Again, fistulae have occurred between the common or hepatic duct and the portal vein; four such cases have been recorded. I have on several occasions seen and operated on communications between cavities in the liver and the pancreas and the bile ducts, the communication being through a fistula established by ulceration.

Nor will time permit me to describe, except briefly, that interesting class of cases in which communications have been established between the bile tracts and the thoracic organs, the pericardium, the pleura and lungs.

Courvoisier collected 24 such cases of fistula between the biliary tracts, pleura and lung. Very few have been submitted to operation. I had a very interesting case of this kind sent to me from South Africa in May, 1903, of which the following are brief notes:

CASE IX.

History.

Mr. G., aged 28, was quite well up to April, 1894, when he had an illness accompanied by a cough, and on the third day he began to expectorate; shortly afterwards he coughed up a large quantity of pus and bile. Before this attack he had had no liver symptoms, except that on one occasion he had had pain in the gall-bladder region, which, it was surmised, might be due to gall stones. Since that time, for a period of nine years, he had regularly coughed up bile and pus. At first he was thought to be suffering from phthisis, especially as he lost flesh rapidly and had night sweats. During the year before coming to England he thinks he did not get thinner, though the amount expectorated did not lessen. When I saw him he was round-shouldered and old-looking, as if worn down by illness, and his fingers showed marked clubbing. An examination of the chest showed no positive sign of lung disease, though the breath sounds were diminished on the right side up to the level of the seventh rib. The liver was decidedly enlarged but not tender, and projected 3 in. below the costal margin. There was slight jaundice. From 1 to 1½ pints of extremely offensive bile and pus were coughed up in the twenty-four hours. The pus was crowded with bacteria but did not contain tubercle bacilli or elastic fibres, and was manifestly not from a bronchiectasis.

Operation.

Operation was performed on May 21st, 1903. No cyst or abscess cavity was discovered in the liver, which was enlarged, and showed signs of cirrhosis. After numerous firm adhesions between the shrunken gall bladder and the under surface of the liver, and the stomach, duodenum, and colon had been separated, a gall stone the size of a small nut was found impacted in the hepatic duct, and removed through an incision in the duct; numerous adhesions fixed the back and the dome of the liver to the diaphragm. Drainage of the hepatic duct was effected by a rubber catheter, and a gauze drain was passed through a split rubber tube to the neighbourhood of the incised duct. The expectoration of bile was immediately arrested but offensive pus continued to be coughed up. The expectoration of bile returned on the third day and then gradually lessened; the cough also gradually became less, and the purulent expectoration rapidly diminished. The wound healed by first intention except where the tube had been, this healing by granulation.

After-History.

Two months later the patient had improved very much, was gaining weight rapidly, and was only coughing up a small quantity of muco-pus without any bile. There was no jaundice, and all the bile was passing into the bowel. The wound had been soundly healed for a month, and he had been able to walk several miles a day. He returned to South Africa in the third month, and has since reported himself well.

Mr. Rigby also reported an interesting case in the *BRITISH MEDICAL JOURNAL* of August 8th, 1903, which was dependent on impacted gall stones and cured by cholecystectomy. Out of 18 autopsies collected by Courvoisier, 10 were due to gall stones, 6 to hydatids, and 2 to ascarides. It may, however, also be due to tropical abscess or to abscess of the liver from other causes.

CONCLUSION.

It may be asked what purpose can be served by relating a large series of unusual cases. Quite apart from the interest attached to these cases, to the difficulty of diagnosis, and the possibility of their cure by operation, I should like to dwell on the fact I have so often mentioned before as to the serious responsibility of allowing gall-stone disease to pass on until complications such as those I have mentioned have supervened, since operation for cholelithiasis at a time before the gall bladder and bile ducts have become seriously damaged, and the neighbouring organs have participated in the trouble, is almost devoid of danger if the operation be performed by an experienced and careful surgeon; whereas, if operation is only done after the parts have become matted together, after fistulae have formed and the patient is run down by fever and other septic complications, the mortality will be greatly increased.

AN UNUSUAL CASE OF APPENDIX ABSCESS DUE TO THE PNEUMOCOCCUS AND BACILLUS COLI COMMUNIS.

TREATMENT BY DOUBLE VACCINE: RECOVERY.

By EDWARD HARRISON, M.A., M.D., F.R.C.S.,
HONORARY SURGEON TO THE HULL ROYAL INFIRMARY.

WITH OPSONIC ESTIMATIONS AND VACCINE TREATMENT

By EDWARD TURTON, B.Sc., M.D., M.R.C.P.,
HONORARY PHYSICIAN TO THE HULL ROYAL INFIRMARY.

THE case seems worthy of record not only on account of the unusually serious surgical conditions which had to be dealt with, but because distinct benefit appeared to be derived from the vaccine treatment during the time that the patient was so desperately ill from toxæmia. It would appear also that, as has been frequently insisted on by one of us (E. T.), in order to effect most good by bacterial vaccines, it is advisable to use a vaccine prepared from the organisms isolated from the patient's own pathological discharge, even if, as in this case, separation of the organisms is by no means an easy task.

S. H., a woman aged 27, was admitted to the Hull Royal Infirmary on June 10th, 1908, under the care of Dr. Turton.

History.

She had been ill for three weeks, with abdominal pain, general malaise, and headache. A week before admission the pain had become more intense, and was accompanied with vomiting, which persisted until admission, but was said never to have been faecal. The bowels had been open quite regularly, and there had been no diarrhoea. There was no history of previous attacks of pain, and menstruation had been regular.

Condition on Admission.

The patient was obviously very ill; her expression was anxious and her complexion earthy. The pulse was 130 per minute and very feeble, tongue dirty and dry, and respirations 24 per minute. She complained of pain all over the lower part of the abdomen, which moved slightly on respiration. Palpation of the abdomen was difficult on account of the large amount of abdominal fat; a large mass could, however, be felt below the umbilicus somewhat to the right of the middle line. It was dull on percussion, tender, and appeared to be freely movable. Nothing definite could be made out vaginally or per rectum. A provisional diagnosis of ovarian cyst, with twisted pedicle, was made by Dr. Turton and immediate operation advised.

First Operation (by Dr. Harrison).

Chloroform being administered, the abdomen was opened by an incision in the middle line, the incision being a somewhat lengthy one, on account of about 3 in. of fat which had to be cut through. On opening the peritoneum, a large mass was seen occupying the right iliac fossa and pelvis, and an effort was made to free it from the coils of intestine which were extensively adherent to it. The patient was placed in the Trendelenburg position and the upper abdomen packed off. An attempt was then made to isolate the mass by separating the adhesions, and it was seen that the greater part of the tumour was made up of matted mesentery. On working down in the pelvis, a gush of offensive pus was observed; this was mopped out and the patient placed in the horizontal position again. Owing to the great thickness of the abdominal parietes, it was now necessary to make an additional transverse incision dividing the right rectus. On further separation of the coils of the small intestine, the caecum was found in the abscess, with the stump of a ruptured and gangrenous appendix. This was removed, and, together with some pus and a soiled swab, was placed in a sterile tube for bacteriological examination by Dr. Turton. Drainage tubes were passed into the pouch of Douglas and the wound closed. On recovering from the anaesthetic, the patient, who was in a precarious condition, was placed in the Fowler position.

Progress.

The patient remained in an extremely critical condition for several days after the operation; the pulse was rapid and very feeble, and there was evidently severe toxæmia, although there appeared to be free drainage from the tubes. The result of the bacteriological examination had been to show the presence in the pus of the pneumococcus and *Bacillus coli communis*, and the opsonic index was estimated the day after operation and found to be 0.62 for the pneumococcus and 0.87 for the *Bacillus coli*. On the next day, June 12th, the indices were respectively 0.81 and 1.22, and a vaccine was given, consisting of 50 millions of *Bacillus coli*, made from a culture grown from the pus, and 10 millions of a stock vaccine of pneumococcus. There appeared to be very little improvement in the patient's condition, and the opsonic indices taken on June 16th showed the index for the pneumococcus to be still as low as 0.71, though the *coli* index was 1.4.

On June 18th there was found to be a reaccumulation of pus, and a counter incision was made above the crest of the right

ilium and a drainage tube inserted. Through this tube there was free irrigation with Wright's sodium citrate and saline solution.

On the following day, June 19th, the pneumococcic index was low, 0.81, and the coli index 1.05; a vaccine of 25 millions pneumococci and 50 millions *Bacillus coli* was injected, both organisms on this occasion, and subsequently, being isolated from the pus obtained at the time of operation. A rise in the opsonic power of the blood for the pneumococcus took place, and it was not again found below normal. Concurrently, the

patient's condition improved, the temperature became lower, the pulse less rapid though still very feeble, and the purulent discharge gradually ceased, though not before there had been a considerable amount of sloughing of the wound margins. On July 6th it was first noticed that a faecal fistula had formed, and the patient suffered great distress from the excoriation of the skin in the neighbourhood of the wound.

The range of the opsonic index for the two organisms can be well seen on the chart, and also the dates on which the injections of the two organisms were given, the amounts of which were as follows:

Operation for Closure of Faecal Fistula (by Dr. Harrison).

On September 28th after chloroform had been administered, an incision was made to the left of the discharging sinus, after the opening in the bowel had been plugged with gauze. Except close to the faecal opening there were found to be few adhesions, so a transverse incision was made and the structures forming the abdominal wall divided with scissors round the opening in the bowel. The loop of intestine was then freed, and the opening, which was as large as a shilling, sutured in the transverse axis of the bowel with Lembert sutures. When this was completed the packing which had been placed round the site of the operation was removed, the part was then swabbed over and the abdominal sutures were about to be inserted when a great gush of intestinal fluid was seen in the wound. When this was swabbed up it was found that there was a second, very large opening in another coil of bowel situated rather deeply in the right iliac fossa. Fresh packing was then inserted and the rent carefully examined, when it proved to be a much larger opening than the first, triangular in shape and involving almost the whole circumference of the gut. The opening being so large and irregular and so deeply seated it was with great difficulty that a double row of sutures were inserted to close it. The whole operation lasted nearly two hours and the patient bore it much better than had been anticipated, although saline infusion and strychnine injections were thought necessary.

After the operation the patient's progress was uninterrupted. The openings in the bowel proved to have been satisfactorily closed and there was no further faecal discharge. The large wound filled with healthy granulation tissue and was quite healed when the patient left hospital on November 12th. The bowels were then acting quite regularly. She is at the present time quite strong and well.

THE INDICATIONS FOR NEPHROPEXY.*

BY

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Date of Blood Examination or Injection.	Opsonic Index for Pneumococcus.	Opsonic Index for <i>Bacillus Coli</i> .
June 11th, 1908 ...	0.62	0.87
{ June 12th	0.81	1.22
{ " "	Injected 10 millions	Injected 50 millions
June 16th	0.71	1.4
{ June 19th	0.81	1.05
{ " "	Injected 25 millions	Injected 50 millions
June 21st	1.28	—
{ June 23rd	1.5	1.14
{ " "	Injected 20 millions	Injected 40 millions
June 25th	1.27	1.22
{ June 27th	1.75	1.13
{ " "	Injected 30 millions	Injected 60 millions
June 30th	1.46	1.4
July 3rd	1.19	1.14
{ July 6th	1.92	0.9
{ " "	Injected 15 millions	Injected 30 millions
{ July 14th	1.5	1.3
{ " "	Injected 20 millions	Injected 40 millions
July 20th	1.21	1.4

After the date of the last opsonic estimation the patient's condition was so satisfactory, except for the presence of the faecal fistula, that it was not considered necessary to give further injections of bacterial vaccines, and hereafter the treatment was of a surgical nature.

On July 26th she was taken to the operating theatre and the wound examined under an anaesthetic with the view of closing the fistula. The opening in the bowel was nearly the size of a shilling and as the patient was not in a condition to bear a prolonged operation, a purse-string suture was passed round the opening and a closure made. This, however, broke down again in the course of a day or so, and the condition was as bad as ever, except that the skin had improved around the wound.

Her general condition subsequently improved greatly, she took her food well and gained weight. Though the patient desired that the fistula should be closed it was wished to postpone this for a time in order to allow of absorption of adhesions.

In my original paper I stated that where both kidneys are movable it is better to operate on one rather than both. My reasons for this statement were that the risk to life was less and the improvement which followed the single fixation was so marked that a second operation was rarely necessary. Extended experience has led me to correct this view, and I now know that when both kidneys are movable it is better practice to fix both. The double operation does not add materially to the risk, increases the prospect of complete cure, and spares the patient the possibility of a subsequent operation. It has been a surprise to me to find that double nephropexy is followed by no more shock or general disturbance than the single operation.

* A paper read before the Midland Medical Society.