of the pathological report, the dosage was increased to 500,000 units daily.

Pathological Report.—Greenish foul-smelling pus containing a moderate number of small yellow granules. Stained film: numerous pus cells, numerous fusiform bacilli, small Gram-negative coli and bacilli, a moderate number of clumps of filamentous organisms of fungal morphology. This specimen was referred to the Fungus Reference Laboratory, which reported that *Actinomyces israeli* was present.

On February 22, 2 pints (1.14 litres) of pus was aspirated and 100,000 units of penicillin injected. On February 24, 1 pint (570 ml.) was aspirated. A radiograph on February 28 still showed an encysted collection in the right mid-zone posteriorly. This was much thicker and more difficult to aspirate. Rib-resection was considered, but as the fluid was centred under the inferior angle of the scapula it was decided to continue to aspirate.

By March 12 the temperature finally settled. On the 14th a radiograph still showed some encysted fluid. Aspiration failed. On March 18, 6 oz. (170 ml.) of pus was aspirated after screening, and penicillin was injected. On April 8, 6 oz. of pus was aspirated and 100,000 units of penicillin injected.

Pathological Report of Pus.—On March 9:—Direct smear: numerous pus cells, very scanty Gram-negative bacilli, no actinomyces seen. Cultures: no growth on blood agar. On March 18:—Direct smear: numerous pus cells, no organisms. Culture (aerobic and anaerobic): no growth.

An x-ray report on April 12 stated that the fluid seemed to have cleared from the right side and had left some residual pleural thickening.

Other Investigations.—A blood count on February 14 showed: Hb, 68%; red cells, 4,435,000; colour index, 0.77; white cells, 14,000 (eosinophils 81.5%, basophils 0.5%, lymphocytes 11.5%, monocytes 6.5%). Sputum examination on February 17: *M. tuberculosis* not found; moderate number of pus cells, fairly numerous epithelial cells, a few "dust" cells; no malignant cells seen. Blood sedimentation rate on February 21: first hour, 118 mm.; second hour, 125 mm. (Westergren). Sputum on February 25: moderate number of pus cells, fairly numerous squamous cells, fairly numerous dust cells, no malignant cells; *M. tuberculosis* not found. Culture:—Mixed: haemolytic streptococci and *Neisseria catarrhalis*.

In addition to intramuscular penicillin (total dosage 25,000,000 units) and intrapleural penicillin (400,000 units) the patient received potassium iodide, 30 gr. (2 g.) thrice daily.

He was discharged home on April 18, having been ambulant for ten days. He had gained weight and looked and felt very well.

I am greatly indebted to Dr. G. Manning, pathologist; Dr. Brash, radiologist; and Dr. Dawson, resident medical officer, for their assistance in the investigation and treatment of this case.

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The American Heart Association is publishing a quarterly journal entitled *The American Heart*, the object being to obtain broader public understanding and support of the association's programme in the field of cardiovascular disease. Approximately \$700,000 has been allocated for heart research this year by the association and affiliated organizations. According to a report in the *New York Times* (September 13, 1949) the United States Public Health Service is also launching a nation-wide attack on heart disease. A programme involving expenditure amounting to over \$8,000,000 has been planned by the National Heart Institute. Among the subjects which are to be specially studied are: environmental and hereditary factors; dietary factors; new surgical methods; the usefulness of new drugs and new substances such as ACTH and cortisone; new diagnostic instruments such as the electro-kymograph and the ballisto-cardiograph.

Medical Memoranda

Unusual Case of Nutritional Anaemia

The following case of nutritional anaemia is worthy of record because of the history.

CASE REPORT

A boy aged 9 was admitted to hospital on May 25, 1948, with a history of recurrent vomiting for six weeks. His previous medical history showed that he had been a full-time baby, born spontaneously after a normal pregnancy. He was the sixth of a family of seven, and all his siblings were healthy. From birth there had been a spastic paralysis of all his limbs; he had never been able to sit up and was completely helpless. Since birth his diet had consisted of milk. He refused to eat any other foods and would take his milk only from a feeding-bottle. His average daily consumption was about 5 pints (2.84 litres).

He had always tended to be constipated, but otherwise remained well until ten weeks before admission to hospital, when he had become unusually constipated and had had no bowel action for 25 days, at the end of which time he passed a very large constipated stool. Since then he had been less keen on sucking; he had often vomited after feeds, and his condition had steadily deteriorated.

On examination he was seen to be grossly mentally deficient, and was unable to speak. The skull was flattened posteriorly and there was a scoliosis of the dorsal spine. His temperature varied from 100 to 101° F. (37.8 to 38.3° C.); he was extremely pale and his face was puffy. His teeth were larger than normal, well spaced, and not carious. There was a spastic paralysis of all limbs, with permanent flexion of the elbow- and knee-joints due to contractures. Cardiac enlargement was not pronounced, but a loud blowing systolic murmur was heard all over the praecordium. A blood count showed: Hb, 8.5%; red cells, 1,020,000; C.I., 0.42; white cells, 11,400 (polymorphs 54%, basophils 1%, lymphocytes 38%, monocytes 7%). The red cells were severely microcytic and hypochromic. These figures were confirmed by the Department of Medicine, Aberdeen University. Plasma proteins were 7.7 g. %, with an albumin/globulin ratio of 1.24 to 1. A radiograph showed abnormally slender bones with delayed ossification and severe general decalcification.

The patient refused to take iron by mouth, and in view of this and the extreme degree of anaemia it was decided to give iron by intravenous injection. The preparation used was a saccharated oxide of iron, "ferrivenin" (Bengers), which contained 20 mg.

of iron per ml. Small doses of 1 ml. and then 1.5 ml. were given on consecutive days at the beginning of treatment, and thereafter 5 ml. on alternate days to a total of 42.5 ml. On the day after the third injection

the temperature rose to 104° F. (40° C.), but, despite this, the patient looked much better. One injection was omitted, and his temperature settled. He remained afebrile during the remainder of the treatment.

The haemoglobin and reticulocyte response to therapy are shown on the accompanying Chart. Within three weeks the haemoglobin was 70%, and he had been persuaded to increase the range of fluid feeds, but he still refused all solids. Iron and ammonium citrate in 10-gr. (0.65-g.) doses was thereafter given three times daily in bottle feeds.

COMMENT

The only demonstrable dietary deficiencies in a boy of 9 fed since birth solely on milk were a severe iron-deficiency anaemia and poor calcification of bones. Milk as a food is an incomplete source of nourishment, but in such large quantities as this patient consumed there is an adequate supply of all the essential food elements except iron. The vitamin D supply is variable, but is probably insufficient in the absence of sunlight. The response to intravenous iron was rapid, and the injections were well tolerated.

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An Extrarenal Hypernephroma

The following case was shown at a pathological meeting of the Section of Surgery of the Royal Society of Medicine on January 7, 1948.

CASE REPORT

The patient, a man aged 58, was first seen at Edgware General Hospital in October, 1944. He had had sacro-iliac backache for two years, but nothing significant was found on examination. He also complained of dysuria and nocturnal frequency in December, 1945, when the backache and urinary symptoms had increased, and of lassitude and loss of weight.

On examination his general appearance was cachectic. A large solid tumour was found emerging below the left costal margin and filling the upper left quadrant of the abdomen and the epigastrium. It moved on respiration, was dull to percussion, and was not tender. The liver was not enlarged and there was no ascites. The blood pressure was 120/70. A blood count showed: red cells, 4,000,000; haemoglobin, 76%; white cells, 10,800. The urine was normal. Radiographs of the spine revealed osteoarthritis but no metastatic deposits. Barium studies showed the stomach displaced to the right and hypertrophy of rugae at the greater curvature; the splenic flexure was displaced downwards. An intravenous pyelogram showed the left kidney rotated and displaced downwards to the level of L4. Anatomy and function were normal.

Operation (January, 1947).—A left paramedian incision was made. A normal spleen presented in the epigastrium on the surface of a large retroperitoneal tumour. The spleen and tumour were excised after freeing the latter from the upper pole of the kidney. A tough layer of connective tissue containing the suprarenal gland intervened. Recovery was uneventful.

The specimen is a solid ovoid tumour weighing $7\frac{1}{2}$ lb. (3.4 kg.) (Fig. 1). Microscopically, the appearances are characteristic of a hypernephroma. The cells are polygonal, with a foamy cytoplasm. The connective-tissue septa are thinner and less abundant than usual (Fig. 2).

COMMENT

Tumours with the histological appearance of adrenal carcinomata—the so-called hypernephromata—occur much less commonly as independent retroperitoneal growths than within the substance of the kidney.

Surveys of large numbers of primary retroperitoneal tumours (Goebell, 1901; Donnelly, 1946) indicate that adrenal-cell tumours account for only 3 or 4%; the remainder consist of a wide range of tumours corresponding to all the varieties which may occur in the adult urogenital organs. They are thought to arise from remnants of the embryonal urogenital apparatus (Hansmann and Budd, 1931). Death results from dissemination by lymphatics and veins as well as from direct extension to vital organs. Bone metastases are relatively infrequent (Ewing, 1940).

Complete extirpation of the tumour while still self-contained obviously offers the best prospects of cure. The operability rate is generally low because symptoms are ill defined and may remain so for months or years before a mass is discovered. Of Donnelly's (1946) series of 95

FIG. 1.—Photograph of cut surface of tumour.

FIG. 2.—Photomicrograph of tumour—high power.

primary retroperitoneal tumours, 82 were explored and 34 were considered operable. The operative mortality was 19.7%.

The most valuable diagnostic aids to earlier diagnosis are barium x-ray films and pyelography, which reveal displacements of the viscera and exclude growths of the gastrointestinal and urinary tracts. Loss of weight and strength are the most constant symptoms. Exploratory laparotomy, however, often offers the only means of discovering the exact nature of the tumour.

I am indebted to Miss M. H. Shaw for the photographs.

FRANK FORTY, F.R.C.S.

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