ABSTRACTS

The following abstracts and title references represent material published from the Yale University School of Medicine during the first quarter of 1948.

Barron, D. H.: Some effects of amputation of the chick wing bud on the early differentiation of the motor neuroblasts in the associated segments of the spinal cord. J. Comp. Neurol., 1948, 88, 93-127.

When the wing bud of the chick is amputated at the embryonic age of 72 hours, no effect is observable in the associated segments of the spinal cord until the time when the lateral motor cord normally makes its appearance. Then, there is a reduction in the number of primary unipolar neuroblasts that become bipolar and lay down the lateral motor column. This reduction apparently also reduces the number of indifferent mantle cells which differentiate into neuroblasts. A neuron hypoplasia, as development advances, is a result. These observations indicate that the axon of a unipolar motor neuroblast, by establishing contacts with myoblasts, enables that neuroblast to proceed in its development.

W.F.S.

Brobeck, J. R.: Regulation of energy exchange. Ann. Rev. Physiol., 1948, 10, 315-38.

A comprehensive summary of the field of energy metabolism is given covering the period from July 1, 1945, to June 30, 1947. Knowledge established from experiments or predictable from known data is pointed out in contrast to concepts and hypotheses which require further study. The author includes an extensive bibliography of papers published during the above-stated period.

W.F.S.

Darrow, D. C., R. Schwartz, J. F. Iannucci, and F. Coville: The relation of serum bicarbonate concentration to muscle composition. J. Clin. Invest., 1948, 27, 198-208.

The composition of serum and muscle was determined in normal and in adrenalectomized rats subjected to conditions leading to adjustment of body electrolyte in the presence of a deficit of one of the ions—sodium, chloride, or potassium. The data demonstrate a high degree of correlation between the concentration of bicarbonate in serum, muscle potassium, and intracellular sodium. These relationships may be considered a biological equilibrium which is attained when renal adjustment is made in the presence of a deficit of sodium or chloride or potassium. Adrenalectomized rats show the same relationships as do normal rats.

R.T.M.
Delgado, J. M. R., and R. B. Livingstone: Some respiratory, vascular, and thermal responses to stimulation of orbital surface of frontal lobe. J. Neurophysiol., 1948, 11, 39-55.

Studies on monkeys and dogs demonstrate that electrical stimulation of the orbital surface of the frontal lobe produces blood pressure, respiratory, and thermal changes. After bilateral, chronic ablation of the posterior orbital gyrus in monkeys, marked elevation in temperature of the extremities occurs. Cortical areas deep in the sulcus principalis of monkeys closely approximate the cortex of the orbital surface and appear to have related function.

Evans, A. S., and E. C. Curnen: Serological studies on infectious mononucleosis and other conditions with human erythrocytes modified by Newcastle disease virus. J. Immunol., 1948, 58, 323.

Serological reactions with human red blood cells modified by adsorption and elution of Newcastle disease virus have been studied with infectious mononucleosis and other infectious diseases. Serum from some patients with infectious mononucleosis, or with other infectious diseases, agglutinated NDV-treated red cells in higher titer than did serum from normal persons or from patients with non-infectious diseases.

Evans, A. S.: Liver involvement in infectious mononucleosis. J. Clin. Invest., 1948, 27, 106-10.

The results of serial liver function tests on 19 cases of infectious mononucleosis without jaundice indicate that demonstrable hepatic impairment occurs quite frequently.

Fenton, P. F., and G. R. Cowgill: Nutrition of the mouse. VII. Lactation performance of four strains maintained on stock rations. Proc. Soc. Exper. Biol. & Med., 1948, 68, 58-60.

A stock diet and a purified commercial diet were compared with respect to lactation performance which was determined by weights of mothers and weights of offspring. The stock diet proved to be superior. Contributing factors such as living conditions also were considered.

Fenton, P. F., G. R. Cowgill, and M. A. Stone: Nutrition of the mouse. V. Long-term maintenance of two strains on synthetic and on stock diets. Proc. Soc. Exper. Biol. & Med., 1948, 67, 27-29.

Tumor-susceptible A strain mice show deficiency symptoms on synthetic diet only, whereas susceptible C3H strain mice failed to show symptoms on either diet.

Forbes, T. R., and C. W. Hooker: The solubility of progesterone in saline. Science, 1948, 107, 151.

The solubility of progesterone in isotonic saline is equal to the solubility of the hormone in blood.
Fruton, J. S.: A peptide derivative of gramicidin. J. Am. Chem. Soc., 1948, 70, 1280.

The hydrolysate of gramicidin contains 50 per cent d-leucine and l-tryptophan. Synthetic d-leucyl-l-tryptophan diketopiperazine, however, does not exhibit significant growth of organisms. M.H.B.

Fruton, J. S.: Specificity of chymotrypsin. B. J. Biol. Chem., 1948, 173, 109-10.

The enzymatic action of crystalline activated protein B or chymotrypsin B of Brown, Shupe, and Lanowski on synthetic substrates supports the conclusion that there is a close relationship to crystalline chymotrypsin of Kunitz and Northrup. M.H.B.

Gall, L. S., P. F. Fenton, and G. R. Cowgill: The nutrition of the mouse. II. Effect of diet on the bacterial flora of the intestine and the cecum. J. Nutrition, 1948, 35, 13-23.

The bacterial flora of the distal small intestine and cecum was studied in three groups of mice of the A strain. Each group was fed a designated diet. Each group displayed a characteristic flora; so much so, in fact, that the diet could be identified by the types of bacteria represented. M.A.B.

Gall, L. S., B. A. Illingworth, G. R. Cowgill, and P. F. Fenton: The nutrition of the mouse. III. The relation of diet to the synthetic activity of the predominating flora isolated from the small intestine and cecum. J. Nutrition, 1948, 35, 27-38.

This study attempts to unravel the synthesizing activity of the flora found with respect to 5 vitamins of the B complex. This activity was found to be a function of the diet of the animal. It was emphasized, however, that the sequence of events is complicated by the fact that the bacterial flora itself is also a function of the diet. M.A.B.

Green, R. H.: Inhibition of multiplication of influenza virus by tannic acid. Proc. Soc. Exper. Biol. & Med., 1948, 67, 483-84.

Tannic acid inhibits multiplication of influenza A virus and hemagglutination by the virus. Also, the virus is inactivated, in vitro, by tannic acid. J.B.LeR.

Gueft, B., and P. D. Rosahn: Experimental mouse syphilis, a critical review of the literature. Am. J. Syph., Gonorr., & Ven. Dis., 1948, 32, 59-88.

A thoroughly comprehensive review of all aspects of syphilis in the mouse, covering investigations of the past forty years. W.P.MCN.

Gutmann, H. R., and J. S. Fruton: Partial purification of cathepsin II from swine kidney. Fed. Proc., 1948, 7, 157.

A method for separating cathepsin II from other peptides present in swine kidney is described. In addition evidence associating endopeptidase activity of cathepsin II with a protein-splitting enzyme is given. M.A.B.
Harvey, S. C.: Indications for therapeutic abortion from the point of view of the surgeon. J. Am. Med. Asso., 1948, 135, 331-32; 334-36.

The problem of whether or not to interrupt a pregnancy by therapeutic abortion in various surgical conditions is discussed and is followed by a panel discussion.

Horstmann, D. M.: Problems in the epidemiology of poliomyelitis. Lancet, 1948, i, 273.

A discussion and review on poliomyelitis from an epidemiological standpoint.

Huss, J. H., J. Gilbert, and A. A. Liebow: A method for obtaining bone marrow by vertebral spinous process puncture. Yale J. Biol. & Med., 1948, 20, 291-97.

Jackson, E. B., R. W. Olmsted, A. Foord, H. Thoms, and K. Hyder: A hospital rooming-in unit for four newborn infants and their mothers. Pediatrics, 1948 (Jan.), 28-43.

A discussion is presented of the development of a rooming-in project in a teaching hospital, with a description of procedures and a few general current observations, chiefly about parental responses.

Kaplan, H. S., H. M. Wilson, and A. H. Morse: Results and causes of failure of radiation therapy in carcinoma of the cervix. Surg., Gynec., & Obst., 1948, 86, 332-40.

The results in a series of 88 patients with carcinoma of the cervix treated by combined roentgen and radium therapy in a general hospital are reviewed. The net 5-year survival rate for the whole group was 38 per cent, which compares favorably with that reported elsewhere. However, when analyzed by stages, almost all of the 5-year survivals were noted to have occurred in the disproportionately large group of "operable" Stage I and II cases, and the results in more advanced cases are thus shown to have been unsatisfactory.

Li, M. H.: Malignant granulosa-cell tumor in an intrasplenic ovarian graft in a castrated male mouse. Am. J. Obst. & Gynec., 1948, 55, 316-20.

Heretofore metastasis and transplantation of this tumor have not been reported. The tumor was produced by an ovarian graft in the spleen of a castrated male mouse of the A strain. The mouse received injections of progesterone. Metastasis to the liver was observed, and transplantability was demonstrated by subcutaneous implantation of the original tumor in mice of various strains.

M.A.B.

Liebow, A. A., N. T. Milliken, and C. A. Hannum: Isospora infections in man. Am. J. Trop. Med., 1948, 28, 261-73.

Infection with *Isospora hominis* exceeded 0.75 per cent among the military personnel hospitalized from the campaign in Okinawa. No symptoms could be ascribed to the infection, which appeared self-limited, though rather unre-
suggest made responsive feces. Am. taken lobes histamine compared intestinal tract. No intracellular forms of Isospora were found in material taken by Miller-Abbott tube from the upper jejunum. W.P.MCN.

Lindskog, G. E., and A. Gilman: Effect of pulmonary artery ligation on the histamine content of lung, with observations on concomitant structural changes. Am. J. Physiol., 1948, 152, 417.

"Operative interruption of the pulmonary arterial flow to the right lower lobes in ten dogs for periods ranging from two weeks to 8 months produced no significant change in the levels of extractable pulmonary tissue histamine, as compared with preoperative and postoperative controls from the same animals." These findings indicate that the histamine content of lung tissue is not dependent upon a filtration and storage of histamine derived from the venous blood of the pulmonary artery.

J.B.Ler.

Maculla, E. S.: The immunochemistry of mouse tissue components: I. The comparative antigenic composition of normal mouse tissues. Yale J. Biol. & Med., 1948, 20, 299-314.

Maculla, E. S.: The immunochemistry of mouse tissue components: II. The comparative antigenic composition of homologous and heterologous mouse tumor transplants. Yale J. Biol. & Med., 1948, 20, 343-68.

Mayer, J., and W. A. Krehl: Influence of vitamin A deficiency on the gross efficiency of growth of rats. Yale J. Biol. & Med., 1948, 20, 403-405.

Mayer, J., and W. A. Krehl: Scorbutic symptoms in vitamin A-deficient rats. Arch. Biochem., 1948, 16, 313-14.

These symptoms were greatly alleviated by massive doses of vitamin C. Blood ascorbic acid levels of the vitamin A-deficient rat were about half those of the controls. The ratio of adrenal weight to body weight in the deficient animals was 2 to 4 times that of the controls.

M.A.B.

Melnick, J. L., and J. R. Paul: Experimental Fort Bragg fever (pretibial fever) in chimpanzees. Proc. Soc. Exper. Biol. & Med., 1948, 67, 263-68.

Chimpanzees were inoculated with the virus of Fort Bragg fever, with a mild infection resulting. This was characterized by a short febrile period with viremia, and by the appearance of neutralizing antibodies in the serum a few weeks after the infection.

J.B.Ler.

Milstone, J. H.: Three-stage analysis of blood coagulation. J. Gen. Physiol., 1948, 31, 301-24.

The blood-clotting mechanism can be separated somewhat imperfectly into three primary reactions, carried out in separate test-tubes. Thrombokinase may be
measured by its rate of activation of prothrombin, which follows the course of a unimolecular reaction. Hence, the activation of its precursor, prothrombokinase, may be charted. Evidence is presented that the activation of prothrombokinase is an autocatalytic process. The presence of calcium is required both for the activation of prothrombin and transformation of prothrombokinase by thrombokinase, while heating to 60° C. or adsorption with barium sulfate causes drastic losses in both these activites. W.P.MCN.

Mylon, E., and J. H. Heller: Activation of hypertensin and tyrosine by subthreshold amounts of epinephrine. Proc. Soc. Exper. Biol. & Med., 1948, 67, 62-67.

Perfusion rate determinations were made on rabbit ears, adding to the perfusate hypertensin and various amino acids, with and without traces of epinephrine or plasma. Hypertensin and the amino acids are without effect alone. However hypertensin or L-tyrosine, or compounds of tyrosine containing a free amino group, are capable of profound vasoconstrictor effects when fresh plasma or subthreshold amounts of epinephrine are added. W.P.MCN.

Mylon, E., M. Lund, and J. H. Heller: Limitations of the renin-hypertensin hypothesis. Am. J. Physiol., 1948, 152, 397-405.

In vitro experiments indicate that the smallest amount of renin detectable by bio-assay in the dog produces within 30 seconds the maximum yield of hypertensin from large quantities of hypertensinogen. Intravenous injections of hypertensin so produced cause smaller and more transient blood pressure rises in the dog than does direct injection of the renin.

Intravenous injection of renin elicits a constrictor effect, as determined by amputation and perfusion of a rabbit's ear, subsequent to injection of renin. No such effect can be demonstrated with hypertensin.

In view of such evidence it is apparent that the blood pressure response to renin cannot be adequately explained by the production of hypertensin. W.P.MCN.

Mylon, E., and E. R. Smith: Mechanisms concerned in the necrosis effected by unsaturated fatty acids. Arch. Path., 1948, 45, 21-24.

Necrosis of the renal vessels and epithelium following injection of sodium morrhuate into the renal artery is correlated with the unsaturation of the fatty acids present, since injections of sodium linoleate and linolenate produce similar lesions. Saturation of the acids with bromine prevents this necrosis. Furthermore, injection of the fatty acids into the systemic circulation does not produce lesions. Preliminary mixing of the morrhuate with powdered dog serum albumin shows that serum albumin has a neutralizing action on the toxicity of unsaturated fatty acids. W.P.MCN.

Nims, L. F.: Anoxia in aviation. Rev. Physiol., 1948, 10, 305-13.

A review of the literature pertaining to problems of anoxia in aviation covering the period July 1, 1946, to June 30, 1947. Advances in knowledge during the period and urgent needs for future research in the field are cited. An extensive bibliography is included. W.P.S.
Powers, G. F.: Some observations on the feeding of premature infants based on twenty years' experience at the New Haven hospital. Pediatrics, 1948 (Feb.), 145-157.

Infants' dietaries can be understood intelligently only when analyzed in terms of the unit of metabolism—the calorie. Infants, particularly those who are feeble, premature, convalescent, or malnourished, can be fed very successfully on a cooked cow's milk mixture lower in fat and higher in protein and carbohydrate content than human milk. Vitamins must be added to the diet. Liver, or liver extract, is also recommended, based on the concept that unrecognized deficiencies may thereby be supplied.

Pratt, E. L., B. Bienvenu, and M. M. Whyte: Concentration of urine solutes by young infants. Pediatrics, 1948 (Feb.), 181-87.

The water exchange of five infants, one to two months old, is described during the water restriction imposed by feeding food mixtures of undiluted evaporated milk. A chart is given for the estimation of the renal water requirement for infants at any given concentration of urine solutes on a variety of intakes.

Pratt, E. L., B. Bienvenu, and M. M. Whyte: Concentration of urine solutes by young infants. Pediatrics, 1948 (Feb.), 181-87.

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Preston, S. N., and N. K. Ordway: Observations of arterial oxygen content in children during the inhalation of air and 100 per cent oxygen. Am. J. Physiol., 1948, 152, 696-702.

A technique of femoral artery puncture has been described. Arterial blood samples were obtained from 14 normal children and the results of oxygen analyses by a modified Roughton-Scholander technique have been reported with relation to the average arterial oxygen saturation under conditions of rest and the breathing of room air.

Rantz, L. A., P. J. Boisvert, and W. H. Clark: The relationship of serological types of group A hemolytic streptococci to toxin formation and antibody response. Stanford Med. Bull., 1948, 6, 55-65.

A large number of Group A hemolytic streptococcal respiratory infections in young adult males was studied with relation to rash formation, reversal of the Dick reaction, fibrinolysin formation in vitro, antifibrinolysin response, and ability of streptococci to stimulate the production of antistreptolysin 0 in infected human beings. The differences in the biological properties of Group A streptococci were closely related to the serological type of the organisms causing disease in the epidemiological unit under study.

Rosenthal, T. B.: The effect of temperature on the pH of blood and plasma in vitro. J. Biol. Chem., 1948, 173, 25-30.

A formula is presented for calculation of the original pH of whole blood from a measurement of its plasma pH at room temperature. The temperature coefficients of pH for whole blood of man and animals are found to be the same. Relations between whole blood, true plasma, and derived plasma are discussed.
Rubenstein, A. D., J. P. Milnor, H. von Magnus, and J. L. Melnick: A study of virus carriers from a poliomyelitis outbreak at a boy's camp. New England J. Med., 1948, 238, 218-22.

An outbreak of infantile paralysis in a boy-scout camp, attended by boys aged 12 to 18 years, is described.

Sadusk, J. F., Jr., and W. E. Swift, Jr.: Sensitivity of the tubercle bacillus to streptomycin before and during specific therapy. J. Clin. Invest., 1948, 27, 278-82.

In a group of 16 patients with pulmonary tuberculosis, streptomycin was administered daily for 4 months. In all cases, the strains of bacilli isolated prior to treatment were highly sensitive to streptomycin. Loss of sensitivity began to appear by the end of the first month of therapy, together with conversion of positive sputum or gastric washings to negative. It was not possible though, with this small group of patients, to demonstrate conclusively a correlation between resistance to streptomycin and clinical course under therapy.

Salter, W. T., and F. D. Humm: Chemical studies of sex steroid balance in human subjects. Fed. Proc., 1948, 7.

Salter, W. T., M. W. Johnson, and J. Beach: Extra-thyroidal iodine. Fed. Proc., 1948, 7.

Salter, W. T., and M. X. Zarrow: Comparison of biological and chemical evaluation of sex hormone balance. Fed. Proc., 1948, 7.

Shrigley, E. W.: The influence of mammalian environment on the tissue specificities of the Rous chicken sarcoma virus. Cancer Research, 1947, 7, 575-84.

Possible changes in virulence and tissue specificity of the chicken Rous sarcoma virus in passage through the anterior chambers of the eyes of guinea-pigs and mice were examined. Passage through the guinea-pig increases the potency and alters the tissue specificity of the virus, manifested in chicks by increased periosteal and hemorrhagic lesions, and decreased local lesions at the site of inoculation. Passage of the tumor through mice does not essentially alter the properties of the virus, with the possible exception of a slight decrease in potency.

Shumacker, H. B., I. J. Speigel, and R. H. Upjohn: Causalgia—the rôle of sympathetic interruption in treatment. Surg., Gynec., & Obst., 1948, 86, 76-86.

Sympathectomy has been found to be a safe and usually reliable method of treatment in causalgia. Failures were extremely rare, and incomplete cures uncommon. In certain cases of this disorder, sympathetic procaine blocks were effectual.

Strong, L. C.: Hereditary dwarfism in the descendants of mice receiving methylcholanthrene—parallel induction. Proc. Soc. Exper. Biol. & Med., 1948, 67, 46-49.
The dwarf mice were produced by the pBr subline of the NHO descent whose ancestors have been injected with methylcholanthrene for many generations. The pBr mice weigh about 25 gm. when fully grown, the dwarfs about 15 gm. There is 3:1 ratio of normals to dwarfs in the pBr progeny, thus demonstrating dwarfism as a simple mendelian recessive. The relation of this phenomenon to parallel induction is considered.

M.A.B.

Tager, M.: Studies on the coagulase-reacting factor: I. The reaction of staphylocoagulase with the components of human plasma. Yale J. Biol. & Med., 1948, 20, 369-80.

Tepperman, J., and H. M. Tepperman: On the blood lactic acid response to measured exercise in hypoxic human subjects. J. Clin. Invest., 1948, 27, 176-86.

Experiments on human subjects determining the blood lactate level after measured exercise at sea level and lower barometric pressures were performed, with the findings that the lactate levels after exercise were higher at 15,000 feet than at sea level. Additional experiments indicated that the lactate level rise after exercise at any altitude is due to overproduction of lactate and not to any interference with its normal removal. Lactate response curves differed after measured activity between individuals in a poor state of athletic training and those of well-trained persons.

W.F.S.

Treffers, H. P., and K. E. Yaw: A turbimetric growth assay method for the determination of the relative bactericidal activities of sera. Fed. Proc., 1948, 7, 311.

A new method is described for measuring the bactericidal properties of serum plus complement. From a suspension of organisms in serum plus complement, aliquot portions are, at intervals, subcultured into broth. Growth is measured colorimetrically. This procedure is more reliable than are plate counts.

W.P.MCN.

Wang, S. C., and L. F. Nims: The effect of various anesthetics and decerebration on the CO₂ stimulating action on respiration in cats. J. Pharmacol. & Exper. Therap., 1948, 92, 187-95.

A method of automatic recording of the pulmonary ventilation for anesthetized animals is described. It was found that the control ventilation and the sensitivity of the respiratory system to increased CO₂ are not appreciably altered by urethane or by mid-brain decerebration. Nembutal or choralose, however, markedly depress control respiration as well as respiratory response to increased CO₂ content of the inspired air.

W.F.S.

Waters, L. L.: Changes in the coronary arteries of the dog following injections of allylamine. Am. Heart J., 1948, 35, 212-20.

A report is made of the pathologic changes occurring in dogs after single or repeated injections of allylamine. The similarity of the resulting lesions of
the coronary arteries to those occurring in certain diseases of man is noted. Allylamine provides a tool for the more intensive study of the pathogenesis and fate of such lesions.

W.P.MCN.

Wilhelmi, A. E.: Metabolic aspects of shock. Ann. Rev. Physiol., 1948, 10, 259-76.

A comprehensive review of recent work on the main aspects of shock, this paper clearly shows the reinforcement and advances which metabolic studies have contributed to theories of the circulatory dynamics in this condition. An extensive bibliography is given.

M.H.B.