case of Hodgkin's disease, and was himself dead within a few weeks of the same condition. The view taken was that he had been infected at the time of the necropsy, and the acute attack which developed simulated septicaemia. Perhaps, however, I ought not to mention Hodgkin's disease in the present connexion.

Again, there are certain cases which appear to be comparable to the acute pyaemias. In these, while the disease may have progressed slowly for some time, we finally get a rapid generalization of the condition with miliary deposits, affecting perhaps chiefly the skin, or diffused throughout the body, and the patient rapidly succumbs. Such cases may be seen in the melanotic sarcomas, or the carcinomas affecting the secreting glands—for example, breast and pancreas.

Healing.—As in inflammation, apart from the occurrence of resolution, fibrosis, either primary or secondary to partial or total destruction, plays a large part in the cure or attempted cure of the condition. The contraction of the fibrous tissue may lead to the same complications in tumour growth as it does in inflammation—for example, stricture of the hollow viscera with obstruction to the onflow of contents, as in intestinal obstruction, retention of urine, etc.

When tumours occur near a surface, there is a tendency for them to become pedunculated, and this, while curative in essence, may also lead to complications. Thus in the hollow viscera, when pedunculated, their attempted expulsion may cause inversion of the viscus affected—for example, intussusception of the intestine, prolapse of the rectum, inversion of the uterus, etc. In the serous cavities their pedunculation may give rise to torsion. The same remarks apply to inflammatory masses, though perhaps they are affected less frequently.

Secondary Infection.—As in inflammation, the secondary infection may be inflammatory or malignant. When inflammatory, it may cure the primary condition, as is well seen in Coley's treatment of sarcoma, but this is not common. The usual result is an increase of both local and general destructive effects, and often a great part of the cachexia present is due to the superadded sepsis. An example of this is seen in the tuberculous foci, which may be completely eradicated by a secondary infection, but are usually rendered much more virulent and destructive. Again, the development of malignant disease on an inflammatory focus is by no means uncommon. Examples may be found in the occurrence of carcinoma on biliary or urinary calculi, or on a chronic ulcer of the leg or stomach, while one expects an epithelioma to develop in due season on a tongue affected with chronic superficial glossitis.

I need not emphasize the predisposing effect which a "simple" tumour has in the subsequent development of malignant disease, but such a development is by no means uncommon.

In illustration, we may take the affections of bones, especially the long bones, in inflammation and tumour growth, to demonstrate the striking similarity between them.

In young bones—that is, before union of the epiphyses—inflammation, both acute and chronic, commences in the region of the epiphysis, on the shaft side of the cartilage, and may remain limited to this position or ultimately affect the whole shaft. Thus we see it in acute septic osteitis, in tuberculous and syphilitic disease, and in the last especially is the tendency to spread to the shaft marked. In the tumours also, whether simple or malignant, the same region is involved. Thus exostoses, which are the commonest simple tumours, are found here; and sarcoma, whether myeloid, endosteal, or "periosteal," is similarly situated. Further, not only is this region common to both conditions, but the same ends of the same bones are more especially chosen in both—that is, the more active epiphyses. Thus, the commonest parts to be affected in both inflammation and tumour growth are the upper ends of the tibia and humerus, and the lower ends of the femur and radius.

In adult bones, on the other hand—that is, after union of the epiphyses—in neither inflammation nor tumour growth is the epiphyseal region specially selected; and further, in both, whereas previously the bone itself was particularly affected, the subperiosteal tissue is now the most involved. Thus, in acute inflammation, we no longer have the typical acute osteitis mentioned above, and the

best example of a blood infection, which is rare, is the pyaemic deposit in typhoid fever—that is, the typhoid node. This is usually about the middle of the shaft, and subperiosteal. Similarly tubercle, when it affects adult bones, occurs as a subperiosteal deposit, and does not choose the epiphyseal regions particularly. This is best seen in tuberculous disease of the spine. Further, syphilis is manifested most commonly in the subperiosteal gumma, which chooses the region of the middle of the shaft of the long bones. In sarcoma the same remarks hold good, and in adult bones quite a large proportion are found away from the epiphyseal ends. The tumours are mostly classified as osteo-sarcomas, and here again the subperiosteal tissues appear to be affected most. This was very well demonstrated in Mr. James's Berry's address before the Northumberland and Durham Medical Society last year, when almost all the sarcomas in adult bones were situated away from the epiphyseal ends.

THREE CASES OF TRAUMATIC RUPTURE OF THE SMALL INTESTINE.

By FRANK RADCLIFFE, M.D.,

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THERE is a common belief that the more rare conditions met with at hospitals turn up in runs of three. Those who hold that view will find support for their view in the fact that we have had three cases of traumatic rupture of the small intestine in Oldham in three months. These cases are also of interest on account of the fact that they had many features in common.

CASE I.

A young, strong collier was about to send a tub of coal down an incline in a coalpit when the tub got foul of the line; he stooped down to put matters right, when suddenly the tub started to go, and the rope which was attached to the rear of the tub got entangled round his arm, and he was dragged along the ground to the bottom of the incline. He was taken to the Oldham Royal Infirmary, and found to be covered with superficial abrasions. He complained of abdominal pain, but before his symptoms became, in my opinion at that time, sufficiently clear to justify operation he died, and at the *post-mortem* examination the jejunum was found torn completely across within a few inches of the duodeno-jejunal junction.

CASE II.

A strong man in the prime of life at night attempted to board a rapidly moving electric tramcar. He was seen to seize the handle, but missed his footing; he was dragged by his hands for some distance, and then let go and fell to the ground. He got up and proceeded on foot on his journey, a distance of some two miles. He then became acutely ill and died. At the *post-mortem* examination it was found that the trunk of his body was free from the slightest external sign of injury, but a transverse rupture of the small intestine, within a few inches of the duodeno-jejunal junction, was found.

CASE III.

A man of about 30, a fine specimen of physical humanity, was engaged unloading bales of cotton from a lorry, his duty being to fix two hooks into the bale and, when clear of danger, to shout to another man, who set machinery in motion, first, to wind the bale into the air, and then into the factory. He had fixed the hooks when, before he had got clear, the other man commenced the winding process. The patient clung to the covering of the bale, was lifted by his arms into the air, and fell to the floor, a distance which I could not ascertain; the patient himself said about the height of the hospital ward, but on this point the witnesses were not in agreement; he could not, however, have fallen far, because the only external injury he received was a slight bruise over the malar bone and a little discoloration of the corresponding eye.

He was admitted to the Oldham Royal Infirmary, and I saw him within an hour of the accident; he complained of abdominal pain. There was a suspicion of rigidity in the upper part of the abdomen; the pulse was good (64), and there was nothing more, to suggest internal injury. I saw him again three hours later; the rigidity was more pronounced, he had vomited, but the pulse had not appreciably altered.

I determined to operate, more as a precautionary measure than because I could make any, even an approximate, diagnosis. On opening the abdomen above the umbilicus I soon found a transverse rupture of the small intestine within a foot of the duodeno-jejunal junction; the rupture extended about two-thirds of the circumference of the bowel, and about $\frac{1}{2}$ in. above it there was another partial rupture extending half the circumference of the bowel, but only through the peritoneum and not through the muscular coats. I closed the ruptures, the one in three layers and the other by a single layer of sutures, dry mopped the peritoneal cavity, and introduced a suprapubic

"cigarette drain." The upper incision was closed in three layers. On his return to bed he was put in the Fowler position and continuous rectal saline infusion given. Unfortunately he developed chest symptoms and died on the tenth day after the operation.

At the *post-mortem* examination it was found that the abdominal organs were matted together by recent plastic peritonitis. There was some lymph around the track of the drain; the rupture was closed so as to be watertight. The upper lobe of the right lung was in a condition of grey hepatization, and almost the whole of the left lung was in the same condition. He had clearly died from pneumonia, and not from the abdominal condition.

These three cases have so many points in common that it is difficult to believe that coincidence is a sufficient explanation. They were all well-developed, strong men, in the prime of life; they all suffered accidents which involved them being suddenly and unexpectedly dragged by their arms fully extended above their heads; they none of them complained of violence applied to the abdomen or showed any external evidence of severe injury to that part. Two of them were absolutely free from the slightest abrasion or bruising on the trunk; the other had some superficial skin scratches; none of them showed immediate marked collapse or such symptoms as would lead me to feel certain that any severe internal injury had occurred; each of them had a rupture of the small intestine; in all the rupture was transverse to the long axis of the bowel; and in all the rupture was within a foot of the commencement of the jejunum; and unfortunately all of them died. I have been strongly impressed by these cases, and ask myself whether the mechanism of the rupture was not as follows: When each was suddenly dragged by the arms, the chest would be forced into the position of full inspiration, and the diaphragm raised, as shown by indrawing of the epigastrium; therefore the upper abdominal organs (liver, stomach, and spleen) would be drawn upwards. The pancreas and duodenum are usually considered to be fixed, but any small movement which might take place in these organs would be in an upward direction. At the same time, as one easily finds by standing with the arms extended above the head, the lumbar spine would be markedly arched forwards, and there would be, I think, a very strong contraction of the anterior abdominal muscles made by the patient in the effort to recover himself. I find by examining thin people in this position that the anterior and posterior abdominal walls actually meet. It seems to me that the small intestine would then be suddenly and violently forced down towards the pelvis, and I ask if it is possible that the only part of the small intestine which cannot go downwards, the first part of the jejunum, is so dragged upon as to rupture transversely, just as one finds that a string fixed at one end and jerked by the other, breaks near the fixed end.

The explanation of the mechanism of these cases is of more than academic interest, because, if they can be explained in this or some similar manner, surgeons would, I think, be justified in operating in such accidents on clinical evidence which falls short of that usually associated with acute abdominal conditions, and therefore they would not lose those favourable early hours whilst waiting for indications which in injuries to that part of the intestines have often not appeared until the time favourable for operation has passed. I should not have operated as early as I did in the last of these had I not had in mind the other two cases, and remembered the vagueness of the symptoms for some time after the accident.

I am indebted to Dr. Gerrard, the pathologist to the Oldham Royal Infirmary, for the particulars of the second of these cases, and for his reports upon the *post-mortem* findings in all of them.

WE learn from the *Medical Record* that a bill has recently been introduced into the New York State Legislature which would provide at least one medical judge in each county, three in the Court of Appeals, and three in each Appellate Division of the Supreme Court, to sit when any medical evidence is to be offered. Under the terms of the bill the medical judges would be appointed for five-year terms at £1,440 a year, with an additional allowance of £100 for expenses. They would sit when any evidence as to sanity was to be given, and would advise the court and would instruct the jury as to the correctness of statements and conclusions of medical witnesses.

RUPTURE OF DUODENUM CAUSED BY A BLOW.

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THIS case is of extreme interest, as, beyond diagnosing a subphrenic abscess, I could not be sure as to the original seat of the trouble.

A Hindu, male, aged 25, stated that six weeks before admission to hospital on February 8th, 1914, a wooden plank fell from the ceiling on to his right side while he was asleep. The corner of the plank hit him over the eighth rib in the mid-axillary line. For three weeks he felt a dull aching pain, and then noticed a small swelling, and the pain became severe, especially on respiration; at the same time he said he had fever every day. There was no history of dysentery. The patient was desperately ill, extremely emaciated and in great pain; the evening temperature was 101.8° F., and the pulse 100; a dry cough was very troublesome. Over the centre of the eighth rib was a fluctuating swelling about two inches in diameter; it was extremely painful on palpation. The liver dullness was diminished, reaching to one inch above the costal margin. The abdomen was moderately swollen and hard; it was evident that chronic peritonitis was present. The bowels moved freely, the tongue was coated.

On February 9th, under cocaine, I incised the swelling in the seventh intercostal space in the mid-axillary line, and at once gas and 6 oz. of pus escaped. The odour was faecal. I then introduced my finger and discovered that the eighth rib was denuded of periosteum and very rough. I could then feel an abscess cavity in the right lobe of the liver, and that the liver had fallen away from the chest wall, so that I could only just reach it. Above I could feel the diaphragm, but below nothing. I put a large-sized drainage tube just through the chest wall, and applied an antiseptic dressing and bandage.

The temperature that evening was only 99° F., and after that remained normal. The differential blood count was as follows: Polymorphonuclears 86 per cent.; mononuclears 1.6 per cent.; lymphocytes 12.4 per cent.

The patient improved slightly, the pain being negligible, and he slept soundly. The discharge from the wound was only thick yellow pus. On February 13th I gently washed out with a weak iodine solution. He passed five loose motions a day, with a tinge of blood and slime. The pulse kept rapid, varying between 92 to 100. His condition remained the same until February 16th, when at 7.30 a.m., in spite of the strictest warnings, he suddenly got out of bed and fell back on to the bed in a state of collapse, from which he never recovered; he died at 11.45 a.m.

Post mortem it was found that the posterior surface of the descending portion of the duodenum had ruptured in the long axis of the bowel. The infection then spread round the chest wall, along the eighth rib, pointed, and then infected the liver, forming an abscess cavity. The lower portion of the right lobe of the liver was gangrenous. The peritoneal cavity contained serous fluid, and large masses of clear gelatinous matter.

The history was clear that the injury was the starting point of the illness, and after opening the abscess I realized that we were dealing with some intestinal injury, but the most careful examination of the discharge gave no clue as to what part of the intestinal tract was damaged, as nothing but small quantities of foul, thick pus were discharged through the drainage tube. The actual tear in the duodenum was closed by adhesions, and I think that, considering his wonderful vitality, if the patient had come to hospital earlier, there would have been a reasonable chance of his recovery.

CONDENSATION OBSTRUCTION IN RELATION TO PERICOLITIS AND INTESTINAL KINKING.

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SINCE interest has been aroused in the presence, pathology, symptomatology, and mode of formation of accessory peritoneal adhesions and bands, causing more or less definite symptoms of alimentary toxæmia, a number of explanations have been advanced. The membranes or bands associated with the names of Jackson and Lane especially have been known and noted since the advent of laparotomy. Only recently has the more correct name "appendicitis" replaced the older one of "perityphlitis";