the best plan is for the patient to start with a good light wooden leg which he can change for a metal one after he has become thoroughly used to the artificial limb, and the stump has had time to assume a more or less permanent form. This is more particularly to be advised as metal limbs are very expensive.

One often sees a patient wearing an artificial leg which the instrument maker has taken great trouble to make as light as possible, with a heavy boot on the end of it. The weight of the boot does away with the advantages in the lightness of the limb. The patient should wear the lightest possible shoes—at any rate, at first, for by so doing he will learn to walk much more easily and quickly.

It is advisable to avoid limbs in which there are a number of joints; they should be as few in number as possible. Lateral motion, for instance, in the ankle-joint is not only of no value, but is a distinct disadvantage. The important thing in joints is that they should be strong and should move without noise.

It is an advantage for the patient to have a spare artificial limb, but it is better that this should not be made until the first one has been worn for about six months, as considerable alterations will probably be necessary, and at the end of six months these can be incorporated in the new limb.

It must not be thought that I am advising that patients' limbs should be trimmed to suit the convenience of the artificial limb maker. Far from it. But it seemed to me that some of the points mentioned here are not sufficiently well known, and that they might be of assistance to those of our surgeons who have a large number of amputations to perform at the present time.

▲ CASE OF ACUTE ANEURYSM OF THE SUPERIOR MESENTERIC ARTERY, WITH RUPTURE.

BY

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PRIVATE W., aged 26, was admitted to the 2nd Scottish General Hospital on February 28th, 1915, at 1 p.m. He was complaining of severe abdominal pain, and was considerably collapsed. His temperature was subnormal, and his pulse thready and irregular. His bowels had not acted for three days. He had not vomited. His tongue was moist and clean. The abdomen was somewhat distended with gas; there was no abnormal dullness to be made out in either flank or elsewhere. Subjective pain was felt all over the abdomen, but tenderness on pressure was not noticed over any area in particular. A small enema was given, and this was followed by a slight normal evacuation of the bowels. After this he felt easier, and slept for a short time. The heart sounds were feeble, but not otherwise markedly abnormal.

At 8 p.m.—that is, seven hours after admission—he suddenly collapsed, and died at 8.30. It was considered likely that internal haemorrhage had taken place, but he was too collapsed during the few hours he was under observation for laparotomy to be performed.

NECROPSY.

A *post-mortem* examination was performed on March 1st. The body was that of a well nourished and well developed young man. Rigidity was marked in both upper and lower limbs. There was extreme pallor of the skin. Slight adhesions were present in the left pleura. The pericardial sac contained a considerable amount of fluid. The peritoneum contained a large quantity of fluid and clotted blood. The omentum and mesentery were also infiltrated with blood clot. The small intestine was to a great extent collapsed. The spleen was enlarged, firm, and showed a recent pale infarct. The kidneys and liver were pale but healthy. In the bend of the duodenum and around the pancreas there was a large amount of blood clot. All the abdominal organs were searched for a source of the

haemorrhage. Eventually a thin-walled aneurysm about the size of a walnut in connexion with the commencement of the superior mesenteric artery was found. This had ruptured into the substance of the mesentery and into the peritoneal cavity. The heart was enlarged and conical in shape. The cavities were uniformly dilated, and the muscle pale. The mitral valve was healthy. The segments of the aortic valve were thickened and covered with large friable vegetations. The lungs showed congestion and oedema. Cultures were made from the vegetations on the aortic valve and from the spleen. Those from the spleen showed no growth. The cultures from the valve showed a pure growth of a staphylococcus which failed to develop pigment.

Microscopic Appearances.

The vegetations showed a granular amorphous thrombus in process of organization; large masses of cocci were visible at the margin. The spleen infarct showed the usual appearances of an early pale infarct with large numbers of polymorphonuclear leucocytes infiltrating it, thus indicating its septic character. The kidneys, liver, and heart showed cloudy swelling, but no evidence of metastatic inflammatory foci in them. The portion of lung examined showed oedema and some catarrhal pneumonia.

Aneurysm and Mesentery.—The tissue of the mesentery is infiltrated with blood clot, which in parts shows distinct evidence of organization. In other parts there is infiltration with polymorphonuclear leucocytes. The larger vessels show well-marked infiltration of their walls with inflammatory cells, and in the aneurysm wall this is accompanied by marked thinning. No organisms were found in the aneurysm wall or in the tissues around.

REMARKS.

The chief interest about the case lies in the rarity of the condition. We have only seen one other example of an acute aneurysm in this situation. Apparently both the endocarditis and the haemorrhage had been in existence some days, as evidenced by the considerable amount of organization which had occurred. At the *post-mortem* examination we were struck by the absence of smell, pus, or other evidence of sepsis. Whether this is explained by the nature of the causal organism we are unable to say. The presence of the *Staphylococcus albus* may be quite accidental, but the large numbers of cocci in masses found microscopically in the vegetations indicates that the germ belonged to that group.

SOME GENERAL NOTES ON SUFFOCATION BY POISONOUS GASES, WITH DETAILED NOTES ON ONE FATAL CASE.

BY

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DURING the last two weeks we have had under our care in this hospital several cases of suffocation by poisonous gases.

We have attempted to divide them into clinical groups from the severity of the symptoms and physical signs.

GROUP I.—THE MILD CASES.

Class A.—In these the cough has been frequent, painful, and harsh; the physical signs in the chest were rough breathing with sonorous rhonchi, indicating an essentially "dry" condition of the chest, suggesting a reddened and roughened bronchial apparatus.

Class B.—The cough was frequent and painful in these cases, but the harshness was not so apparent; the sounds in the chest were moist, and there was some secretion of a greenish, viscid character which was expectorated by the patient.

In both these classes of Group I the patients complained of headache, pain in the eyes, and abdominal pain, but they were not cyanotic, and the symptoms tended to disappear rapidly with the exception of some increased

frequency of respiration which persisted for days, and had not entirely subsided upon their discharge to convalescent camp.

GROUP II.—THE MODERATELY SEVERE CASES.

These patients were actually ill. They were cyanotic, with frequent panting and painful respiration, which caused them the greatest discomfort. Headache was very marked, and pyrexia up to about 100° F. was common for three or four days. The physical signs varied in different parts of the chest. In the upper part the sounds were loud, with sibilant rhonchi. Lower down, especially at the back, there were submucous râles, indicating a "bronchiolitis." Such patients were usually drowsy, and tended to get much worse at night.

GROUP III.—THE VERY SEVERE CASES.

The only case of this group which came under our care, and of which we propose to give some detailed notes together with the *post-mortem* findings, exhibited signs of extreme poisoning which led to a fatal result. The man was admitted in a semi-comatose condition twenty-four hours after being exposed to the fumes. He was intensely cyanotic, respiration-rate 30 to the minute, pulse 88, throat dry and red, tongue cracked and furred.

When roused—which could only be done with great difficulty—the patient indicated by signs that he had severe pain in the chest. He was unable to cough, and there was much rattling with the breathing. Physical signs showed râles all over the chest, front and back. The fremitus of these râles was easily palpated by the hand. The condition was diagnosed from these signs as acute pulmonary oedema following exposure to irritant fumes. The blood pressure appeared to be raised, though apparatus for verifying this was not at our disposal. Bleeding was resorted to, and 12 oz. of blood were withdrawn from the median basilic vein at the elbow. The intensely dark colour of the blood and its remarkable rapidity of clotting were the special features noted, and the latter condition made the operation very tedious and difficult. The patient seemed to be relieved for a time but never regained consciousness, and died in twenty-four hours from the time of his admission, and forty-eight hours in all from the time of being exposed to the fumes. Oxygen was administered throughout without any benefit. Postural treatment resulted in large quantities of frothy secretion pouring out of the nose and mouth, but at no time was the patient able to expectorate this for himself.

Post-mortem Examination.—The body was that of a moderately developed adult man. There were no external signs of interest. Rigor mortis was complete two hours after death. Examination of the chest showed very firm old pleuritic adhesions between the left lung and the chest wall. The lungs were fully expanded, crepitant throughout, and floated in water. On section they emitted a very tenacious frothy and slightly blood-stained exudation from all parts of both lungs. The same was also found filling the trachea, bronchi, and bronchioles, indicating a condition of general acute pulmonary oedema. Subpleural haemorrhages were also found in various places. The heart showed some hypertrophy of the left ventricle, but was otherwise normal. The liver was congested. The left kidney was enlarged, and showed two infarcts, one pale, the other red, but the capsule of the kidney stripped easily, and there were no signs of nephritis. The right kidney was normal. The spleen was not enlarged nor congested. The other abdominal organs were normal, likewise the brain, which was carefully examined. The urine was normal in colour, acid, specific gravity 1020, and contained no pathological products. Smears taken from the blood, and stained by Leishman's stain, showed a remarkable number of cells indistinguishable from myelocytes, and also an increase in the lymphocytic elements of the blood. The polymorphonuclear leucocytes were diminished to about 30 per cent. The red cells were unaltered. We would wish to call attention to this condition of the blood, and should be glad to hear if such changes have been observed in other cases of a similar kind that have been investigated.

Treatment varied according to the group under which the patient was diagnosed. Those of Group I, Class A—that is, those with dry physical signs—received a purge and a bronchial sedative. Those of Group I, Class B and

Group II—that is, those with moist physical signs—received a hypodermic injection of atropine sulphate $\frac{1}{10}$ gr., and for a few days were put on a mixture containing belladonna. In two cases emesis was produced with good results. In our one case of Group III we found no treatment of any value. Transfusion with normal saline after bleeding might have been done, but, in our opinion, it was contraindicated on account of the possibility of increasing the pulmonary oedema. The administration of atropine to this case also occurred to us, but, owing to the lungs being already so full and the paralysing effect of the drug on the coughing reflex, we considered its use inadvisable.

We shall be interested to hear of other investigations carried out on similar cases, and especially shall we be interested to note if such findings agree with ours also; we shall be glad for some suggestions for the treatment of the severe cases.

ANEURYSMAL VARIX OF POPLITEAL VESSELS FROM GUNSHOT WOUND.

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WOUNDS of blood vessels are always interesting surgically, and are particularly so at the present moment; and this fact, and my sympathy with Sir William Osler's desire that all such cases should be put on record, is my excuse for the following note.

Private O. M., 2nd Northants Regiment, aged 22, was at Neuve Chapelle, and on January 29th was shot in the left leg while on the way to bring up the company's rations. He was carried to a dressing station, and subsequently sent to England, arriving at St. John V.A.D. Hospital, Chester, on February 8th. He complained of pain in the neighbourhood of the left knee, and inability to use the limb. On examination it was found that a bullet had entered the outside of the leg immediately behind the fibula, and about an inch below the level of the head. It passed horizontally through the limb, and made its exit behind the tibia on the inner side, the track being on a level with the lower part of the tibial tuberosity. The wound was clean and healing well.

The lower part of the left popliteal space was rather full, but there was no definite tumour. On palpation what Sir William Osler, who saw the case, described as a "remarkable pistol shot shock" could be very distinctly felt in the lower part of the popliteal space, and could be traced in diminished force some way down the leg. There was a marked impulse, and a very distinct thrill was discernible. On auscultation the typical bruit was heard, loud, harsh, and roaring. The limb did not appear to differ in temperature from the sound leg, but no pulse could be felt in the posterior tibial or dorsalis pedis arteries, and the skin presented a slightly dusky hue, which may have been caused to some extent by a moderate degree of "frost-bite" from which the patient suffered. When he had recovered from this complication an operation for the cure of the varix was performed on March 26th.

On exposing the vessels it was found that the bullet had passed between them exactly where the popliteal vein crosses behind the artery, wounding their coats, and they were closely adherent, without any intervening sac. The artery was neither generally nor locally dilated. The vein seemed unusually large. The internal popliteal nerve was uninjured. I divided the artery between two ligatures above and below the anastomosis, and then applied Crile's clamps to the vein with the intention of separating it from the artery and stitching it. It struck me, however, that I might find it possible to put a ligature round the venous side of the anastomosis without occluding the lumen of the vessel, and the attempt proved successful. The gastrocnemii, which had been somewhat freely split, were brought together with a few interrupted catgut sutures, and the deep fascia sutured continuously. The patient made an uneventful recovery, with the exception of suffering great pain in his toes for the first two or three days. This I have found in other patients who have undergone operations on apparent recovery from "frost-bite." The present condition of the leg is normal, except for a little