completely to quinine medication, and, moreover, showing none of the common symptoms and signs thereof, with the exception of purpura. Purpura is certainly not uncommon in septicæmia, but it occurs in many other conditions also. The leucocytosis of 11,600 did not seem of much clinical value.

The presence of *Ascaris lumbricoides* was probably accidental; its toxicity is usually slight in adults, though on inquiry we learnt from a colleague from India of a case of severe toxæmia with purpura, the origin of which was unaccountable until the patient one day vomited two *ascaris* worms, which led to treatment of the condition and disappearance of the symptoms. The worms in this case were, however, numerous. Malaria, relapsing fever, and tuberculosis were disproved both clinically and at the autopsy; the enterica *al-o*.

In spite of the negative history of syphilis a Wassermann reaction might have been of service, though a matter of some difficulty under the local conditions. The terminal purpura, if not the early purpura also, may perhaps be accounted for by the combined renal and adrenal condition.

Lastly, an interesting point in the case is the absence of all visible sign of cardiac hypertrophy so common in renal disease, explicable perhaps by the deficiency of adrenalin.

We are much indebted to Major Alec Ferguson (pathologist to Egyptian Expeditionary Force), Captain Rhys Jones (No. 1 Military Laboratory), for the pathological and bacteriological findings; and to Lieut.-Colonel Fredk. E. Roberts, D.S.O., R.A.M.C., for permission to publish the case.

TWO CASES OF CHOLESTERIN PLEURAL EFFUSION.

BY

H. SHARPE, M.R.C.S., L.R.C.P.,

HOUSE-PHYSICIAN TO THE BROMPTON HOSPITAL.

Cases of cholesterolin pleural effusion are so rare that it seems well to put on record the details of the following:

CASE I.

S. H., aged 34, married, was admitted to the Brompton Hospital on March 21st, 1919, under Dr. Perkins, with the following history:

In December, 1911, he states that he had "peritonitis," consisting of severe abdominal pain and constipation, which, however, cleared up after he was given an aperient.

On February 12th, 1912, he was admitted to this hospital under Dr. Perkins for pleurisy with effusion on the left side. X-ray examination showed the roots of both lungs to be opaque, with small densely opaque areas in the lung tissue (suggesting calcifying glands?). Only a small area of the inner portion of the diaphragm was visible on the left side. Obscuring the greater part of the left diaphragm and the lower ribs was a dense opacity, with a hard and definite border, extending upwards and outwards towards the axilla, becoming less opaque above, strongly suggestive of fluid (encysted).

On February 27th, 1912, the left pleura was punctured in the eighth space in the mid-axillary line, and some clear straw-coloured fluid was aspirated. The clinical laboratory report on the cytology of the pleural effusion showed:

Polymorphonuclear neutrophils	...	8 per cent.
Endothelial cells	...	15 "
Small lymphocytes	...	77 "
		100

A few red cells were present. No reference in the report of the fluid was made to its appearance being "spangled."

On March 29th, 1912, he was sent to the Frimley Sanatorium, his general condition having improved. There was then dullness and diminished movement over the left side of his chest. The breath sounds were almost absent, and vocal resonance and vocal fremitus were diminished. After fifteen weeks' treatment at Frimley his general condition improved; he had gained 5 lb. in weight, and reached Grade VI, and the only physical signs he showed was an area of dullness at the left base, with fine crackling râles.

During the whole period of his stay at the sanatorium he was afebrile, and had a small amount of sputum on a few occasions only. On discharge he was able to resume his occupation as a glass cutter. After this he remained in fairly good health until October, 1918, when he had a sudden hæmoptysis, bringing up about half a pint of blood.

On March 21st, 1919, when readmitted to the Brompton Hospital, his condition was as follows:

He looked decidedly ill, and had apparently lost weight. He had a cough and a good deal of muco-purulent expectoration. He complained of night sweats and dyspnoea, and his sputum was slightly coloured. There was limitation of movement over the whole of the left side of the chest. Vocal fremitus was

increased at the left apex, and absent over the left base. There was impairment of the percussion note at the right apex, and slight impairment at the left apex. The note over the left base was dull.

On auscultation crepitations were heard at the left apex in front and behind, vocal resonance was increased, and pectoriloquy was present. Over an area extending from the fourth to the sixth intercostal spaces in the mid-axillary line there were numerous râles, but the breath sounds were barely audible. Râles were present behind, between the spine and the vertebral border of the scapula, and also round its inferior angle. At the left base in front breath sounds were absent, as was also vocal resonance. Behind, a few friction sounds were audible.

The apex beat was in the fifth intercostal space just internal to the mid-clavicular line. The liver, spleen, and kidneys were not palpable, and the urine was normal.

X-ray examination showed "Lessened expansion and translucency at both apices. The left apex is absolutely opaque. The heart is slightly displaced to the right, and there is a dense opacity with a well-defined edge on the left side suggesting pleural effusion."

Between April 16th and June 11th he had three pyrexial attacks, each attack lasting about a week; the temperature each time reached 102° and fell by lysis. In the intervals the temperature was normal. Each attack was accompanied by profuse expectoration, the last attack being the most severe, when, in two and a half hours, he expectorated 11 oz. of frothy mucopurulent sputum with an offensive odour. The last attack strongly suggested the presence of a cavity, bronchiectatic or tuberculous, and the physical signs found on auscultation were confirmatory.

On June 16th another x-ray examination was made, and the report showed "the left side of the diaphragm is raised and the stomach translucency can be made out. No excavation noted."

On June 17th three attempts were made by Dr. Burrell to produce an artificial pneumothorax in the seventh space in the mid-axillary line. At the third attempt, after the needle had been inserted to its utmost limit, about 10 c.cm. of straw-coloured fluid were drawn off. The pleura was found to be greatly thickened and of a corky consistence.

The bacteriological report on the effusion states: "The centrifuged deposit shows under the microscope large numbers of cholesterolin crystals. No cellular elements are present."

No further attempt to produce an artificial pneumothorax was made on account of the dense adhesions.

Examination of his sputum had revealed the presence of tubercle bacilli on March 24th, July 8th, 9th, and 10th.

Since June 22nd he has made satisfactory progress, and his temperature has remained normal except on two occasions, the first on June 30th, when it rose to 100.4° and fell to normal the next day, and the second on August 4th, when it rose to 101.4°, and on August 9th fell to normal. His general condition has improved, and he was transferred to Frimley on September 3rd.

CASE II.

D. B., aged 9, was admitted to the Brompton Hospital on April 7th, 1919, under Dr. Cecil Wall.

There was a history of pulmonary tuberculosis on his mother's side, two of her sisters and one niece having died of phthisis. He had an operation for empyema when 2 years old; whooping-cough when 3 years old; tonsils and adenoids removed in June, 1918; in March, 1919, he developed a pleural effusion whilst living at home, and 1½ pints of fluid were aspirated from the left side of his chest; this was "spangled" in appearance.

His condition on admission was as follows: He complained of a cough and occasional pain in the left side of his chest; he had some dyspnoea and had lost weight. His general condition was good. There was diffuse pulsation in the second and third intercostal spaces half an inch to the right of the right edge of the sternum, and the heart was found to be entirely over to the right of the sternum. There was an old empyema scar in the fourth space, about 3½ in. in length, the mid-point being in the left anterior axillary line. There was very slight movement of the left side of the chest, there was impairment of the note at the left apex, and there were weak breath sounds both in front and behind. There was absolute dullness from the third interspace downwards on the left side in front and behind; breath sounds, vocal resonance, and vocal fremitus were completely absent.

On April 8th the left side of his chest was explored, and about 10 c.cm. of golden-yellow coloured fluid was withdrawn. X-ray examination showed "a very sharply defined upper limit of opacity in the left side of the chest, the diaphragm on this side being obscured. The heart is considerably out to the right."

On April 16th 5 oz. of fluid were withdrawn from the left side of his chest, and on April 23rd 17 oz. more were aspirated. On April 30th the left side of the chest was again aspirated, and 34 oz. were drawn off. After this aspiration he vomited for about twenty-four hours. At this time the apex beat was one inch inside the left nipple line; there was dullness from the fifth interspace in front and from the inferior angle of the scapula behind downwards. The breath sounds were audible but considerably diminished.

On May 9th he had a rise of temperature (100°), his tongue was furred, and a few cervical glands were palpable. Nothing abnormal was felt in the abdomen. The heart was still slightly over to the right side of the sternum, and there was no diminution of dullness at the left base. He looked pale, and was quieter than was his wont.

On May 19th his temperature was steadily rising. The

abdomen was slightly distended, nothing abnormal was felt, and there was no tenderness on pressure. There was a "squeaking" bruit just to the left of the sternum, and pulsation to the right of the sternum; the bruit was in all probability cardio-pulmonary.

On May 21st his temperature had risen overnight to 102.4°. His pallor had increased, and he looked ill, and was constipated. His spleen was palpable but not tender, and the liver was not enlarged. Next day the left side of his chest was again aspirated, and 10 c.cm. of opaque, dark, amber-coloured fluid was withdrawn. A sediment appeared on allowing the fluid to stand, and on microscopic examination pus cells and a few cholesterol crystals were seen.

On May 24th his chest was aspirated and 18 oz. of fluid drawn off. The fluid was thicker in consistence than on former occasions; it was greenish-brown in colour and odourless. There was increased sediment, and microscopic examination showed a few cholesterol crystals and many pus cells. A culture of the pleural effusion showed: In aerobic culture, *Staphylococcus aureus*; anaerobic culture, sterile.

On May 30th, as the temperature had been fluctuating between 99.2° (morning) and 102.4° (evening) since May 17th, an operation was decided upon, and about one inch of the seventh rib was resected near the inferior border of the left scapula and 2 pints of pus evacuated. A drainage tube was inserted. Bacteriological examination of the pus revealed in culture a pure growth of *Staphylococcus aureus*.

After this he improved rapidly until June 13th, when he had a sudden rise of temperature to 102.4° and complained of a sore throat. There was a small patch of exudate on the left tonsil, and a few submaxillary glands were palpable. This quickly improved, and his temperature fell to normal on June 16th. On June 25th the left lung was apparently expanding well and the heart was in its normal position. There was still some discharge from the sinus. On July 8th his temperature was normal, his general condition had improved, and he was putting on weight.

He had now lost his cough, and has had no expectoration since his admission to the hospital.

Since compiling these notes he has been discharged from hospital and his condition on leaving was as follows: The breath sounds at the left base behind were clearly audible, but still diminished in front. The "squeaking" bruit had disappeared. The empyema wound was still discharging.

The first case was shown by Dr. Batty Shaw at the meeting of the Association of Physicians on July 12th. I am indebted to Dr. Perkins and Dr. Cecil Wall respectively for permission to publish these cases.

A PERICARDIAL EFFUSION OF "GOLD-PAINT" APPEARANCE DUE TO THE PRESENCE OF CHOLESTERIN.

BY

J. S. ALEXANDER, M.R.C.S., L.R.C.P.,

HOUSE-PHYSICIAN, UNIVERSITY COLLEGE HOSPITAL, W.C.

THE significance of cholesterol in the body fluids is little understood. In a recent monograph on this subject Adrien Grigaut describes the presence of cholesterol in pleural effusions and hydroceles, but I can find no record of the occurrence of cholesterol in a pericardial effusion.

A. G., aged 32 years, a chauffeur, was admitted to University College Hospital under Dr. H. Batty Shaw on October 15th, 1918. He gave a history of the following symptoms, of five years' duration: Roughness and dryness of the skin; loss of hair; thickness of speech; and, during the last few months, swelling of the feet, legs, and abdomen, and shortness of breath.

His features were heavy, skin harsh and dry, hair coarse and scanty. He was orthopnoeic, cyanosed, and slightly jaundiced. There was a well marked pulsus paradoxus; trace of albumin in the urine; systolic blood pressure, 100 mm.

Examination of the chest showed a great increase in the area of precordial dullness; x rays confirmed, and in the photograph a definite boss could be seen on the right lower border of the shadow. The heart sounds were faintly audible to the right of the sternum.

The condition of the skin and hair was attributed to hypothyroidism; the causation of the pericardial effusion remained obscure. Under treatment with thyroid extract and diuretics his condition improved, although x-ray examination showed no alteration in the pericardial effusion, and on his discharge from hospital in February he was able to resume work and continued at it for six weeks.

He was readmitted to hospital on April 8th, 1919, with severe dyspnoea, weak rapid pulse, cyanosis, jaundice,

marked oedema, and ascites. His condition improved but little, and an attack of bronchitis caused a further embarrassment of the overtaxed and failing heart; it was decided to open the pericardium.

Mr. Gwynne Williams carried out the operation under regional anaesthesia on May 13th. Over three pints were withdrawn of an opaque dark brown fluid of a scintillating gold paint appearance. Laboratory examination showed the presence of large quantities of cholesterol crystals; no bacteria were found.

The cardiac condition rapidly improved, and the patient was discharged early in June, free from symptoms. The last x-ray photograph shows a slight diminution in the area of opacity, and a dense area has developed over the right base.

A PRELIMINARY NOTE ON THE TREATMENT OF INOPERABLE CARCINOMA WITH SELENIUM.

BY

E. WATSON-WILLIAMS, M.C., B.A.,
M.R.C.S., L.R.C.P.

FOLLOWING the work of Wassermann and Keyser¹ on the treatment of mouse cancer with selenium and eosin, a number of observations were recorded in France and elsewhere on the Continent on the effect of injections of colloidal selenium on human patients with inoperable carcinoma. The pharmacology and low toxicity of this agent were investigated by Duhamel² in 1912. Unfortunately the earliest publication in English on the subject³ attributed a total therapeutic inefficacy to the preparation; and it may be that to this fact must be attributed the lack of notice which in England alone has been accorded to this work.

Previous Reports.

A brief summary of the more important series of observations hitherto published may be useful.

I. Cade and Girard, 8 cases; 5 c.cm. of 0.02 per cent. selenium up to twenty intramuscular injections. No untoward effects. Definite benefit in 5 cases.

II. Bougeant and Galliot, 12 cases; 5 c.cm. of 0.02 per cent. selenium in serum up to (in one case) fifty intravenous injections. Benefit in all cases.

III. A. Blumenthal, 6 cases; 5 c.cm. of 0.02 per cent. selenium up to ten intravenous injections. One case died from sloughing carcinoma of uterus; one not reported; two completely relieved of symptoms; two benefited.

IV. Trinklér, 4 cases; 5 c.cm. of 0.02 per cent. selenium up to eight subcutaneous injections. Some pain. All improved.

V. Touche, 27 cases; 5 c.cm. of 0.02 per cent. selenium; three weekly intramuscular injections, repeated if required. In one case possibly accelerated death (from hemiplegia); seven cases gave negative results; three slightly improved; twelve markedly improved; one showed no macroscopic trace after death. In three the disease appeared to be arrested.

VI. Hope,⁴ 2 cases; 3 c.cm. of 0.02 per cent. selenium thrice weekly up to five doses close to growth. Both improved.

VII. Carles and Vieron, 10 cases; 2 to 5 c.cm. of 0.02 per cent. selenium up to thirty intramuscular injections. Six cases improved.

Personal Observations.

Recently, when I wished to try the effect of copper on a patient with inoperable carcinoma of the stomach, Mr. T. P. Legg, C.M.G., M.S., under whose care the patient was, was good enough to suggest treatment with selenium. Since then, by the kindness of several surgeons, I have been able, at King's College Hospital and at the Throat Department of Bristol Royal Infirmary, to observe the effect on 24 cases. It is as yet too early to pronounce finally on the value of this agent. But pending the completion of treatment in certain of these cases it may be of interest to record the results, in a general way, of my observations as far as they go.

Selenium as available for injection is a "protected" colloidal suspension of erythro-selenium beta, prepared chemically or electrically, and is a dichroic coral-red fluid. It appears not to be very stable; in old preparations the metal is found to be precipitated. It is isotonic, if this has not already been done, before injection, by the addition of sodium chloride solution. I have been careful to record the strength of "solution" used, as there are at least three strengths on the market. I inject a dose representing 0.0005 to 0.005 gram of the metal, preferably intravenously. Intramuscularly it is painless, and this may