capability as the peritoneum of dealing with infective organisms, and as it is almost impossible to prevent contamination of the parietes during the operation for the removal of the septic focus, it usually happens that the wound suppurates and breaks down. Healing is then a very slow process, and a weak scar is likely to result.

Bacillus coli is the usual offender in appendicitis, and signs of mischief do not manifest themselves before the fifth day, when a little local discomfort and a slight rise of temperature give an indication of what is happening. Sometimes there is no evidence of trouble when the clips are taken out on the fifth day; and it may not be till the tenth day, when the supporting stitches are removed, that the edges of the wound fall apart, and a thin offensive pus appears. It is not difficult to clean such a wound; eusol or flavine will make it look quite healthy in a few days, but the slow process of granulation is a serious matter both for the patient and for the hospital. Secondary suture hastens matters in some cases, but is not always successful, and sometimes not advisable. The complete breakdown of the wound may, to some extent, be avoided by inserting at each end a drain reaching down to the fascia. These should not be removed earlier than the fifth day.

It is worth while, however, to attempt more than this, and to endeavour to obtain primary union, first by protecting the wound as well as possible against infection, and secondly, if that fails, as in most cases it will to some extent, to try to destroy the contaminating organisms. Where purulent fluid wells up immediately on opening the wound there is little chance of keeping the wound clean; but in cases of localized abscess it is possible to protect the edges with tetra cloths stitched to the peritoneum, or with the rubber-backed cloths recommended by Bonney, held in place by his special clips. If the abscess is small, the pus may then be mopped out without soiling the wound. Even then it is a difficult matter to keep the protecting cloths in position during the manipulations necessary in performing the operation, and one can never be quite certain that infection has not taken place. It is advisable, therefore, in all cases to disinfect the wound after the peritoneum has been sewn up; and it was in order to find a suitable antiseptic that various chemical agents were tried in the small series of cases tabulated below. The cases were all emergency ones of acute suppurative appendicitis, five having localized abscess and seven having general peritonitis. In all of them the appendix was removed, pus and fluid mopped out as well as possible with dry gauze, and the peritoneum and abdominal wound firmly sewn up. All did well eventually, though with varying success as regards union of the parietal wound, as will be seen.

Eusol was tried first, but appeared to have no effect. *Violet green* seemed to have an inhibitive effect on microbic growth, and delayed the appearance of sepsis till the tenth day, when the whole wound broke down (No. 4). *Iodine* produced a first intention wound in one instance, and only slight failure in another. *Flavine*, 1 in 1,000, gave the best results. It was used in the last seven cases and all healed by primary union except one, where the tissues were soaked with purulent fluid as soon as the peritoneum was opened, and where the operation was long and the patient weak (No. 8). *Bipp* was not used in this series. I have tried it in other similar conditions, with unfavourable results.

No.	Sex.	Age.	Lesion.	Anti-septic.	Result.	Days in Hospital.
1	M.	39	Perforated appendix, general peritonitis	Eusol	Infected, broke down	57
2	M.	32	Ditto	Iodine	Slight infection	23
3	M.	14	Localized abscess	Flavine	Slight infection	22
4	F.	65	Perforation, general peritonitis	Violet green	Infected, broke down	43
5	M.	18	Gangrene, general peritonitis	Iodine	Primary union	17
6	M.	17	Localized abscess	Flavine	Primary union	19
7	F.	12	Ditto	Flavine	Primary union	12
8	F.	34	Gangrene, general peritonitis	Flavine	Infected, broke down	58
9	F.	38	Extensive peritonitis	Flavine	Primary union	14
10	M.	8	Localized abscess	Flavine	Primary union	13
11	M.	25	General peritonitis	Flavine	Primary union	18
12	F.	60	Localized abscess	Flavine	Primary union	17

Flavine should be very thoroughly swabbed into every corner of the wound, which should then be flooded with it, and afterwards gently dried out. It is not advisable to run saline into the abdomen, either to wash out the peritoneum or for absorption. In the former case the wound will become hopelessly saturated, and in the latter there is likely to be leakage through the peritoneal suture, with consequent infection of the parietes, especially as the patient has to assume the Fowler position. Saline should of course be given freely by the rectum for the first twenty-four hours.

OSTEITIS OF THE TEMPORAL BONE WITH MENINGITIS.

BY

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The following case is of interest on account of its complicated nature, for, in addition to osteitis of the temporal bone and meningitis, extradural abscess and lateral sinus thrombosis were also present. The satisfactory result would appear to be due largely to the use of bipp.

Florence G., aged 11, was admitted under Dr. Porter Parkinson to the London Temperance Hospital on November 10th, 1922. For the previous week she had complained of earache (right), but latterly rather of general headache and pain behind the eyes. On November 5th there had been a slight discharge from the right ear. On and after November 7th she had vomited daily. Since November 9th her arms and legs had twitched occasionally. On admission the temperature was 103°, pulse 114, respirations 20. The child was drowsy and complained of pain behind the eyes. There were no physical signs of disease in chest or abdomen. Edges of both optic discs indefinite and "fuzzy." Veins dilated. Otherwise cranial nerves normal; no facial paresis; no demonstrable deafness. There was some rigidity of neck. Kernig's sign and tache cérébrale present. The knee-jerks were normal, as also was the flexor plantar response on both sides. There was a slight inoffensive watery discharge from a small central perforation in the membrana tympani of the right ear and tenderness over the mastoid, chiefly at the tip; no oedema. There was no thickening in the neck over the jugular. Dr. Porter Parkinson agreed with me that there were no physical signs to warrant operation.

November 11th: Lumbar puncture: cerebro-spinal fluid under pressure and turbid. Pathologist's report (Dr. Sanguinetti): Many polymorphonuclear pus cells, but no organisms seen. Culture sterile.

November 17th: The patient was less drowsy. The temperature had fallen on November 15th to 98.8°, which had been the average temperature ever since. Tenderness over right mastoid, and slight puffiness behind angle of right jaw. Head rigidity and tache cérébrale still present. No paralysis, anaesthesia, or other focal signs.

November 21st: The temperature shot up to 104° without rigor or convulsion. Obvious puffiness over the right mastoid. Optic neuritis on both sides, more marked on the right. The right pupil was larger than the left. At 6 a.m. the temperature was 104°, pulse 128, respirations 28. It was decided that operation must be deferred no longer; and the patient was transferred to my care by Dr. Porter Parkinson.

Operation.

The operation was done under general anaesthesia (Dr. Hirsch). Preliminary lumbar puncture yielded findings similar to those of November 11th. The antrum was now opened, but neither pus nor necrotic cells were found. On exposing the sigmoid sinus an extradural abscess was encountered overlying a black non-pulsating thrombosed sinus. Pus also exuded in small globules from the cut edge of the bone itself. Bone was freely cut away backwards, exposing the lateral sinus until healthy sinus wall was reached, and no pus exuded from the bone. The thrombosed sinus was sausage-shaped, two and a half inches long, and quite black and inelastic.

A pack of ribbon-gauze was placed between bone and dura behind to control bleeding, and the whole length of the thrombosed sinus slit open and clot evacuated. The wound was packed with gauze. The bony "bridge" was not touched. The dura (excepting the outer wall of the lateral sinus) was not opened to examine the brain. The internal jugular vein was not tied, the neck not being interfered with at all.

The patient endured these procedures fairly well. Immediately after operation the temperature fell to 99°.

Subsequent Progress.

November 24th: The temperature has remained low—98° to 99.6°. Wound re-dressed with gauze soaked in bipp, under short general anaesthesia. The sinus bled, but only from about one-sixth of the length of the original incision.

November 29th: Wound re-dressed under general anaesthesia, cleaned with hydrogen peroxide, saline, and spirit, and repacked with bipp gauze. No bleeding from the sinus, which was almost completely covered by healthy granulation tissue. Lumbar

puncture: fluid under high pressure but clear. No organisms found. Culture sterile. Temperature for the past five days 97.8° to 99.6°. All drowsiness has disappeared; appetite and well-being are returning.

On December 4th the right pupil was still larger than the left and optic neuritis was more marked on the right side than before; there was right external strabismus (this was transient and will not be referred to again). On December 6th the wound was re-dressed as before under general anaesthesia. On lumbar puncture the fluid was normal in appearance and flow.

December 12th: Wound re-dressed under general anaesthesia. The temperature oscillated very slightly around normal. The patient sat up in bed. Optic neuritis, right and left, steadily diminishing. Swelling of discs: right, 2 D; left, 3 D. The oculist (Mr. Loosely) is of opinion that some degree of optic atrophy will result.

From this time onwards recovery was uneventful. The dressings since December 12th were performed without an anaesthetic. The membrana tympani had healed. With the Bárány noise-box applied to the left ear to exclude its function the right ear heard as follows: conversational voice, 20 feet; whisper, 4 feet.

Commentary.

1. Although on no occasion were organisms found in, or grown from, the cerebro-spinal fluid, the diagnosis of meningitis was nevertheless obvious from the turbidity and presence of pus cells.

2. In the course of the illness optic neuritis appeared early and disappeared late. Being a true inflammation and not a mere congestion, this lesion cleared up only slowly after the exciting cause had been dealt with.

3. The jugular vein was not tied. This was partly because the child would obviously not have stood the necessary prolongation of anaesthesia, but also because it is debatable whether the usefulness of thus cutting off the peripheral outflow (even although the common facial vein also be ligatured) may not be discounted by the remaining patency of the petrosal sinuses.

4. We have here another instance of the value of bipp. The intervals between the first four dressings were respectively 3, 5, 7, and 6 days; during the whole period the temperature remained low.

5. The residual hearing is very satisfactory.

FATAL THROMBO-ARTERITIS OF THE RIGHT MIDDLE CEREBRAL ARTERY OF UNCERTAIN CAUSATION.

BY

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THE following brief report of a case of fatal thrombo-arteritis of the right middle cerebral artery is of interest, and may serve to draw attention to a subject of some importance.

The patient, A. H., aged 43 years, a Russian Hebrew cabinet-maker in London, had a cerebral "stroke" of some kind on the evening of December 29th, 1922, and remained in a semi-conscious condition, with left hemiplegia, thought to be probably due to haemorrhage on the right side of the brain. He had previously enjoyed good health, and had had five children, all of whom were living. He was admitted to hospital on the morning of January 1st, 1923, still in a semi-conscious state. There was no fever. He could hardly be roused to answer questions. His left knee-jerk was greatly exaggerated. The plantar reflex on the left side was of the extensor type (Babinski's sign), and on the right side was of the normal flexor type. The cremasteric and superficial abdominal reflexes were absent on the left side and present on the right side. Ophthalmoscopic examination (Dr. R. Gruber) showed slight blurring of the inner margin of the optic discs, suggesting commencing optic neuritis. The brachial systolic blood pressure was 130 mm. Hg. The blood serum gave a completely negative Wassermann reaction. The urine was passed into the bed. The condition became gradually worse, and Cheyne-Stokes respiration preceded death on the evening of January 2nd.

Necropsy.

The necropsy, which was performed by the house-physician, Dr. G. Welsch, in my presence, except for passive congestion of the viscera, showed nothing special beyond thrombosis of the trunk and branches of the right middle cerebral artery, with extensive (white) softening on the right side of the brain. There was no chronic interstitial nephritis and the heart and great blood vessels were healthy. There was nothing to suggest cerebral embolism.

In regard to the microscopic examination I have to thank Dr. J. G. Greenfield for his kind help. There was evidence of arteritis, but not of syphilitic endarteritis obliterans. The main part of the middle cerebral artery (trunk) showed a degenerated inflammatory area on one side only. The inflammation appeared to be older there than in the more distal parts. At the region of the first branch of the middle cerebral artery the vessel walls showed similar inflammatory areas. As to the type of cells in the

inflammatory areas, many of the cells were so degenerated that it was impossible to be sure whether they were polymorphonuclear or not. Some of the less degenerate cells were definitely mononuclear and some were polymorphonuclear. By Gram staining Dr. Greenfield failed to find any definite organisms in the necrotic masses of cells or in their vicinity, though some were present in the clot. The arteritis was apparently confined to the main trunk of the middle cerebral artery.

Dr. Greenfield suggested that we might be dealing with an arteritis secondary to suppuration in the splenoidal cells, which is often unaccompanied by obvious clinical symptoms. It has, however, occurred to me that the arteritis might have been analogous to the arteritis of middle-sized arteries in the extremities in so-called thrombo-angiitis obliterans of Hebrews. In a typical case of the latter disease a middle-aged Hebrew, who had long had intermittent claudication of both lower extremities with absence of pulsation in the pedal arteries, I once was able to observe the commencement of thrombo-arteritis obliterans in the radial artery at one wrist. The man complained of a tender swelling in that situation, and when the swelling gradually subsided pulsation in that portion of the radial artery (which had been present up to the time of the appearance of the swelling) was found to be absent. This was several years ago, and pulsation has not returned. The process seemed to resemble what takes place in superficial veins during attacks of nodular thrombophlebitis, to which Hebrews with thrombo-arteritis of one or both lower extremities are sometimes subject. (That particular patient had suffered a good deal from superficial thrombophlebitis.)

It is worth mentioning that in the case of the patient A. H. some urine collected from the urinary bladder at the post-mortem examination was found to contain much albumin, but no tube casts. J. Sabrazès and Ch. Massias have recently (abstract in the *Presse médicale*, Paris, 1923, xxxi, p. 104) drawn attention to the occurrence of "massive" albuminuria, without tube casts in the urine, in cases of cerebral haemorrhage. They found that in a young rabbit, when 2 to 3 c.cm. of its own blood were injected into its brain, albuminuria accompanied the resulting apoplectic shock, the albumin in the urine reaching 4.6 per mille at the time of the animal's death, thirty hours afterwards.

RUPTURE OF RENAL ARTERY AND VEIN BY SLIGHT INJURY: OPERATION: RECOVERY.

BY

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THE following case seems worthy of note as an example of the serious lesion which can occur in a hydronephrotic kidney as the result of very inconsiderable trauma. Moreover, I have not been able to find a record of any similar case.

A boy, aged 18, was admitted to the Prince of Wales's Hospital with haematuria. Two days previously he fell while playing cricket and pushed his elbow into his left side. The pain was very slight, and he thought so little of the accident that he continued playing. The next day his side was stiff and painful, and he was passing blood in his water all day. On the day of his admission the pain in his side was less, but he still had haematuria, and consequently consulted his doctor, who sent him to hospital the same afternoon.

On admission he did not look ill, distressed, or pale. The whole of the left side of the abdomen and the left flank were rigid and tender, sufficiently to make examination difficult; but palpation of the left kidney region revealed an indefinite swelling below the costal margin which was dull to percussion. The lower pole of the right kidney could be felt with ease. The abdomen was not distended and there was no evidence of free fluid. The temperature was 99°, pulse 104, and the urine contained old dark blood in large quantity. In view of the fact that the boy did not appear ill and that there was no fresh blood in the urine it was decided to do nothing in the way of operation, but to keep him quiet in bed. He continued to pass dark blood in the water for the remainder of the day, but with no rise of pulse rate. His bowels not having been open since the accident he was given an enema, with no result.

The following morning he seemed quite well, though still passing blood. There was no result from an enema. In the afternoon he suddenly vomited three times, looked rather distressed, the abdomen became slightly distended, and the pulse rate rose from 100 to 120. His condition did not improve, and when seen by me later he looked definitely ill. The abdomen was less rigid than before on the left side and in the flank, and a large mass could be felt extending down from the left kidney region to the iliac crest and dull on percussion. The abdomen was somewhat distended, tympanitic on the right side, with no evidence of free fluid. The