2 cases Finney's operation was performed; both patients recovered. In 153 cases gastro-enterostomy was performed; 151 patients recovered, 2 patients died.

Secondary operations have been necessary in 2 cases; in one, an early case, on account of regurgitant vomiting, an entero-anastomosis being performed; in the other vomiting began a few weeks after the operation, and persisted in spite of lavage; at the operation a hernia of the small intestine through the opening in the transverse mesocolon was found. Both these conditions—regurgitant vomiting and hernia through the opening in the mesocolon into the lesser sac—are impossible with the two slight modifications I have adopted during the last twelve months. Regurgitant vomiting is prevented by making the anastomosis as high as possible in the jejunum, and hernia is prevented by suturing the margins of the opening in the mesocolon to the jejunum near the line of stitches between it and the stomach.

HOURLASS STOMACH.

One of the late results of chronic ulceration occurring in the body of the stomach is the constriction of the organ at or near its middle; a condition of what is appropriately termed "hourglass stomach" is then seen.

Hourglass stomach is far commoner than was at one time supposed, and its existence was formerly attributed to a congenital fault in development. I have elsewhere shown that the condition is always acquired, and is the result of chronic ulceration or of malignant disease which is probably secondary to ulceration. The diagnosis of an hourglass stomach can generally be made with confidence if attention be paid to certain signs. These are:

1. If the stomach tube be passed, and the stomach washed out with a known quantity of fluid, the loss of a certain quantity will be observed when the return fluid is measured. Wölfler, who called attention to this sign, said that some of the fluid seemed to disappear "as though it had flowed through a large hole," as indeed it has in passing from the cardiac to the pyloric pouch (Wölfler's "first sign").
2. If the stomach be washed out until the fluid returns clear, a sudden rush of foul, evil-smelling fluid may occur; or, if the stomach be washed clean, the tube withdrawn and passed again, in a few minutes several ounces of dirty offensive fluid may escape. The fluid has regurgitated through the connecting channel between the pyloric and cardiac pouches (Wölfler's "second sign").
3. Paradoxical dilatation—if the stomach be palpated and a succussion splash obtained, the stomach tube passed and the stomach apparently emptied, palpation will still elicit a distinct splashing sound. This is due to the fact that only the cardiac pouch is drained; the contents of the pyloric remain undisturbed and cause the splashing sound on palpation. For this phenomenon Jaworski has suggested the appropriate name "paradoxical dilatation." Jaboulay has pointed out that if the cardiac loculus be filled with water, a splashing sound can still be obtained by palpation over the pyloric pouch. The sign of paradoxical dilatation is best elicited after washing out the stomach in the ordinary manner. When the abdomen is examined at the completion of the washing and when the stomach has been apparently drained quite dry, a splashing sound is readily obtained, for some of the fluid used has escaped into the pyloric pouch through the connecting channel.
4. Von Eiselsberg observed in one of his cases that on distending the stomach a bulging of the left side of the epigastrium was produced; after a few moments this gradually subsided and concomitantly there was a gradual filling up and bulging of the right side.
5. Von Eiselsberg also called attention to the bubbling, forcing, "sizzling" sound which can be heard when the stethoscope is applied over the stomach after distension with CO₂. If the two halves of a Seidlitz powder are separately given and the stomach be normal or dilated, no loud sound is heard anywhere except at the pylorus; if a constriction is present in the stomach, a loud, forcible, gushing sound can be easily distinguished at a point two or three inches to the left of the middle line.
6. I first called attention four years ago to a sign which I have since found of great service in establishing a diagnosis of hourglass stomach. The abdomen is carefully examined, and the stomach resonance percussed. A Seidlitz powder in two halves is then administered. On percussing after about twenty or thirty seconds, an enormous increase in the resonance of the upper part of the stomach can be found, while the lower part remains unaltered. If the pyloric pouch can be felt or seen to be clearly demarcated, the diagnosis is inevitable, for the increase in resonance must be in a distended cardiac segment. If the abdomen be watched for a few minutes the pyloric pouch may sometimes be seen gradually to fill and become prominent.
7. Schmidt-Monard and Eichhorst have seen a distinct sulcus between the two pouches inflated with CO₂. This condition I have twice seen very distinctly.

Summary of Cases.

I have operated upon 20 cases of hourglass stomach due to simple disease, with three deaths. There may be great difficulty in successfully dealing with this deformity, owing to the fact that there are two pouches in the stomach, both of which must be drained, and to the fact that in a certain number of cases a constriction in the body of the stomach is

associated with one at the pylorus. The operations performed in my cases were as follows:

- Gastroplasty in 7.
- Gastro-enterostomy alone in 6.
- Gastroplasty and gastro-enterostomy in 2.
- Gastro-gastrostomy alone in 1.
- Gastro-gastrostomy and gastro-enterostomy in 3.
- Dilatation of stenosis in 1.

CASES ILLUSTRATING ALTERNATIVE OPERATIONS FOR INTESTINAL OBSTRUCTION.

By ARTHUR E. BARKER, F.R.C.S.,

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AMONG the large number of cases of intestinal obstruction which fall to the lot of most active surgeons, there are many, probably the majority, in which the line to be adopted seems quite obvious—as, for instance, in simple external herniae, which with few exceptions—one of which will be illustrated lower down—are plain sailing. But there are besides, and perhaps always will be, a large proportion in which the course which ought to be taken is not immediately clear even when the abdomen has been opened, and which consequently tax the surgeon's judgement even more than his skill, though both may be equal to many other emergencies. He may be familiar with the best method of performing colostomy, caecostomy, and enterectomy; he may have had success in "short-circuiting" in various directions and in enterectomy, and yet he is from time to time confronted with cases in which he must feel considerable doubt as to which of these procedures he is called upon to adopt, and where he is only too keenly conscious that an error in judgement or delay in decision may cost the patient his life, or, if the latter is saved, render it one of great suffering both to mind and body; and the more experience he has the more fully will he recognize the need of mature judgement and prompt decision.

A series of cases recently under my care have suggested these reflections, and that a very brief survey of them, with a short commentary on each, may be profitable for guidance to others, and even encouraging, in a very serious class of cases.

In the group to be related it will be noticed that there are instances both of obstruction in the large and small intestine due either to growth or inflammatory constriction; but stoppage from rectal carcinoma is not included, as the question of excision *versus* colostomy would carry us too far. There was a time, not long since, when the only alternative to non-interference in cases of obstruction of large or small bowel was the formation of an artificial anus, with or without excision of the growth if present. But ever since we have learned how to "short-circuit" the intestine round a growth or firm inflammatory obstacle, we have often where this has been done been perhaps inclined to be despondent as to the prognosis, and have not fully realized the resources of surgery.

Out of a large number of cases illustrating the alternative procedures at our disposal, the following are taken as examples. The first two show the advantages of "short-circuiting" as a preliminary to subsequent removal of the obstructing growth.

CASE I.

A young man, aged 30, was admitted into hospital with aggravated symptoms of obstruction. These had been for some weeks gradual, and then rapidly increased. The abdomen was moderately distended, but very hard; the general condition was good, but pulse and temperature were rising. No tumour could be felt anywhere in the tense abdomen, and the only guides to the situation of the obstruction were the gradual onset of the symptoms, and the relatively late appearance in particular of the vomiting, which all pointed to a stoppage low down.

On May 7th, 1899, I opened the abdomen in the middle line, and found the small intestine hugely distended to over 3 in. in diameter, and greatly hypertrophied. It was hopeless to explore the abdominal cavity manually under these circumstances, and a coil was allowed to force itself out of the incision, and was at once slit open, giving exit to about five pints of horribly offensive contents and a large quantity of gas. The hand could now be introduced, and a growth was discovered in the caecum. The ileum, about 2 ft. above the ileo-caecal valve, was now anastomosed laterally to the transverse colon by suture, then the first relief opening in the gut was closed by suture, and the abdominal wound stitched up without drainage. Recovery from this operation was soon complete, with only some slight abscesses. At the end of six weeks I again opened the abdomen in the right flank, and, finding everything quiet, excised the caecum and ascending colon, and about 6 in. of the ileum below the point of anastomosis, turning in and

stitching the ends distal to the anastomotic junction. Recovery was rapid, and the patient was quite well in May, 1904, five years after operation, and without any recurrence. I have sent him word to report himself, and hope soon to see him again.

In this case the benefit of immediate evacuation of the bowel was obvious, and as the latter was fairly healthy and hypertrophied, the process of emptying the bowel was rapid and almost complete, leaving little to flow through the anastomosis opening into the bowel below. The gut, though hypertrophied from effort against the chronic obstruction, was not sodden with toxins, as in the next and other cases, and was therefore in a suitable condition to hold stitches and unite by plastic adhesion. This being so, and the patient being relieved at once of most if not all of the pent-up faeces and in good condition generally, there was no reason against immediate "short-circuiting," and this was done forthwith. But it appeared questionable whether at that time he would have borne in addition the extra strain of such an elaborate operation as an excision of the caecum, which necessarily takes up much time. This measure was therefore postponed to a second sitting, when there was no doubt of the general condition and that of the gut being improved by the evacuation through the anastomosis and an abundant dietary.

The second case is somewhat analogous, but the conditions were altered, requiring a different procedure.

CASE II.

A. A., aged 57, admitted to University College Hospital May 27th, 1904. Symptoms began with abdominal pain six months earlier, which recurred at intervals. Five weeks previous to admission severe pain and vomiting set in. This recurred and became faecal four days before he came to us. Bowels were irregular since the first attack, but had not acted at all for four days before admission. Wasting and anorexia had been noticed for five weeks. Enormous distension was now present. Diagnosis: carcinoma of the splenic flexure of colon.

May 27th, abdomen opened in mid-line below umbilicus. Greatly distended coils presented, and some free fluid escaped. Intestines sodden and friable. One of the escaped coils was incised, and much fluid and gas escaped. The hand could now be introduced into the abdomen, and a mass of carcinoma was felt blocking the splenic flexure. The sodden state and paresis of the bowel seemed to indicate that there was still much more faeces retained than had come away on incision of the gut; and as the general state of the patient was bad I abstained from further operation until the intestines had been emptied, and simply brought the incised portion of the bowel into the angle of the abdominal wound, and established an artificial anus. Relief followed freely, but the acrid faeces soon caused the most extensive ulceration of the whole of the lower half of the abdominal wall, in spite of every care. At the end of July this ulceration had improved, and was cleansed as far as possible for some days, and the proximal loop of bowel about 2 ft. above the artificial anus was anastomosed through a left lumbar incision to the sigmoid flexure of the colon (July 1st). This was a difficult operation, as the sigmoid was contracted owing to prolonged disuse, and it did not resume its functions until July 24th, when the first motion was passed per anum.

On July 28th I opened the abdomen again further up the left flank, and excised the whole splenic flexure with the growth, closing both cut ends of the bowel.

Finally on October 10th, I incised round the artificial anus, drew forward the bowel in which the opening lay, closed the proximal end, and dropped it into the abdomen and stitched up the wound in the abdominal wall, leaving the distal end of the bowel in the lower angle to allow the escape of gas and mucus from the caecum and colon, which had been closed at the other end. The man soon improved, and left the hospital on November 20th, 1904, for his home, looking very well.

In this case it appeared inadvisable to short-circuit the bowel in the first instance, in view of the fact that it was loaded with very acrid fermenting faeces and toxins, even after being relieved by incision in the first instance, and also on account of the sodden and rotten condition of the gut, which would hardly hold stitches when they were inserted in the relief opening. Moreover, the patient's general condition after many weeks of obstruction, semi-starvation, and suffering forbade anything but the shortest operation possible. But the ill-effects of an artificial anus were well exemplified in this case. The ulceration of the abdominal wall, due to the constant discharge of acrid faeces, was such as I have never seen before, and influenced the safety of the second operation very seriously, to say nothing of the discomfort and suffering. It also seemed to contraindicate the more extensive operation of excising the growth at the same time that the anastomosis was made. But there was another reason for postponing this excision. This lay in the condition of the bowel below the obstruction. It must be remembered that it had been for weeks or months inactive, little or no faeces having passed through it. As might have been expected, it was found to be empty and contracted, and could only resume its functions by degrees after the anastomosis was made. As a matter of

fact, the first motion per rectum only took place on the twenty-fourth day after the ileum had been united to it. All this time the faeces continued to be discharged on the abdominal wall, keeping up the ulceration and rendering such a delicate operation as excision of a large part of the colon and growth extremely hazardous. When the latter operation came to be done, it was very difficult to keep the new wound in the flank clean of faeces. But it was done almost perfectly, and only a trace of superficial suppuration took place in it. Finally, it was necessary in closing the artificial anus to leave the distal portion open in the abdominal wall to serve as a safety-valve for the remains of the colon, thrown now out of function. Looking back upon all the features of this case, I cannot help thinking that the right course was followed, and that any other combination of the procedures would have given less prospect of success.

But there are other cases where our measures for the relief of malignant obstruction are far more simple and in many ways safer. Two out of a larger number may now be mentioned:

CASE III.

Mrs. M., aged 58, was admitted in October, 1900, under the care of the late Dr. G. V. Poore, and transferred to me when we had diagnosed a cancerous obstruction of the transverse colon. The general condition was good except that the patient was passing 6.6 per cent. of sugar in her urine. Here the bowel could be assumed to be healthy as the obstruction had never been acute, and I trusted that a strict attention to asepsis would meet the risks of operating in the presence of glycosuria.

On October 25th, 1900, I excised the transverse colon and its growth, and at once joined up the divided bowel "end to end." The first dressing was removed on the tenth day, when some suppuration and leakage was found; but the patient made a steady and uneventful recovery after discharging a few stitches, and is now quite well, and apparently without recurrence four years and five months after operation (February, 1905). She is reported to have had, however, a stroke of paralysis recently.

It was in this case the absence of such an amount of obstruction as would have produced distension and disease of the gut with general toxæmia which determined resection and immediate junction "end to end." There was no need of a preliminary artificial anus, and no serious risk of contamination from an overloaded upper part, or of the stitches not holding in damaged intestine. Of course, the 6.6 per cent. of sugar complicated the case, but the success in spite of it shows the effect of adequate asepsis.

CASE IV.

Mrs. G., aged 57 (private case), was like the last, except that the growth was in the splenic flexure. On November 11th, 1901, I excised the whole descending colon, including a large growth in the flexure involving a large patch of parietal peritoneum and a portion of the corresponding mesentery, and united the end of the transverse colon to the sigmoid flexure "end to end." Recovery was excellent after a trifling faecal fistula in the wound, which soon closed. Within the last few days, through the kindness of Dr. Travers, whose patient she was, I have heard that she is in excellent health now, over three years and a quarter after operation.

In this case, too, our whole task of relieving the obstruction and excising the cancer was completed at one sitting, as the bowel was healthy and the general condition favourable; and there was no reason to regret the procedure.

But even in cases where a growth in the bowel either ought not or cannot be removed owing to its extent and relations, or the patient's age or general health, or the presence of other deposits, much may be done to relieve the suffering of obstruction and prolong life in many cases by short-circuiting. A few such may be quoted in illustration:

CASE V.

Case v is a remarkable instance and one hard to explain. Mrs. W., a lady aged 48, was treated by my colleague, Dr. F. Roberts, for chronic and very painful obstruction at the beginning of 1899. As the most approved measures gave no relief I was asked to operate. This was done on February 10th, 1899, six years ago. I found a mass of new growth the size of my fist, involving the small intestine. There were no adhesions, and the whole mass could be lifted out of the abdomen. It was pale in colour, lobulated, and softish under its covering of peritoneum. Though in itself it could have been easily excised with the several inches of bowel running through it, the presence of a chain of similar though smaller nodules lying in the corresponding mesentery as far as its root seemed to indicate advanced generalization, and to negative excision. It was regarded by all who saw it as malignant and probably sarcoma. I therefore made a short-circuit between the gut above and below the growth.

Recovery was perfect and rapid, and from that day to this the lady has remained perfectly well and has grown stout. We have of course been anxious about the growth, but it has

given no further trouble. I have heard of and seen her frequently up to date, and all is well. What the nature of the neoplasm really was it is impossible now to say, but we all held it to be a sarcoma. As six years have elapsed since the operation and it now shows no signs of its presence, this can hardly be the case.

CASE VI.

Mrs. M., aged 73, seen at Wimbledon with Dr. Barton, had suffered acutely from abdominal pain and obstruction for some considerable time. There was a small rounded, indistinct tumour to be felt above the umbilicus, which was, I think, first noticed by Dr. Mitchell Bruce. As no relief could be obtained otherwise, Dr. Barton asked me to operate, which I did last May in the presence of his partner, Dr. Hayward, and with my assistant. A mass of growth was found in the small intestine, obviously cancerous. But though this itself could have been easily removed with the loop involved, the presence of many secondary deposits forbade such a measure. Short-circuiting was therefore done, and perfect and immediate recovery followed. Within the last few weeks I have heard from Dr. Barton that the lady remains perfectly well and has increased much in weight. In this case months of comfort, at all events, have been secured at a very moderate risk.

CASE VII.

Mrs. B., aged 65, was suffering from constipation due to a carcinomatous lump in the sigmoid flexure of the colon. On opening the abdomen in the left flank not only was the large bowel found to be involved, but some coils of small intestine which were adherent to it. I therefore with considerable difficulty short-circuited the colon above and below the obstructing mass. Perfect recovery followed. A few days ago Mr. Stathers, of Brackley, wrote, saying that relief had been complete, and that the patient had enjoyed a comfortable existence for many months before the inevitable end came.

CASES VIII AND IX.

Cases VIII and IX were both of obstruction from cancer of the caecum, inoperable in each. In the first, an old woman of 72, on account of great feebleness; and in the other, a healthy-looking man of 48, on account of extensive secondary nodules in omentum, etc., only discovered when the abdomen was opened. They both illustrate the advantages of short-circuiting, and have left the hospital recently relieved of their obstruction and pain, and a good prospect of, perhaps, many months of comfortable existence, for such growths, as a rule, are slow in growth. In the first of these a lateral anastomosis of ileum to transverse colon was made 18 in. above the valve, with division of the ileum between the latter and the anastomosis, and closure of the cut ends. In the other, in order to save a little time, the ileum was divided, and the proximal end was implanted into the hepatic flexure of the colon "end to side," while the distal was closed. This of course diminished the ends to be closed by one, though, perhaps, it increased the risk of infection from the open end a little while stitching. Recovery was rapid in spite of bronchitis, and all troublesome symptoms were relieved at once.

The next case, recently in hospital, offered for solution a very difficult problem, although a simple incarcerated femoral hernia; it was, to be sure, of great size—in fact, the largest I have ever seen.

CASE X.

Mrs. G., aged 48, had suffered from a right femoral hernia for several years. This could always be reduced until quite recently, when it had become enormously increased in size, painful, and absolutely irreducible, but on admission there were no symptoms of actual acute strangulation. Attempts were made on several days to effect taxis with the fingers in vain, and then the whole mass was enveloped in a light elastic bandage to gradually reduce its size, if possible. Finally, I cut down upon it, and found that it contained the caecum (!) and a couple of feet or so of the lower part of the ileum. Both guts were almost quite black, inflamed, enormously oedematous, and were absolutely irreducible unless I had completely divided Poupart's ligament and much of the abdominal wall. But, even if this had been done, the condition of the bowel forbade reduction. I therefore covered the exposed hernia carefully with gauze packing, and immediately opened the abdomen in the right flank, and, having with some difficulty found the proximal end of the incarcerated loop of the ileum, anastomosed it to the ascending colon, and closed the abdominal wound. Then, returning to the hernia, I excised it *in toto*, closed the two cut ends, and, having stitched up the peritoneum where the caecum had been removed, performed a radical cure in the usual way. The gut removed consisted of the whole caecum and about a foot or so of the ileum, part of which was so dilated as to resemble the stomach in size and outline. After some vicissitudes, chiefly due to bronchitis, the patient recovered, and is now relieved of all trouble.

To have left such a large femoral hernia on the borderland of suppuration unrelieved would have been to court disaster sooner or later. An operation was, therefore, begun in the hope that it might be in a state to admit of reduction and a radical cure. But when the hernia was actually exposed, it was at once seen that this was out of the question. In the first place, to reduce a large hernia containing the caecum is always in the adult a very difficult matter, seeing that the caecum is only partially covered by the peritoneum. But apart from this difficulty, which would have been greater in a femoral hernia (where it is fortunately rare) than in an in-

guinal in which it is more common, the condition of the bowel was grave; it was black, oedematous, matted together into a lump, and softened. To have reduced it in this condition would have been very perilous. The only alternative, therefore, appeared to me to be excision of the whole extruded mass. This had the further advantage of enabling a radical cure to be done, which, though it prolonged the operation, seemed unavoidable, inasmuch as the large femoral ring, if left unclosed, would have invited the redescend of some other coil of intestine during the vomiting and coughing which so often follows chloroform or ether, and both of which were very severe after this long operation, for the operation was necessarily long (two and a half hours), involving as it did an abdominal section with anastomosis, followed by an extensive resection and then a radical cure. And there was no stopping once the condition had been clearly ascertained. That the fear of bronchitis was justified was seen soon after return to bed, and the lung condition was the chief source of anxiety. It was met in the usual way, especially by keeping the patient in the sitting position in bed, to give the fullest play to the lungs. This group of cases illustrate most of the alternatives at our disposal in cases of obstruction, exclusive of the formation of an artificial anus alone—a very sad alternative in my opinion, but one to which we are driven in some cases which might be amply illustrated by recent cases where it certainly gave a measure of relief.

Before concluding it may be well to refer to some points in the after-treatment in such cases which are of prime importance.

One of the chief immediate risks of these operations may fairly be said to be lung affections from causes tolerably well understood. This is best met by careful cleansing of the mouth and teeth before operation, by warmth during and after, when the patient's vitality is often at its lowest, by the reduction of the amount of the general anaesthetic to its lowest, and by the use of local anaesthesia for a part or the whole of the operation, and when the latter is finished the patient should be kept in the upright position as much as possible. This, of course, presupposes that the wound is firmly supported without too tight a bandage or binder, so that the diaphragm shall have free play. If the diaphragm be impeded in action, the bases of the lungs are of course not properly expanded.

Another risk is leakage at the points sutured in the intestine, and this is more apt to occur where the large bowel has been operated on than in the case of the small gut. This possibility raises the question of drainage of the wound or no drainage. Some operators of large experience and great skill have noticed leakage so often that they advocate drainage with gauze packing as a routine. But this involves a more or less open wound, and the risk of protrusion of gut during coughing or vomiting. On the other hand, if the wound is securely stitched up union takes place, and there is little danger of prolapse, and from what I have seen I think less danger of leakage. But if the latter takes place under a closed wound it may, of course, cause serious trouble, but perhaps not so serious as is often supposed where the junction lies immediately under the abdominal wound—for example, Case III. After trying both courses, I personally feel that where there is any doubt as to the asepsis or completeness of the sutures a small gauze drain is desirable from the neighbourhood of the junction. Otherwise entire and careful closure of the abdominal wound with firm support should be the rule. The gauze drain, if employed, should be removed early. Its track will still remain a point of least resistance should leakage subsequently take place, and will guide the discharge to the surface. Such tracks usually heal up sooner or later. But the weakness of an extensively drained wound, especially if a vertical pararectal wound has been made, must always be remembered. For this reason, in removal of portions of the large intestine the oblique incision in the loin is to be preferred. This has also the merit of being less likely to divide the nerves going to the rectus muscle as well as that of avoiding division of muscle fibres.

The less a wound has to be disturbed for the first few days the better for all the plastic processes and for the patient's general state. The second dressing can never be so securely applied as the first.

All this question of after-treatment requires very close attention and experience, and those who are constantly seeing these cases realize this most fully. No hard-and-fast lines of action can be laid down; each case must be treated on its merits. Some are simple enough, others tax our judgement and resourcefulness to the utmost.

Since these remarks were written, another case showing the benefit of short-circuiting for carcinoma of transverse colon has reappeared at hospital. I "short-circuited" more than two years ago, and on recovery proposed excision of the cancerous colon. But the poor fellow, aged 31, was obliged to decline, as his business matters were in confusion and required his personal attention then. He only returned three weeks ago looking very well and with regular bowels, but the growth was too far gone to justify removal (*vide Clin. Soc. Trans.*, March, 1905, for details).

REMOVAL OF GALL BLADDER IN A WOMAN AGED 75.

By AUGUSTUS W. ADDINSELL, M.R.C.P.,
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THE following case may be worth recording on account of the age of the patient, the severity of the symptoms, and the completeness of the recovery.

Mrs. M., aged 74, a widow, had suffered from frequent attacks of pain in the right hypogastric region, accompanied by jaundice. There had been progressive exhaustion and emaciation for eighteen months. I saw her first in consultation with Dr. Muzio Williams in March, 1902. The history was that eighteen months previously she had been suddenly seized with violent pain in the right hypogastric region; vomiting was severe, and the following day all the usual symptoms of jaundice manifested themselves. The stools were pale, the urine was porter-coloured; the skin yellow, and the itching intolerable. This condition lasted for some days, the jaundice never completely disappearing; when in about a month another attack came on. These attacks recurred with increasing frequency, until, at the time I saw her, she was completely bedridden, rarely out of pain, deeply jaundiced, had lost more than 2 st. in weight, and had all the appearance of a woman suffering from malignant disease of the liver. There was a large solid mass reaching from below the right costal margin to the level of the anterior superior iliac spine; percussion over the right chest gave a clear note down to the last rib. There was complete enteroptosis. The lower border of the liver was easily felt below the umbilicus, and in the right iliac fossa a small movable mass was made out.

Dr. Turney had previously seen the patient and advised, in the event of the continuance of the symptoms, that an operation should be attempted. Dr. Muzio Williams agreed with me that, as the patient was markedly losing ground, there was no other course open.

I made an incision as for appendicitis, as that corresponded with the lower edge of the liver and was over the mass which I took to be the gall bladder. That organ was found considerably enlarged, and an incision into it showed it to be greatly thickened; the walls were more than $\frac{1}{2}$ in. thick, and it was filled with a large mass of inspissated bile which readily broke down; there were in addition several large gall stones. After removing the mass and the stones, 6 oz. of normal saline solution were injected into the cystic duct; these were followed by another 3 oz. As none returned, it evidently passed through the *via duodenales* into the duodenum.

I removed the gall bladder and succeeded in getting the neck of the cystic duct into the lower angle of the peritoneal wound. The peritoneum was then closed and the fascia muscles sewn round the orifice of the duct, but the skin was not attached to the stump. The dressing was changed daily for a week, and 3 or 4 oz. of normal saline solution injected into the duct daily for seven days. After that the injections were discontinued. There was a gradually diminishing quantity of bile discharged, and in a month the wound was healed.

From the day following the operation decided improvement in all the symptoms set in; the urine became normal in colour; bile passed freely into the intestine, as evidenced by the colour of the stools; gradually the jaundice disappeared, the pain entirely ceased.

I have just seen the patient, two years after operation; she has put on more than two stone in weight. She takes daily walking exercise of four miles. She has had no pain or return of any of the symptoms, and is quite well, and stronger than she has been for years past. The eminently satisfactory result of operation on this case of severe cholangitis is encouraging.

I am indebted to Mr. Mayo Robson for the suggestion which I found in his book—as to the injection of saline solution—and I cannot help thinking that it was the washing out of the clogged ducts that cured this patient.

NEW METHODS OF STUDYING AFFECTIONS OF THE HEART.

By JAMES MACKENZIE, M.D.,
Burnley.

IV.—ACTION OF DIGITALIS ON THE HUMAN HEART IN CASES WHERE THE INCEPTION OF THE RHYTHM OF THE HEART IS DUE TO THE VENTRICLE.

I HAVE already endeavoured in two papers in this JOURNAL¹ to demonstrate the fact that the rhythm of the heart may originate with the ventricle. Continued observation has afforded me still stronger proof in favour of this observation. The study of the effect of digitalis on my patients has brought out very striking differences between these cases and those where the rhythm starts at the auricle. No rational idea of the manner in which digitalis acts can ever be obtained unless this change in the heart's action is appreciated. The means whereby one can recognize and demonstrate whether the rhythm of the heart is auricular or ventricular in origin is by the jugular pulse. When a pulse is present in the jugular if the auricle is active it will undoubtedly always produce a wave with its systole, but if the rhythm is ventricular in origin then no wave will appear at the time usually occupied by the auricular systole, but the jugular pulse will be found to be synchronous with the ventricular systole. This change of the jugular pulse from one of the auricular type to one of the ventricular has been illustrated by examples in my previous papers in this JOURNAL and in my book,² and very convincing illustrations will be found in the second case recorded in this paper, and in a paper which Deutsch read at the last German Medical Congress at Leipzig.³

Apart from the scientific interest which this view should evoke, the matter is one of the highest practical importance, as a large number of the cases of heart failure which we are called upon to treat present not only this feature, but the inception of the rhythm by the ventricle is the direct and immediate cause of the heart failure. I have been engaged for some time on a minute inquiry into this subject, and the results obtained so far justify me in stating that they will not only profoundly modify our conception of many forms of heart failure, but will give us a more direct and definite aim in our attempts at treatment.

In my first paper on the ventricular rhythm, I showed that this condition might arise in different ways, one of which was that which occurred in advanced disease of the mitral valves. In this complaint, towards the end of life, the pulse frequently becomes irregular—the well-known "mitral pulse." This is almost invariably the sign that the ventricle has taken on the inception of the rhythm of the heart. If there has previously been present an auricular systolic murmur of the crescendo type it disappears, though a low-toned diastolic murmur may continue; and if there has been a jugular pulse present, it will now be found to be of the ventricular type. If the heart's action is rapid, it may be quite regular with the ventricular rhythm (see Figs. 5 and 8).

There seems to be reasonable ground for assuming that an anatomical basis will be found to account for some varieties of ventricular rhythm. In those cases where the ventricular rhythm arises subsequent to long-standing disease of the mitral valves and great dilatation, I had assumed that the auricle, like an over-distended bladder, became paralysed, temporarily or permanently. Certain signs, however, now lead me to doubt the correctness of this view in all cases, as it would seem that the auricle might contract during the ventricular systole. I mention this, that the term "auricular paralysis" may be understood to apply to those cases of long-standing mitral disease where the rhythm is ventricular in origin, and where no evidence of an auricular contraction occurs. Dr. A. Keith,⁴ in his recent Hunterian lectures, dwelt upon the nature and functions of certain bands of muscle fibres in the heart. In these lectures he analyses the anatomical condition of a number of hearts I sent him, and he brings out in a striking manner the relationship between certain anatomical conditions and the symptoms during life. Thus, in describing the heart from the first case I cite below, he found extreme atrophy of the musculature of the auricle with great elongation and atrophy of the auricular canal, there being also marked stenosis of the mitral and tricuspid orifices (see his Fig. 9). In another heart with mitral and tricuspid stenosis which I