Struthers, who found no redness, swelling, or fluctuation in the region of the hip, and advised against interference at that time.

On February 4th it was noted that the temperature was still rising each evening. Fluctuation was evident over the right ilium, and an incision evacuated pus which on culture yielded the *Staphylococcus aureus*. A drainage tube was inserted. Pus was daily evacuated on washing through the jugular bulb. The temperature continued to swing, and the patient still complained of pain in the right hip.

On February 7th he complained of pain in the right knee. Professor Lorrain Smith was consulted regarding the intravenous injection of eusol, and at 5 p.m. blood was withdrawn from an arm vein, and thereafter 50 c.cm. of eusol and normal saline were injected. (On culture the blood yielded a Gram-positive staphylococcus and a Gram-positive bacillus.)

Third Operation.

On February 11th it was noted that the temperature was still swinging, that the wounds showed little reaction, and the patient still complained of severe pain in the right hip, and kept the right hip and knee joints flexed. Mr. Struthers made an incision over the right ilium, and exposed the bone freely. When the gouge was inserted pus oozed out of the bone. The ilium was accordingly pierced, and a free flow of pus obtained from a large abscess between the anterior surface of the ilium and the iliacus muscle. The hole in the bone was enlarged, and the abscess cavity washed out with eusol. Two drainage tubes were inserted, and thereafter the cavity was syringed out with eusol twice daily.

On February 15th the temperature was normal, the wounds granulating well, and the patient could keep his right leg extended. Next day he vomited in the morning, and was rather drowsy. The optic discs were examined by Dr. Traquair, who found great congestion of the veins and oedema.

On February 25th it was noted that the temperature continued normal, that drowsiness had passed off, that the neck and hip wounds were closing rapidly, and that the general condition was satisfactory.

Fourth Operation.

On March 27th the wound behind the right ear was closed, and the patient was dismissed on April 15th with all wounds healed, except for a small opening behind the right ear.

The patient was a feeble, badly nourished boy. The case was one of extradural perisinus abscess, with secondary thrombosis of the sigmoid sinus. The chief infecting organism appears to have been the *Staphylococcus aureus*. As events showed, it would have been better had the jugular vein been ligatured and divided at the first operation; but the question "when to ligature the jugular" has not yet been finally decided.

The presence of bacteraemia was not known at the time of the first operation, which was performed shortly after admission. Symptoms of metastasis in the right ilium developed two days after operation, but the condition was not definitely diagnosed till some days later. The fact that the metastasis occurred in bone is what we should expect considering the nature of the infecting organism (staphylococcus). As far as we know, no satisfactory explanation has been given for the fact that in staphylococcal pyaemia metastases occur in the bones, whereas in streptococcal pyaemia of otitic origin they occur in the lung—pleuropneumonia and empyema. It has been suggested that small emboli may pass through the pulmonary capillaries, whereas large ones are arrested there. Further, the bone marrow may be a *locus minoris resistentiae* for the staphylococcus. In view of the condition of the right ilium, it was only to be expected that ligature of the jugular vein and intravenous injection of eusol should fail to stop the disease process. It was only when a large hole was made in the ilium and the abscess evacuated that the patient began to improve. Recovery was interrupted for a day or two by an attack of cerebral oedema, the origin of which is somewhat difficult to explain in view of the time which had elapsed between the complete blockage of the sigmoid sinus and the onset of the drowsy condition associated with oedema of the optic discs. Choked disc is commoner in sinus thrombosis than in temporo-sphenoidal or cerebellar abscess. Rutin attributes the condition of the discs to engorgement of the cavernous sinus due to blockage of the superior and inferior petrosal sinuses following obstruction of the sigmoid sinus and jugular bulb respectively.

If the superior longitudinal and straight sinuses always divided into equal branches at the torcular, it is probable that little disturbance would arise from thrombosis of one sigmoid sinus or ligature of one internal jugular vein. Ruedinger, however, has shown that the blood from the superior longitudinal sinus as a rule flows mainly into the

right lateral sinus, which, in most cases, is larger than the left. The straight sinus at times becomes continuous with the left lateral sinus, but as a rule it divides—the smaller branch going to the right lateral sinus and the larger to the left. Thrombosis of one lateral sinus or ligature of one internal jugular vein (right or left respectively) may thus interfere with the venous return from (1) the surface of the brain in cases in which the superior longitudinal sinus becomes continuous with the right lateral sinus; or (2) the deeper parts of the brain when the straight sinus becomes continuous with the left lateral sinus. Linsler has shown that ligature of the right internal jugular vein in cases where it is much larger than the left may produce fatal cerebral oedema.

[The writers wish to express their best thanks to Professor Lorrain Smith and Dr. Theodore Rettie for their advice and assistance with regard to the intravenous injection of eusol; to Miss Mabel Fitzgerald for her careful investigation of the bacteriology of these two cases; and to Dr. Logan Turner for his kind permission to record the histories of the patients.]

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, November 13th, 1915.

ACUTE HAEMORRHAGIC PANCREATITIS: LAPAROTOMY: RECOVERY.

BY

G. W. KILNER CROSLAND, D.S.O., M.R.C.S., L.R.C.P.,
SURGEON, HUDDERSFIELD INFIRMARY.

CONSIDERING the gravity of this disease, the difficulty in diagnosing it before operation, and its high mortality, the following account of a case which recovered under surgical treatment may be of interest.

R. L., millworker, female, was sent to the Huddersfield Royal Infirmary by Dr. Brown, suffering from an acute abdominal catastrophe, thought to be a perforation of an ulcer of the stomach.

Previous History.

Her general health had been fairly good, with the exception of dyspeptic symptoms, from which she had suffered since early life, "bilious attacks" and the rising of sour fluid into the mouth being frequent. Lately these symptoms had not been so marked, and for months before the present illness she had been free from them until two or three days ago, when she had an attack which caused her to stay in bed for a day. She had always been a hard worker, and stated that tea and toast had been a great element in her meals. She was in the hospital in the summer with a small tuberculous abscess in the neck.

History of Present Illness.

On November 10th, 1916 (the day before admission), while at work in the mill, she was lifting a basket, and in the act of stooping felt "the blood rush to her head," and a hard swelling rise up in the body. To ease herself she undid her corsets; there was a little pain and she felt unwell, and decided to go home. Her fellow workers state that she looked very ill. On the way home she vomited several times, and had severe pain in the back between the shoulders; on reaching home she was so ill and weak that she could not stand; her sensations were mixed, and she could scarcely describe them; she had "a burning all over," and an inclination to cry out. The next morning she again felt "something rise up inside her," the pain increased, and became localized in the pit of the stomach, and the abdomen felt tense and swollen.

Condition on Admission.

Pulse 160, temperature 98.3°. She looked extremely ill and was in great distress; the abdomen was acutely distended (especially above the umbilicus), rigid, and tender. The breathing was entirely thoracic; she complained of pain in the epigastric region. She was retching a little, and there was tetany in both arms, increasing in spasms every few minutes.

She presented the picture of a very acute abdominal catastrophe, and a provisional diagnosis of a perforated ulcer of the stomach was made and immediate laparotomy decided upon.

Operation.

Within an hour of admission she was anaesthetized and the abdomen opened by an incision above the umbilicus. On opening the peritoneum, a quantity of blood-stained fluid escaped, and a very greatly distended stomach presented through the wound; there was obviously no perforation in it. It was so much distended that, in order to save time and to prevent damage in returning it, I punctured with a large trocar; it collapsed, the distension being due entirely to gas. The small hole was closed with an encircling suture and the stomach easily returned to the abdominal cavity. On further examination, fat necrosis was seen in the great omentum and the transverse mesocolon. The pancreas was enlarged and there were extensive haemorrhages in this region and in the transverse mesocolon extending to the large intestine; the

mesocolon was oedematous. The gall bladder was atrophied to a fibrous cord and apparently contained some calculi. The peritoneal cavity contained a fair quantity of blood-stained fluid; so far as could be made out, the rest of the abdominal organs were normal. The whole condition looked hopeless, and, as the patient was seemingly at the point of death, I rapidly closed the wound in the endeavour to get her off the operation table alive.

She was removed to the ward, placed in the Fowler position, and rectal salines given. For about a week her condition was most distressing, the pain and abdominal distension being very acute; the restlessness and pain were so severe that I was compelled, against my almost invariable practice in abdominal cases, to keep her under morphine. The bowels, in consequence, did not act until the fourth day, in spite of the free administration of calomel, magnesium sulphate, and turpentine enemata; eserine was given with, I think, good results.

About the tenth day diarrhoea became troublesome; this was relieved by bismuth. After this her convalescence was uneventful, and she left the hospital on December 5th.

Owing to the urgency of the case and the necessity for immediate operation, a specimen of the urine was not obtained, but the urine passed immediately after operation contained a small quantity of sugar, which soon disappeared.

I saw the patient a few days ago, three months after operation, walking briskly in the street and looking the picture of health; she tells me that she feels quite well, but still has the dyspeptic symptoms, and the sour rising in the throat which she had previous to operation.

Though the diagnosis was incorrect and the operation consisted only of a rapid laparotomy and puncture of the stomach, the patient recovered; whether this was *post* or *propter hoc* one cannot say, but she certainly was the most ill patient, both before and after operation, that I have ever seen recover.

I have to thank Mrs. Somerville for her assistance at the operation and for the after-treatment, and Mr. Bradford for the notes on the case.

APPENDICITIS CONSEQUENT ON ACUTE PHARYNGITIS.

By CHARLES BENNETT, M.B.,

WESTERN INFIRMARY, AND ROYAL HOSPITAL FOR SICK CHILDREN,
GLASGOW.

THE case described below possesses features which, although not of a new type, are, in my opinion, noteworthy. Reliable statistics of appendicitis are not too numerous, and the need for them in order to trace the disease to its sources is undisputed. By the findings in this case, both at the operation and at the subsequent histological examination, I am convinced that it is an example of infection of the appendix from a distant infective condition, namely, acute inflammation of the fauces and pharynx, and that the infection was conveyed by the blood stream. Although this cause is recognized in general terms throughout the literature yet, judging from the number of detailed cases on record, instances of it are either uncommon or have for the most part escaped observation.

G. R., female, aged 25, who was admitted to the Western Infirmary, Glasgow, on January 3rd, 1917, gave the following history: On December 30th, 1916, she began to suffer from a catarrhal cold accompanied by "sore throat." On December 31st pain commenced in the abdomen. At first this was felt in the epigastrium, but that same evening it settled in the right iliac fossa, whence it occasionally radiated to the umbilicus. There was no vomiting. Her condition remained thus until her admission to hospital, when, in the absence of the visiting surgeon, Major Duncan Macartney, I was called to see her.

Her general appearance suggested more a thoracic than an abdominal condition. The face was deeply flushed, respirations were rapid, and there was considerable restlessness. Temperature was 102° F., and the pulse rate about 140. Examination of the chest proved negative. The tongue was white with pink spots, while the fauces and pharynx appeared intensely inflamed. The tonsils were not enlarged. There was marked rigidity of the right rectus muscle of the abdomen and tenderness was general over this cavity, but most complained of in the right iliac region.

I opened the abdomen by the gridiron method. The terminal twelve inches of ileum, the caecum, appendix, and a part of the ascending colon were of a deep red colour, while the bowel proximal and distal to these parts was normal in appearance. The redness seemed to map out exactly the distribution of the ileo-colic branch of the superior mesenteric artery. The pelvic organs were normal.

The appendix, which was only slightly swollen, and in which a good lumen could be felt, was removed, and the abdomen closed.

As I expected, the temperature did not immediately settle, but swung irregularly until the fourth day, and about this time also the throat condition subsided. She was dismissed well on January 17th.

As all the circumstances suggested to me that inflammation of the appendix had commenced in a plane nearer peritoneum than mucosa, the organ was sent to Dr. G. Haswell Wilson, acting clinical pathologist to the infirmary, for histological examination. In his report, after referring to evidence of previous inflammatory mischief, he says: "The serous covering and the meso-appendix are intensely inflamed, and show early purulent infiltration."

The formation of pus in this plane with comparatively normal coats nearer the lumen is significant.

Dr. Wilson states that in his opinion the histological evidence supports my view that the infection came from a distance, and the throat condition was a possible causative precursor.

Of course no general conclusion can be drawn from one or a very few cases; and despite the evidence of the source in this instance it seems to me improbable that more than a small proportion of cases can be due to a similar cause. On the other hand, the possibility of such a cause is already admitted by many, and a cause affecting even a small proportion is not to be set aside. Personally I believe that when the etiology of appendicitis has been determined we shall find no one universal cause, but rather that the cases resolve themselves into a number of groups with a definite cause for each.

I am aware that the possibility of appendicitis being caused by infection carried through the blood stream is denied by a few observers. Perhaps the most dogmatic of statements lately made on this head is by Klotz,¹ of Ottawa, who says:

In recent years some authors have claimed that appendicitis is the outcome of a blood distribution of bacteria gaining entrance to the body tissues at some distance from the appendix. The tonsil has been spoken of as the portal of entry. A study of human appendicitis can give no support to this theory. It is rare to find a metastatic abscess of the appendix, and the character of this lesion is vastly different from clinical appendicitis.

Nevertheless, I am satisfied that my case was of metastatic nature. The signs and symptoms were precisely those of acute appendicitis. Even though there was also infection of the bowel in the immediate neighbourhood, the appendix was the focus of danger, and claimed principal attention.

REFERENCE.

¹ *Canadian Medical Association Journal*, December, 1916.

A NOTE ON THE USE OF B.I.P. AFTER BONE-GRAFTING.

By CAPTAIN H. S. BRANDER, R.A.M.C.

THE technique of the operation of bone-grafting rendered necessary by the character of wounds caused by modern projectiles requires careful consideration owing to the fact that the cicatricial tissue is often extensive and the blood supply consequently poor. As the scar tissue must be undermined in order to expose the end of the bone which is to be grafted, and the risk of relighting infection in a wound which has been healed for months avoided, I venture to record my experience with the use of "Bipp" following a bone-grafting operation. This I do because, in my opinion, the strictest aseptic precautions *alone* are not always sufficient.

Corpl. B. P., R.A.M.C., aged 26 years, wounded by shrapnel at the Lancashire landing, Gallipoli, on July 11th, 1915, was transferred to a military hospital in this country on July 27th, 1915. He had a compound fracture of the left radius. A skiagram showed that the bone was fractured in two places—about the junction of the middle and upper thirds and at the junction of the lower and middle thirds. From the history of the case it is evident that there had been much purulent discharge from the wound due to necrosed bone. The sequestrum was removed on October 13th, 1915, and the wound healed about eight weeks afterwards. The patient was discharged from the army on June 8th, 1916, as medically unfit.

As a Chelsea pensioner he applied for treatment at the War Hospital, Keighley, and was admitted under my care on November 13th, 1916. On the extero-anterior aspect of the left forearm there was a healed scar 4 in. by 2½ in., very