The secondary anemias concurrent with chronic infections are normochromic normocytic or hypochromic and microcytic, refractory to therapy directed against the anemia. This is one of the few such anemias for which administration of iron is futile.

It was shown that in such patients there is a persistent hypoferremia. Intravenous iron ascorbate in these individuals succeeds in raising the plasma iron level only as long as the infusion continues; in controls, however, this effect lasts longer. The same phenomenon was also demonstrated in experimental animals.

The fate of this iron so rapidly withdrawn from the plasma was postulated, and evidence based on isotopic iron studies indicates that the liver is one of the principal repositories.

Normal individuals promptly utilize virtually all of small doses of tracer iron for hemoglobin synthesis, and persons with iron deficiency anemias avidly utilize large amounts while patients and experimental animals with the anemia of chronic infection utilize neither dose as promptly nor completely.

Other factors influencing these anemias were mentioned. Among them are cobalt salts which experimentally cause polycythemia in normal animals. According to some of the animal data presented these salts exert a beneficial effect upon the anemia of chronic infection.

R. P. L.

12 March, 1947

YALE MEDICAL SOCIETY

NICOTINIC ACID AND TRYPTOPHANE IN RELATION TO PELLAGRA.

W. H. KREHL

Rats fed on a corn diet developed signs of pellagra which could be prevented by the addition of either tryptophane or nicotinic acid to the diet. The author suggested that tryptophane may be a precursor of nicotinic acid.

A. F. G.
EFFECT OF DIET ON REPRODUCTION AND LACTATION.

P. F. Fenton

By the use of synthetic diets it appeared that there are factors present in the stock diet essential for lactation, but not necessary for reproduction in rats. The nature of these factors is not as yet clear, but biotin and folic acid added to the synthetic diet increased the number of rats in a litter which were successfully weaned.

RHEUMATIC FEVER IN THE NAVY.

R. W. Quinn

The high incidence of rheumatic fever among the Navy personnel during this last war is striking in comparison to the Army incidence. Through the years of the war the incidence rose markedly following epidemics of upper respiratory infections in the large training centers. Factors important in the epidemiology were (1) the introduction of susceptible individuals into an infected group, (2) the location of these centers in regions in which the civilian mortality from rheumatic fever was high, and (3) the young age of the Navy recruits.

A PHYSICAL THEORY OF DECOMPRESSION SICKNESS.

L. F. Nims

Dr. Nims presented a mathematical approach to the study of the symptoms of decompression sickness. The presence of gas bubbles of different sizes at the same pressure is dependent on factors such as partial pressures, solubility of gases and diffusion constants and the distortion factor due to tissue elasticity. Knowing the threshold of pain and the oxygen saturation of an individual's blood it is possible to predict his sensitivity to decompression sickness.

9 April, 1947

YALE MEDICAL SOCIETY

ORIGIN AND CONTROL OF SEIZURES.

W. G. Lennox

Dr. Lennox divided the study of seizures into four spheres of investigation: 1. the inherent rhythmicity of the brain, seizures being a manifestation of dysrhythmia; 2. hereditary factors, which have been investigated by the study of EEG patterns of monozygotic and dizygotic twins and their parents; 3. cellular metabolism, including studies on the oxygen and glucose consumption of the brain and the acid-base balance; and 4. neurophysiology. He discussed briefly drugs used in the control of seizures, including phenobarbital, dilantin, mesantoin, and tridione, the latter being specific for petit mal seizures.
In hypertension, no matter what the cause, there is a hyperplasia and hypertrophy of the juxta-glomerular apparatus. Along with this change there is an increase in the renin content of the blood, and a transition of the glomerular arteriolar musculature to afibrillar cells that are indistinguishable from the cells of the juxta-glomerular apparatus. From his observations, the speaker advanced the theory that the juxta-glomerular apparatus and the afibrillar cells in the arteriolar walls cause the hypertension by an overproduction of renin. Glomerular ischemia was thought to be the primary cause of both the hyperplastic and metaplastic changes observed.

K. S. Howlett, Jr., and John O'Connor

Streptomycin is a relatively new drug, and its use in the treatment of tuberculosis is in the preliminary stage of study. Many questions such as the optimum dose schedule and optimum length of treatment are as yet unanswered. This is a report of its use in 30 patients with pulmonary tuberculosis, using 1.8 to 3.0 gm. per day for three to four months. The two major disadvantages are the toxicity of the drug and the development of resistance by the tubercle bacillus to streptomycin. Toxic reactions which necessitate abandonment of therapy are (1) exfoliative dermatitis; (2) decrease in leukocytes and platelets; (3) renal failure; (4) deafness. As yet no death has been attributable to streptomycin. Common toxic reactions include pain at the site of injection, the intermittent appearance of granular casts in the urine, and loss of vestibular function.

The most marked clinical improvement was noted in cases of ulcerative tuberculous bronchitis. Of the pulmonary parenchymal lesions the exudative type showed the best response. Of 16 patients who have completed the course of therapy only one case failed to show improvement by clinical and x-ray findings, but all patients showed symptomatic improvement, and a few showed a remarkable response. The question has been raised, however, as to the durability of this improvement following discontinuance of the drug. At present it can be said that the use of streptomycin in pulmonary tuberculosis appears to be of the greatest benefit in cases of ulcerative bronchitis and in preparing for surgery cases which have not responded to the usual treatment.

A. F. G.
Sensitivity of Tubercle Bacillus to Streptomycin.

J. F. Sadusk, Jr., and W. E. Swift, Jr.

Tests for determining the sensitivity of the tubercle bacillus to streptomycin were made possible by the use of synthetic media for the growth of tubercle bacilli. Growth was found 7 to 10 days after the first transfer of material to Dubos-McDermott medium and as early as three days after succeeding transfers. The original resistance of tubercle bacilli found in the sputum of 16 patients ranged from 0.5 to 1.0 microgram of streptomycin. In all patients the resistance of the organism increased after eight weeks of therapy, in some reaching over 1000 micrograms. This is a preliminary report indicating the development of variable degrees of resistance, the peak of which appears after 3 to 4 months of therapy. A method for determining blood levels of streptomycin was also presented with some preliminary data.

A. F. G.

Reaction of the Labyrinth to Prolonged Streptomycin Therapy.

Norton Canfield and Aram Glorig, Jr.

The main toxic manifestation of streptomycin is on the auditory and vestibular functions of the patient. This effect appears to be proportional to the size of the dose, and occurs in the majority of patients after 21 to 28 days of therapy. Of 16 patients one developed high pitch perceptive deafness, while 13 showed signs of auditory impairment. The vestibular signs are more marked, including dizziness with lateral nystagmus and nausea and vomiting. Following cessation of therapy these patients show no recovery of vestibular function as measured by the caloric test, the revolving chair, the tilting table, and walking blind-folded, but merely become compensated by the use of other functions to maintain equilibrium.

A. F. G.

19 May, 1947

Yale Medical Society

Nutrition in Relation to Bone Growth and the Nervous System.

Sir Edward Mellanby

In 1913 the lack of vitamin A, which at that time included vitamins A and D, was considered to be responsible for rickets. In 1921 a condition of incoordination was first noted in dogs fed a vitamin A deficient diet. Histological studies showed degeneration of various cranial nerves including the vestibular and cochlear nerves and the posterior columns of the spinal cord. After many years of study it was found that the degeneration of these nerves was caused by an overgrowth of periosteal bone which squeezed the nerves in the cranial foramina. The brain itself was also compressed by periosteal bone formation in the posterior fossa. The spinal cord was likewise shown to be compressed due to an accumulation of osteoblasts, on the inner surface of the vertebral foramen. Thus, what originally was thought to be a toxic degeneration of nerves proved to be caused by abnormal growth of bone due to a nutritional deficiency.

A. F. G.