be in one of the physical laboratories of the centre at which the Association is meeting.

Personally, I should be very glad if you could have a room provided for your section at next Summer's meeting in South Wales, because our friend Mr. Brook, the senior surgeon of the Swansea General Hospital, is not only a Member of this Society, but has already evinced his practical interest in electro-therapeutics by work done with the x-rays in the treatment of carcinoma of the breast. You, certainly, as electro-theraputicians, had an unfortunate experience at the Manchester Meeting. You went there as fully charged as a Leyden-jar, intending to emit sparks if not to cause explosions, in the Surgical Section, when the subject of inoperable cancer was being discussed, and also in the Dermatological Section, where views were to be exchanged upon the value of the high-frequency methods and of the light-treatment in certain diseases of the skin. But it so happened that these two Sections set to work on their respective subjects at the same time, so that anything like a focusing of your views in either one of them became impossible. Now, had there been an Electro-therapeutic Section at Manchester, both the Surgical Section and the Dermatological Section would—or should—have arranged that you should be fully represented at each of those discussions.

In conclusion, Gentlemen, on behalf of the many friends who have come here to-night to show their interest in your work, and also on my own behalf, let me express the hope that with you and your Society it may never be a question of "Make," "Break," but that it may be ever "Make," and never "Break." That each one of you may strive his best to make a good name for himself, and so, at the same time, to make the work of your young Society regarded with approval and respect; that at your Meetings, as well as outside of them, in your dealings with each other and with your professional brethren, you may make many a true and lasting friendship, and that your work and that of your Society may have a continuous current of happiness and success!

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, November 1st, 1902.

The Purvis Oration

ON

THE SIMULATION OF INTESTINAL OBSTRUCTION.

Delivered before the West Kent Medico-Chirurgical Society.

By ANTHONY BOWLBY, C.M.G., F.R.C.S.,

Lecturer on Surgery at St. Bartholomew's Hospital.

THERE are few subjects more interesting to the surgeon of the present day than those that deal with the acute affections of the alimentary tract; and foremost amongst these is the condition spoken of in general terms as "acute intestinal obstruction." And it is because this condition is one that demands prompt recognition, because it is within the day's work of every practitioner, and because it is of vital importance to the patient that I have chosen it for my subject this evening.

In the first place, let me say that by the term intestinal obstruction I mean "mechanical obstruction of the intestines within the abdomen," and that I exclude all cases of external hernia where the obstructed bowel is outside the peritoneal cavity. But I will ask you before going further to consider what is the one essential difference between an ordinary strangulated hernia and a strangulation by bands or adhesions inside the abdomen. It is this. Whereas in the one case the morbid processes which ensue are limited to the sac and to the tissues outside the sac of the hernia, in the other they take place inside the peritoneum and are early complicated by peritonitis. The strangulated bowel in either case exudes fluid, and we are all familiar with the fact that as this goes on in a case of unrelieved hernia, the fluid in the sac becomes blood stained, and ultimately foul smelling or even faeculent in odour. This no doubt is due to the transudation through the inflamed and softened bowel of both serum and blood as well as of micro-organisms. And this same process is present also in internal strangulation, with this important difference, that the exuded fluid escapes into the peritoneal cavity and causes in many cases both septic peritonitis and also general septic

poisoning. And the discovery of this fluid, which is often blood-stained on opening the abdomen, is in very many cases a most valuable sign as indicating that strangulated bowel is to be sought for as the cause of the peritonitis. It thus results that those cases of intestinal obstruction where there is strangulation of the bowel are early complicated by peritonitis, and to this point I shall again have to direct your attention.

SYMPTOMS.

I would now ask you to consider for a few minutes the principal symptoms and conditions that result from acute intestinal obstruction, so that we may be prepared to compare them with the symptoms of other conditions that simulate this affection. Amongst many other symptoms there are three which are most characteristic—abdominal pain, vomiting, and obstruction to the passage of wind and faeces.

Pain.—The first of these is very early complained of, but its onset will differ with the nature of the obstruction. Thus the acute and sudden strangulation by a band of adhesion or a volvulus will usually cause a sudden and definite attack of severe pain, and perhaps collapse; whilst, on the other hand, in cases where the obstruction occurs first and is only later on followed by strangulation the pain may have no very definite onset. The pain may be correctly localized by the patient at the seat of the obstruction, or may be referred to the umbilical region in addition, or may be felt in the umbilical region alone. Occasionally it is referred to other regions of the abdomen distant from the part affected. In cases where at first there is no strangulation but merely obstruction the pain is liable to increase as the case progresses, and is often spasmodic and gripping in character, coming on in paroxysms, which are evidently the result of violent contractions of the intestines. The pain is not relieved by pressure, and is usually associated with extreme hardness of the whole abdominal wall, although this is often more marked in the neighbourhood of the obstruction. Pain is often increased as the intestine becomes more distended, and, in addition to the pain, there is great discomfort as tympanites becomes more marked and the diaphragm is prevented from acting.

Vomiting.—This may commence, as in strangulated hernia, within a few minutes of the occurrence of strangulation, whilst in other cases it does not supervene until after an interval of many hours or even days. Occasionally, but very rarely, it is absent or but little marked, and I have seen a man with severe strangulation proceeding to gangrene of the gut in whom not only was there no vomiting for three days, but the patient took food readily to within eighteen hours of his death. Such an occurrence, however, is extremely rare, and intractable sickness culminating in true faecal vomiting is present in most cases of intestinal obstruction. If food is withheld vomiting may cease for many hours and retching may similarly be in abeyance. It is therefore to be remembered that these important symptoms may be absent in cases which have been properly treated by the withholding of all food given by the mouth, and without the administration of any opiates.

Obstruction to the Passage of Wind and Faeces.—This is of little less importance than the vomiting. But the absence of the passage of wind is in all cases of greater significance than is mere constipation, and it almost always happens that in cases of acute obstruction the retention of wind really causes more trouble than the inability to pass solid matter.

PERITONITIS SIMULATING OBSTRUCTION.

So much then for some of the main symptoms, and I will not occupy your time by describing in detail the general condition of a patient with advanced intestinal obstruction. It is well known to you all, but I must point out that in cases of internal strangulation, as opposed to those of external hernia, the symptoms are much more rapid in their onset, the general state of the patient at any given time is much worse, and symptoms of peritonitis and of septic poisoning are early present; so that it is well known that in all such cases the prognosis is much more serious than it is in hernia, and that operation is not at all so satisfactory. This is no doubt due to the fact which I have already laid stress upon, namely, the early infection of the peritoneum in all cases of internal strangulation. And it is this peritonitis which complicates internal obstruction that so often renders an accurate diagnosis impossible. Yet on the one hand it is to be remembered both that the peritonitis itself may suggest the obstruction as its cause, and that, on the other hand, in very many instances of peritonitis there is also

very serious obstruction due to the impaired peristalsis of the inflamed bowel. There are consequently many cases in which a diagnosis of peritonitis can with confidence be made, but in which it is difficult to say whether the peritonitis is the main cause of the obstruction or whether in its turn it results from the presence of strangulated bowel in the peritoneal cavity. And thus it happens that peritonitis more frequently simulates mechanical obstruction than does any other affection; and considering the frequency with which peritonitis is the result of inflammation of the appendix, it may be said with truth that a very large number of cases that clinically present themselves as cases of obstruction are cases of acute appendicitis in which there is either a diffuse inflammation of the peritoneum or a localized peritonitis limited to the neighbourhood of the caecum. But I do not propose to deal this evening with appendicitis or say more on this well-worn subject. I think we may take it as generally accepted that peritonitis may simulate mechanical obstruction, and I will pass on to consider how inflammation or other lesion in the neighbourhood of the peritoneum merely may have the same effect.

Obstruction due to Perityphlitic Abscess.

Some years ago I was sent for to a considerable distance from London to see an elderly lady who was suffering from obstruction. Her history was that she had always been constipated, and had been obliged to take aperients and use enemata. On one occasion two years previously there had been a more complete obstruction due to faecal impaction, and this had necessitated the breaking up of a large mass before relief was obtained. Her recent attack, for which I saw her, had lasted several days and had not yielded to treatment. The patient was an exceedingly stout woman, weighing about 17 st. She was in no pain, but complained of flatulence and distension. Her temperature and pulse were normal, her tongue clean, and her general condition quite satisfactory. The rectum was empty and an examination of the abdominal wall revealed nothing, the immense thickness of the fat quite preventing any positive conclusions being drawn. It seemed to me that everything pointed to mere constipation, for the whole history led to this as a probability, so I ordered enemata and small doses of opium and very little food.

The treatment seemed at first to produce the desired result, for thirty-six hours later there was a satisfactory evacuation and much relief. Again, however, the bowels refused to act, and after an interval of four more days I saw the patient again. She had had no relief by the passage of faeces and was in great discomfort. Her tongue was not so clean and her pulse was a little more rapid, but the temperature remained normal and there was no pain or tenderness. As ordinary enemata had proved useless I had her placed under an anaesthetic and irrigated the bowel with warm water for a quarter of an hour. There was practically no result, but still feeling that the case was one of obstinate constipation or faecal impaction I did not then advise operation.

Two days later I was again called to see her. There had been no relief and the distension had become more marked; the patient had also begun to be sick after food. It was now a fortnight since the beginning of the attack and there were still no pain or tenderness and the temperature remained normal. The general condition of the patient was, however, not so satisfactory, and her pulse was more rapid and her respiration quickened, the distension also caused much distress and there was a constant feeling of sickness. There was a general consensus of opinion of those in attendance on her that the obstruction was in the large intestine, and the question now presented itself whether there was a cancerous growth causing partial occlusion of the bowel, although only conclusion that could be arrived at was that the distension must be relieved and that operation could not be further postponed. But in view of the difficulty and risk of opening so distended an abdomen in so fat a person of advanced years in order to search for the seat of obstruction I decided to cut down upon the caecum and open it, believing that this would give the best chance of recovery and knowing that this would involve no undue handling of intestine and no difficulty of closing the abdomen through distension of the bowel. I therefore proceeded to cut down upon the caecum, but fortunately before reaching it I opened, to my surprise, an abscess of considerable size in the loose cellular tissue of the iliac fossa, and consequently did not proceed further with the operation. The symptoms of obstruction were at once relieved and without further complication the patient recovered.

Now this case is not only remarkable in itself as an example of perityphlitic abscess without pain or fever, but it illustrates in a striking manner the way in which an inflammation near to the peritoneum may cause a serious interference with the peristalsis of the intestine.

This was a case of abscess which was probably due to mere retention of scybala in the caecum, and as soon as the pus was evacuated the bowels at once returned to their work. There was no real mechanical obstruction throughout, for the abscess could not have occluded or sensibly compressed the bowels. Yet this patient had all the conditions which justify a diagnosis of complete obstruction of the large intestine, and was in no way assisted by the treatment adopted, which usually suffices to overcome a mere accumulation. We must regard the case as an illustration of the simulation of intestinal obstruction by inflammation of a neighbouring tissue causing a paralytic condition of the intestine; and I hope to show that the affections of various organs near to the peritoneum may produce similar results.

But before dealing with the peritoneum and the abdominal viscera, I would remind you that, apart altogether from the abdominal cavity, it has long been recognized by physicians

that certain cases of acute pneumonia and pleurisy simulate intestinal obstruction and cause abdominal pain, distension, and sickness; and it is therefore well to bear in mind such cases, and not to allow the attention to be diverted from the thorax merely because of the presence of abdominal symptoms. I will not, however, say more on this subject now, because it has very recently been dealt with by Mr. Barnard in an interesting paper read at a meeting of the Clinical Society of London, with which many of you are doubtless familiar, and because the time at my disposal is all too short.

AFFECTIONS OF THE SOLID VISCERA SIMULATING OBSTRUCTION.

In the next place, I would say that it may be laid down as a general rule that many of the acute affections of the solid abdominal viscera cause severe and sudden abdominal pain and sickness, and that in some cases constipation and flatulence also coexist, so that in some degree, at any rate, the cardinal symptoms of intestinal obstruction may be present.

No organ illustrates the truth of this statement better than does the kidney. Consider any acute affection of this organ, such as the torsion of a movable or floating kidney, the lodgement of a calculus in the ureter, or laceration by an injury. In all of these there is not only pain, but also in many cases sickness; which may be persistent, and tympanitic distension of the colon. In most cases, of course, the other symptoms are sufficiently definite to admit of a correct diagnosis, but occasionally there is no complaint of special pain in the lumbar region, and pain is felt all over the belly.

Renal Colic Simulating Intestinal Obstruction.

I was sent for one day to see a case said to be one of intestinal obstruction, probably requiring operation. The patient was a well-built man of about 40 years of age, who had always enjoyed good health, and who said that his present illness had begun after dinner with severe pain in the abdomen, and sickness. He went to bed and sent for his doctor, who found him much collapsed, with general abdominal pain and constant retching. Pain was felt all over the abdomen, and there was much discomfort from flatulence. Fomentations gave little relief, an enema produced no result, and the sickness and pain continued during the night. I saw him the following afternoon, and found that the condition had not much changed. The bowels had not acted, and the abdomen was distended but nowhere tender, the tongue was clean, the pulse was regular (at about 85 to the minute), and abdominal respiratory movements were not much impeded. The retching continued, but was less; and there had been but little fluid vomiting throughout. There was now what there had not been at first, namely, more pain in the right lumbar region than elsewhere, and distinct tenderness was now complained of when pressure was made at this part. Under these circumstances, as it was now becoming clear that there was no need for any immediate operation, and that the case might prove to be one of renal colic, we decided to give opium to diminish the spasm, and then to await events. The result was satisfactory, for very soon the pain subsided, and in the evening the presence of blood in the urine and the free passage of flatus cleared up all remaining doubts.

I think, however, that at the onset of this attack, when there was general pain all over the abdomen and no renal symptoms, it would have been impossible to say that the case was not one of obstruction; and whilst it illustrates the simulation of obstruction, it points to the advisability of exercising a little patience before coming to a decision. I would also like to point out that the persistent vomiting and retching noticed in this patient are frequently seen in such cases, as well as occasionally after operations on the kidney. Thus I have quite recently seen a lady in whom the persistence of the vomiting suggested to her medical advisers the probability of pyloric obstruction, but in whom the whole of the symptoms subsided with the passage of a small calculus.

Most of what I have said with regard to the kidney might almost be repeated for the gall bladder, for here also in "hepatic colic," the pain, which is usually local, may be general, the sickness may be violent and persistent, and there may be flatulent distension and constipation, as well as a good deal of collapse in some patients. I have seen several cases where the symptoms have been such as to raise the question of obstruction, and in one case at least the vomiting and distension had caused the physician in attendance to make a definite diagnosis of obstruction, and to advise operation for its relief.

But although these cases are well recognized, it must be remembered that gall stones may cause real obstruction by impaction in the bowel, so that, whilst a history of previous attacks of gall-stone colic may rightly suggest another attack of a similar kind, the same history may be found when a stone is lodged in the ileum. This is illustrated by the following case:

Obstruction due to Impaction of Large Gall Stone.

A stout woman of 60 was admitted to St. Bartholomew's Hospital under my care last October. She gave a history of four weeks' abdominal discomfort and flatulence, and one week's complete constipation with sickness. Her previous history was uneventful, except that she had had

attacks of so-called "indigestion," which her doctor had told her were due to gall stones.

Her general condition was good, except that her pulse was weak and rapid—120 a minute. She was in no pain, and the abdomen, though slightly distended, was quite soft and free from all tenderness. The rectum was empty. Soon after admission she was sick after taking whey, the vomit being yellowish and had smelling. She was given a turpentine enema, and passed wind and a little faecal matter with relief.

The sickness, however, continued at intervals, although all food was withheld and flatus passed freely, and as this vomited material was evidently regurgitated from the intestine, and the long history rather suggested obstruction of the large intestine, I cut down on the descending colon the next day, expecting that I had to do with a stricture of the rectum or sigmoid flexure. I found, however, that the large intestine was empty, and the peritoneum quite normal and free from all fluid; so, as it was now clear there could be no strangulated intestine and no rectal stricture, and as the abdomen was quite soft, I decided to do no more exploration at that time on account of the general feebleness of the patient: I therefore closed the wound, and continued rectal feeding.

For forty-eight hours after this all sickness stopped and the abdomen remained soft and undistended, yet no motion was passed. I now reverted to the history of previous attacks of gall-stone pain, and had the advantage of a consultation with Sir Thomas Smith. He agreed that this might be a case of impacted gall stone, so I decided to open the abdomen in the middle line and explore it. On this being done it was found that the great omentum was adherent at one place to the bottom of the pouch of Douglas, and on separating it from adhesions, evidently recent, some coils of distended intestine were revealed. The tendency of the omentum to seek out in some curious way any inflamed viscus and to attach itself thereto is well known to all surgeons, so I was at once suspicious that the intestine in Douglas's pouch was the piece I wanted. I drew it up into the wound without difficulty, and immediately felt a very large foreign body in its lumen. The intestine was very little altered and had evidently not been much hurt, so withdrawing it from the abdomen I incised it and turned out a very large gall stone. The wound in the gut was sutured by the Czerny-Lembert method, and the abdomen being quickly closed, the operation was completed within half-an-hour of the commencement of the anaesthesia. I am sorry that I cannot tell you of such a satisfactory ending as seemed likely to result, for within a few hours of the obstruction being removed acute diarrhoea supervened, and after passing large quantities of watery stools the patient became suddenly collapsed in spite of all remedies, and died.

Necropsy showed that the wound in the bowel was quite securely closed and that the gall stone had entered it by ulcerating through the gall bladder into the duodenum, and had traversed the greater part of the small intestine before becoming arrested in the ileum.

The case illustrates a rare form of obstruction, and one in which the diagnosis is always difficult. The long history of abdominal discomfort, the passage of wind but not of faeces, the absence of all abdominal tenderness, and the absence of signs of peritonitis are conditions commonly met with in such cases as these, where the obstruction is not quite complete, and where there is no strangulated intestine to set up peritonitis. In other cases I have seen there has been more pain than there was in this patient, and in various recorded cases the pain has been griping and paroxysmal, and evidently due to the efforts of the bowel to propel onwards the obstructing mass. The onset of the symptoms may be sudden, and, as I have pointed out, the pain may be mistaken for gall-stone colic. But in many patients there is rather evidence of long-continued abdominal discomfort, gradually culminating in increasing obstruction and sickness.

ACUTE PANCREATITIS.

I will now ask you to direct your attention to a less familiar organ—the pancreas—whose ailments until very recently attracted but little notice.

Acute Pancreatitis.

A few years ago I was asked to see a lady under the following conditions: She was a healthy unmarried woman of 40, of a naturally vigorous disposition, and had always enjoyed excellent health. One morning after breakfast, whilst sitting quietly reading the newspaper, she was suddenly seized with intense abdominal pain, which was so severe that she lay on the floor, and within a few minutes was violently sick. The doctor found the patient exceedingly collapsed, with cold hands, a clammy perspiration, and still retching. He at once administered a small injection of morphine, and had the patient carried to bed. Later in the day a well-known physician was sent for from London, but as the distance was some two hundred miles he did not arrive until late in the evening. After seeing the patient he sent for me, and I arrived the following morning.

I found that during the previous day the pain had decreased, but that there had been no action of the bowels, and no passage of flatus. Sickness had continued at intervals, but the vomit was merely bilious. No food had been given, but small doses of belladonna and morphine had been administered with relief. The patient looked very ill, but did not complain of severe pain any longer. The tongue was furred and dry (perhaps from the drugs), the temperature was 100°, and the pulse was singularly good at about 90 per minute. The abdomen was universally tender, but the tenderness was very superficial, and was not increased by pressure. The abdomen moved on respiration, though not freely, and the muscles were not rigid as in peritonitis. There was no diminution of liver dullness, nor was there any increased dullness to suggest the presence of fluid or a tumour. We decided that in view of the very serious condition of the patient it was advisable to open the abdomen, and we were all the more inclined to advise this because of the distance from London and from any large town where surgical aid could be obtained. The exact diagnosis seemed doubtful, but it was considered probable that there was perforation of a gastric ulcer or perhaps strangulation of a coil of intestine.

The abdomen was accordingly opened, and revealed a normal peritoneum, free from gas or fluid. There was also revealed, however, that which was the key to the correct diagnosis—namely, "fat necrosis" of the

great omentum, the latter being thickly studded with those small areas of opacity varying in size, but mostly not larger than a pinhead or a pea, which characterize this condition. It is now well known that fat necrosis complicates many cases of acute pancreatitis, and that apart from affections of this latter viscus, it is rarely seen; so that its presence here at once suggested that, instead of there being either perforation or strangulation, there was acute pancreatitis. The finding of a firm swelling behind the great omentum confirmed this, and the operation was brought to a close.

I am sorry that there is little to add to this history, as the patient died three days later. She lost all pain after the operation for some unexplained reason, and was quite comfortable for two days; then she suddenly collapsed, and died in a comatose condition.

The history of this patient may be taken as fairly typical of acute pancreatitis, for although the symptoms may be more or less acute and the course of the illness more or less prolonged, the general conditions are the same. I will not stop to discuss the varieties or causes of acute pancreatitis, interesting though they be, but would rather sum up as briefly as possible the leading clinical features of a disease which is so little recognized and which simulates both acute intestinal obstruction and acute peritonitis.

In the first place, acute pancreatitis has never been seen in children; most of the patients are males and are usually about middle age, and more often than not they are fat people. A previous history of gastric or duodenal catarrh or of gall stones is obtainable in many but by no means in all of the cases. The onset is usually very sudden, and is characterized by acute pain, which may be general or localized, by vomiting and by constipation. There is usually also some collapse, with feeble and rapid pulse, and a subnormal temperature. It is, however, to be noted that the abdominal wall is not so hard or so universally tender on deep pressure as in cases of perforative peritonitis, and that the vomit is often only the contents of the stomach, perhaps with dirty brown or black matter, and not faeculent.

In most cases not rapidly fatal, after an interval of a day or two there is a definite abdominal swelling, and, at a later stage, a localized or general peritonitis. The swelling may be due to the enlargement of the pancreas, but is in part due in many cases to the effusion into the lesser peritoneal cavity, and at this stage there is generally some pyrexia, and there may also be sugar in the urine. I will not take up your time by describing the later histories of those who survive after the first few days, for enough has been said for my present purpose. It will be seen that acute pancreatitis may simulate intestinal obstruction by the pain, vomiting, and constipation that accompany it. But the development of a definite localized swelling, the absence of hardness and retraction of the abdominal wall, and in some cases the absence of intestinal vomit will often suggest a correct diagnosis. It must, however, be confessed that in very many cases it is impossible in the early stage to decide that the symptoms caused by acute pancreatitis are not due to either perforative peritonitis or strangulation of the intestine.

I have, I think, said enough to indicate that certain affections of the solid viscera cause pain, vomiting, and tympanites; and I will pass directly to the conditions of the intestines themselves that may simulate obstruction, merely reminding you that in addition to the causes above alluded to, others, such as an ovarian cyst with a twisted pedicle and some cases of intraperitoneal haemorrhage, are associated with these same symptoms.

EMBOLISM OF SUPERIOR MESENTERIC ARTERY.

The next class to which I wish to direct your attention is fortunately rare, for I desire to point out that the symptoms caused by embolism of the superior mesenteric artery, or its branches may simulate obstruction and peritonitis. The following is a typical case:

Embolism of Superior Mesenteric Artery: Gangrene of Intestine.

A middle-aged man was admitted into St. Bartholomew's Hospital a good many years ago under the following circumstances: It was winter, the weather was exceedingly cold, and the patient was engaged unloading coal trucks in a snowstorm. He noticed afterwards that his fingers were very numb and dead, and that one hand had become very feeble. The next day the fingers of this hand were found to be shrivelled and cold and in a state of commencing dry gangrene, a condition which was fully explained by his exposure, so that a diagnosis of frostbite was readily arrived at. His hand was kept wrapped up in cotton-wool, and the patient was confined to bed.

All went well for a few days, and then one afternoon the man had a violent attack of abdominal pain, followed by sickness and collapse. He rapidly became worse in spite of treatment, and the abdomen became distended and tympanitic with universal hardness and tenderness. No flatus could be passed, and the bowels would not act to enemata. The symptoms continued unchanged, and from the initial collapse the patient never really rallied, and died in thirty-six hours.

Necropsy. On opening the abdomen, it was found that practically the whole of the smaller intestine was gangrenous; and the cause of this

was soon discovered to be, not a strangulation, but an embolus occluding the main trunk of the superior mesenteric artery. Further examination showed that in the left ventricle was a clot evidently resulting from endocarditis, and an examination of the arm showed that another embolus had lodged at the bifurcation of the brachial artery, and small secondary emboli being swept into the digital branches fully accounted for the gangrene of the fingers which had been thought due to frostbite.

Now this case is a fairly typical one of its class, and it is fortunate that there are but few of them, for they must always be difficult to diagnose, and it is only too evident that when the main artery is plugged and all the small intestines involved in the resulting gangrene, treatment is of no avail. There are, however, other cases where only a branch of the vessel is occluded, and in these, as there is a gangrene of only a corresponding portion of the bowel, the symptoms are less severe, and there is a possibility for the surgeon to render aid. A very interesting case of this kind was recently recorded at the Clinical Society by Dr. Tyson and Mr. Linington, of Folkestone. A woman, aged 66, had pain, sickness, and obstruction, which had been increasing for a week before she was admitted to the hospital and was operated on. It was then found that about a foot of the intestine had been rendered gangrenous by embolism of a branch artery, and the damaged bowel was accordingly resected. The patient did not recover, and the necropsy showed that the embolism resulted from the detachment of clot from an atheromatous aorta. But the case illustrates that in such a condition there is at least a chance for surgery, and points to the importance of recognizing the existence of such an affection.

The authors I have named, in discussing similar cases, say: "The first common symptom is abdominal pain, closely resembling an ordinary attack of colic. Nausea is frequent and comes on fairly early. Vomiting follows, with a gradual change in the character of the vomit. Constipation is the rule, but diarrhoea has been commonly reported. Tension and tympanitic distension of the abdomen are late symptoms, indicating the advent of peritonitis. Extreme fetor of the stools, should there be diarrhoea, is of serious omen, and points to gangrene of the bowel. Profuse intestinal haemorrhage has also been recorded." It may be added that, as in my own case, there may be evidence of other emboli, and in some patients at least there may be definite evidence of valvular lesion to suggest an origin for the embolus.

An exactly similar condition of limited gangrene of the bowel may result from a blow on the abdomen, which tears the mesentery and damages a branch of the mesenteric artery.

FUNCTIONAL CONSTIPATION.

But there are certain other and more common affections of the intestines themselves which may simulate intestinal obstruction, and I propose to allude particularly, first, to that common class of "functional constipation" in which aperients lose their characteristic action; and, secondly, to "enteritis." The following is a characteristic example of the first of these:

Functional Constipation.

An unmarried lady, aged 40, resident in the country, and of a neurotic disposition, consulted her medical attendant because of constipation, which had not been relieved by her usual remedies. He ordered some cascara, and as this had no effect gave a full dose of castor oil, and followed it up by an enema, at the time restricting his patient to fluid diet. The treatment failed to act, and her bowels had now been confined about six days. The patient complained of abdominal pain, and as another aperient resulted in sickness and nausea, with disinclination for food, I was asked to see her with regard to possible operation. I found her free from all severe pain, with no distension at all, a soft abdominal wall moving well on respiration, a quiet pulse, and a normal temperature. Her tongue was furred, and she suffered from headache. It was quite evident that there was here no sign of complete obstruction, so I ordered what I have usually found best in these cases, namely, rectal feeding, small doses of opium, nothing but water by the mouth, and after two days of this a turpentine enema. This had the desired result, and no further trouble arose.

I am sure most of us must have seen similar cases in which large and repeated doses of aperients give no result, and in my experience all the patients have been women. They are most often neurotic or hysterical, but I have seen a lady of sixty who was in no way neurotic and who caused much anxiety by just such an attack as I have described.

The condition is generally easily recognized, for, although purgatives do not relieve the constipation they do not cause pain, and there is no abdominal distension or tenderness such as is induced when aperients are given in real obstruction. I will not pretend to give any explanation of the failure of aperients to produce their natural result, but will content myself with pointing out that the want of proper innervation of the intestine is paralleled by the other evidence of imperfect innervation, such as the hemianaesthesia and paraplegia

of the hysterical temperament. These are patients whose nervous systems are constantly surprising us by their inconsistent actions, for, whereas they may be peculiarly sensitive in one direction they are absolutely dulled in others. In the cases I have been alluding to there is a complete absence of all serious pain and there is never material distension. Anxiety as to the presence of a real cause of obstruction is chiefly due to the difficulty of getting the bowels to act, but the anxiety is generally mainly on the side of the friends and relations, and the patient herself is rather inclined to assume the air of a martyr who takes pride in bearing her sufferings in silence. There is none of the real anxiety which is so marked a feature in patients with real obstruction and especially in cases of strangulation. Opium in moderate doses, abstinence from all solid food, and the administration of enemata usually suffice to bring about a satisfactory result.

ENTERITIS.

But while the sluggishness of the bowels to which I have referred may bring about obstinate constipation, a completely opposite condition may even more seriously simulate obstruction. For "acute enteritis" may cause an absolute arrest of the passage of wind and faeces, as well as produce severe abdominal pain and vomiting. It is, of course, true that enteritis much more often causes acute diarrhoea; and I think myself that the frequency of obstruction due to uncomplicated enteritis has been rather exaggerated. But, on the other hand, the simulation of mechanical obstruction in some cases is of the most complete kind, and the real obstruction to the passage of the contents of the bowel is so extremely severe as to threaten early death unless relief is obtained.

I remember to have seen a very typical case of this kind under the care of the late Mr. Morratt Baker, when an elderly man was admitted into St. Bartholomew's Hospital suffering from great distension of the abdomen, faecal vomiting, and complete obstruction, which, together with severe pain, had followed upon a very large meal, in which cold pork had played the chief part. All other means having failed, Mr. Baker opened a coil of small intestine, and sutured it to the skin, with the result that the obstruction was relieved, and the patient recovered, the opening in the bowel healing spontaneously. I know of very similar cases which have either required similar treatment or which have died without relief, but I have also seen two other cases in which acute enteritis was complicated by a previous narrowing of the bowel, and I am a little inclined to think that in others of this class of cases I am now alluding to similar conditions may be present.

Obstruction due to Enteritis and Distension above Old Adhesions.

In the first of these two cases the patient was a man who one Christmas time some years ago had completely gorged himself, and confessed to having eaten ten mince-pies after a surfeit of meat and vegetables and drink. A few hours later he had severe pain and vomiting, and this continued until the next day. The abdomen became distended, and flatus would not pass, nor could the bowels be made to act. On admission to the hospital forty-eight hours after his first symptoms the man was already in a dying condition. His belly was enormously distended, and he was constantly sick and in great pain. He was far too ill to admit of much surgery, and though the small intestine was opened he got but little relief, and died soon afterwards.

I made the necropsy, and found that the small intestine was tied down and very much narrowed by old adhesions, in the right iliac fossa, so that it would hardly admit the tip of the little finger, and above this point was enormously distended, inflamed, and darkly discoloured.

It was evident that, although the altered intestine was quite equal to its ordinary work the symptoms were largely due to this narrowing, which prevented the bowel from transmitting sufficiently rapidly the huge meal and the fluid secreted by the irritated intestine. The sudden and great distension had thus practically resulted in strangulation at the seat of stricture, and had been followed by the usual paralysis of intestine above the obstruction.

Well, this case remained deeply impressed on my mind, but it was not until last Christmas that I saw its parallel.

Obstruction due to Enteritis and Distension above Old Adhesions.

A man was admitted under my care with a precisely similar history of a huge meal followed by intense abdominal pain, sickness, and obstruction. The only contradictory thing was his pulse, which was quite equal and steady at about 86, the temperature keeping about 100°. In this case I was so greatly impressed with the amount of pain the man evidently suffered, and with the extreme hardness of the abdominal wall, that I decided to operate at once in spite of the history that all the symptoms were due to mere overeating, and as it turned out it was very well I did so.

As soon as I opened the abdomen an immense quantity of chocolate coloured and distended intestine presented itself, and had to be withdrawn and wrapped in a hot towel to enable me to find the seat of obstruction. I then soon ascertained that the lower part of the ileum was closely adherent to the left side of the mesentery, and before I could free it I had to divide five bands which had evidently tied down and constricted the smaller coils of the intestine for many years past. There was here no definite loop that had recently become strangulated, but rather, as in the other case I have alluded to, a long-standing contraction of the lumen of the bowel which nevertheless did not prevent the passage of the intestinal contents until the ingestion of a great quantity of indi-

gestible food, and the sudden filling up of the irritated intestine produced such a congestion of the traffic that an absolute block resulted. I completed the operation by opening the distended bowel in three places, emptying it, and suturing the incisions, and finally I replaced the now flaccid intestine in the abdomen and closed the wound. The man made a complete recovery in spite of the very bad condition of several feet of the intestine, and I think it is quite certain that without operation he must inevitably have died.

THE INDICATIONS FOR EXPLORATORY OPERATIONS.

And now, gentlemen, I have nearly concluded all I have to say on this subject, and will only ask your attention to a few concluding words.

I have shown you that abdominal pain, vomiting, and complete constipation, which may be taken collectively as good *prima facie* evidence of mechanical obstruction of the intestine, may nevertheless all be found in certain patients in whom no mechanical obstruction exists.

I have pointed out that many acute affections of the abdominal viscera may be associated with these same symptoms, and that consequently there are many conditions which simulate intestinal obstruction, but yet need no surgical treatment at all. It is not possible in a single address to describe in detail the differential diagnosis of every class of such cases, but I think I may at least point out that the knowledge of each of these various conditions is very essential in attempting a diagnosis of cases which are very frequently difficult, and are always anxious.

There is I think a very foolish and harmful tendency to say in such cases, "Oh, make an exploratory abdominal section to see what is the matter," and a still more foolish and dangerous creed which adds "There is no risk in an exploratory incision."

For myself I regard all such sayings as dictated very largely by mere ignorance, and whilst I would be the first to urge operation where necessary, I find that the suggestion to open the abdomen is often made by those who have never seriously considered the necessity of knowing what is to be sought for when it is opened, and who are very ignorant of the difficulties they would rashly encounter and of the risk to the patient of the operation they propose.

I would urge rather that the interests of the patient and the success of the surgeon alike demand a most careful consideration of all symptoms and an attempt to arrive as nearly as possible at a diagnosis before deciding upon any line of treatment. In many patients needless operations will thereby be avoided altogether, and in others where abdominal section is decided upon it will be undertaken with some definite object in view and with a definite plan of procedure in the mind of the surgeon.

With regard to the alleged safety of all exploratory operations, I would further say that however safe they may be made when the patient can be carefully prepared and dieted, as for the performance of an ovariectomy, all the essential elements of safety are wanting when the patient is acutely ill and the intestines are greatly distended. It is impossible to exaggerate the difficulties that may be encountered in a stout patient under these circumstances, and it is only those who have had to deal with them who know how great is the risk that is run in a so-called exploration, and how difficult or impossible it may be to ascertain what an abdomen does or does not contain until many feet of intestine are withdrawn and the question presents itself as to how the bowels are ever to be put back again. Such operations are necessarily always dangerous, and I know none in which there is more need of good assistance.

In conclusion, may I suggest for your consideration a few points as to procedure when in a doubtful case it is decided to open the abdomen in order to seek for a supposed mechanical obstruction?

1. Open in the middle line below the umbilicus, because most of the causes of obstruction will be found in the lower half of the abdomen.

2. Without allowing any intestine to escape examine first with two or more fingers, or even the whole hand, the right iliac region, and pass from there towards the umbilicus to feel whether there are any adhesions there. It is in this right lower half of the abdomen that most of the causes of obstruction are to be found, for here are (1) the appendix; (2) intestinal diverticula, perhaps attached to the umbilicus or to the neighbouring mesentery; (3) the commonest site for volvulus, that is, the caecum; (4) the usual site for the lodgement of an impacted gall stone, that is, the lower part of the ileum; (5) a common place for adhesions due to caseous mesenteric glands; (6) the sites of inguinal, femoral, and obturator hernia. Further, if the obstruction be in the small intestine,

it is in the right iliac fossa that undistended intestine will be found, and if this can be secured and traced upwards it is the surest guide to the seat of obstruction.

3. Examine next the left iliac region and the pelvic region, the latter especially if the patient be a woman, for there, as additional causes of adhesions, may be inflamed ovaries or tubes or some uterine trouble with neighbouring inflammation.

4. If no cause can be discovered then either open a coil of distended intestine and suture it to the skin, if the patient be too ill to bear more; or else decide to take the distended bowel out of the abdomen altogether, and if necessary open it, empty it, and suture it. It is only by so doing that you will be able to return it once you have decided to let it escape, and it is often only by so doing that you will find a deeply-seated obstruction.

These are the rules I have made for my own guidance, and I have found that it is of great assistance to have some definite plan on which to proceed. If one has been able to eliminate the various conditions that simulate intestinal obstruction, it is evident that the next thing is to have some clear idea as to how best to proceed in dealing with any mechanical obstruction itself.

THE DIAGNOSIS AND TREATMENT OF VARIOUS FORMS OF SEPTIC SYNOVITIS.*

By F. C. WALLIS, M.B., B.C. CANTAB., F.R.C.S.,

Assistant Surgeon to Charing Cross Hospital; Surgeon to the Metropolitan Hospital.

SYNOVITIS due to sepsis has never yet received the attention that it should have in works on surgery. Most textbooks refer to it in a perfunctory manner, and only a few books written on diseases of joints refer to the subject at all. Each year it becomes more obvious to me that a very large number of cases of acute and subacute synovitis are caused by sepsis in some form or other, and the acuteness of the condition depends upon the virulence of the micro-organism responsible for the trouble. A number of these micro-organisms have been found in joint effusions—namely, streptococcus articularum, staphylococcus pyogenes aureus, pneumococcus, gonococcus, and several others. The only paper I have seen which in any way touches on this extremely interesting and very important condition is one by Dr. H. D. Rolleston,¹ in which he states his belief that it is a much more common occurrence than is generally known or suspected.

When a patient has one or more joints swollen, hot, and painful, and this is associated with a temperature, it is usual to treat the case as one of rheumatic fever. But in these cases now referred to, if attention is paid to the symptoms it will be noticed that certain clinical signs are absent, notably the profuse sweating which is, I believe, invariably present in an attack of rheumatic fever, whilst others are added, and I would particularly refer to two symptoms which are nearly always present in septic conditions, and upon which I depend to a considerable extent in making my diagnosis—namely, the dry, harsh, unpleasant condition of the skin, and more particularly the restless, distressed, unhappy mental condition which exists in these patients. These points are well brought out in Dr. Rolleston's paper.

To further illustrate this class of case, let me quote from a paper of my own which was published in the BRITISH MEDICAL JOURNAL of October 6th, 1900, on the causes and treatment of non-malignant stricture of the rectum. In this paper, three cases are described in which the patients suffering from septic ulceration of the rectum were subject to attacks of acute synovitis in one or more joints. The usual remedies for acute rheumatism were given in the first case, because I did not then know or recognize the cause, and yet it was obvious that the attacks in no way resembled acute rheumatism. After the septic ulceration of the rectum had been successfully dealt with, these attacks of synovitis ceased and have never recurred. It is now over two years since I operated on the last case, and four and a-half years since the first one was done.

These are instances of a large group of cases of synovitis, generally multiple, which in certain ways resemble acute rheumatism and yet there is practically no doubt that some septic process is the cause of it.

* Read at a meeting of the West Surrey District of the South-Eastern Branch of the British Medical Association.