BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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JUNE, 1943

A., III.—PHYSIOLOGY & BIOCHEMISTRY

(INCLUDING ANATOMY)

CONTENTS

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A., III.—Physiology and Biochemistry (including Anatomy)

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I.—GENERAL ANATOMY AND MORPHOLOGY.

Sexual differences in breadths of epidermal ridges in finger tips and palms. E. A. Ohler and H. Cummins (*Amer. J. phys. Anthrop.*, 1942, **29**, 341—362).—Collective counts in females of mean age 18 years yielded a mean of 23·4 ridges per cm., an increase of 2·7 per cm. over the corresponding val. in the male. Digit 1 has the coarsest ridges of all the digits. Ridge breadths are given for the various digits and for the palms. The digital ridges are coarser in the right hand, as in the male. No significant bimanual difference of ridge breadth occurs in the palm but ridge breadth tends to vary with hand length. There may be a sp. genetic factor involved in the determination of ridge breadth, supplementing the loose control associated with hand size. W. F. H.

Surgical anatomy of external carotid plexus. E. Gardner (*Arch. Surg., Chicago*, 1943, **46**, 238—244). F. S.

Anatomy of inguinal region. A. B. Howell (*Surgery*, 1939, **6**, 653—662). P. C. W.

Acute traumatic dislocation of tendon of long head of biceps brachii. L. A. Abbott and J. B. deC. M. Saunders (*Surgery*, 1939, **6**, 817—840).—6 cases resulting from injury are described. Symptoms, diagnostic signs, and operative treatment are indicated; at operation all cases showed displacement of the tendon over the lesser tuberosity. P. C. W.

Absence of anterior mediastinum. A. Ochsner, M. DeBakey, and S. Murray (*Surgery*, 1939, **6**, 915—926).—9 cases of intrapleural communication are collected from the literature, the majority being due to tuberculous involvement of the mediastinum. A congenital case of complete absence of the mediastinum associated with congenital diaphragmatic hernia is described; only a single pleural cavity existed. P. C. W.

Accurate pelvimetry. C. Nicholson (*J. Obstet. Gynaec.*, 1943, **50**, 37—43). P. C. W.

Adult scapula: additional observations and measurements. A. Hrdlička (*Amer. J. phys. Anthrop.*, 1942, **29**, 363—415).—The basic properties of the scapula are inherited and are much the same in all human groups, but every part of the bone is subject to changes with age, brought about, or largely influenced, by muscular development and activity. There are no differences that could be regarded as true racial characters. Phylogenetically the bone is mainly a muscular product dependent on the development and activity of its muscles. Age differences in relative dimensions are marked. Sex differences become manifest from fœtal life, the female bone remaining the more juvenile. W. F. H.

Experimental osteomylitis. R. D. Cressman and A. Blalock (*Surgery*, 1939, **6**, 535—549).—Increased intramedullary pressure produced by the injection of salt solution into the ribs of dogs causes marrow and bone necrosis with subsequent new bone formation but without sequestration. Addition of toxin-producing staphylococci to the injection causes extensive bone necrosis with sequestration, a condition resembling acute human hæmatogenous osteomylitis. Sequestrated bone may be absorbed without sinus formation or extrusion of the sequestrum. P. C. W.

Lesions of intervertebral disc and ligamentum flavum of lumbar vertebræ. T. Horwitz (*Surgery*, 1939, **6**, 410—425).—An anatomic study of 75 human cadavers. Lesions resulting from degeneration of the intervertebral disc, ligamentum flavum, and adjacent structures may be asymptomatic and yet produce defects in the intraspinal column of air or iodised oil. Defects in contrast myelograms are not therefore always due to protrusion of the disc or hypertrophy of the ligamentum flavum. P. C. W.

Scoliosis. Experimental production and growth correction; growth and fusion of vertebral bodies. J. D. Bisgard and M. M. Musselman (*Surg. Gynec. Obstet.*, 1940, **70**, 1029—1036).—In goats all growth in length of the vertebræ is derived from proximal and distal epiphyseal growth cartilages. Excision of the latter inhibits all growth in length; if the excision is unilateral the arrest of growth is unilateral. Such unilateral excision in 2—3 vertebræ produces rotary lateral curvature of the spine. This is regarded as the cause of idiopathic scoliosis in man. Fusion of vertebral bodies *per se* with no damage to epiphyseal cartilage does not arrest growth. P. C. W.

Cervical rib and hyperhidrosis. E. D. Telford (*Brit. Med. J.*, 1942, II, 96).—2 cases of cervical rib showed hyperhidrosis in the hand of the affected side; relief followed removal of the rib. C. A. K.

Study of craniolacunia. J. B. Hartley and C. W. F. Burnett (*J. Obstet. Gynaec.*, 1943, **50**, 1—12).—11 new cases are reported and the incidence is shown to be higher than suspected. P. C. W.

Tantalum [for surgery]. H. M. Carney (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 147—148).—Implanted in dogs, Ta becomes thinly encapsulated by fibrous tissue, and causes increased density in bone to which it is applied. V. J. W.

Use of autogenous rib cartilage grafts to repair surface defects in dog joints. F. Young (*Surgery*, 1940, **7**, 254—263).—The articular cartilage of the superior patellar groove between the femoral condyles in dogs was removed and replaced by grafts taken from the costal cartilage of the same dog. The resected portion of articular cartilage was from a non-weight-bearing area. The dogs were killed 10 days—18 months after the operation. Rib cartilage grafts placed in parallel healed together by cartilaginous union; rib cartilage and articular cartilage were united by fibrous tissue. The grafts remained viable for as long as 1 year. After 18 months the graft was partially replaced by osteoid tissue but this is probably due to faulty technique. P. C. W.

Coarctation of aorta in childhood. P. H. Rhodes and E. Durbin (*Amer. J. Dis. Child.*, 1942, **64**, 1073—1096).—A review and report of 3 cases. C. J. C. B.

Congenital atresia and stenosis of great cardiac vessels. J. I. Rossman (*Amer. J. Dis. Child.*, 1942, **64**, 872—880).—1 case of aortic atresia and 1 of pulmonary stenosis are described. C. J. C. B.

Congenital anomalies of anus and rectum. E. A. Crowell and J. W. Dulin (*Surgery*, 1940, **7**, 529—539).—Description and classification with an analysis of 28 cases. P. C. W.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Branchial cysts. R. B. Malcolm and R. E. Benson (*Surgery*, 1940, **7**, 187—203).—The embryology of the branchial region and the origin of branchial cysts are discussed. Two cases with cysts of the cervical sinus are described and the origin of the cysts is detailed. P. C. W.

Effect of destruction of germinal crescent on origin of germ cells and development of gonads in domestic fowl. J. M. Essenberg and A. J. Svejda (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 318—327).—118 embryos were sectioned following electrocautery of the germinal crescent 1 or 18—24 hr. after laying. Resistance to operative shock was decreased if the eggs were allowed to cool between laying and transference to the incubator; mortality is not related to the extent of the lesions produced but to the destruction of the vitelline circulation. Survival depends on the degree of vascular reconstruction which may be restored to normal on the 6th day of incubation. The development of the gonad is proportional to the development of the other organs and in embryos surviving 6 days gonads and fully formed germ cells are present unless the embryo is severely deformed. In embryos younger than 6 days germ cells may be present but usually the young gonad is covered with a germinal epithelium in which germ cell formation is always found. Germ cells originate in the germinal epithelium. P. C. W.

Thirteen years of homologous function in normal and supernumerary grafted limbs. S. R. Detwiler (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 176—177).—Two additional right anterior limbs were produced by grafts in an axolotl which survived for 13 years. Synchronous movements took place throughout life in all three limbs, which all received innervation from the brachial region of the cord. V. J. W.

Changes in body proportions produced in frog embryos by supra-normal temperatures. J. B. Olson (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 97—98).—Developing eggs of *Hyla regilla* were exposed for 2—6 hr. to temp. of 29—35° at various stages of development up to that of the early tail bud. On the 4th day, when hatching began, embryos so treated had longer heads than controls. Body (head + trunk) and tail lengths were not affected. V. J. W.

Possibilities of recovery of regenerative territory of fore-limb in axolotl after removal. M. I. Efimov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 588—590).—Limb regeneration depends on the amount of muscle eliminated from the brachial zone. When the fore-limb is removed with all the brachial zone, skin develops over the wound without any limb recovery. When the underlying thoracic muscles were traumatised at the same time and the nerve was abducted there was regeneration of atypical and under-developed skeleton of the brachial zone alone. It was possible to produce complete regeneration if the whole of the brachial zone was removed but the underlying thoracic muscle was cut out and replaced into the sleeve of skin so that the muscle fibres lay perpendicular to the long axis of the axolotl. Correct orientation of the regenerating constituents is essential for limb regeneration. P. C. W.

Growth of salmon embryo. F. R. Hayes and F. H. Armstrong (*Canad. J. Res.*, 1943, **21, D**, 19—33).—Wet and dry wts. of Atlantic salmon are given up to the end of yolk sac absorption and from them growth curves are determined. Wt. increase during the interval considered ends before the point of inflexion of a Sachs growth cycle. Growth in length represents a complete cycle; hence there is no simple quant. relation between length and wt. W. F. H.

Survival and change of weight on sugar-water mixtures of *Drosophila* mutants and species of different body colour. H. Kalmus (*J. Genet.*, 1942, **44**, 194—203).—*D. pseudoobscura* (race *A*, wild type) showed the longest abs. survival time. Max. median survival periods of females in the different experimental series are given. Their mutant yellow sibs survived significantly shorter periods on mixtures containing over 15% of sugar but had the same survival time on less conc. mixtures. Both forms lost little water in 4 days when kept together on 20% cane sugar. On 90% cane sugar the average losses were much greater. Light *melanogaster* wild-type flies survived for a shorter period on mixtures rich in sugar and longer on mixtures rich in water. The results are discussed in conjunction with previously formulated rules dealing with correlation between cuticle colour and graded ecological factors such as drought, longevity, and temp. W. F. H.

Chromosome ends in *Datura pruinosa*. A. D. Bergner and A. F. Blakeslee (*Proc. Nat. Acad. Sci.*, 1943, **29**, 1—7).—A description, in terms of numerical representation, of the chromosomes in this *Datura* species and a comparison with those of *D. stramonium* and *D. leichardtii*. J. D. B.

Complex induced rearrangement of *Drosophila* chromosomes. B. P. Kaufmann (*Proc. Nat. Acad. Sci.*, 1943, **29**, 8—12).—Among the larval progeny of an irradiated *D. melanogaster* male there appeared one female whose salivary gland chromosomes showed extensive rearrangements involving at least 32 points of breakage. The breaks were aggregated particularly in the right limb of the third chromosome. The bearing of this complex non-random distribution on the problem of chromosome recombination is discussed. J. D. B.

Mechanism of induction of gross chromosomal rearrangements in *Drosophila* sterms. U. Fano (*Proc. Nat. Acad. Sci.*, 1943, **29**, 12—18).—An analysis of radiation-induced chromosomal rearrangements with the conclusion that breaks become more readily available to take part in a rearrangement after the rearrangement begins to develop from other breaks. J. D. B.

Genetical processes associated with fertility in natural population of *Drosophila fasciata*. M. K. Skarban (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 581—583).—Homozygous generations (apart from pair 4) were bred from *D. fasciata* collected in Kiev during 1937—1939. Of 102 homozygous lines in 1938 12 proved sterile; corresponding vals. for 1939 were 14 sterile lines out of 114. Only in 2 of the sterile lines were males and females both affected. In a total of 23 sterile lines tested the sterility genes were localised in chromosome II in 12 cases and in chromosome III in 11 cases. Fertility is higher in the heterozygous flies than in the homozygous ones. When poorly fertile lines are crossed between themselves or with highly fertile lines there is a sharp increase in fertility in the progeny. The average abs. fertility of heterozygotes is twice that of homozygotes and equals that of flies caught in nature. P. C. W.

Selection against heterozygosis in man. J. B. S. Haldane (*Ann. Eug.*, 1942, **2**, 333—340).—The discovery, by American workers, that erythroblastosis fœtalis is due to an innate antigenic difference between mother and child is described. It is pointed out that this leads to selection against heterozygotes and the consequences of this selection are calc. The bearings of the discovery on human evolution, on the origin of species, and on practical eugenics are discussed. W. F. H.

Hereditary deforming chondrodysplasia. B. T. Vanzant and F. R. Vanzant (*J. Amer. Med. Assoc.*, 1942, **119**, 786—790).—In 5 generations of one family 36 of 78 members had hereditary deforming chondrodysplasia which is transmitted as a mendelian dominant. C. A. K.

III.—PHYSICAL ANTHROPOLOGY.

Crania of Siberia. A. Hrdlička (*Amer. J. phys. Anthrop.*, 1942, **29**, 435—481).—To the end of neolithic time (or about 2000 B.C.) probably all the territory had a population of one main type, with oblong head, medium stature, vault of moderate height, face relatively broad but only moderately prognathic, and skeletal parts much like those of the American Indian. Possibly the type is connected with the Siberian upper paleolithic, and through them with the post-glacial man of Europe. The type is now represented by various tribes collectively grouped as "paleo-Siberian." The neolithics of eastern Siberia show a close relationship to the oblong-headed lower vaulted tribes of America. The mongols proper are a mixed yellow-brown people connecting with the mongoloids of Siberia, but only distantly with the peoples of America. W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Collapse of cells. K. Helmke (*Virchow's Arch.*, 1939, **304**, 255—270).—A peculiar state of cell is described in liver, salivary glands, tubules of kidney, adrenal cortex, pancreatic islets, anterior pituitary, epithelial cells of gut, and malignant growths characterised by altered staining reactions, and by a great reduction in size of nucleus and body. When stained with azo-carmine a pink substance can be demonstrated to leave the nucleus and later to fill most of the cell body. Often these "dark cells" are a reversible phase in the functional cycle occurring after prolonged secretion but sometimes they precede cell death. J. A.

Effects of removing nucleus from amœba. A. M. Clark (*Austral. J. Exp. Biol.*, 1942, **20**, 241—247).—After enucleation, there is a gradual decrease in streaming activity followed by withdrawal of pseudopodia and loss of attachment to the substrate. The protoplasm becomes rounded off and passes into a state of corrugation, which is probably due to excessive loss of water. The amœba recovers from this condition in about 30 min. and shows varying degrees of activity, but it gradually becomes quiescent and dies after about 7 days. Enucleation causes 70% decrease of respiration, and about 70% of the respiration of the normal amœba is sensitive to CN′, whilst the decreased O_2 consumption that remains after enucleation is unaffected by CN′. During recovery, the enucleated amœba is increasedly sensitive to CN′. The length of life after enucleation is increased slightly in presence of small amounts of $CaCl_2$. The ultimate death of the enucleated amœba is not due to starvation or reduced O_2 consumption, but may result from loss of cytoplasmic structure. J. N. A.

Partial purification of cell growth-promoting principles in adult tissue extracts. H. Werner and L. Doljanski (*Nature*, 1942, **150**, 660—661; cf. A., 1942, III, 792).—Saline extracts of heart muscle were pptd. with 4 vols. of alcohol. The ppt. represented 5% of the wt. of the original tissue, and was sol. in 0·01N-NH_3, from which it was repptd. by half-saturation with $(NH_4)_2SO_4$, the product having good growth-promoting properties. E. R. S.

Histochemical reactions for lipin aldehydes and ketones. G. Gomori (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 133—134).—Bennett's test (A., 1940, III, 411) is given by all lipin aldehydes, of which large amounts are present in the adrenal cortex, and is not sp. for keto-steroids. V. J. W.

Polychrome methylene-blue. III. Alkali methods of polychroming. R. D. Lillie (*Stain Tech.*, 1943, **18**, 1—12; cf. A., 1942, III, 729).—Rate of conversion into azures and nature of final products were tested by spectrophotometric investigation and staining. Alkali polychroming is unaffected by external O_2, but accelerated by increased concn. of alkali, by increase in pH, by evaporation, and by heat. Control of these factors gives polychrome methylene-blues that are similar. E. E. H.

Paraffin compression due to the rotary microtome. W. T. Dempster (*Stain Tech.*, 1943, **18**, 13—24).—Compression of sections during cutting is much greater for thin sections (50% or more) than for thick ones (15% or more). Inequality of compression between tissue and matrix is eliminated if the hardness of the paraffin is increased or that of the tissues decreased. Temp. should be just high enough to cut ribbons. E. E. H.

Decalcification *in vacuo*. R. A. J. Wilson (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 79—82).—The vac. process described completes the decalcifying and neutralising processes within 8 hr. The processes of washing in water and shrinking in alum solution are omitted. C. J. C. B.

Rœntgenographic method for determination of degree of decalcification in preparation of tissues for histological examination. S. A. Lovestedt (*Amer. J. clin. Path. tech. Sect.*, 1942, **6**, 89). C. J. C. B.

Microtome technique for electron microscopy. A. G. Richards, jun., T. F. Anderson, and R. T. Hance (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 148—152).—Modifications are described for the Minot microtome by which sections of 0·1—0·25 μ. can be cut. A special imbedding medium of a water-sol. wax is used. (2 photomicrographs.) V. J. W.

V.—BLOOD AND LYMPH.

Blood picture of mature normal dogs. J. W. Landsberg (*Anat. Rec.*, 1942, **84**, 415—421).—The mean erythrocyte count, hæmoglobin concn., mean corpuscular vol., mean corpuscular hæmoglobin, and the mean corpuscular hæmoglobin concn. are detailed. There is no significant difference in the hæmatological val. for adult male and female animals but there is a significant difference in the blood picture of adults when compared with immature animals. W. F. H.

Degeneration phenomena in erythrocytes. F. Jung (*Naturwiss.*, 1942, **30**, 472—473).—Poisoning of rabbits, cats, and men with dinitrobenzene leads to degeneration of the erythrocytes. The membrane remains normal, but the cells contain Heinz bodies. During the early stages, these are submicroscopic in size, but gradually grow and clump together. With poisoning by phenylenediamine, all stages of a gradual destruction of the membrane are observed. The nature of the Heinz bodies is still not clear; besides the usual blood-pigment derivatives, they appear to contain compounds of the type of verdochromogens. J. N. A.

Blood transfusion. E. P. Vary (*Surgery*, 1940, **7**, 282—309).—A review with 173 references. P. C. W.

Bleeding and blood-sugar levels in blood donors. B. J. Lawrence and G. Plaut (*Brit. Med. J.*, 1942, II, 8—9).—The blood-sugar level was without effect on the incidence of fainting in 96 blood donors of whom 18 fainted during bleeding. C. A. K.

Reactions after transfusion of stored blood. R. A. Jones (*Brit. Med. J.*, 1942, II, 476—477).—Blood stored for less than 5 days caused unusual transfusion reactions in 2 cases. There was no evidence of incompatibility or hæmolysis *in vivo*. There was marked and prolonged collapse with a blood pressure of less than 60 mm. Hg systolic for 48 hr. Marked N retention and congestive heart failure subsequently developed. C. A. K.

Blood transfusion in U.S.S.R. A. Bagdasarov (*Brit. Med. J.*, 1942, II, 445—446).—An account of blood transfusion organisation in U.S.S.R. C. A. K.

Blood transfusion. J. Vaughan (*Brit. Med. J.*, 1942, II, 19—21).—The use and relative val. of whole blood, serum, and plasma transfusions are discussed. C. A. K.

Improved needle and observation tube for collection of blood for transfusion. L. W. Diggs (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 91—92). C. J. C. B.

Nutritional iron deficiency anæmia in wartime. L. S. P. Davidson, G. M. Donaldson, M. J. Dyar, S. T. Lindsay, and J. G. McSorley (*Brit. Med. J.*, 1942, II, 505—507).—Hæmoglobin levels of 831 infants, pre-school and school children from working-class families in Edinburgh in 1942 were compared with those of a similar series in Aberdeen in 1935. There were no differences among the infants, but the wartime vals. for school children showed a definite reduction of hæmoglobin level, 50% of those in Edinburgh and none of those in Aberdeen being below 80% hæmoglobin. C. A. K.

Blood picture in hæmorrhagic anæmia. J. M. Leichsenring and A. Biester (*Minnesota Agric. Exp. Sta. Tech. Bull.*, 1939, No. 139, 120 pp.).—A detailed study in 19 dogs on a synthetic diet. A. A. M.

Idiopathic aplastic anæmia. J. W. Macfarlane and J. P. Currie (*Edinb. Med. J.*, 1943, **50**, 171—176).—An account of 4 cases. The authors distinguish between "true" aplastic anæmia and aleukia hæmorrhagica with and without a hyperplastic marrow. H. S.

Bone marrow in pernicious anæmia. I. Fluctuation in number and volume of nucleated cells. II. Nucleated cells and blood- and urine-uric acid. J. Stasney and P. Pizzolato. **III. Occurrence of protoporphyrin in human bone marrow.** J. Stasney and W. M. McCord (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 335—338, 338—339, 340—343).—6—24 hr. after 1st injection of liver extract there is a marked decrease in no. of nucleated cells of sternal marrow. Normoblasts then show a periodic increase and decrease, being almost absent at one stage at 96—168 hr. after this injection, when there is also an increase in uric acid in blood and urine. Appearance of protoporphyrin in the marrow coincided with increase of immature red cells of normoblastic type. V. J. W.

Megaloblastic anæmia of pregnancy and puerperium. L. S. P. Davidson, L. J. Davis, and J. Innes (*Brit. Med. J.*, 1942, II, 31—34).—16 cases of severe megaloblastic anæmia occurring during pregnancy and puerperium are described. 10 of the cases were temporarily refractory to liver extract, Fe, etc., and repeated blood transfusions were necessary. C. A. K.

Macrocytic anæmia of pregnancy and puerperium. H. W. Fullerton (*Brit. Med. J.*, 1943, I, 158—160).—3 cases of macrocytic anæmia of pregnancy and puerperium are described. Liver extracts by injection produced a reticulocytosis but little increase in red cell count. Whole liver by mouth was very effective. C. A. K.

Hæmatopoiesis in normal and splenectomised rabbits under influence of anæmic serum. N. V. Popova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 99—101).—In normal rabbits (10) subcutaneous injections of 9 c.c. of anæmia serum did not affect leucopoiesis but strongly stimulated erythropoiesis. In splenectomised rabbits (5) similar injections produced little effect. It is suggested that the spleen is concerned in stimulating the erythroblastic functions of other tissues, especially bone marrow. J. D. B.

Whole liver as adjuvant to iron in treatment of hypochromic anæmia. R. Gottlieb (*Canad. Med. Assoc. J.*, 1942, **47**, 456—460).—Acute cases do well on Fe alone; chronic cases often need liver as well for rapid recovery and prevention of relapse. C. J. C. B.

Intracellular and extracellular blood-phosphorus in anæmia in children and in experimental anæmia. H. Behrendt (*Amer. J. Dis. Child.*, 1942, **64**, 789—802).—In 7 cases of anæmia in children, whole blood and red cells showed intracellular retention of org. ester P in 5 cases and normal P in 2. In 2 rabbits with phenylhydrazine anæmia, the corpuscular ester P was increased and in 1 with blood loss anæmia. There is no correlation between the intracellular retention of P and the presence of any kind of pathologic blood cells or of any special type of anæmia. C. J. C. B.

Sickle-cell anæmia in white race. M. Morrison, A. A. Samwick, and E. Landsberg (*Amer. J. Dis. Child.*, 1942, **64**, 881—887).—2 cases of sickle-cell anæmia occurring in 2 unrelated white (Italian) families going back 3 generations are reported. Splenic puncture is a valuable adjunct in confirming the phenomenon of sickling in obscure cases. C. J. C. B.

Human iso-agglutinin anti-*M*. J. L. H. Paterson, R. R. Race, and G. L. Taylor (*Brit. Med. J.*, 1942, II, 37—38).—A pregnant woman of 28 of blood group *ON*, Rh-positive, showed iso-agglutinin anti-*M* in her serum. C. A. K.

Rh agglutinogen of human blood. R. T. Fisk and A. G. Foord (*Amer. J. clin. Path.*, 1942, **12**, 545—551).—Rh tests with anti-Rh immune guinea-pig sera gave an incidence of 85·0% Rh-positive and 15·0% Rh-negative persons in 927 adults. The differential action of anti-Rh sera for Rh-positive and -negative bloods is quant. and experience is required to assure consistent results. Anti-Rh guinea-pig sera, while giving satisfactory results with adult bloods, did not differentiate infant bloods into positive and negative groups. Reactions with these bloods were much stronger and all of 312 samples were Rh-positive while 10% were negative using human anti-Rh serum. The specificity of human anti-Rh sera was usually parallel with that of the guinea-pig preps. in tests on adult bloods and these sera were also suitable for typing infant bloods. C. J. C. B.

Optimal proportions of antigen and antibody in Rh tests. G. L. Taylor, R. R. Race, A. M. Prior, and E. W. Ikin (*Brit. Med. J.*, 1942, II, 572—574).—A sample of human serum containing Rh antibodies agglutinated red cells of strongly positive reactors to anti-Rh but failed to agglutinate the cells of weak reactors, unless the serum was suitably diluted, when good agglutination occurred. A titration test is therefore advised in which the cells are tested against several dilutions of serum at 37°. C. A. K.

Clinical significance of Rh factor. K. E. Boorman, B. E. Dodd, and P. L. Mollison (*Brit. Med. J.*, 1942, II, 535—538, 569—572).—The literature is reviewed. The technique of testing for anti-Rh agglutinins is described. 85·15% of 1610 individuals were Rh-positive and 14·85% Rh-negative. 46 of 48 mothers whose babies had erythroblastosis were Rh-negative and in 44 Rh-antibodies were present in the serum. All 48 babies were Rh-positive. 3 cases of hæmolytic transfusion reactions due to Rh antibodies are described. C. A. K.

Tests for Rh factor with guinea-pig immune serum. K. Landsteiner and A. S. Wiener (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 313).—Serum is prepared by injecting guinea-pigs 5 times at 5-day intervals with washed cells from 2 c.c. of rhesus blood. For testing, sera are diluted 10 times and absorbed for 1 hr. with 0·1 vol. of blood sediment containing equal parts of A_1 and B blood. (Cf. *J. Exp. Med.*, 1941, **74**, 309.) V. J. W.

Red cell and plasma volumes (circulating and total) as determined by radio-iron and by dye. P. F. Hahn, J. F. Ross, W. F. Bale, W. M. Balfour, and G. H. Whipple (*J. Exp. Med.*, 1942, **75**, 221—232).—Viviperfusion with red cells tagged with radioactive Fe shows erythrocyte vol. to be only 70—75% of the vol. determined

from venous hæmatocrit. Average hæmatocrit of the entire vascular system of dog is lower than hæmatocrit of larger vessels, and cell–plasma ratio is still less. There are no great reservoirs of stationary erythrocytes. Plasma vols. were determined by a modification of the brilliant-vital-red method. "Rapidly circulating plasma vol." forms about 80% of the total, the rest being sluggishly moving cell-free plasma at the periphery of vessels. A. C. F.

Determination of blood volume with red blood cells containing radioactive phosphorus (^{32}P). F. A. Brown, jun., L. H. Hempelmann, jun., and R. Elman (*Science*, 1942, **96**, 323—324).—A donor dog was prepared by subcutaneously injecting 0·4 mc. of radioactive Na_3PO_4 daily for 10 days. 10 c.c. of blood were removed, heparinised, centrifuged, the plasma removed, and the cells resuspended in saline. A measured amount of this prep. was injected into the recipient dog. Loss of ^{32}P from red cells was apparent after several hr. Lower vals. of blood vol. were obtained than with the dye method. E. R. R.

Use of T-1824 in plasma volume determinations. P. B. Price and W. P. Longmire (*Bull. Johns Hopkins Hosp.*, 1942, **71**, 51—83).—The success of the dye-dilution method of plasma vol. measurement depends on determination of dye disappearance rate and proper interpretation of deviation of dye concn. from the established curve of dye disappearance. The time–concn. curve of the dye T-1824 in dog plasma is a compound curve—the sum of the dye disappearance and the diluting effect of fluid shifts. Each dog has a characteristic disappearance rate, unaffected by the quantity of dye injected, which can be determined by following plasma concns. of dye after widely spaced injections. Variations in plasma vol. and shifts of water in and out of the vascular system can be thus used to estimate the quantity of plasma lost in traumatised areas or in the body tissues and to observe the fate of intravenous infusions. T. F. D.

Hæmoglobin determination by alkaline hæmatin method. J. W. Clegg and E. J. King (*Brit. Med. J.*, 1942, II, 329—333).—The alkaline hæmatin method of Wu (*J. Biochem., Japan*, 1922, **2**, 173) for determination of blood-hæmoglobin is preferable to the Haldane or pyridine-hæmochromogen methods. The method measures total blood pigment, is reasonably simple and accurate, the reagents used are non-toxic, and a permanent standard is easily prepared. Full technical details are given. C. A. K.

Methæmoglobin formation. J. W. Legge (*J. Proc. Roy. Soc. New South Wales*, 1942, **76**, 47—52).—Brooks' hypothesis (cf. A., 1936, 92) is rejected. The breakdown of Hb_4O_4 to methæmoglobin is spontaneous and is of the first order at const. pressure. With varying pressure, the rate depends on the concn. of Hb_4O_4. R. L. E.

Iron content of crystalline human hæmoglobin. F. W. Bernhart and L. Skeggs (*J. Biol. Chem.*, 1943, **147**, 19—22).—Fe is determined by a semimicro-adaptation of the titration of Fe^{++} with $K_2Cr_2O_7$. Cryst. hæmoglobin dried at 105° contains 0·34% Fe. H. G. R.

Relation of blood-hæmoglobin concentrations to rate of gain in suckling pigs. W. E. Swales, E. W. Crampton, G. C. Ashton, and L. Cloquette (*Canad. J. Res.*, 1942, **20**, **D**, 380—386).—The hæmoglobin concn. and body wt. of suckling pigs were increased by Fe therapy. R. H. H.

Hæmoglobinometry and the hæmatocrit. Medical Research Council Report (*Brit. Med. J.*, 1943, I, 209—212).—There is no accurate colorimetric or photometric method for hæmoglobin estimation. A method that measures total hæmoglobin is desirable and determination of Fe on washed red cells is the best check for this. Venous blood should be drawn without stasis for hæmoglobin and hæmatocrit studies. The form of Haldane–Gower hæmoglobinometer recently standardized by the British Standards Institution (B.S. No. 1079—1942) is recommended and all colour standards should be checked by the N.P.L. The standard colour defined by the N.P.L. in B.S. No. 1079—1942 is recommended as an interim basis of standardisation but none of the proposed 100% standards is acceptable. The most satisfactory basis of standardisation would be a knowledge of total hæmoglobin of bloods of normal men. Where CO is unobtainable the Sahli hæmoglobinometer must be used. Red cell vol. estimations should be made in Wintrobe's hæmatocrit tubes spun at 3000 r.p.m. in the Hearson centrifuge until no further packing occurs. The lower level of the white cell layer is read. As anticoagulant, heparin or a mixture of NH_4 and K oxalates is used. C. A. K.

Effect of dietary calcium, phosphorus, and vitamin-*D*.—See A., 1943, III, 335.

Human allergy to mammalian sera. F. A. Simon (*J. Exp. Med.*, 1942, **75**, 315—322).—Four patients allergic to mammalian sera had circulating skin-sensitising antibodies. Tests suggested that a small no. of allergenic complexes are present in mammalian sera in various combinations. A. C. F.

Prognostic value of blood sedimentation rate in pulmonary tuberculosis. E. Lewis-Fanning and M. Myers (*Brit. Med. J.*, 1942, II, 125—127).—Follow-up records of 630 patients with pulmonary tuberculosis showed that the higher is the blood sedimentation rate on discharge from sanatorium the worse is the prognosis. C. A. K.

Effect of purified protein fractions on sedimentation rate of erythrocytes. S. J. Gray and E. B. Mitchell (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 403—404).—Sedimentation rate was increased 300% by addition of 0·2 g.-% of fibrinogen; 100% by 0·2 g.-% of α- or β-globulin or by 0·4 g.-% of γ-globulin. It was inhibited by albumin. V. J. W.

Sedimentation rate and sedimentation index. B. L. Della Vida (*Brit. Med. J.*, 1942, II, 278—280).—The technique of collecting blood and performing red cell sedimentation rate tests is described. The most convenient method of correcting for anæmia is the sedimentin index of Day (A., 1940, III, 789). C. A. K.

Effect of heparin on platelet count *in vitro*. A. L. Copley and T. P. Robb (*Amer. J. clin. Path.*, 1942, **12**, 416—423).—Heparin decreased the platelet count of normal blood *in vitro* within the first 5 min. This decrease is progressive and is still marked after 48 hr. In 2 cases of hæmophilic blood no decrease was seen with less than 10 units of heparin per c.c. of blood, whereas in only 1 case there was a decrease of 56% with a concn. of 100 units. The platelet count in blood of 15 dogs which received a single intravenous injection of heparin was decreased with 1 exception by the addition of 10 units of heparin per c.c. of blood *in vitro*. Isotonic Na citrate solution inhibits the action of heparin on the platelet count. C. J. C. B.

Effect of heparin *in vivo* on platelet count in mice and dogs. A. L. Copley and T. P. Robb (*Amer. J. clin. Path.*, 1942, **12**, 563—570).—Single and repeated subcutaneous injections of heparin into mice did not change the platelet count. There was no correlation between bleeding time and platelet count in heparinised mice or between coagulation time and platelet count. Intravenous injection of heparin into dogs produces an initial decrease and a later increase in platelet count. C. J. C. B.

Death after dental extraction in hæmophiliac. C. L. Endicott, J. H. Mitchell, and G. Qvist (*Brit. Med. J.*, 1942, II, 34—35).—Case report. C. A. K.

Clot resistance in mice and mechanism of hæmostasis. J. J. Lalich and A. L. Copley (*Arch. Surg., Chicago*, 1943, **46**, 224—237).—Clot resistance, *i.e.*, firmness and adhesiveness, in a wound in the tail of the mouse was estimated by applying a cuff pressure of 75 mm. Hg proximal to the wound after bleeding had stopped and noting if bleeding recurred. There was decreased clot resistance in 26 of 33 mice after subcutaneous injection of 200 units of heparin per 20 g. body wt. and in 19 of 54 mice after oral administration of 30—60 mg. per kg. body wt. of dicoumarin for 3 days. F. S.

Crystalline trypsin-inhibitor and blood clotting. J. H. Ferguson (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 373—375).—This substance (*Physiol. Abs.*, 1936, **21**, 725) prolongs clotting time of recalcified citrated plasma and is antifibrinolytic, antiprothrombic, and antithrombic. For the last effect serum-albumin is necessary, and all of them develop more slowly than those of heparin. V. J. W.

Normal variation in concentration of fibrinogen, albumin, and globulin in blood plasma. R. M. Hill and V. Trevorrow (*J. Physical Chem.*, 1942, **46**, 1117—1129).—Analyses of plasma-albumin, -globulin, and -fibrinogen were made on 547 persons from birth to 39 years of age. The concn. of albumin in persons over 3 years of age is higher in winter than in summer. There is no correlation between the 3 fractions as is expected from the orosin theory of the structure of plasma-proteins. C. R. H.

Denaturation of fibrinogen by anticoagulants. G. Crut (*Compt. rend.*, 1942, **214**, 749—751).—Na anetholedisulphonate acts as a blood anticoagulant by denaturing the fibrinogen, which is no longer coagulated by thrombase and is insol. in 0·9% aq. NaCl. Large amounts of urea added to freshly prepared solutions of very pure fibrinogen do not prevent pptn. by saturated aq. NaCl, the ppt. so obtained being sol. in 0·9% aq. NaCl and its solution coagulated by thrombase. Denaturation products are rapidly formed by autohydrolysis in solutions of fibrinogen that have been kept for a time. J. N. A.

Barbiturates and vitamin-*K*. J. E. Fitzgerald and A. Webster (*J. Amer. Med. Assoc.*, 1942, **119**, 1082—1085).—Studies in about 160 infants showed that the normal fall in plasma-prothrombin val. 2—5 days after birth was to about 60% of adult normal, but that after Na pentobarbital or other barbiturate was given to the mother during labour the prothrombic val. in the infant fell to 40% of normal. Administration of vitamin-*K* to the mother during labour, or to the infant on the 1st day of life, prevented the fall in prothrombin level, even after barbiturates. None of 641 babies whose mothers had -*K* during labour showed any signs of neonatal hæmorrhage. C. A. K.

Intravenous use of vitamin-K_1 oxide. W. A. Davis, H. A. Frank, A. Hurwitz, and A. M. Seligman (*Arch. Surg., Chicago*, 1943, **46**, 296—300).—10 mg. of the oxide dissolved in 3 c.c. of alcohol are drawn into a syringe containing 10 c.c. of physiological saline and the

required dose of the suspension is immediately injected. A single intravenous dose of 6—10 mg. in 2 patients produced the rapid response and prolonged action characteristic of vitamin-K_1. F. S.

Hæmolysis by digitonin. J. Schmidt-Thomé (*Z. physiol. Chem.*, 1942, **275**, 183—189).—Dil. suspensions of blood corpuscles, added at 40° to isotonic digitonin solution, undergo hæmolysis that ceases when all the cholesterol of the corpuscles has combined with the digitonin. Examination under the electron microscope of corpuscles that have been hæmolysed by digitonin shows that during hæmolysis the membranous envelopes of the corpuscles break down into small fragments, with complete dispersion of the hæmoglobin. Other saponins act in the same way. The cholesterol content of non-human corpuscles also determines the extent of their reaction with saponins and account must be taken of this when determining hæmolytic index. W. McC.

Inhibition by serum of hæmolysis by digitonin. J. Schmidt-Thomé (*Z. physiol. Chem.*, 1942, **275**, 208—214).—The cholesterol of serum is the only constituent that inhibits hæmolysis by digitonin. Glucose has no effect and lecithin acts only to the extent to which it is contaminated with cholesterol. Determination of serum-cholesterol by the digitonin-hæmolysis method succeeds only when appropriate conditions of time, temp., and concn. are fulfilled. W. McC.

Standardisation of African viper (*Bitis arietans*) and Cape cobra (*Naia flava*) antivenenes. E. Grasset (*Bull. Health Organ. League of Nations*, 1940, **9**, 476—491).—Using the method of Banic and Ljubetic (*Z. Hyg.*, 1938, **120**, 390) as modified by Ipsen (*Bull. Health Organ.*, 1938, **7**, 785) it was possible to assay the neutralising power of the antisera to monovalent African viper or Cape cobra and also to assess the amounts of each antibody in the polyvalent viper–cobra antivenene prepared by the S. Afr. Inst. for Medical Research. P. C. W.

Late phase of congestive splenomegaly (Banti's syndrome) with hæmatemesis and without liver cirrhosis. L. M. Rousselot (*Surgery*, 1940, **8**, 34—42).—15 cases are described; none had cirrhosis of the liver at operation or after operation (up to 19 years). The splenomegaly can be explained by mechanical obstruction of the portal bed and associated portal hypertension; there was definite hypertension in the splenic vein in all of 4 cases in which it was determined. The variations in clinical behaviour in these cases of extrahepatic congestion are dependent on the site of the obstructive lesion and variants in the venous anatomy of the region are described to account for them. P. C. W.

Separation of two acidophilic granulocytes of turtle blood, with suggested phylogenetic relationships. D. L. Ryerson (*Anat. Rec.*, 1943, **85**, 25—49).—Two distinct coarsely granular acidophilic leucocytes distinguished by the spindle-shaped granules of the heterophil and the spheroidal granules of the eosinophil occur in turtles. The two are physiologically distinct since the heterophil reacts to injections of turpentine and nucleic acid and the eosinophil does not. Acidophilic granulocytes resemble those of birds. With regard to homologies the vertebrates may be grouped into two lines: one containing the selachians, reptiles, and birds, the other containing the cyclostomes, teleosts, amphibians, and mammals. W. F. H.

Formation of antibodies in popliteal lymph nodes in rabbits. W. E. Ehrich and T. N. Harris (*J. Exp. Med.*, 1942, **76**, 335—348).—The formation of agglutinins and hæmolysins in the popliteal lymph nodes in rabbits was compared with the output of lymphocytes through the efferent lymph and with changes in the lymph node following subcutaneous injection into the feet of typhoid vaccine and sheep erythrocytes. Antibodies appeared in the efferent lymph after 2—4 days, reaching their highest titre after 6 days, preceded by a sharp rise in lymphocyte output through the efferent lymph and lymphatic hyperplasia after preliminary infiltration of granulocytes and monocytes in the lymph node. The hyperplastic node showed large germinal centres. A. S.

Gastrointestinal involvement in lymphatic leukæmia. B. Pearson, J. Stasney, and P. Pizzolato (*Arch. Path.*, 1943, **35**, 21—28).—2 such cases were found among 20 cases of lymphatic leukæmia which came to necropsy. C. J. C. B.

Milk influence and leukæmia in mice. A. Kirschbaum and L. C. Strong (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 404—406).—No sp. "milk influence" is concerned in development of leukæmia in strain *F* mice, but the incidence of leukæmia in them was slightly reduced when they were nursed by mice of another, low-leukæmia, strain. V. J. W.

Serological reactivity of hydrolytic products from silk. K. Landsteiner (*J. Exp. Med.*, 1942, **75**, 269—275).—Hydrolytic products of silk inhibit silk precipitin reactions. They may be peptides with mol. wt. 600—1000. Silk fibroin may contain relatively small determinant structures. A. C. F.

Antigenic properties of horse serum fractions isolated by electrophoresis and by ultracentrifugation. H. P. Treffers, D. H. Moore, and M. Heidelberger (*J. Exp. Med.*, 1942, **75**, 135—149).—Tested against rabbit anti-serum to type II pneumococcus antibody, electrophoretic γ-globulin from immune horse serum, unlike that obtained from normal horse, is quantitatively as antigenic as antibody obtained by salt-dissociation of sp. ppts. Immune γ-globulin is probably a polymer of 6 specifically altered γ-globulin units. A. C. F.

Quantitative chemical studies on complement or alexin. M. Heidelberger and M. Mayer (*J. Exp. Med.*, 1942, **75**, 285—295).—A modified method is described for the titration of human complement, measuring $C'1$ instead of $C'2$ titres. A. C. F.

Total circulating plasma-proteins in surgical patients with dehydration and malnutrition: indications for intravenous alimentation with amino-acids. W. E. Abbott and R. C. Mellors (*Arch. Surg., Chicago*, 1943, **46**, 277—288). F. S.

Plasma-protein concentration after hæmorrhage. J. Beattie and H. B. Collard (*Brit. Med. J.*, 1942, II, 301—304).—Plasma-proteins move into the blood stream within 20 hr. of hæmorrhage in cats anæsthetised with nembutal. After blood or plasma transfusion at varying times after hæmorrhage plasma-proteins move out of the circulation within 1 hr. The amount of plasma-protein which enters the blood after hæmorrhage depends on the plasma-protein stores outside the circulation. C. A. K.

Plasma-protein storage. J. Beattie and H. B. Collard (*Brit. Med. J.*, 1942, II, 507—511).—Plasma transfusions in cats anæsthetised with nembutal, and perfusion of the isolated liver, showed that there are plasma-protein reserve stores in the liver and that such stores can be saturated by plasma transfusions, further transfusions raising the plasma-protein concn. Thus the liver can add to or remove plasma-protein from the blood according to the plasma-protein concn. Plasma-protein stores exist apart from the liver. C. A. K.

Ten amino-acids essential for plasma-protein production effective orally or intravenously. S. C. Madden, J. R. Carter, A. A. Kattus, jun., L. L. Miller, and G. H. Whipple (*J. Exp. Med.*, 1943, **77**, 277—295).—Const. hypoproteinæmia was produced in dogs by plasmapheresis. A mixture containing threonine, valine, leucine, *iso*leucine, tryptophan, lysine, phenylalanine, methionine, histidine, and arginine was adequate for plasma-protein production. Cystine may replace methionine for 7—10 days but there is loss of body wt. and a negative N balance. Cystine, added alone to a protein-free diet, produces plasma-proteins for 1 week. Omission of threonine or valine from the mixture is quickly followed by a sharp decline in plasma-protein production and a negative N balance. The latter and body wt. may be maintained for 1 week, but protein production diminishes, when histidine, arginine, and most of the lysine are omitted. A. S.

Low-protein diet augments hyperproteinæmia produced by repeated injections of homologous plasma. Dynamic equilibrium between food-, plasma-, and tissue-proteins. R. L. Holman (*J. Exp. Med.*, 1942, **76**, 519—525).—In 4 dogs, maintained on a high-protein diet, repeated injections of dog's plasma (18—24 injections over a period of 3—4 weeks; 1595—4355 c.c. averaging 1800 c.c. for a 5-kg. dog) raised the plasma-protein concn. by 20%. In 7 dogs, maintained on a low-protein diet, the average increase in plasma-protein level was 40%. The albumin : globulin ratio in the low-protein diet group showed a fall of 30%; there was no significant change in the high-protein group. The hæmatocrit vals. fell in both groups by 15—20%; there was no change in body wt. or in plasma-non-protein-N. A. S.

Hypoproteinæmia as protection against mercuric chloride injury in dogs. R. L. Holman and G. L. Donnelly (*J. Exp. Med.*, 1942, **76**, 511—518).—12 control dogs died within 4—11 days following an intravenous injection of $HgCl_2$ (3 mg. per kg. body wt.) with marked N retention and extensive necrosis and calcification of the epithelium in the proximal convoluted tubules. 3 dogs with lowered plasma-protein level from low-protein diet and repeated hæmorrhage showed no signs of illness, no elevation of plasma-non-protein-N, and normal kidneys 8—45 days after the $HgCl_2$ injection. Plasmapheresis following the injection of $HgCl_2$ does not prevent the renal injury. The hypoproteinæmic condition renders the animals more susceptible to injury by U. A. S.

Hypoalbuminæmia produced by protein-deficient diets; correction in dogs by large plasma transfusions. R. Elman and H. W. Davey (*J. Exp. Med.*, 1943, **77**, 1—5).—Dietary hypoalbuminæmia in dogs was corr. by plasma transfusions of 50 c.c. per kg. body wt. per day for 1 week. The plasma-protein level exceeded the normal level although only 10—13% of the injected protein remained in the blood; there was an increase in plasma vol. and marked diuresis. Within 2 weeks plasma-protein level and vol. returned to their previous low level. There was no increase in urinary N excretion during the week of injections but it increased in the following 2 weeks. A. S.

Osmotic pressure of animal bloods. P. Aldred (*J. Exp. Biol.*, 1940, **17**, 223—226).—V.p. methods gave vals. for the goat, horse, ox, and dog similar to those for man. Sheep and bird vals. were consistently higher; frogs were much lower. D. M. Sa.

Quantitative studies of photochemical depreciation of horse serum. J. P. Henry (*J. Exp. Med.*, 1942, **76**, 451—476).—Normal horse serum, exposed to air in thin layers and thoroughly agitated, was irradiated for 3—4 days with visible or ultra-violet light of known intensity and occasionally after addition of hæmatoporphyrin. The sera were unchanged in colour and over 90% of the original protein remained precipitable with phosphotungstic acid. The antigenic activity of the sera was only slightly diminished but there was marked deviation in specificity. The viscosity of the solutions increased during irradiation. A. S.

Titrimetric micro-determination of cholesterol based on hæmolysis of blood corpuscles. Application to serum. J. Schmidt-Thomé and H. Augustin (*Z. physiol. Chem.*, 1942, **275**, 190—207).—The free cholesterol of serum or plasma (0·5—1·0 c.c.) added to a standard buffered digitonin solution (pH 7) diminishes the free digitonin content and correspondingly decreases the vol. of suspension of washed blood corpuscles subsequently required to titrate the digitonin solution. Thus free cholesterol is very simply determined in 15 min. Cholesteryl ester in serum is determined in 1 hr. in the same way after extraction with 1 : 1 alcohol–acetone mixture and hydrolysis with aq. KOH. The procedure is applicable to colloidal solutions of cholesterol and to cholesterol in extracts of organs if the turbidity is not too great. W. McC.

Mechanism of colloidal gold reaction of blood serum in liver disease. S. J. Gray (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 400—401).—In liver disease the γ-globulin of the blood is increased and albumin diminished. Addition of γ-globulin to normal serum gives a positive colloidal Au reaction which is inhibited by albumin. V. J. W.

Blood-iodine in dogs receiving thyroxine or phloridzin. O. H. Gaebler and R. E. Strohmaier, jun. (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 343—345).—There is no correlation between blood-I and basal metabolic rate in dogs receiving 10-mg. doses of thyroxine or phloridzin (dose not given). V. J. W.

Xanthoproteic index, urea, and creatinine in plasma of patients with renal insufficiency. R. S. Hubbard, J. F. Mezen, and F. E. Kenny (*Amer. J. clin. Path.*, 1942, **12**, 590—594).—A marked correlation between these 3 constituents of the blood was demonstrated; all are affected by the degree of renal failure present. The blood-creatinine was the best and the xanthoproteic index the poorest measure of the degree of renal failure. C. J. C. B.

Plasma–cell partition of blood-lead. K. Bambach, R. A. Kehoe, and M. A. Logan (*J. Pharm. Exp. Ther.*, 1942, **76**, 326—337).—90% of the total blood-Pb in normal and Pb-poisoned rabbits is found in the cell fraction. Similar vals. were found in man. There was no difference between plasma–cell-Pb partition in arterial and venous blood, or after the use of heparin, K oxalate, or Na citrate. Plasma–cell and serum–clot partitions of Pb in rabbit's blood are similar. Over 90% of the total Pb is found in the cell fraction when $PbCl_2$ solution is added to whole blood (to a concn. of 0·35 mg.-% Pb) and 80% with blood concns. of 0·55 mg.-%. Removal of Pb by the cells is delayed if they are returned to plasma containing Pb; 24 hr. are needed for the removal of 75% of the total Pb. A. S.

Effects of pituitary preparations on blood-non-protein-nitrogen.—See A., 1943, III, 324.

Mineral content of blood in Bengali subjects. II. Calcium, magnesium, and phosphorus content of serum, plasma, and whole blood in tubercular, diabetic, and normal people. A. Roy (*Ann. Biochem. Exp. Med.*, 1942, **2**, 1—8).—There were no differences in serum-Ca or blood-Mg. Serum- and plasma-Mg are the same as previously reported in the literature, whole blood-Mg is lower. In the tubercular patients the inorg. and total acid-sol. P in whole blood was subnormal and the inorg. P in serum and plasma higher than normal. In both pathological conditions the total acid-sol. P content of the serum was above normal. P. C. W.

Inorganic phosphorus content of serum in shock. G. W. Duncan (*Arch. Surg., Chicago*, 1943, **46**, 214—223).—In dogs, the average increase of serum-inorg. P was 180% within 7—9 hr. after experimental crush injury, 100% within 7—9 hr. after hæmorrhage, and 60—80% 3—9 hr. after trauma by hammer blows. These increases are due to the breakdown of phosphocreatine following muscle injury and to anoxia and other deleterious effects of shock which may be responsible for the breakdown of org. phosphates. F. S.

Blood-sugar values in radial artery, antecubital vein, and finger. P. H. Langner, jun., and H. L. Fies (*Amer. J. clin. Path.*, 1942, **12**, 559—568).—The sugar vals. of blood obtained simultaneously by puncture of the finger and from the radial artery are identical even in the presence of considerable arterio-venous sugar differences and whether there is a free flow of finger blood or the finger is squeezed. C. J. C. B.

Chemical luminescence test for blood. J. McGrath (*Brit. Med. J.*, 1942, II, 156—157).—An alkaline solution of 3-aminophthalhydrazide hydrochloride + H_2O_2 produces a typical chemiluminescence with hæmatin, and may be used for forensic identification of blood stains or clinical tests for blood in fæces. C. A. K.

Determination of alcohol in blood. R. K. Anderson (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 85—89).—The blood sample is desiccated by a H_2SO_4–$K_2Cr_2O_7$ solution. The amount of reduction of the $K_2Cr_2O_7$ is determined by direct comparison with previously prepared standards, by colorimetric determination in a photo-electric colorimeter, or by the Harger titration. C. J. C. B.

Determination of silica in blood. H. Kraut and M. Weber (*Z. physiol. Chem.*, 1942, **275**, 127—134; cf. Frank and Gerstel, A., 1938, III, 875).—The SiO_2 content of 3—4 c.c. of blood is determined by Urbach's method (B., 1934, 430) after drying, fine-grinding, igniting in a Pt crucible, dissolving in HCl, removing Fe with HCl in ether, fusing with $K_2CO_3 + Na_2CO_3$, dissolving in water, and adding a little HCl. A blank experiment must be performed. Healthy human blood contains 0·0—1·05 (average 0·55) mg.-% of SiO_2. W. McC.

Carotinæmia. S. Almond and R. F. L. Logan (*Brit. Med. J.*, 1942, II, 239—241).—Carotinæmia occured in 4 subjects who ate over 4 lb. of carrots weekly. There was carroty pigmentation of naso-labial folds and palms in mild cases and general tanning, except in the sclera, in more severe cases. It has no effect on health. Carotene is sol. in light petroleum, bile pigments are sol. in alcohol. C. A. K.

Fluorine content of human blood. H. Hartmann, E. Chytrek, and R. Ammon (*Z. physiol. Chem.*, 1940, **265**, 52—58).—Determinations by a modification of the method of Kraft and May (A., 1937, III, 288) show that the F content of healthy human blood is 27—74 μg.-%. Usually part of the F occurs in a form sol. and part in a form insol. in alcohol. W. McC.

Acetoin: polarographic determination and disappearance from blood after administration. L. A. Greenberg (*J. Biol. Chem.*, 1943, **147**, 11—17).—The acetoin in a protein-free blood filtrate is oxidised to diacetyl by $FeCl_3$, which is then determined polarographically in the distillate using Na_2SO_3 as the supporting electrolyte. The rate of disappearance of acetoin from the blood of dogs after administration of 1—2 g. per kg. decreases with decreasing concn. and is no more rapid than that of alcohol. It appears in the urine at a concn. approx. 1·2 times that in the blood, the % loss in the urine being small. H. G. R.

Blood changes following glucose, lactate, and pyruvate injections in man. E. Bueding and W. Goldfarb (*J. Biol. Chem.*, 1943, **147**, 33—40).—A rise in blood-pyruvic and -lactic acid returning to normal after 2 hr. follows a single intravenous injection of glucose; the rise is sustained during continuous infusion. Insulin has no effect in the former but produces a further rise during the latter. An increase in -pyruvic acid occurs on injection of Na *dl*-lactate or *d*-lactate, being greater with the latter. Injection of pyruvate produces a rise in blood-lactate and -keto-compounds other than pyruvate, injection of large amounts of insulin being without effect. Injected pyruvate disappears from the blood more rapidly than the same amount of *d*-lactate. No change in blood-glucose follows injection of either pyruvate or lactate. H. G. R.

Alterations in blood-histamine in patients with allergic disease.—See A., 1943, III, 361.

VI.—VASCULAR SYSTEM.

Weight of normal human heart. P. M. Zeek (*Arch. Path.*, 1942, **34**, 820—832).—In 357 normally nourished males the wt. in g. of a normal heart was 1·9B.L. − 2·1±40 (B.L. = body length in cm.). The heart wt. in 224 normally nourished females was 1·78B.L. −21·58±30. C. J. C. B.

Cardiac massage. G. A. Pollock (*Brit. Med. J.*, 1942, II, 157—158).—A cat showed collapse with cessation of breathing and heart beat due to overdosage with ether. Cardiac massage, begun 2 min. 40 sec. after collapse, + artificial respiration restored normal cardiac contractions (and blood pressure) and respiration. C. A. K.

Cardiac resuscitation. S. A. Thompson, G. L. Birnbaum, and I. S. Shiner (*J. Amer. Med. Assoc.*, 1942, **119**, 1479).—4 cases are described and the technique for dealing with cases of cardiac standstill is discussed in detail, *i.e.*, cardiac massage, intracardiac adrenaline, etc. C. A. K.

Supernormal circulation in resting subjects. I. Starr and L. Jonas (*Arch. intern. Med.*, 1943, **71**, 1—22).—In 1400 cases in whom cardiac output was determined by the ethyl iodide or ballistograph method 100 patients had a supernormal resting output (hyperkinæmia). Hyperkinæmia occurred in patients with thyrotoxicosis, patent ductus arteriosus, wasting diseases, fever, etc., but in 17 cases there was no explanation of the increased cardiac output. The clinical characteristics of this group are fully described. C. A. K.

Circulating time in man and dog as affected by fasting and meals. I. M. Reingold, F. Neuwelt, and H. Necheles (*J. Lab. clin. Med.*, 1942, **28**, 289—293).—During fasting or post-prandial conditions considerable unpredictable variations of the NaCN circulating time

in both directions were found in man and dog. The nature of the meal did not determine changes in circulating time. C. J. C. B.

Effects of adrenaline and pitressin on coronary artery inflow in anæsthetised dogs. H. D. Green, R. Wégria, and N. H. Boyer (*J. Pharm. Exp. Ther.*, 1942, **76**, 378—391).—Intracoronary injection of 0·1—2·0 units of pitressin dissolved in 2 c.c. of blood caused intense coronary constriction, depressing myocardial contractility. Injection of 100 μg. of adrenaline caused only weak coronary dilatation *per se*; the main increase in coronary flow is due to the increase in intra-aortic pressure, marked rise in myocardial metabolism (out of proportion to the increased cardiac work), dilator action of the preservative, and to a relative increase in the total diastolic time per min. (due to a shortening of the systole/cycle ratio). A. S.

Mitral systolic murmurs. W. Evans (*Brit. Med. J.*, 1943, I, 8—9).—The features of irrelevant, innocent, and organic mitral systolic murmurs are discussed. C. A. K.

Paroxysmal ventricular tachycardia in childhood. F. F. Rosenbaum, F. D. Johnston, and A. P. Keller (*Amer. J. Dis. Child.*, 1942, **64**, 1030—1046).—2 cases are reported and the literature reviewed. C. J. C. B.

Diphtheritic heart disorders in children. C. Neubauer (*Brit. Med. J.*, 1942, II, 91—94).—100 cases of diphtheria with myocardial lesions are described. The e.c.g. showed many different abnormal rhythms and various degrees of heart block. C. A. K.

Manifestations of circulatory congestion produced in dogs by rapid infusion. A. Yeomans, R. R. Porter, and R. L. Swank (*J. clin. Invest.*, 1943, **22**, 33—45).—Rapid infusion of 2·5—5·0 c.c. per kg. per min. for 30 min. of saline or glucose saline in dogs produced congestion in the peripheral, pulmonary, and portal venous systems, evidenced by rises in their venous pressures, swelling of the abdomen, liver, and spleen, and in some cases pulmonary œdema; an increase in plasma vol. and a dilution of the serum-proteins; an increase in the heart rate, heart size, and cardiac output; gallop rhythm and systolic murmur and an increase in O_2 consumption. C. J. C. B.

Venoclysis unit resistant to freezing. A. C. Ivy and S. C. Harris (*J. Amer. Med. Assoc.*, 1942, **119**, 1414—1415).—Description of apparatus. C. A. K.

Parenteral administration of fluids [in surgery]. M. A. Falconer (*Minnesota Med.*, 1939, **22**, 621—628).—A review. E. M. J.

Circulation and rapid intravenous injection. E. P. Sharpey-Schafer, J. Wallace, A. Latham, and A. C. Pincock (*Brit. Med. J.*, 1942, II, 304—308).—Up to 2000 c.c. of saline, serum, or blood was injected intravenously into convalescent subjects without heart disease at rates of 54—168 c.c. per min. The venous pressure may be raised by up to 11 cm. H_2O and *X*-ray showed an increase in the diastolic size of the heart. Vital capacity was diminished but there was no pulmonary œdema. Heart rate was increased in 6 of 15 subjects and 4 showed flattening of *T* wave of e.c.g. in chest lead. Symptoms were unimportant and venous pressure fell rapidly to normal when the injection was stopped. C. A. K.

Venous pressure in blood donors and recipients. J. F. Loutit, M. D. Mollison, and E. D. van der Walt (*Brit. Med. J.*, 1942, II, 658—661).—During venesection the venous pressure fell for at least 30 min., by an average val. of 43 mm. H_2O in 20 subjects. The rise of venous pressure in 30 transfused subjects varied with the rate of transfusion and the total amount given. Transfusion in cases of pulmonary disease reduced the vital capacity but this was not related to venous pressure changes. C. A. K.

Qualitative alterations in hyperæmic responses to local ischæmia of smallest blood vessels of human skin following systemic anoxia, hypercapnia, acidosis, and alkalosis. J. R. DiPalma (*J. Exp. Med.*, 1942, **76**, 401—411).—The clearing period of the threshold hyperæmia response to local ischæmia was determined in the smallest vessels of human skin. Systemic anoxia lowers the sensitivity of the vessels to local ischæmia and slows the blood flow; these changes are prevented by hypercapnia. The effects are independent of changes in pulse rate, blood pressure, and respiratory rate and depth. Acidosis, produced by ingestion of NH_4Cl, produces similar effects to those of anoxia; alkalosis, following ingestion of $NaHCO_3$, increases the sensitivity of dermal vessels to local ischæmia and increases the blood flow. The CO_2 concn. of the blood is the most important factor determining vascular sensitivity to local ischæmia. A. S.

Presence or absence of nerves in umbilical blood vessels of man and guinea-pig.—See A., 1943, III, 298.

Reflex vasodilation in surgery. J. R. Learmonth (*Edinb. Med. J.*, 1943, **50**, 140—154).—A lecture illustrated by reference to clinical cases. The mechanism of reflex vasodilation is discussed. H. S.

Blood flow in hand and forearm after paravertebral block of the sympathetic ganglia. Evidence against sympathetic vasodilator nerves in extremities of man. J. V. Warren, C. W. Walter, J. Romano, and E. A. Stead, jun. (*J. clin. Invest.*, 1942, **21**, 665—673).—On 2 occasions, the sympathetic ganglia supplying the right upper extremity of a normal subject were paralysed with novocain by the paravertebral route. Local heat (43°) to the right hand produced the same increase in local blood flow (1 c.c. per min. per 100 c.c. of tissue to 34 c.c. per min.) as did sympathetic paralysis. Inhibition of sympathetic activity is sufficient to explain the vasodilatation which occurs in the hand when the body is heated; sympathetic vasodilator fibres to the hand need not be assumed. In the forearm, paravertebral novocainisation of the sympathetic ganglia caused a six-fold increase in blood flow; a similar increase was produced by immersing the forearm in hot water (46°). The fact that neither heating the forearm nor injection of the sympathetic ganglia with novocain produces max. dilation in the forearm (compared with exercise) indicates that many of the vessels of the forearm are not exclusively under control of the sympathetic nervous system. C. J. C. B.

Effect of muscular exercise on peripheral circulation in patients with valvular heart disease. D. I. Abramson, S. M. Fierst, and K. Flachs (*J. clin. Invest.*, 1942, **21**, 747—750).—Using the venous occlusion plethysomographic method, the circulation in the hand was found to be diminished in 29 patients with aortic insufficiency and in 16 subjects with mitral valvular disease; vals. for the forearm and leg in most cases were normal. The post-exercise response of the blood vessels in the forearm to a specified amount of work was greater than in the patients in the control group. C. J. C. B.

Rœntgenographic visualisation of thoracic duct and cisterna chyli. D. Kornblum (*Radiology*, 1942, **39**, 395—399).—In 1 out of 9 subjects studied following intraduodenal administration of iodised oil (iodipin or lipiodol) a shadow conforming to the anatomical position and size of the thoracic duct was observed in an *X*-ray photograph of the chest 2 hr. later. E. M. J.

Simple technique for cerebral arteriography. J. E. Hemphill (*Radiology*, 1942, **39**, 432—436).—20 c.c. of thorotrast are injected into the exposed internal carotid artery and 3 exposures made within 11—12 sec. E. M. J.

Vascular supply of monkey's spinal cord. A. L. Sahs (*J. comp. Neurol.*, 1942, **76**, 403—415).—A detailed account of the blood supply to the spinal cord of *Macaca mulatta*, based on the study of 7 injected specimens. J. D. B.

Effect of adrenal cortex extract and of various steroids on capillary permeability.—See A., 1943, III, 322.

Acidosis and decreased urine flow in rabbits during gravity shock. J. B. Allison, W. H. Cole, J. H. Leathem, W. L. Nastuk, and J. A. Anderson (*J. Biol. Chem.*, 1943, **147**, 255).—When rabbits are held vertically with their heads up, they become unconscious, or nearly so, just before respiratory failure (" gravity shock "); if returned to the horizontal position at that time, approx. 25% die within 12 hr. The shocked animals show a severe acidosis (blood pH 6·85—7·10), acapnia (50—70% decrease in CO_2), marked increase in blood-lactic and -pyruvic acid, and a phosphatæmia (150% increase above normal); the urine flow steadily decreases to zero. Recovery is attended by a fairly rapid return to normal conditions, the urine showing an increased PO_4''' content. F. O. H.

Effect of lowering temperature of injured extremity to which tourniquet has been applied. A. Blalock (*Arch. Surg., Chicago*, 1943, **46**, 167—170).—Dogs of 6—10 kg. were injured in a hind limb by repeated blows with a blunt instrument under pentobarbital and morphine anæsthesia. Of 10 dogs treated by plasma transfusion (5% of body wt.) 8 survived. The remaining 30 dogs had a tourniquet applied to the injured limb for 5 hr. Of these, none survived of 10 that had 5—10% plasma therapy, 5 survived of 10 that had 5% plasma therapy and the affected limb kept cold in ice, and 4 survived of 10 that had no plasma and the affected limb kept in ice. The results indicate that a tourniquet should not be used on an injured extremity, but, if it is necessary, the temp. of the limb should be lowered. F. S.

Management of wound shock. J. McMichael (*Brit. Med. J.*, 1942, II, 671—673).—A lecture. C. A. K.

Shock, exhaustion, and restoration in war. G. Crile, O. Glasser, and D. P. Quiring (*Cleveland Clin. Quart.*, 1943, **10**, 3—9).—A review. A. S.

State of vessels of mesentery in shock produced by constricting the limbs and following hæmorrhage. I. H. Page and R. G. Abell (*J. Exp. Med.*, 1943, **77**, 215—232).—Shock was produced in cats under intraperitoneal Na pentobarbital anæsthesia by tying cords tightly around each leg and releasing them after 3 hr.; the animals died 3—6 hr. later; part of the mesentery was exteriorised in transparent celluloid chambers and photographic measurements were taken. Marked constriction of the arteries and arterioles, without interruption of blood flow, occurred within 1 hr. of occlusion of the limbs, lasted for several hr., and finally gave way to relaxation 1 hr. or more before death. The constriction markedly reduced the blood flow and the venous return from the mesentery; stagnation of blood did not occur. The veins of the mesentery also became

constricted but showed less marked terminal dilatation; the leucocytes always moved along the capillaries and venules without changes in shape or sticking to the walls. There was narrowing of the lymphatics. Hæmatocrit readings showed progressive hæmoconcn. No further changes were produced by bilateral nephrectomy, adrenalectomy, or by pancreatectomy. Hæmorrhage always produced constriction of arteries, arterioles, veins, and lymphatics. Fall in arterial blood pressure produced by pithing was not accompanied by change in vascular diameter or by blanching of the mesentery or gut. A. S.

Experimental cholesterol atheromatosis in chicks. D. V. Dauber and L. N. Katz (*Arch. Path.*, 1942, **34**, 937—950).—In 7 of 12 cholesterol-fed 10-day-old cockerels (the remaining 5 dying within 8 weeks) atheromatous deposits developed in the aorta. Of these 7 chicks, 3 had intimal atheromatous lesions in the coronary arteries with narrowing of the vessel lumen and 2 showed similar changes in the splenic arteries. The hearts of the cholesterol-fed birds were heavier per unit of body wt. than the controls. (6 photomicrographs.) C. J. C. B.

Relations between structure of the ageing aorta and properties of isolated aortic elastic tissue. G. M. Hass (*Arch. Path.*, 1943, **35**, 29—45).—The purified elastic networks are more extensible than the intact aorta. The extensibility is greatest among young networks and usually decreases with age. The low extensibility of aged dilated intact aortas is partly due to the fact that at zero load the elastic networks are under tension. When the constraints responsible for this const. tension are removed, the elastic networks spontaneously retract to the dimensions of an undilated aorta. The tensile strength of isolated networks is high in the early decades and low later When elastic systems with low tensile strength are encountered in middle life, peculiar crystal patterns abutted by collagenous splints are found in the axes of elastic lamellæ. Elastic systems with low tensile strength in late life have conspicuous discontinuities but no axial crystals. Some of these discontinuities arise by disintegration of elastic lamellæ at focal points of collagenous splinting and axial crystallisation. (2 photomicrographs). C. J. C. B.

Elasticity and tensile strength of elastic tissue isolated from human aorta. G. M. Hass (*Arch. Path.*, 1942, **34**, 971—981).—The amounts of elastic tissue recovered from 21 human aortas, aged 10 days—77 years, was 29—42%. The quantity of elastic tissue in each unit vol. of aortic wall remains const. throughout life. The purified elastic systems possess 32% greater extensibility and 170% greater retractility than the intact aortic walls from which they are isolated. The max. extensibility of isolated elastic tissue decreases with increasing age in a manner which cannot be predicted by a study of the intact aorta. The retraction of isolated elastic tissue after extension is always more complete than that of the intact vessel. The magnitude of retraction is the same for all isolated networks and is independent of their age. The tensile strength of isolated elastic tissue is 1590—6750 g. per sq. cm. of dry cross-sectional area at max. extension. In general, tensile strength decreases with increasing age. (2 photomicrographs). C. J. C. B.

Adrenal cortex in essential hypertension. W. S. Dempsey (*Arch. Path.*, 1942, **34**, 1031—1034).—The adrenal glands in essential hypertension were not heavier than normotensive controls. Nodular or adenomatous hyperplasia of the adrenal cortex was not found regularly in essential hypertension, but occurred frequently in normotensives. C. J. C. B.

Production of nephrosclerosis by overdosage with deoxycorticosterone acetate. H. Selye (*Canad. Med. Assoc. J.*, 1942, **47**, 515—519).—In young chicks overdosage with deoxycorticosterone acetate may produce typical nephrosclerosis accompanied by cardiac dilatation and hypertrophy, œdema, ascites, and pericardial effusion. C. J. C. B.

Modern conception and treatment of frost-bite. W. G. Bigelow (*Canad. Med. Assoc. J.*, 1942, **47**, 529—534).—A survey. C. J. C. B.

Mechanical principles effective in aortic sclerosis. J. Krafka, jun. (*Arch. Path.*, 1942, **34**, 965—970).—By using the formulæ of mechanical engineering for stress in the walls of thin-walled cylinders, stress in the aortic wall can be related to blood pressure vals. Calc. vals. for systolic and diastolic pressures fall well within the hollow portion of the exponential curve obtained by stretching strips of aortas on the serigraph. % extensibility of the strips of aorta within the stress equivs. for systolic and diastolic pressure is consistent with normal stroke vol. With ageing, fibrosis, and sclerosis there is a tendency for the plastic cylinder to become a rigid one A redistribution of force vectors accordingly follows the rivet rule, and normal blood pressure may become an effective agent of rupture. C. J. C. B.

Arteriosclerosis obliterans. S. W. Sappington and H. R. Fisher (*Arch. Path.*, 1942, **34**, 989—1008).—44 cases of arteriosclerosis obliterans were studied by completely dissecting out the arterial trees from amputated gangrenous legs. 44% of the entire length of the anterior and posterior tibial and peroneal arteries was occluded by various stages and regressions of organising clots. Vessels with the highest incidence of atheroma exhibited the lowest % of occlusions, and vice versa. Calcification of the media was demonstrated in 100% of 38 cases roentgenologically and in 98% of 44 cases microscopically. Bone formation was found in 70% of the cases; it is concluded that bone formation precedes calcification in the media in arteries of the legs and accounts for most of the calcification found there. (19 photomicrographs.) C. J. C. B.

Reaction of peripheral blood vessels to angiotonin, renin, and other pressor agents. R. G. Abell and I. H. Page (*J. Exp. Med.*, 1942, **75**, 305—313).—Using Abell and Clark's moat chamber technique (cf. A., 1937, III, 452) on the rabbit's ear, renin, angiotonin, tyramine, and methylguanidine cause arteriolar but not capillary constriction. A. C. F.

Nature of renin activator. A. A. Plentl, I. H. Page, and W. W. Davis (*J. Biol. Chem.*, 1943, **147**, 143—153).—Pig's serum is shown by electrophoretic analysis to contain 5 distinct proteins. Fractional pptn. with $(NH_4)_2SO_4$ yields partly purified (approx. 94—95%) γ- and α-globulin. The limits of $(NH_4)_2SO_4$ concn. within which these are pptd. are the same as for horse's serum but the concn. required to ppt. the albumin is much higher. The electrophoretic pattern for the α-globulin has two peaks indicating the existence of two forms of this protein. One of the forms, α_2-globulin, is or contains the renin activator: it alone acts as substrate for production of anigotonin. W. McC.

Renin: duration of pressor effect of large doses in conscious normal and renally abnormal dogs. L. Leiter and L. Eichelberger (*J. clin. Invest.*, 1943, **22**, 11—23).—Trained, conscious dogs, injected with renin intravenously, in single doses, which raised mean femoral blood pressure by 50—100 mm. Hg, gave similar pressor responses after partial constriction of the renal arteries or ureters, with or without unilateral nephrectomy. Multiple doses of renin, or continuous injection by pump, produced a pressor plateau in renally normal and abnormal dogs; the blood pressure usually returned to control level within 1 hr. except in dogs with bilateral renal abnormalities, in anæsthetised, renally normal dogs, and in most conscious dogs with uncomplicated uræmia. Dogs with experimental hypertension + uræmia reacted irregularly. Repeated experiments on the same animal with heterologous renin led to the development of anaphylaxis. Dogs sensitised to pig renin reacted normally to dog renin. The pathological lesions of experimental malignant hypertension can be induced or accelerated by injection of foreign renin. The prolonged effect of renin in conscious dogs with extensive renal abnormality supports the view that the ratio of normal to abnormal ("ischæmic") renal parenchyma is a determining factor in the dog's response to exogenous, as well as endogenous, renin. C. J. C. B.

Rôle of renin in experimental hypertension. B. A. Houssay and E. Braun-Menendez (*Brit. Med. J.*, 1942, II, 179—181).—A review. C. A. K.

Enzymic nature of angiotonin formation from renin and renin activator.—See A., 1943, III, 351.

Treatment of experimental hypertension. H. Goldblatt, J. R. Kahn, and H. A. Lewis (*J. Amer. Med. Assoc.*, 1942, **119**, 1192—1201).—A review of the effects of surgical treatment and drug therapy in dogs rendered hypertensive by renal ischæmia. No methods are of real val. and the temporary fall of blood pressure produced by renal extracts is non-sp. and is dependent on local and general reactions. C. A. K.

Technique for splanchnic resection for hypertension. R. H. Smithwick (*Surgery*, 1940, **7**, 1—8). P. C. W.

Distribution of water and electrolytes between blood and skeletal muscle in experimental hypertension. L. Eichelberger (*J. Exp. Med.*, 1943, **77**, 205—213).—The total Na and Cl content of skeletal muscle and its total K content are decreased in Goldblatt hypertensive dogs. A redistribution of water occurred, involving a shift of water from the muscle cells to the extracellular phase, which was increased by 65% over that of normal dog muscle. On intravenous injection of saline the total bulk of skeletal muscle increased; one half was attributed to the extracellular phase and the other half to the swelling of the muscle cells. A. S.

VII.—RESPIRATION AND BLOOD GASES.

Respiration of armadillo, with possible implications as to its burrowing. P. F. Scholander, L. Irving, and S. W. Grinnell (*J. Cell. Comp. Physiol.*, 1943, **21**, 53—63).—The armadillo is able to struggle violently for 6 min. after its respiration has been stopped. During this time very little lactic acid enters the blood, but large amounts are found after 6 min. and increase during recovery. Blood-CO_2 is 68 vols.-%. During arrest of breathing it increases for 2 min. and then falls. O_2 consumption remains high for over 2 hr. after anaërobic struggling. V. J. W.

Artificial respiration at sea. G. H. Gibbens (*Brit. Med. J.*, 1942, II, 751—752).—Eve's rocking method is the most satisfactory. C. A. K.

Indoctrination of flying personnel in physiologic effects of high-altitude flying and need for and use of oxygen. L. D. Carson (*J. Aviat. Med.*, 1942, **13**, 162—169).—The use of low-pressure chambers in the training of air personnel is described. F. S.

Aviation medicine in Royal Canadian Air Force. G. E. Hall (*J. Amer. Med. Assoc.*, 1942, **119**, 1104—1107).—Clinical lecture. C. A. K.

Deleterious effects of anoxia on liver of hyperthyroid animal. M. A. McIver and E. A. Winter (*Arch. Surg., Chicago*, 1943, **46**, 171—185).—Rats given injections of cryst. thyroxine for 2—3 weeks in doses of 0·1 mg. daily remained healthy but showed clinical signs of hyperthyroidism. The hepatic glycogen was low but there were no degenerative lesions of the liver. On exposure to 9—11% O_2 for 1—9 hr., 14 of 17 hyperthyroid rats developed various degrees of hepatic injury and 9 died within 6 hr. (10 photomicrographs.) F. S.

Effect of pre-oxygenation on newborn rats exposed to simulated altitude of 55,000 feet (barometric pressure of 67·8 mm. Hg). A. L. Barach, N. Molomut, and S. Landy (*J. Aviat. Med.*, 1942, **13**, 190—192).—Of 91 newborn rats subjected to 67·8 mm. Hg for 45—60 min. 34 died. Of 90 similarly treated newborn rats previously given 100% O_2 for 5 hr. 11 died. F. S.

Effects of adding carbon dioxide to oxygen-enriched atmospheres in low-pressure chambers. II. Oxygen and carbon dioxide tensions of cerebral blood. H. Himwich, F. Fazekas, H. Herrlich, A. E. Johnson, and A. L. Barach (*J. Aviat. Med.*, 1942, **13**, 177—181; cf. A., 1943, III, 95).—The O_2 and CO_2 contents of arterial and cerebral venous blood in 5 dogs and 3 human subjects when breathing 10% CO_2 and 90% O_2 at a simulated altitude of 35,000 ft. were similar to those obtained when 100% O_2 was used. F. S.

Erythrocytes and hæmoglobin values in acclimatisation produced by discontinuous anoxia. J. C. Stickney and E. J. Van Liere (*J. Aviat. Med.*, 1942, **13**, 170—176).—Five dogs were subjected to low pressure (483—379 mm. Hg equiv. to altitudes of 12,000—18,000 ft.) for 6·5—9 hr. daily for 6 months. Hæmoglobin began to increase at 3 weeks and erythrocytes at 5 weeks. At the 16th week hæmoglobin had increased by 74% and erythrocytes by 84%. F. S.

Adjustment of blood-oxygen levels in neonatal life. C. A. Smith and E. Kaplan (*Amer. J. Dis. Child.*, 1942, **64**, 843—859).—The arterial (cutaneous) O_2 saturation of 36 infants aged 8 hr.—14 days was 93·0%; that of 22 adults 94·7%. O_2 saturations within the adult range may be reached less than 30 min. after birth, and usually within 3 hr. Satisfactory oxygenation is not necessarily associated with complete expansion of the lungs as shown rœntgenologically. In 23 premature infants examined between birth and the 26th day of life, O_2 saturations were generally lower than in full-term infants of comparable age. C. J. C. B.

Alterations in respiration caused by alcohol.—See A., 1943, III, 345.

Repair of tracheal and bronchial defects with free fascial grafts. M. Taffel (*Surgery*, 1940, **8**, 56—71).—20 dogs had portions of their trachea or bronchi removed with or without lobectomy or pneumonectomy. The defects were repaired by free fascial grafts tightly sutured to the orifice. All animals survived without complications. The healing process was essentially the same in all cases: the graft did not remain viable but served as an airtight scaffolding which was rapidly invaded by wandering cells and fibroblasts which became differentiated into collagen-bearing adult connective tissue. The respiratory mucosa was completely regenerated within 2 weeks with normal pseudostratification, goblet cells, and cilia. The remaining thickness of the graft was occupied by submucosa with occasional mucous glands and little muscle and small areas of new cartilage and an outer layer of adult connective tissue. P. C. W.

IX.—NERVOUS SYSTEM.

Deafferentation and amphibian activity. J. Gray and H. W. Lissmann (*J. Exp. Biol.*, 1940, **17**, 227—236).—Deafferentation of one or two limbs in *Bufo bufo* little disturbs the normal ambulatory pattern; that of three or four limbs causes loss of muscle tone, and often loss of co-ordination between fore- and hind-limbs. Pan-deafferentation inhibits ambulation, for which at least one intact spinal segment is necessary. D. M. Sa.

Amphibian ambulatory reflexes. J. Gray and H. W. Lissmann (*J. Exp. Biol.*, 1940, **17**, 237—251).—Single limbs of anæsthetised spinal toads when passively retracted respond by active protraction but when both are retracted simultaneously they protract alternately. With simultaneous retraction of all four limbs an ambulatory rhythm is produced. In intact specimens protractor reflexes are accompanied by diagonal protractor responses. D. M. Sa.

Motor cells of spinal cord. Distribution in normal human fœtal cord. H. C. Elliott (*Amer. J. Anat.*, 1943, **72**, 29—38).—A new nucleus is described, subdivisions of known nuclei are established, adjustments in length of others made, and difficult regions further clarified. The nuclear pattern is clearer in fœtuses of 15—20 cm. crown–rump length than at any other stage in development. W. F. H.

Epileptiform attacks produced by sudden cooling of spinal cord. Latent period of attacks in *Leptodactylus ocellatus*. M. Ozorio de Almeida, H. Moussatché, and M. Vianna Dias (*Rev. Brasil. Biol.*, 1942, **2**, 455—471).—The upper temp. limit for the production of cold epileptiform convulsions is 10·3—12·5° with the cord exposed, and 8·5—9·0° with the vertebral column not opened. Destruction of the cerebral hemispheres is without effect but destruction of the labyrinths increases the temp. ceiling. The latent period of the onset of the attacks is directly related to the wt. of the cord cooled. A. S.

Adie's syndrome. J. B. Dynes (*J. Amer. Med. Assoc.*, 1942, **119**, 1495—1497).—Description of 8 cases. C. A. K.

Blood supply of nerves. II. Effects of exclusion of its regional sources of supply on sciatic nerve of rabbit. W. E. Adams (*J. Anat., Lond.*, 1943, **77**, 243—250; cf. A., 1942, III, 741).—The blood supply of the sciatic nerve of the rabbit is described and contrasted with that of man. Ligation of the inferior gluteal artery in the rabbit caused no degeneration or other histological changes in the sciatic nerve. When other sources of arterial supply to the nerve were ligated there was either no dengeneration or it was extremely limited. W. J. H.

Pain pathways in migraine. G. F. Rowbotham (*Brit. Med. J.*, 1942, II, 685—687).—3 patients with migraine were relieved of pain after section of the ophthalmic fibres in the trigeminal root and (in 2 cases) of the 2nd division of the trigeminal nerve at the foramen rotundum. C. A. K.

Peripheral nerves in chronic atrophic arthritis. H. A. Freund, G. Steiner, B. Leichtentritt, and A. E. Price (*Amer. J. Path.*, 1942, **18**, 865—885).—In 3 of 5 cases of chronic atrophic (rheumatoid) arthritis, characteristic lesions were found in peripheral nerves; the other 2 cases showed only mild lymphocytic inflammation while none were present in 86 controls. (12 photomicrographs.) C. J. C. B.

Painful scars. F. E. Kredel (*Surgery*, 1940, **8**, 98—104).—Clinical and histological findings are described in 12 cases of painful scars. Microscopic neuromas were found in 10 cases and symptoms disappeared after excision of the painful areas. P. C. W.

Experimental study of thalamus in phalanger, *Trichosurus vulpecula*. F. Goldby (*J. Anat., Lond.*, 1943, **77**, 195—224).—The corticopetal connexions of the thalamus of *Trichosurus vulpecula* were investigated by the method of retrograde degeneration after varying degrees of cortical injury. The ventral complex of nuclei projects on to a wide area which includes the motor cortex and the anterior half of the parietal cortex and extends ventrally almost to the rhinal fissure. The anterior nuclei project on the cingulate area, the anteromedial on the frontal lobe, the anterolateral above the cerebral commissures, the anterodorsal possibly to the cingulate cortex, and the lateral complex of nuclei to the posterior parietal area. The medial geniculate body projects on to an area which corresponds to the auditory area of other mammals. W. J. H.

Relation of hypothalamic lesions to adiposity in rat. A. W. Hetherington and S. W. Ranson (*J. comp. Neurol.*, 1942, **76**, 475—499).—A study of the results of localised hypothalamic lesions in a series of 43 male and female rats. Obesity is produced by symmetrical lesions which destroy bilaterally (1) the ventro-medial hypothalamic nuclei, (2) the pre-mammillary area, or (3) the areas which lie dorso-lateral to the mammillary body in the caudal hypothelamus. In addition to adiposity, observations of the effects of the lesions on growth, water consumption, and vaginal smears were collected. There is no significant correlation between the adiposity and the diabetes insipidus or persistent vaginal œstrus. J. D. B.

Effect of intensity and wave-length on driving cortical activity in monkeys.—See A., 1943, III, 317.

Cortical lamination in *Perameles nasuta*. A. A. Abbie (*J. comp. Neurol.*, 1942, **76**, 509—536).—A description of the cerebral cortex in this polyprotodont marsupial. 15 cortical areas are described and it is considered that the findings substantiate the principle that one part of the neocortex differentiates from the hippocampus, the other from the pyriform cortex. A fibre path is described which is considered to be the forerunner of the corpus callosum. J. D. B.

Melanin pigment in gorilla brain. A. Adler (*J. comp. Neurol.*, 1942, **76**, 501—507).—A description of the distribution of melanin in the substantia nigra and locus cœruleus of the adult gorilla and a comparison with the pigment in man, chimpanzee, and lower primates. J. D. B.

Impedance changes induced in brain by electric stimulation. E. Spiegel and G. Henny (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 382—385).—In cats under light ether anæsthesia, faradic stimulation decreases impedance of the brain, and single shocks have a similar

effect on isolated surviving frog's brains. No change occurs in dead brains. V. J. W.

Effects of certain cerebral lesions on caloric responses.—See A., 1943, III, 319.

Metabolism of central nervous system in experimental poliomyelitis. E. Racker and H. Kabat (*J. Exp. Med.*, 1942, **76**, 579—585).—The brain of mice infected with poliomyelitis virus shows a decrease in anaërobic glycolysis of 5—50% with no change in O_2 consumption. Anaërobic glycolysis is more inhibited by NaF in normal than in poliomyelitic brain. The ratio of anaërobic glycolysis to O_2 utilisation for motor cortex is higher than for visual cortex slices in normal cats and dogs. The O_2 consumption of the anterior spinal horn is less than that of the cerebral cortex. A. S.

Education of goldfish. F. K. Sanders (*J. Exp. Biol.*, 1940, **17**, 416—433).—Goldfish taught to associate an illuminated disc with feeding could then learn to associate an olfactory stimulus (amyl acetate) with the disc. Extirpation of the roof fibres of the optic lobes, or cuts made into the anterior border of this tectum, disturbed this learning. D. M. Sa.

Neuronal regeneration in central nervous system. II. Insertion of peripheral nerve stumps into brain. W. E. Le G. Clark (*J. Anat., Lond.*, 1943, **77**, 251—259; cf. A., 1943, III, 98).—The proximal stump of the divided facial nerve or the distal stump of a cut occipital nerve in a series of rabbits was inserted into the brain through a small trephine opening and left for 1—6 weeks. In some cases proliferating Schwann tissue had extended out from the cut end of the nerve into the adjacent brain tissue and this Schwann outgrowth was accompanied by regenerating fibres which had grown down the implanted nerve. Occasionally a few regenerating fibres from the brain tissue had entered the implanted nerve; these were probably derived from vascular nerves accompanying vessels and not from the intrinsic nerves of the brain. There was no evidence of regeneration of fibres in the brain in relation to the epithelial masses. W. J. H.

Supraoptic decussations in cat and monkey. H. W. Magoun and M. Ransom (*J. comp. Neurol.*, 1942, **76**, 435—459).—A study of Marchi preps. from cats and monkeys with localised brain stem lesions established the presence of only two supraoptic decussations, a dorsal (of Ganser) and a ventral (of Meynert and Gudden). Both of these have their origin in the lower brain stem and, in part at least, as far back as the pons. The observations are not in agreement with the view (of Papez) that the fibres of the supraoptic decussations are afferent relays to the hypothalamus from primitive thalamic stations. J. D. B.

Encephalographic ratio for estimating size of cerebral ventricles. W. A. Evans, jun. (*Amer. J. Dis. Child.*, 1942, **64**, 820—830).—Serial determinations of the encephalographic ratio indicate a const. basis for mensuration. Many subjects show no change in measurements after 3 and 24 hr., but in the majority ventricles increase slightly in size in the presence of air. The dilatation is not reduced by spinal tap or influenced by the intravenous injection of hypertonic solutions, and is more pronounced in the presence of an active diffuse cerebral lesion, in which case a rapid and irreversible dilatation of the ventricles may occur. It is recommended that serial measurements be made for 48 or 72 hr. in pneumoencephalography. No change in the measurements suggests that any diffuse cerebral lesion present is "fixed." If the ventricles enlarge, the lesion is probably active and progressive. The rate of enlargement is proportional to the degree of "softening" of the brain. C. J. C. B.

Value and indications for encephaloventriculography. J. M. Meredith (*Surgery*, 1940, **7**, 95—116).—Discussion with description of 12 illustrative cases. P. C. W.

Cerebral sequelæ and behaviour disorders following pyogenic meningo-encephalitis in children. L. Bender (*Arch. Pediat.*, 1942, **59**, 772—783). C. J. C. B.

Transitory hemiplegia associated with hypoglycæmia in diabetic child with congenital heart disease. A. E. Fischer and A. L. Florman (*Amer. J. Dis. Child.*, 1943, **65**, 73—76).—A case report. C. J. C. B.

Hypoglycæmic cerebral damage in diabetics. J. A. Layne and A. B. Baker (*Minnesota Med.*, 1939, **22**, 771—776).—Encephalomalacic changes, glial proliferation, demyelinisation, and multiple petechiæ were found in the brains of 4 cases of diabetes who died in hypoglycæmic coma. Marked psychic changes were seen in 3 other cases who survived severe hypoglycæmic coma. There was mental retardation with perseveration and inability to recognise previously well-known individuals in a child of 8 years, aphasia, slight ataxia in one arm, bilateral loss of position sense, and peculiar crying spells in a 15-year-old girl, and definite personality changes in a 21-year-old woman. E. M. J.

Medical aspects of head injury. W. R. Russell (*Brit. Med. J.* 1942, II, 521—523).—A lecture. C. A. K.

Amphetamine sulphate and electrical convulsions. K. C. Bailey (*Brit. Med. J.*, 1943, I, 250—253).—Prior administration of amphetamine sulphate lowered the threshold for electrically induced convulsions. C. A. K.

Pitressin diagnosis of idiopathic epilepsy. W. Blyth (*Brit. Med. J.*, 1943, I, 100).—87 cases of suspected idiopathic epilepsy were given enough water to create a positive balance in 48 hr. and then pitressin + more water during the test period. The pitressin was given in 0·5-c.c. doses 2-hourly for 10 doses or until a major or minor seizure resulted. Subsequent follow-up showed that the test gave an 86·5% accuracy. C. A. K.

Tetany in newborn infant. E. L. Kendig, jun. (*J. Pediat.*, 1942, **21**, 510—513).—Report of 4 cases with hypocalcæmia due to unknown causes. C. J. C. B.

Mechanism of spinal fluid colloidal gold reaction. S. J. Gray (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 401—402).—A positive reaction is due to the presence of γ-globulin and is inhibited by albumin. V. J. W.

Afferent and parasympathetic innervation of lungs and trachea of dog. A. G. Elftman (*Amer. J. Anat.*, 1943, **72**, 1—27).—In the lung preganglionic parasympathetic fibres terminate in pericellular baskets about ganglion cells. Pericellular baskets were not found in young animals. Efferent fibres to bronchial muscles and to intrapulmonary glands originate in intrapulmonary ganglia; they are of small diameter and their terminations are less complex than those of afferent fibres. Terminations similar to those found in smooth muscle are found in the perichrondrium. Different varieties of nerve endings are described in the epithelium of the lung. W. F. H.

X.—SENSE ORGANS.

Latin American developments in prevention of blindness. M. E. Alvaro (*Sight Saving Rev.*, 1942, **12**, 235—243).—Direct methods for the prevention of blindness include legislation designed to prevent ophthalmia neonatorum, establishment of routine examinations of school children's eyes, and measures to combat trachoma. Indirect methods consist of improvement of public health arrangements and the standards of the medical profession, including ophthalmology, increasing the no. of eye specialists and better equipment for eye hospitals, the enforcement of adequate lighting conditions, and protection against accidents in industry. The need for more knowledge of the common causes of blindness, better transport both for personnel and ideas, and more and better trained ophthalmologists is stressed. K. T.

Industrial eye efficiency in war programme. C. P. Colman (*Sight Saving Rev.*, 1942, **12**, 244—251).—A study of eye safety practice and eye efficiency in 50 industrial plants in America revealed the following facts: 10% utilise the services of an ophthalmologist to discover what visual requirements are necessary to qualify a worker for a particular job, 20% more employ binocular tests, while 70% make no test at all of their employees' vision; periodic eye examinations of workers especially exposed is made by 14% of the firms but only 10% make periodic examinations of all their workers; special goggles with non-shatterable lenses ground to compensate for the worker's refractive errors are required by 58% of the firms but in only 34% are the goggles provided at the company's expense; only 22% of the firms report the eye condition of persons involved in accidents and 12% the illumination at the scene of the accident. K. T.

Orthoptic training. H. Y. Bakre (*Indian J. Ophthal.*, 1942, **3**, 99—105).—A review of the diagnosis and treatment of various forms of squint with special reference to orthoptic training. K. T.

Pathological changes in listerella infection, particularly of eye. L. A. Julianelle and E. Moore (*Amer. J. Path.*, 1942, **18**, 813—820).—The ocular reaction in animals after instillation of *Listerella* organisms is characterised by an inflammatory response in the conjunctiva and cornea without involvement of the deeper eye structures. The cellular infiltration in the first few days consists principally of lymphocytes, but by the 5th day the polymorphs increase and predominate by the 10th day. Œdema of the involved structures is marked at the height of the infection. Vascularisation of the cornea develops concomitantly with the other evidences of inflammatory response. The eye generally heals without scarring 2—3 weeks after instillation of the organisms. (15 photomicrographs.) C. J. C. B.

Acne rosacea keratitis and riboflavin (vitamin-B_2). W. M. Fish (*Brit. J. Ophthal.*, 1943, **27**, 107—109).—The view put forward by Johnson and Eckardt (cf. A., 1940, III, 638) that "rosacea keratitis (so-called) may be the direct result of deficiency of riboflavin" is challenged. In only 3 out of 45 cases of acne rosacea examined was the corneal involvement bilateral, as it always is in ariboflavinosis; only one showed the vascularisation typical of this condition, and this case was the only one of those treated by riboflavin alone to respond, the others getting rapidly worse until routine treatment for acne rosacea was substituted. J. H. A.

Circumcorneal injection in human riboflavin deficiency. H. Scarborough (*Brit. Med. J.*, 1942, II, 601—604).—69 of 204 unselected out-patients showed circumcorneal injection (which was seen in 43 of 63 patients over 50). 8 of these cases were given riboflavin, which had no effect. 5 out of 8 further cases who also had other signs of vitamin-*B* complex deficiency were cured or improved. 3 classical cases of ariboflavinosis were relieved by riboflavin. Circumcorneal injection alone is not diagnostic of ariboflavinosis. C. A. K.

Aniridia. H. J. Hathi (*Indian J. Ophthal.*, 1942, **3**, 106—108).—Report of three cases of aniridia in one family; two sisters each had complete congenital absence of the iris and one brother had bilateral coloboma of the iris. Two other brothers had normal eyes and no information could be obtained about the other relatives. All three affected siblings had congenital corneal opacities but clear lenses; visual acuity was poor but the eyes were otherwise normal. K. T.

Glaucoma. T. H. Butler (*Brit. J. Ophthal.*, 1943, **27**, 116—127).—The author expresses a no. of heterodox views on congestive glaucoma and glaucoma simplex. He regards the former as due to a physico-chemical derangement leading to absorption of water by the vitreous, and holds that the operation of choice in its cure is a "trap-door iridectomy," in which a trephine hole is made at the limbus, the iris prolapse is excised, and the disc replaced. Glaucoma simplex is the result of undetermined senile changes in the eye mainly affecting the optic nerve, where "cupping" is due to a degenerative process which softens the nerve-head and allows it to become excavated even by a very slight rise of tension. The chief indication for operation is a nasal notch which deepens to menace the fixation-point, and the best operation is iridencleisis. J. H. A.

Results of glaucoma surgery. S. A. Fox (*Amer. J. Ophthal.*, 1943, **26**, 31—49).—Results of 54 cases of primary glaucoma followed from 6 months to 6 years after operation are reported. As far as reduction in tension is concerned, better results were obtained with iridectomy in acute glaucoma than with trephining or Lagrange sclerectomy in chronic glaucoma. The type of operation did not influence the further progress of pre-operative field deterioration. A review of the published statistics for the past 30 years shows that trephining is still the most popular operation in chronic glaucoma, though the iris-inclusion technique has given the best results. It is suggsted that, in order to facilitate the evaluation of published results, acceptance of certain definite and uniform standards is necessary in describing cases. J. H. A.

Prostigmine in treatment of glaucoma: its effect on intraocular pressure. P. Montalván (*Amer. J. Ophthal.*, 1943, **26**, 57—62).—In a series of 52 glaucomatous eyes treated with prostigmine bromide, the tension was controlled in 56% of cases, the best results being obtained in the chronic primary type. In 33% of primary glaucomas already controlled by pilocarpine or eserine, the tension rose when prostigmine was substituted; on the other hand, of 20 eyes not controlled by these other miotics, prostigmine reduced the tension to normal in 5. The drug was used in 5% solution, this being reduced to 2½% in cases where a decrease in tension was successfully maintained. J. H. A.

Fincham's capsular theory of accommodation. J. W. Nordenson (*Brit. J. Ophthal.*, 1943, **27**, 127—131).—According to Fincham, the anterior surface of the lens assumes a conoidal form in accommodation, and this is due to inequalities in the thickness of the anterior capsule. Both these statements are challenged. A flattening of the periphery of the anterior surface would mean an increase in the radius of this part of the surface in accommodation; yet from a study of the Purkinje–Sanson images the author found that the radius of the periphery decreases, though to a smaller extent than that of the central part. Furthermore, an extracted lens placed in hypotonic saline assumes an even spherical shape as it absorbs water, whereas if Fincham's theory were correct, it should behave like a football bladder when the pressure inside it is increased, and show a bulging of the parts between the thickened "seams." J. H. A.

Problem of hypermetropic miner. A. C. Reid (*Brit. J. Ophthal.*, 1943, **27**, 110—115).—A discussion of 14 cases mostly sent for compensation reports. A relationship was found between the amount of hypermetropia and the age of onset of subjective symptoms incapacitating the miner for further pit-work, the latter decreasing as the former increases: with an error of over +4 D., the age of breakdown is about 30 years. It is suggested that the neurosis may be due to the unnatural association of accommodation with mydriasis, which is necessary for working at arm's length in a dim light. J. H. A.

Toxic amaurosis due to quinine. L. Pelner and E. Saskin (*J. Amer. Med. Assoc.*, 1942, **119**, 1175—1176).—Complete amaurosis developed in a malarial patient who received 2·6 g. of quinine in 3 days. Ophthalmoscopic examination showed marked retinal artery spasm and intravenous injection of $NaNO_2$ produced rapid improvement. C. A. K.

Practical importance of aniseikonia. E. Jackson (*Amer. J. Ophthal.*, 1943, **26**, 18—20).—The problem of aniseikonia arises when the normal slight dissimilarity of the two retinal images of an object is exaggerated to such an extent that cerebral co-ordination is impossible. The condition occurs after cataract extraction when the vision in the other eye is good, or as a result of wearing glasses which correct ametropia, when this is of different amounts or has different meridians of astigmatism in the two eyes. It is usually possible to obtain co-ordination if const. wearing of the correcting lenses is insisted on. Changes of refraction due to continued growth of the lens are usually too gradual to cause aniseikonia, but do so in some cases. J. H. A.

Photochemical and thermal reactions of visual purple in absence of oxygen. A. M. Chase and W. H. Hagan (*J. Cell. Comp. Physiol.*, 1943, **21**, 65—76).—Visual purple solutions extracted from frog retinas were illuminated with white light in the presence and absence of O_2 and the absorption spectra measured. No difference in spectrum or rate of bleaching was detected and it is concluded that the impairment of vision in O_2 deprivation may be due to interference with visual purple regeneration or to a failure of neural transmission. K. J. W. C.

Are welders subject to depletion of visual purple while at work? H. S. Kuhn and E. C. Wille, jun. (*Amer. J. Ophthal.*, 1943, **26**, 63—68).—In order to ascertain whether, in spite of the protective measures in use, the eyes of welders are subject to a partial depletion of visual purple, and if so whether ingestion of vitamin-*A* before and during work could compensate for such depletion, 61 welders, half of whom were given 20,000 units of -*A*, were tested for speed of dark-adaptation before and after a day's work. No general failure of dark-adaptation was found, and there was no difference between those welders who received -*A* and those who did not. Welders on the night-shift showed a definite gain in dark-adaptation during their work, those on the day-shift a slight loss. The excessive no. of complaints among welders may be due to poor protective equipment or carelessness in its use. J. H. A.

Clinical test for dark adaptation. V. P. Flynn (*J. Aviat. Med.*, 1942, **13**, 216—218).—Description of apparatus. F. S.

Colour in protective night light. C. E. Ferree and G. Rand (*Brit. J. Ophthal.*, 1943, **27**, 173—183).—The authors desired to select that colour or composition of light which would be of the greatest use in the discrimination of detail in nearby objects, and yet have the least visibility at a distance. They show that, where the intensity is const., mid-spectral colours give the greatest visual acuity, equal acuity being obtained with light from the ends of the spectrum only when the intensity, and therefore the visibility, is increased. They describe their "variable illuminator," which enables the intensity of light to be varied without changing its colour or composition, so that the visual acuity can be estimated using a whole range of different intensities for each colour. J. H. A.

Colour and composition of light in relation to blackout. C. E. Ferree and G. Rand (*J. Aviat. Med.*, 1942, **13**, 193—200). F. S.

Colour and colour perception. A. J. Herbolsheimer (*J. Aviat. Med.*, 1942, **13**, 201—215).—A review. F. S.

Colour perception. P. B. Wiltberger (*Amer. J. Ophthal.*, 1943, **26**, 78—80).—The population, as far as colour perception is concerned, is divided into 5 groups: hyperchromic, normal, chromasthenic, hypochromic, and achromic individuals. Pseudoisochromatic tests place the line of demarcation between the normal and the colour-blind between groups 2 and 3, whereas the author maintains it should be between 3 and 4. Chromasthenic individuals (6% of the male population) are not colour-blind, but merely slow in colour perception; they may pass the Ishihara test in some lights but not in others. This reveals a weakness in the test rather than in the patients, who are in no way handicapped in any type of employment. J. H. A.

Physiology of colour vision. (A) F. W. Edridge-Green. (B) H. Hartridge (*Nature*, 1943, **151**, 422).—(A) It is suggested, in reply to Willmer's theory of colour vision (A., 1943, III, 314), that the rods are not percipient elements but sensitise the cones.

(B) Wilmer's theory of colour vision is criticised on the ground that if the ratio of rod to cone response determines the colour seen, mixture of the end hues of the spectrum in due proportions should match any spectral hue, which is not the case; also that fatiguing the retina with red should tinge white with violet and vice versa, whereas the actual tinging is with greenish-blue and yellow respectively. K. J. W. C.

Effect of temperature on retinal action potential. T. L. Jahn and V. J. Wulff (*J. Cell. Comp. Physiol.*, 1943, **21**, 41—51).—The magnitude of the grasshopper electro-retinogram has a higher temp. coeff. in light- than in dark-adaptation. Since pure photochemical reactions have a low temp. coeff. it is suggested that there are two reactions—a photochemical and a further stimulus-producing one—of which the former shows mastery in the dark-adapted eye above 15° and the latter is the limiting factor at lower temp. K. J. W. C.

Effect of optical stimuli on output of urine in albino rats. E. Boyd, B. K. Lee, and M. E. T. Stevens (*Endocrinol.*, 1943, **32**, 27—32).—In albino rats repeated optic stimuli (flashes of intense light) produce a diuresis lasting for 3 hr. The authors suggest that the stimuli are effective via a pathway composed of optic nerves, hypothalamus, and pituitary gland. P. G.

Cortical response of anæsthetised cat to gross photic and electrical afferent stimulation. W. H. Marschall, S. A. Talbot, and H. W. Ades (*J. Neurophysiol.*, 1943, **6**, 1—15).—In order to determine some of the general aspects of the cortical reactions to photic and electrical stimulation of the visual system, action potentials were led off from the pial surface. Intracortical and subcortical records were also made. Under several types and stages of anæsthesia a brief photic stimulus evokes one or more cortical responses. A single electrical stimulus applied to the optic nerve does not evoke a multiple response of the type caused by photic stimulus. The responses are usually surface-positive although under light anæsthesia negative components are prominent. The positive and negative components are thought to be due to separate neural processes, the positive associated with ascending cortical processes, the negative with descending neural processes. The negative wave is also associated with activation of association areas and tectal regions. Both photic excitation of the retina and electrical stimulation of the optic nerve evoke primary responses over both striate and peristriate regions. P. G.

Local sulphonamide therapy in otolaryngology. A. C. Furstenberg (*Laryngoscope*, 1943, **53**, 93—100).—Sulphonamide, used locally, especially after mastoid operations, proved of great val. in preventing infection and securing a rapid convalescence, but it should never be regarded as a substitute for adequate surgery. K. T.

Developmental anatomy of human stapes. B. J. Anson and E. W. Cauldwell (*Ann. Otol., etc., St. Louis*, 1942, **51**, 891—904).—A general description of the development of the stapes during fœtal life. The stapes is first recognisable in the 4-week embryo. During the next 12 weeks it nearly reaches its final size and shape, which is then fixed by ossification. Ossification is practically complete before the end of intrauterine life. The unique features in the growth and ossification of the stapes are described. K. T.

Cochlear response and mechanism of cochlea. H. Macnaughton-Jones (*J. Laryng. Otol.*, 1942, **57**, 513—526).—The exposition of a theory designed to reconcile and combine the theories of Davis and of Hallpike as to the hair cell or basilar membrane origin of cochlear potentials. It is suggested that the distortion of the hair cells of the organ of Corti generates a negative potential which renders the auditory nerve endings more sensitive to the mechanical stimulus also produced by the movement of the hair cells. It is further suggested that the movement of fluid over the inner surface of the cochlea generates frictional electricity with a positive potential and that the production of such a positive potential with every movement of fluid, but independant of the phase of the stimulating sound, combined with an alternating appearance and disappearance of a negative potential from the hair cells, which is associated with the phase, is sufficient to explain the paradoxical results of Davis' experiments. K. T.

Response of single auditory nerve fibres to acoustic stimulation. R. G. Galambos and H. Davis (*J. Neurophysiol.*, 1943, **6**, 39—57).—Micropipettes, 3—5 μ. in diameter, filled with Ringer's solution were used as electrodes for leading off from single auditory nerve fibres. Pure tones were the stimuli. Each fibre responded only to a narrow band of sound frequencies, showed no unusually brief refractory phenomena, and sometimes discharged spontaneously in the absence of any sound stimulus. In general auditory fibres behaved like other sensory fibres, *e.g.*, increasing the intensity of sound increases the frequency of discharge. The auditory nerve fibre discharges in synchronism with a definite part of the stimulating sound wave cycle. The results are held to support a " place " theory of hearing according to which the recognition of pitch is a function of what part, and loudness of how much, of the basilar membrane is disturbed. P. G.

Secondary acoustic area in cerebral cortex of rat. H. W. Ades (*J. Neurophysiol.*, 1943, **6**, 59—63).—It was found by electrophysiological methods that the primary projection area of the medial geniculate body occupies the middle ectosylvian gyrus. This is in agreement with the results of other workers using different methods. The present experiments also indicate a secondary acoustic area on the posterior ectosylvian gyrus, but do not confirm the observations of Mettler and Campbell. The brain map of Campbell is rejected and the desirability of new anatomical research stressed. The secondary acoustic area has been defined by experiments using the strychnine method and oscillographic recording. P. G.

Midbrain deafness. Tumour of midbrain producing sudden and complete deafness. P. Sloane, A. Persky, and M. Saltzmann (*Arch. Neurol. Psychiat.*, 1943, **49**, 237—243).—A case report of a glioma of the midbrain in a 55-year-old man. P. G.

Neurology in otolaryngology. H. Brunner (*Laryngoscope*, 1943, **53**, 117—137).—A review of last year's work on the following subjects: induced labyrinthine nystagmus; diseases of the labyrinth and vestibular nerve; the various neuralgias and other related diseases involving the head and neck; the olfactory nerve; retrobulbar neuritis; the relation of tonsillectomy to poliomyelitis; aphasia and vocal cord paralysis; encephalography of the brain and spinal cord. K. T.

Dizzy patient. M. Atkinson (*Eye, Ear, Throat*, 1943, **22**, 53—58).—The following are given as the causes of vertigo: (1) serous or purulent labyrinthitis following infection of the middle ear, (2) cerebellar abscess, (3) Ménière's syndrome, (4) occlusion of the external auditory meatus causing pressure on the tympanic membrane, (5) fracture of the base of the skull involving the labyrinth or auditory nerve on one side, (6) stimuli (cold wind or water) to the inner wall of the middle ear exposed after a radical mastoid operation, (7) lesions of any part of the vestibular tract or tumours of the cerebellopontine angle, (8) lesions in the brainstem, cerebellum, or even cerebrum, (9) hypersensitive carotid sinus, (10) ocular imbalance. K. T.

Diagnosis and treatment of Ménière's syndrome. M. Atkinson (*Arch. Otolaryngol.*, 1943, **37**, 40—53).—Cases of Ménière's syndrome —recurrent vertigo, deafness, and tinnitus—may be classified as follows: (I) lesions affecting the VIIIth nerve, (*a*) lesions of the cerebellopontine angle, (*b*) degenerative vascular disease; (II) lesions affecting the labyrinth, (*a*) alteration of intra-labyrinthine pressure due to (1) constriction of the Eustachian tube or (2) increased production of endolymph, (*b*) vascular disease due to (1) primary vasoconstriction or (2) arteriosclerosis, (*c*) " toxic labyrinthitis " due to a focus of infection. Cases belonging to groups II*a*2 and II*b*1 are termed " idiopathic." Those in the former group constituted 20% of the idiopathic cases and were found to be histamine-sensitive. Treatment by careful desensitisation to histamine gave relief in 13 out of 14 cases. Cases falling in the latter group were insensitive to histamine and were thought to suffer because of a secondary vasodilatation following a primary vasconstriction, while the histamine-sensitive patients were thought to suffer from a primary vasodilatation because of their sensitivity. Treatment of the second group was by a course of nicotinic acid injections. Nicotinic acid was used because it is a vasodilator, and the treatment was successful in giving either relief or at least some improvement in 45 cases out of 49. K. T.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Endocrine aspects of mongolism. C. E. Benda (*J. Clin. Endocrinol.*, 1942, **2**, 737—748).—An analysis of autopsy material from 38 cases. The gonads of mongoloid babies were normal but those of children and adults were immature and degenerated. The adrenal medulla and cortex were normal at birth but the cortex fails to develop normally, particularly the two outer layers; the zona fasciculata was narrow and without the normal lipin content. The thyroid was hypoplastic in all cases, 2 apparent exceptions having lymphadenoid goitre and colloid goitre. The anterior pituitary showed an increase in eosinophil cells. 15 cases showed predominance of α-cells; β-cells were present in 4 cases (castration cells). In 10 cases chromophobe cells predominated. The pituitary was normal in 3 cases. Colloid was often present in the pituitary of females. The developmental disorder of mongolism after birth is of pituitary origin; the hypofunction of thyroid, adrenals, and gonads is secondary. P. C. W.

Senile involution of thyroid gland. W. Andrew and N. V. Andrew (*Amer. J. Path.*, 1942, **18**, 849—857).—The thyroids of young mice show relatively small follicles, cuboidal epithelial cells, and an almost homogeneous colloid present in large though varying amounts. There is much interfollicular material, consisting chiefly of immature adipose tissue. In middle-aged mice, the follicles are larger with low cuboidal or squamous epithelium, and a homogeneous colloid which fills the lumen. There is little interfollicular connective tissue. In senility there is great increase in the fibrous connective tissue between the follicles, atrophy of some follicles, and overdistension of others. The colloid presents an extremely varied picture. (6 photomicrographs.) C. J. C. B.

Micro-determination of iodine in biological materials.—See A., 1943, III, 364.

Postoperative myxœdema. W. D. Wilson and C. W. Mayo (*Surgery*, 1940, **7**, 117—121).—Postoperative myxœdema occurred in 1·2% of 15,000 thyroidectomies and was more frequent in exophthalmic goitre than in adenomatous goitre. Thyroiditis was found at operation in 71% of the cases which later developed myxœdema; those with no thyroiditis showed lower proportion of thyroid tissue left *in situ* at operation. The lapse between operation and development of myxœdema varies inversely with the degree of thyroiditis present. P. C. W.

Cardiotoxic goitre, a distinct entity. C. R. Schmidt and A. E. Hertzler (*Endocrinol.*, 1942, **31**, 684—688).—Colloid from toxic goitres is thinner than normal and may be basophil instead of acidophil. Mallory's stain colours it orange instead of blue. In such thyroids, removed after several weeks' treatment with Lugol's I, total I and thyroxine-I are less than normal, but non-thyroxine org. I is increased. Extracts of these goitres accelerate the heart of thyroidectomised rats without increasing O_2 consumption. V. J. W.

Histological study of thyroid of exophthalmic goitre during iodine administration. W. D. Wilson and C. W. Mayo (*Surgery*, 1940, **7**, 325—333).—110 patients with exophthalmic goitre were partly thyroidectomised by 2-stage lobectomy, the periods between the 2 stages being 12—300 days. 100 of the patients received Lugol's solution before the first operation and throughout the interval; 10 patients served as controls without I. The thyroid tissue removed at the second operation showed increased, decreased, or no change in activity; increased activity predominated in the patients with short periods of I therapy and decreased activity in those treated longer. There was increased activity in winter. The amount of colloid varies inversely, and the regenerative hyperplasia directly, with the activity of the gland. The histological evidence of changes in activity of the thyroid is supported by calculation of the ratio of basal metabolic rate to wt. of removable gland before both operations. P. C. W.

Vitamins and experimental hyperthyroidism. V. Korenchevsky, K. Hall, and B. Clapham (*Brit. Med. J.*, 1943, I, 245—247).—Measurements of wt. and histological studies of various organs in rats showed that small or moderate doses of thyroid hormone can lead to better development of liver, kidneys, spleen, heart, adrenals, and ovaries, but only when there are liberal supplies of vitamins-*A*, -*B*, -*C*, and -*D*. Clinical applications are discussed. There are no direct antagonistic effects of vitamins on thyroid hormone. C. A. K.

Effect of progressive iodination followed by incubation at high temperature on thyroidal activity of iodinated proteins. E. P. Reineke, M. B. Williamson, and C. W. Turner (*J. Biol. Chem.*, 1943, **147**, 115—119; cf. A., 1942, III, 593).—The thyroidal activity (measured by injection into tadpoles) of material obtained by iodinating casein and soya-bean protein at 38—40° and incubating at 70° for 18—20 hr. increases with increase in amount of I used until sufficient I has been added to introduce 2 I into each mol. of tyrosine present. Activity decreases if more I is added. The most active material from casein has 8·5% and that from soya bean has 5·25% of the activity of thyroxine. The iodoproteins are much more active where injected into guinea-pigs than when given orally possibly because the thyroxine present remains combined within the protein mol. W. McC.

Desiccated thyroid in treatment of low-grade chronic illness in children. M. H. Stiles (*Arch. Pediat.*, 1942, **59**, 740—753).—The basal metabolic rates of 30 children with low-grade chronic or recurrent illness, principally respiratory and intestinal infections, were: 90%, 0 or less, and 60%, minus 10 or less. Of the 18 children to whom desiccated thyroid was administered long enough to determine its effectiveness, 15 showed conspicuous improvement. C. J. C. B.

Parathyroid gland in infancy. E. Kaplan (*Arch. Path.*, 1942, **34**, 1042—1049).—Among parathyroid glands from 235 unselected infants and children 35 were abnormal, showing diffuse epithelial hypertrophy or hyperplasia. Hypertrophy of the parathyroid glands was present in 8 of 9 patients with rickets, and in 7 of 25 with severe renal disease. Of 53 patients between birth and 30 days of age there were 14 cases of parathyroid hypertrophy, not associated with renal disease or rickets and perhaps representing a normal finding. (4 photomicrographs.) C. J. C. B.

Volume of parathyroid glands in relation to dietary calcium and phosphorus. W. H. Carnes, A. M. Pappenheimer, and H. C. Stoerk (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 314—316).—A low-P high-Ca diet causes a reduction in parathyroid vol. in rats. Added K_2HPO_4 increases this vol.; large doses of vitamin-*E* reduce it further, but raise serum-Ca and -P, and inhibit the hyperplasia produced by a low-Ca diet. V. J. W.

"Adrenaline shock" as manifestation of phæochromocytoma of adrenal medulla. F. L. Engel, W. H. Mencher, and G. L. Engel (*Amer. J. med. Sci.*, 1942, **204**, 649—661).—Report of a case with "adrenaline shock" with successful removal of the tumour. Postoperatively the patient developed a transient postural hypotension and low sugar-tolerance curve with hypoglycæmia. C. J. C. B.

Prolonged adrenaline hypertension and subsequent circulatory failure. R. N. Lewis and N. D. Nickerson (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 389—391).—1 : 5000 adrenaline hydrochloride was given intravenously to 10 anæsthetised dogs at 7—40 μg. per kg. per min. for 51—120 min. At autopsy 2—7 hr. later, evidence of irreversible circulatory changes, consisting mainly of congestion of duodenal mucosa with pericardial and pleural effusions, was found in half the animals. V. J. W.

Mouse adrenal. I. Development, degeneration, and regeneration of *X*-zone. II. Action of hormonal substances on adrenal (action on *X*-zone). M. K. McPhail and H. C. Read (*Anat. Rec.*, 1942, **84**, 51—73, 75—89).—I. Migration of nerve fibres and cells into the adrenal on the 14th and 15th days of intra-uterine life and leucocyte and lymphocyte infiltration in the early post-natal life of the gland are described. Regeneration of the *X*-zone occurs following pregnancy and testosterone propionate administration. There is no evidence that the *X*-zone is a transitory development from the cortical anlage. The *X*-zone may develop from the fasciculata.

II. Anterior pituitary and human pregnancy urine hormones, acting through the gonads, produce degeneration of the *X*-zone. Œstrone usually causes vacuolation of the deep part of the fasciculata. Prœgesterone had little effect on this zone. Regeneration of the *X*-zone following its destruction by testosterone was studied. W. F. H.

Transplantation of adrenal gland. J. E. Dunphy and J. L. Keeley (*Surgery*, 1940, **8**, 105—117).—A technical description is given of the autotransplantation of the adrenal gland into the ovary in dogs. Viable cells of medulla and cortex were present in dogs killed 4—14 months after the transplantation. Removal of the grafts caused death of the dogs from adrenal insufficiency. An adrenaline-like substance is present in the grafts but there is no acetylcholine. Following shock produced by severe thermal trauma the same histological changes are produced in the grafts that normally occur in the adrenal gland. P. C. W.

Adrenal rests in kidney. N. Mitchell and A. Angrist (*Arch. Path.*, 1943, **35**, 46—52).—23 cases are reported. (8 photomicrographs.) C. J. C. B.

Gynæcomastia from deoxycorticosterone acetate. R. D. Lawrence (*Brit. Med. J.*, 1943, I, 12).—Deoxycorticosterone acetate in doses of 15—20 mg. daily for 2 weeks produced gynæcomastia in a man of 32 who had diabetes and Addison's disease. Cortical extract had no such effect but controlled the adrenal insufficiency. C. A. K.

Inactivation of deoxycorticosterone acetate. J. Mark (*Endocrinol.*, 1942, **31**, 582—585).—Pellets of deoxycorticosterone acetate implanted in the spleen of adrenalectomised rats had the same therapeutic activity as similar pellets implanted subcutaneously. V. J. W.

Excretion of pregnanediol following administration of deoxycorticosterone acetate to rabbits. M. M. Hoffman, V. E. Kazmin, and J. S. L. Browne (*J. Biol. Chem.*, 1943, **147**, 259—260).—Following injection of the cryst. acetate, dissolved in oil, into rabbits, 5·6—14·6% is excreted in the urine as pregnanediol (cf. Cuyler *et al.*, A., 1940, III, 850). F. O. H.

Effect of adrenalectomy on lactogenic hormone and initiation of lactation. J. Meites, J. J. Trentin, and C. W. Turner (*Endocrinol.*, 1942, **31**, 607—612).—Adrenalectomy in female rats caused a decrease of 25% in pituitary lactogen. Administration of œstrone caused twice as much increase of pituitary lactogen in normal as in adrenalectomised rats. Post-partum rise in pituitary lactogen was not affected. V. J. W.

Tissue changes in adrenal insufficiency and traumatic shock. A. P. W. Clarke and R. A. Cleghorn (*Endocrinol.*, 1942, **31**, 597—606).—Adrenal insufficiency caused an increase of K in muscle, liver, and small intestine of rats and dogs and in pancreas of dogs. In rats shocked by bruising there was a decrease of K and P in liver and small intestine. In shocked dogs there was an increase of K and P in muscle, liver, intestine, pancreas, and heart. Serum-K was increased. V. J. W.

Action of some synthetic steroids on adrenalectomised immature rat. A. Segaloff and W. O. Nelson (*Endocrinol.*, 1942, **31**, 592—596).—Δ^5-Pregnone-3 : 21-diol-20-one 21-acetate is intermediate in effects on growth and survival between progesterone and deoxycorticosterone acetate. Pregnenin-17-ol-3-one and Δ^5-pregnen-3-ol-20-one are without effect. V. J. W.

Influence of diethylstilbœstrol on adrenal cortex of guinea-pig. B. M. Allen and H. Bern (*Endocrinol.*, 1942, **31**, 586—591).—Oral administration of 1—1·5 mg. per week causes enlargement of the adrenal cortex and a great increase in the vacuoles of the zona fasciculata. V. J. W.

Effect of synthetic deoxycorticosterone acetate therapy on plasma volume and electrolyte balance in normal dogs. M. Clinton, jun., G. W. Thorn, H. Eisenberg, and K. E. Stein (*Endocrinol.*, 1942, **31**, 578—581).—Daily injections of 5 mg. for 5 days caused increase in plasma vol. and in Na and Cl′ retention. 15 mg. given sublingually had some, but less, effect. V. J. W.

Effect of adrenalectomy and adrenocortical steroids on liver-arginase. H. Fraenkel-Conrat, M. E. Simpson, and H. M. Evans (*J. Biol. Chem.*, 1943, **147**, 99—108).—Adrenalectomy causes a more marked decrease in liver-arginase (rat) than does hypophysectomy. Liver-arginase in normal, hypophysectomised, or adrenalectomised rats is increased by administration of small amounts (0·3—1·0 mg.) of corticosterone, 11-dehydrocorticosterone, and 11-dehydro-17-hydroxycorticosterone, but no significant effect

is produced by deoxycorticosterone or by the male and female steroid sex hormones. Thus, only those steroids with an actual or potential hydroxyl group at $C_{(11)}$ can stimulate those adrenal functions that are influenced by the pituitary. P. G. M.

Method for bio-assay of hormones of adrenal cortex which influence deposition of glycogen in liver. R. M. Reinecke and E. C. Kendall (*Endocrinol.*, 1942, **31**, 573—577).—Male rats, adrenalectomised 4 days previously, receive hourly injections of the extract to be assayed. 1—2 hr. after the last injection the liver-glycogen is determined and expressed as % of body wt. It increases with increased dose of extract. V. J. W.

Changes in birefringent material in adrenal cortex of rat following administration of adrenotrophic hormone.—See A., 1943, III, 299.

Chromaffin cells of nerve ganglia of *Hirudo medicinalis*.—See A., 1943, III, 300.

Fatal insulin hypoglycæmic coma. E. H. Roche (*Brit. Med. J.*, 1942, II, 35—37).—2 fatal cases of hypoglycæmic coma produced by Zn–protamine insulin are described. C. A. K.

Effect of hexœstrol and α-methylstilbene on insulin content of rabbit pancreas.—See A., 1943, III, 326.

Vidian ganglion as source of innervation of anterior pituitary. L. R. Zacharias (*Endocrinol.*, 1942, **31**, 638—643).—Removal of this ganglion which is placed at the junction of the great superficial petrosal with the great deep petrosal nerve causes pseudopregnancy in the rat in every case, and increases insulin-sensitivity in 66% of cases. Section of the great superficial petrosal, which is the parasympathetic root of the ganglion, gives a high % of pseudo-pregnancies but does not alter insulin-sensitivity. V. J. W.

Effects of hormones on erythropoiesis in hypophysectomised rat. E. P. Vollmer, A. S. Gordon, and H. A. Charipper (*Endocrinol.*, 1942, **31**, 619—628).—Thyroxine, like testosterone (A., 1941, III, 642), brings back to normal the blood of hypophysectomised rats. Prolactin effects are similar but smaller. Deoxycorticosterone maintains cell count and hæmoglobin, but causes no repair of marrow. These hormones cause no change in wt. or appearance of the thyroids or in O_2 consumption. V. J. W.

Simmonds' disease due to post-partum necrosis of anterior pituitary. H. L. Sheehan and N. G. B. McLetchie (*J. Obstet. Gynaec.*, 1943, **50**, 27—36).—A case with autopsy report is described. P. C. W.

Purification of growth-hormone of anterior pituitary gland. W. Marx, M. E. Simpson, and H. M. Evans (*J. Biol. Chem.*, 1943, **147**, 77—89).—The method of prep. described involves desiccation of the gland with acetone, extraction with $Ca(OH)_2$, fractional pptn. with $(NH_4)_2SO_4$, treatment with cysteine at pH 8·0—8·5 in which the ppt. is discarded, and finally fractionation at different pH vals., followed by further $(NH_4)_2SO_4$ pptn. at 50%-saturation and dialysis. The product, which is essentially free from follicle-stimulating, luteinising, thyrotropic, lactogenic, and adrenocorticotropic hormones, has a potency of approx. 130 hypophysectomised rat-units per mg. It is stable for 1 year in a vac. at 3—5° as a dry powder. A neutral solution is stable at 3—5° for several weeks, but almost complete inactivation occurs at pH vals. below 3·0 in 12 days; heating at 100° for ½ hr. produces marked inactivation without pptn. Addition of 1—2% of butyl alcohol preserves the potency of solutions. P. G. M.

Comparison of thermostability of growth and ketogenic activities of anterior pituitary extract. R. A. Shipley (*Endocrinol.*, 1942, **31**, 629—633).—Both factors are destroyed by boiling at pH 10. By boiling at pH 2 ketogenic activity is reduced to $\frac{1}{17}$ and growth-promoting activity to $\frac{1}{4}$. V. J. W.

Ultra-filtration of anterior pituitary ketogenic and growth principles. R. A. Shipley and W. B. Seymour (*Endocrinol.*, 1942, **31**, 634—637).—Cellophane fitters with pores which transmitted protein (3·3 mμ.) also transmitted ketogenic and growth factors. Pores which excluded protein (1·6 mμ.) excluded them. V. J. W.

Prolactin and healing of experimental peptic ulcer. M. H. F. Friedman and H. M. Podolsky (*Endocrinol.*, 1942, **31**, 689—690).—Extracts of human female urine caused no increase in wt. of pigeon crop gland when given in larger doses than those which caused healing of jejunal ulcer in dogs. V. J. W.

Mammary gland growth in hypophysectomised castrated guinea-pigs. E. T. Gomez (*Endocrinol.*, 1942, **31**, 613—618).—Duct growth was induced in these animals by implants or injections of fresh guinea-pig hypophysis, or by injection of an alcohol-ether extract of hypophysis. This extract was free from all known pituitary hormones. Slight duct growth was caused by injection of lactogen and œstrogen, but this mammogenic activity was removed by washing with alcohol and ether without loss of lactogenic property. V. J. W.

International biological standards in wartime; the new posterior pituitary standard preparations. H. H. Dale (*Brit. Med. J.*, 1942, II, 385—387).—Redistribution of international biological standards in wartime is described. The new international standard for posterior pituitary lobe (1940) is about 15% stronger than the old standard but the i.u. is still the activity of 0·5 mg. of standard. C. A. K.

Micro-electrodes for production of lesions in pituitary rudiment of chick embryos.—See A., 1943, III, 299.

Development of duck pituitary.—See A., 1943, III, 298.

Nerve cells in neurohypophysis of dog.—See A., 1943, III, 300.

Injurious effect of pitressin on rat testis. M. E. Simpson, H. M. Evans, and C. H. Li (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 318—320).—Daily injection of 5 dog pressor units of Parke Davis pitressin for 15 days into 40-day-old rats caused decreased testis growth, and absence of spermatozoa, as compared with controls. V. J. W.

XII.—REPRODUCTION.

Frequency of œstrus in *Acipenser*. A. V. Lukin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 166—168).—The data submitted suggest that œstrus ("frai") is an annual event, after sexual maturity is reached, in the sturgeon. J. D. B.

Stages of sexual maturity in *Acipenser*. A. V. Lukin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 374—376).—An analysis of the annual changes in the testis and ovary of mature sturgeons. J. D. B.

Human fertility. G. P. Smith (*Brit. Med. J.*, 1942, II, 38—40).—Data showing variations of 52 menstrual cycles in 1 woman are presented. Sexual intercourse 1—13 days before the onset of menstruation was non-fertile in 31 cycles, but intercourse on the 9th, 10th, and 13th—16th days after the beginning of a cycle was followed by pregnancy. C. A. K.

Ovulation, maturation, and fertilisation in fox.—See A., 1943, III, 298.

Developmental basis of regenerative and pathologic growth in uterus. P. Gruenwald (*Arch. Path.*, 1943, **35**, 53—65).—The formation of mesenchyme from the epithelium of the Mullerian duct is described in detail. It occurs near the caudal end of the duct while this is growing toward the urogenital sinus. Similar formation of mesenchyme also takes place at the expense of the nearby peritoneal epithelium (tubal ridge); the nonepithelial tissues of the uterovaginal canal then arise from the mesenchyme originally present in that area and in part from the epithelium of the inner and outer linings of the canal. These nonepithelial cells may possess the developmental potencies of their epithelial coverings. Post-menstrual regeneration of uterine epithelium from the stroma thus appears possible. Clearcut distinction of epithelial and nonepithelial structure may not always be possible in tumours of derivatives of the coelomic wall. Endometriosis may develop not only from the coelomic epithelium but also from the adjacent mesenchyme, which is closely related to this tissue in its development. Thus endometriosis can be accounted for in all known locations by local differentiation of tissues derived from the coelomic wall. (12 photomicrographs.) C. J. C. B.

Stilbœstrol and carcinoma of prostate. N. J. Heckel and H. L. Kretschmer (*J. Amer. Med. Assoc.*, 1942, **119**, 1087).—A man with histologically diagnosed carcinoma of the prostate was given 1546 mg. of stilbœstrol during 7½ months with considerable clinical improvement. Histological section after this time showed hydropic degeneration and vacuolation of neoplastic cells. C. A. K.

Therapeutic efficiency of diethylstilbœstrol esters. S. C. Freed, W. M. Eisin, and S. P. Greenhill (*J. Amer. Med. Assoc.*, 1942, **119**, 1412—1414).—The therapeutic efficiencies of diethylstilbœstrol, its dipropionate, and its dipalmitate were compared on injection into women with menopausal symptoms. The dipalmitate produced the greatest and most prolonged relief of symptoms and nausea occurred in 1 of 43 patients as compared with 15 of 32 given stilbœstrol itself. The need for human standardisation is stressed. C. A. K.

Synthetic œstrogens. L. Golberg and O. S. Heyns (*S. Afr. med. J.*, 1941, **15**, 375—383).—A review. P. C. W.

Premenstrual headache relieved by œstrogen. B. B. Rubenstein (*J. Clin. Endocrinol.*, 1942, **2**, 700—702).—6 highly-strung nervous women of child-bearing age are described who had severe pre-menstrual headache; the vaginal smears consisted predominantly of fragmented cells and cells from deep layers of the mucosa, suggesting low œstrogen production. They promptly improved on œstrogen injection (average dose 1 mg. of œstradiol dipropionate given for 1 week pre-menstrually). P. C. W.

Ethinylœstradiol: clinical evaluation. M. J. Groper and G. R. Biskind (*J. Clin. Endocrinol.*, 1942, **2**, 703—706).—The results of ethinylœstradiol therapy in 33 menopausal women are analysed. The dosage was 0·05—0·15 mg. given orally 1—3 times daily. Treatment was ineffective in 4 cases. P. C. W.

Influence of œstradiol benzoate on fat storage. H. G. Loeb (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 330—332).—In rats maintained

on a diet rich in saturated fat, but devoid of essential fatty acids, administration of 3 doses of 100 μg. in 1 week or 24 doses of 30 μg. in 4 weeks caused an increase in body-fat in males but not in females. V. J. W.

Effect of ovarian transplants on adrenal *X*-zone of castrated mate mice.—See A., 1943, III, 322.

Importance of progesterone to induction of sexual receptivity in spayed rats. F. A. Beach (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 369—371).—Administration of 0·5—1 mg. of progesterone markedly increased the effect of œstradiol benzoate in promoting sexual receptivity. V. J. W.

Progesterone in treatment of habitual abortion. S. B. Peters (*Minnesota Med.*, 1939, **22**, 166—169).—Report of 4 cases with histories of 2 or 3 abortions in whom biweekly intramuscular injection of 1 i.u. of progesterone from the 8th to 14th week resulted in a norml pregnancy and delivery and abolished the nausea and vomiting of early pregnancy. E. M. J.

Metabolism of progesterone. M. M. Hoffman (*Canad. Med. Assoc. J.*, 1942, **47**, 424—431).—The conversion of progesterone into pregnanediol in male and female rabbits was demonstrated. The pregnanediol is excreted as the glucuronide. The uterus and the testis are not essential for the conversion of progesterone into pregnanediol. Pregnanediol is excreted in the fæces of rabbits receiving progesterone orally but not when the hormone is administered parenterally. C. J. C. B.

Lactation in women. M. Gunther (*Canad. Med. Assoc. J.*, 1942, **47**, 410—420).—A review. C. J. C. B.

Shute's test for anti-proteolytic properties of human serum in cases of abortion, premature labour, accidental hæmorrhage, and normal pregnancy. V. I. Krieger (*J. Obstet. Gynaec.*, 1943, **50**, 48—54).—Incubation of the serum of pregnant women with trypsin in buffer solution at pH 8 resulted in irregular variations in free acid during the 40—100 min. of incubating. There was no relation between the type of curve and the clinical condition. Since similar variations in the free acid occur when serum and buffer, serum, trypsin, and buffer, or serum, inactivated trypsin, and buffer are incubated, there is no evidence of tryptic digestion of the serum. P. C. W.

Early and late effects of daily treatment with pregnant mare serum on ovary of mice of *A* strain. C. A. Pfeiffer and C. W. Hooker (*Anat. Rec.*, 1942, **84**, 311—329).—The first effect was a general stimulation of the ovary, with supernumerary ovulation and increased œstrogen production. Interstitial cells are not stimulated. Corpora lutea persisted for an unusually long period and the consequent production of progestin was a max. in 21—35 days of treatment. Androgen production was appreciable by the 35th day, continued beyond the 90th day, and had ceased by the 150th day. Progressive ovarian exhaustion set in and by 150 days there was an inability to maintain vacuolation of interstitial cells. After 200 days of treatment the ovaries were composed mainly of heavily granular unvacuolated, eosinophilic cells. After 12 months the no. of primary follicles was greatly reduced and no evidence of the production of any sex hormone was observed. Ultimately the ovaries underwent hyaline degeneration. W. F. H.

Gonadotropic activity of pituitary gland in relation to seasonal sexual cycle of cottontail rabbit (*Sylvilagus floridanus mearnsi*). W. H. Elder and J. C. Finerty (*Anat. Rec.*, 1943, **85**, 1—15).—Gonadotropic activity of the male pituitary is at a min. from Oct. to Jan.; a rapid increase follows and a max. of 600% is reached in March. Basophilic cells increase from 4·4% in the inactive season to 13·8% in the breeding season. The average monthly wt. of the testes, seminal vesicles, and prostate glands shows the same abrupt rise at the onset of the breeding season. In the female the ovarian wt. increases three-fold during the breeding season but there is no significant fluctuation in gonadotropic potency or % of basophilic cells in the pituitary. W. F. H.

Accelerated effects on growth during treatment [with gonadotropin]. G. B. Dorff (*Arch. Pediat.*, 1942, **59**, 791—798).—Administration of chorionic gonadotropin for cryptorchidism and hypogonadism induces not only gonadal stimulation, but also acceleration in height growth, advances in ossification, and gain in body wt. C. J. C. B.

Spermatorrhœa in marsupials. Action of sex hormones on spermatogenesis of *Trichosurus vulpecula*. A. Bolliger (*J. Proc. Roy. Soc. New South Wales*, 1942, **76**, 86—92).—The urine of normal adults contains spermatozoa, but these are strongly motile only during the breeding season. Gonadotropic hormone hastens spermatogenesis in immature animals. Small injections of testosterone may stimulate motility, but repeated large doses, or large doses of œstrogen, reduce spermatogenesis. Progesterone has no effect. R. L. E.

Syndrome of depression, alopecia, and hyposexuality. C. Allen and C. Carlyle-Gall (*Brit. Med. J.*, 1942, II, 67—68).—Case report. C. A. K.

Male hypogonadism : effect of treatment on genital growth and maturity. B. N. Tager (*J. Clin. Endocrinol.*, 1942, **2**, 707—714).—9 hypogonad men, and the effects on them of testosterone therapy, are described. The period of observation was 4 months—2½ years. The difference between genital (penile) growth and genital maturation as determined by the thickness of the pubic hair is stressed. Androgen therapy will produce genital growth only when the thickness of the pubic hair indicates absent or only partial genital maturation. Methyltestosterone will produce genital growth and maturation within the above limits, though testosterone propionate inunction is recommended for maintenance therapy. P. C. W.

Comparative metabolic effects of œstradiol benzoate and testosterone propionate in man. K. Knowlton, A. T. Kenyon, I. Sandiford, G. Lotwin, and R. Fricker (*J. Clin. Endocrinol.*, 1942, **2**, 671—684).—2 eunuchoids were treated by daily intramuscular injections of 5 mg. of testosterone propionate and 2 eunuchoids, one hypogonad woman, and one normal woman with daily injections of 5 mg. of œstradiol benzoate. All showed a reduction in urinary N, inorg. P, and Na excretion. Urinary SO_4'' was reduced in all cases except in one of the eunuchoids treated with œstradiol. Urinary K was raised in the normal woman and reduced in the eunuchoids treated with androgen. Basal heat production was unaffected. In the eunuchoids creatinuria, which was maintained at high levels by creatine ingestion, was reduced by androgen but not by œstrogen. A masculinised girl (adreno-genital syndrome) showed none of these metabolic effects when injected with œstradiol benzoate; creatinuria was increased. P. C. W.

Effect of various steroids in intact male rats. H. Selye and S. Albert (*Amer. J. med. Sci.*, 1942, **204**, 876—884).—All hormonally active steroids caused involution of the Leydig cells in the testis owing to inhibition of pituitary gonadotropic hormone secretion. The tubular damage elicited by small doses of testosterone is not due to the androgenic effect of this compound. The action of the steroids on the appearance of other organs is tabulated. C. J. C. B.

Morphogenetic actions of various steroids in castrate male rat. H. Selye and S. Albert (*J. Pharm. Exp. Ther.*, 1942, **76**, 137—148).—Testosterone has a selective stimulating action on seminal vesicles, androsterone on prostate, and androstenediol on preputial glands. Progesterone and pregnenolone do not stimulate the vesicles in castrates, but androstenediol does so to a small extent. Deoxycorticosterone has no androgenic activity but causes decrease in size of accessory organs. V. J. W.

Metabolic response of aged men to testosterone propionate. A. T. Kenyon, K. Knowlton, G. Lotwin, and I. Sandiford (*J. Clin. Endocrinol.*, 1942, **2**, 690—695).—25 mg. of testosterone propionate injected daily caused an increase in body wt. and a reduction in urinary excretion of N, inorg. P, SO_4'', and Na in two 76-year-old men. Urinary K was reduced in one subject. The max. amount of N retained (25 mg. per kg. per day) and other metabolic effects were not different from those in normal young men, and were slightly less than in younger eunuchoids. P. C. W.

Comparative metabolic effects of testosterone propionate and chorionic gonadotropin. A. T. Kenyon, K. Knowlton, G. Lotwin, P. L. Munson, C. D. Johnston, and F. C. Koch (*J. Clin. Endocrinol.*, 1942, **2**, 685—689).—A short boy 13 years of age with few signs of early puberty was injected daily with 5 mg. of testosterone propionate or 750—1500 i.u. of chorionic gonadotropin. There was a reduction in urinary excretion of N, inorg. P, SO_4'', K, Na, and creatine. In neither case was there any change in urinary excretion of androgens, œstrogens, or 17-ketosteroids. P. C. W.

Effect of male sex hormone and chorionic gonadotropin on height and bone development. M. B. Gordon and E. M. Fields (*J. Clin. Endocrinol.*, 1942, **2**, 715—724).—The effects of chorionic gonadotropin and testosterone propionate on height and bone development were studied in 20 boys suffering from hypogonadism, hypogenitalism, and cryptorchidism. The results are analysed in detail and show in general that chorionic gonadotropin alone or alternated with testosterone propionate stimulates height and bone development, the combined treatment being the more effective. The doses were : chorionic gonadotropin 250—500 i.u. twice weekly and testosterone propionate 10—25 mg. twice weekly. In spite of continuance of treatment for as long as 36 months there was no case of premature closure of epiphyses or stunting of growth. P. C. W.

Effect of testosterone therapy on serum potassium. A. M. Butler, N. B. Talbot, and E. A. MacLachlan (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 378—380).—Daily oral administration of 30 mg. of methyltestosterone and daily intramuscular administration of 50 mg. of testosterone propionate reduced serum-K in 2 male dwarfs to 0·6 and 0·4 m-equiv. per l. respectively. Administration of 100 mg. of methyltestosterone to a hyperthyroid female reduced serum-K to 1·5 m-equiv. per l. V. J. W.

XIII.—DIGESTIVE SYSTEM.

Influence of duodenal acidity on gastric secretion. I. J. Pincus, J. E. Thomas, and M. E. Rehfuss (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 367—368).—In dogs, having a Pavlov pouch and gastric

and duodenal fistulas, gastric secretion is not reduced by duodenal acidity until the duodenal pH reaches 2·5. Further increase of acidity causes further depression. V. J. W.

Influence of bile on gastric motility. J. M. Winfield and J. Kaulbersz (*J. Pharm. Exp. Ther.*, 1942, **76**, 97—103).—Introduction of dried bile or bile salts into the stomach of fasting dogs causes gastric contractions if the stomach muscle is quiescent, but occasionally inhibition if it is contracted. Choline produces the inhibitory, but not the contractile, effect. All the effects are abolished by atropine. V. J. W.

Chronic peptic ulcer of the œsophagus and its association with congenitally short œsophagus and diaphragmatic hernia. R. C. S. Dick and A. Hurst (*Quart. J. Med.*, 1942, **11**, 105—120).—The report is based on 16 private cases and a " rather smaller " no. of hospital cases. Chronic œsophageal ulcer is usually associated with a short œsophagus in which there is free regurgitation of gastric contents in the supine position or when intra-abdominal pressure is raised owing to the absence of the valve-like action of the normal oblique entry of the œsophagus into the stomach. Other cases are probably due to ectopic gastric mucosa in the œsophagus. Heartburn is felt while eating, especially hard or irritating food, on stooping, and in bed unless the patient is propped up. *X*-Ray demonstration may be difficult, and the Ba should be thick, swallowed lying down, and the stomach compressed. There is usually spasm above the ulcer, and this may interfere with œsophagoscopy. Hæmatemesis occurred in 3 cases, and melaena in 1. Fibrotic stricture was found in 4, and may be followed by gastric distension (*aérogastrie bloqué*). Perforation is uncommon, and malignant change very rare. Achalasia of the cardia does not cause the characteristic pain, but 1 healed case developed achalasia. Treatment of the type with short œsophagus should be with milk and soft foods 4 times a day and full doses of atropine, and of those with ectopic gastric mucosa, with frequent feeds and antacids as in ordinary peptic ulcer. 2 of the 16 cases needed gastrostomy. After the ulcer has healed residual stenosis should be treated with graduated Hg bougies before the stoma is allowed to close. (16 figs.) R. K

Hormone effects on male gastroduodenal mucosa. [Use of œstrogen in chronic duodenal ulcer.] R. H. Abrahamson, R. Church, and J. W. Hinton (*Amer. J. med. Sci.*, 1942, **204**, 809—823).—The favourable, though temporary, results of parenteral administration of œstrogen in 29 men with chronic duodenal ulcer are described. C. J. C. B.

Effect of urine extracts on prevention and healing of experimental peptic ulcers in dogs. D. C. Beaver, D. J. Sandweiss, H. C. Saltzstein, A. A. Farbman, and A. W. Sanders (*Amer. J. clin. Path.*, 1942, **12**, 617—629).—The urine of pregnant and normal women contains a substance which has a prophylactic and therapeutic effect in experimental Mann–Williamson ulcers in dogs. The urine of patients with symptoms of active duodenal ulcer contains less of this principle. The nature of the substance is unknown. There is no inhibition of gastric secretion of acid. (18 photomicrographs.) C. J. C. B.

Gastric resection with removal of fundus in treatment of duodenal ulcer. R. Zollinger (*Surgery*, 1940, **8**, 79—93).—Removal of the greater portion of the fundus along the greater curvature of the stomach considerably diminishes the vol. of gastric juice secreted since this area contains much-folded mucosa. Experimental operations were performed in dogs. The technique is described and results of the operation in 2 human cases are reported. P. C. W.

Surgical treatment of gastric and duodenal ulcers. R. Zollinger (*Surgery*, 1940, **7**, 427—452).—A review with 126 references. P. C. W.

Effect of predigested food on experimental peptic ulcer. E. S. Emery, R. Zollinger, and R. B. Rutherford (*Surgery*, 1940, **7**, 574—578).—In 4 dogs in which surgical drainage of the duodenum was performed by the Mann–Williamson technique, the appearance of ulcers was not prevented nor the survival of the dogs extended by feeding them on chyme obtained from the jejunum of other dogs with jejunal fistulas. P. C. W.

Azotæmia in gastro-duodenal hæmorrhage. D. A. K. Black (*Quart. J. Med.*, 1942, **11**, 77—104).—After hæmorrhage into the stomach or duodenum, blood-urea is usually moderately raised, with a N retention equiv. to 1 day's intake of protein; the rise may occur within 2 hr. The blood-urea is max. on the following day, and normal after a week. The other blood-N substances are unchanged except for a small rise in amino-acids. Plasma-Cl′ is little raised, but -HCO_3′ is normal unless there is vomiting. After external hæmorrhage the rise of blood-urea is slight, but after feeding blood it is considerable though only after several hr. The rapid rise must be due to tissue breakdown, from dehydration and anoxia. There is usually a drop in blood vol., sometimes to half, and a diminution of water and salt excretion by the kidney, and a diminution of glomerular filtration and renal blood flow as measured by inulin and diodone clearances. Tubular function is usually unimpaired, and albuminuria and casts are found only occasionally. The usual rise of blood-urea is probably due to absorption from the bowel at a time when the renal blood flow is low. If bleeding is severe tissue breakdown is an important source of urea. In a few cases with pre-existing renal disease, alkalosis due to vomiting, or gross dehydration due to excessive fluid restriction, the blood-urea may rise to 200 mg.-% or more. R. K.

Factors affecting hydrogen-ion concentration of contents of small intestine. C. S. Robinson, H. Luckey, and H. Mills (*J. Biol. Chem.*, 1943, **147**, 175—181).—The progressive increase in pH throughout the jejunum of the dog is due to an increase in HCO_3′ and a decrease in CO_2 pressure. High vals. in the ileum are due to increased HCO_3′. The sharp drop in pH of alkaline solutions introduced into the intestine is due to a relatively rapid influx of CO_2 but subsequent formation of HCO_3′ restores equilibrium vals. NH_4Cl acidosis does not affect the pH of intestinal contents and hence does not increase Ca absorption. HCO_3′ alkalosis increases the intestinal pH. The reaction of the human jejunum is the same as that of the dog. J. E. P.

Plasma-potassium following intestinal obstruction in dogs. W. F. Greenwood, R. E. Haist, and N. B. Taylor (*Surgery*, 1940, **7**, 280—281).—Plasma-K was determined daily in 12 dogs following intestinal obstruction 2 in. below the opening of the common bile duct. There was a fall in all cases of 17—40% in the first few days after operation; there was some rise preceding death but in only 5 cases did the level exceed that before operation. P. C. W.

Spasm of last ileal loop simulating regional ileitis. D. A. Willia, G. C. Coe, and J. Arendt (*Surgery*, 1940, **7**, 226—231).—A case is described. P. C. W.

Histopathology of old anastomotic wounds of gastrointestinal tract. G. F. Archer (*Surgery*, 1940, **7**, 589—598).—Tissue from the site of 81 anastomoses of the stomach and jejunum in man was examined. At the site of recent anastomoses there is sloughing and beginning of repair; collections of polymorphs surrounding the sutures are common. At the site of established anastomoses there are cystic changes in the gastric mucosa but not in the intestinal mucosa. There is a diminished no. of parietal cells in the few gastric glands near the site and undifferentiated glands at the actual anastomosis. These glands extend to the muscularis mucosæ which if present is mixed with muscularis propria and scar tissue. Union of the muscularis propria is by a thin band of mixed connective tissue and smooth muscle. Vascularity of the anastomotic site is decreased and foreign body type of reaction may be present about the suture material. P. C. W.

Technique for high intestinal fistula. R. Zollinger, E. S. Emery, and R. B. Rutherford (*Surgery*, 1940, **7**, 579—581).—Technical description of operation in dogs. P. C. W.

Pancreaticohepatic syndrome. W. H. Cole and J. S. Howe (*Surgery*, 1940, **8**, 19—33).—5 cases of fatty infiltration of the liver with fibrosis of the pancreas reported in the literature are analysed and an additional case is described in detail. The liver condition is considered to be secondary to the pancreatic lesion. The syndrome is an adult form of infantile steatorrhœa. Causes are discussed. P. C. W.

Enzyme studies in œdema of pancreas and acute pancreatitis. H. L. Popper (*Surgery*, 1940, **7**, 566—570).—Pancreatic œdema was produced in dogs by injection of bile or olive oil into the main pancreatic duct and subsequent ligature of the duct. High concns. of pancreatic enzymes were found in the subcapsular œdema fluid 15 min. after the ligature of the duct. These enzymes had collected by diffusion and not owing to rupture of the ducts. 1 hr. after the duct ligation peritoneal exudate was present which also contained pancreatic enzymes. A high concn. of amylase was found at operation in the peritoneal exudate in 9 cases of pancreatic disease. P. C. W.

Diffusion of pancreatic enzymes through intestinal wall in ileus. H. L. Popper (*Surgery*, 1940, **7**, 571—573).—Complete duodenal obstruction was produced in 5 dogs below the pylorus and duct of Santorini. Pancreatic and bile secretion was stimulated by mecholyl, decholin, or eserine. The obstructed duodenum was distended but there was no perforation or pathological change in its walls. Bloody peritoneal exudate accumulated in large amounts and contained high concns. of amylase. The amylase content of the blood increased slowly but did not attain the concn. found in the peritoneal exudate. P. C. W.

Vitamin-*A* absorption and its relation to intestinal motility in fibrocystic disease of pancreas. L. J. Flax, M. Barnes, and J. L. Reichert (*J. Pediat.*, 1942, **21**, 475—483).—Report of 2 cases and a review. 28% of 50 patients had pathologic evidence of vitamin-*A* deficiency. In those cases tested, there was inefficient absorption of -*A* and carbohydrate and hypotonicity, hypomotility, and delayed passage of Ba meal. C. J. C. B.

Functional capacity of cæcal appendage in birds and mammals. C. Dennis, R. E. Buirge, and O. W. Wangenstein (*Surgery*, 1940, **7**, 372—388).—The behaviour of the cæcum was studied in 18 species of birds or mammals and of the cæcal appendage in man and 3 other

mammalian species. No cæcum or appendage was present in raccoon, bear, or skunk. After laporotomy a cannula was inserted into the cæcum or appendage and ligatured off and water passed into the closed system. Increase or decrease in the vol. of water showed whether secretion or absorption was taking place. Secretion was only found in rabbit, chimpanzee, and man, in all cases from the appendage. The gibbon was the only other species possessing an appendage and no secretion was found in this case. There was no secretion from the cæcum in any case. The only instances of inflammation were in cases where there was in increase in the pressure within the lumen suggesting that increased intralumenal pressure is a factor in the production of appendicitis in man. P. C. W.

XIV.—LIVER AND BILE.

Sodium *d*-lactate tolerance test of liver function. C. Cohn (*Arch. intern. Med.*, 1942, **70**, 829—835).—34 of 36 patients with jaundice due to diffuse damage to liver cells showed abnormal retention of intravenously injected Na *d*-lactate. 4 of 24 patients with obstructive jaundice showed abnormal retention. The test is more reliable than Na benzoate, galactose tolerance, ratio of total to esterified cholesterol, and urinary urobilinogen dilution tests. C. A. K.

Respiratory quotient of liver. I. Determination of liver R.Q. in anæsthetised dogs. II. Influence of certain diets on R.Q. A. H. Chambers (*J. Nutrition*, 1942, **24**, 331—344).—A method for determining the R.Q. of liver *in vivo* is described. Observed vals. exceeded 0·7 and were not significantly different from the R.Q. of the entire animal following a meat meal. In animals receiving a high-fat diet or in those previously starved the liver-R.Q. was less than 0·7. A. G. P.

Microcrystallisation of various protein-containing fractions. N. Dobrovolskaïa-Zavadskaïa (*Compt. rend.*, 1942, **214**, 675—677).—The appearance under the microscope of crystals formed in evaporating drops of some fractions of liver and tumour extracts is described. A. Lɪ.

Particulate glycogen : submicroscopic component of guinea-pig liver cell ; its significance in glycogen storage and regulation of blood-sugar. A. Lazarow (*Science*, 1942, **95**, 49, and *Anat. Rec.*, 1942, **84**, 31—50).—By means of a high-speed centrifuge a submicroscopic complex of glycogen (92—93·5% glycogen on a dry-wt. basis) was isolated from the liver of adult guinea-pigs. The high % of water present in it lends support to the concept of water storage with glycogen in the cell. The significance of particulate glycogen in the process of glycogen storage in the liver and the regulation of blood-sugar is discussed. W. F. H.

Availability of *d*(+)- and *l*(−)-histidine for production of liver-glycogen.—See A., 1943, III, 261.

Detoxication of progesterone derivatives in liver.—See A., 1943, III, 242.

Production of cirrhosis of liver in rats by feeding low-protein, high-fat diets. H. Blumberg and H. G. Grady (*Arch. Path.*, 1942, **34**, 1035—1041).—Diffuse nodular cirrhosis of the liver was produced in 3 strains of rats fed wheat-germ oil or corn oil (3—5 c.c. daily) for 200—400 days. The sequence is prolonged fatty infiltration followed by cirrhosis. The cirrhosis depends partly on protein deficiency. (3 photomicrographs.) C. J. C. B.

Hæmorrhagic diathesis in patients with jaundice [in relation to vitamin-*K*]. E. W. Boland (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 459—461).—50 fatal cases in which either bile was excluded from the intestinal tract or there was severe liver damage are reviewed. Both conditions reduce the concn. of bile salts in the intestine, causing decreased absorption of vitamin-*K*. P. C. W.

Sphincter mechanism of lower end of bile duct. G. Gordon-Taylor (*Brit. Med. J.*, 1942, II, 149—151).—A lecture. C. A. K.

Free graft over vitallium tube for bridging gap in common bile duct of the dog. J. W. Lord and A. I. Chenoweth (*Arch. Surg., Chicago*, 1943, **46**, 245—252).—A free fascial graft from the anterior rectus sheath is fashioned into a cuff around a straight vitallium tube with a holder. (2 photomicrographs.) F. S.

XV.—KIDNEY AND URINE.

Goormaghtigh cells in normal and diseased human kidney and hypertension. W. Kaufmann (*Amer. J. Path.*, 1942, **18**, 783—789).—400 kidneys, removed at operation or autopsy, showed Goormaghtigh cells at the vascular pole of the glomeruli in the outer part of the cortex close to the macula densa of the distal convoluted tubules. They also occurred in and along the wall of the afferent and efferent arteriole, interlobular artery, and terminal artery. Their position and cytological characteristics indicate that they may be transformed smooth muscle cells. (6 photomicrographs.) C. J. C. B.

Effects on renal resistance to blood flow of renin, angiotonin, pitressin, and atropine. Hypertension due to renal embolism.—See A., 1943, III, 232.

Non-specificity of glomerular lesions of kidney. H. A. Christian (*Amer. J. med. Sci.*, 1942, **204**, 781—796).—A review of the similarity of glomerular lesions in a no. of diverse diseases. (18 photomicrographs.) C. J. C. B.

Non-specific effect of certain kidney extracts in lowering blood pressure. O. Schales, E. A. Stead, jun., and J. V. Warren (*Amer. J. med. Sci.*, 1942, **204**, 797—809).—A kidney extract, similar to that of Page *et al.* (A., 1942, III, 668), was prepared. Intramuscular injections of the extract given daily in 5 of 7 patients showed a significant lowering of arterial pressure, which was related to the fever, sweating, weakness, anorexia, and severe local reactions produced by the injections. The other patients showed no effect. Hypertensinase-poor extracts were prepared to determine whether the fall in arterial pressure was produced by the sp. action of the hypertensinase on a renin–hypertensin system. Injection of these extracts produced a fall in arterial pressure similar to that produced by the original extract. It is concluded that the decrease in arterial pressure was produced by a non-sp. effect of the renal extracts on the body rather than by the sp. interference with a renin–hypertensin system. C. J. C. B.

Renal impairment from limb crushing in anæsthetised dogs. M. G. Eggleton, K. C. Richardson, H. O. Schild, and F. R. Winton (*Brit. Med. J.*, 1942, II, 392—393).—Dogs were anæsthetised with nembutal and the hind limbs bound with rubber tubing from ankle to hip for 4—5 hr.; the thigh muscles were compressed in a vice and hammered for a few min. Removal of the tubing was followed by a large fall of blood pressure and by severe oliguria or anuria; if there was any urine it was deeply pigmented (myohæmoglobin) and the creatinine clearance was very low. Intravenous serum restored the blood pressure but the creatinine clearance did not exceed 25% of normal. A lowered blood pressure from histamine infusion for 1 hr. did not reduce creatinine clearance. Microscopically the kidneys showed materials in the terminal portion of the proximal convoluted tubules which might have obstructed urinary flow. It is suggested that toxic substances are absorbed from the limb muscles to act on the renal tubules increasing their permeability and the changes are considered comparable with those seen with crush injury in man. C. A. K.

Renal lesions in case of excessive vomiting. N. G. B. McLetchie (*J. Path. Bact.*, 1943, **54**, 17—22).—Renal tubular lesions are described in a case of excessive vomiting due to pyloric stenosis. The changes, which were both degenerative and regenerative and confined to the ascending limbs of Henle, the second convoluted tubules, and the collecting tubules, were similar to those found in the crush syndrome. The acute tubular damage included formation of communications between the tubules and adjacent venules. (3 photomicrographs.) C. J. C. B.

Pyonephrosis in congenital polycystic kidneys. A. E. Goldstein and B. Klotz (*Surgery*, 1939, **6**, 730—745). P. C. W.

Symmetrical cortical necrosis of kidneys. C. P. Larson and R. J. Bennett (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 481—484).—Two cases are reported, associated with acute delirious mania and lobar pneumonia. P. C. W.

Method of explanting kidney for renal venipuncture in dogs. I. H. Page and A. C. Corcoran (*Surgery*, 1940, **7**, 389—391). P. C. W.

Renal colic caused by early obstruction of lower urinary tract. H. M. Weyraugh and S. McMahon (*Surgery*, 1940, **7**, 602—614).—Pain which is usully typical of renal colic was observed in 9 cases of early obstruction of the vesical neck. Trigonal hypertrophy, early trabeculation of the bladder, difficulty in passing the catheter through the intramural portion of the uterer, and little evidence of dilatation of the upper urinary tract were also noted. Removal of the obstruction causes return of the ureteral and bladder musculature to normal. The cause of the pain is discussed. P. C. W.

Anuria, ureteral obstruction, and renal complications following sulphadiazine.—See A., 1943, III, 265.

Acid phosphatase activity of human urine, an index of prostatic secretion.—See A., 1943, III, 244.

Relation of hippuric acid excretion to volume of urine.—See A., 1943, III, 247.

Urinary incontinence. F. B. Block (*Amer. J. med. Sci.*, 1942, **204**, 905—913).—A general review. C. J. C. B.

Creatinuria of premature infants. E. Marples (*Amer. J. Dis. Child.*, 1942, **64**, 996—1007).—Premature infants receiving the low-protein diet of human milk excreted (as N per kg. per 24 hr.) less creatinine (4·22 mg.) than did premature infants receiving cow's milk (5·09 mg.) Premature infants on human milk excreted little or no creatine in the urine; when the protein intake was increased (from 2·4 to 5·2 g. per kg. per day), there was an increase in creatinuria. Creatinuria is related to N metabolism, at least during

first 3 weeks after the change of diet from relatively low to relatively high protein intake. C. J. C. B.

Determination of urinary phenols. M. Volterra (*Amer. J. clin. Path.*, 1942, **12**, 525—531).—A method is described for determining 3 phenolic fractions in urine with the Folin and Ciocalteu reaction. The excretion in 18 normal people in 24 hr. was 44·4 mg. of volatile phenols; that of aromatic hydroxy-acids, expressed as *p*-hydroxyphenylacetic acid, 79·9—49·4 mg. (average 71 mg.). The amount of non-volatile ether-insol. substances reacting with the Folin and Ciocalteu reagent was 156—503 mg. C. J. C. B.

Urinary phenols : their significance in normal and pathological conditions. M. Volterra (*Amer. J. clin. Path.*, 1942, **12**, 580—589).—Determinations of volatile phenols, aromatic hydroxy-acids, and " residual phenols " in the urine of normal subjects are reported. Repeated determinations in the same individual showed a const. elimination of volatile phenols and aromatic hydroxy-acids at a const. ratio. Food intake, protein content of diet, or conditions in the intestine have no influence on the phenolic content of the urine. The intermediate metabolism of proteins is the decisive factor. C. J. C. B.

XVI.—OTHER ORGANS, TISSUES, AND BODY-FLUIDS.

Premature mortality. L. Flax, E. L. Levert, and R. A. Strong (*J. Pediat.*, 1942, **21**, 717—726).—The main causes for premature birth mortality were in order of frequency in 859 cases : atelectasis, prematurity, bronchopneumonia, diarrhœa, cranial injuries, and syphilis. C. J. C. B.

Birth weights and ponderal growth of children of tuberculous mothers. C. A. Urquijo and M. Weissmann (*J. Pediat.*, 1942, **21**, 787—792).—The birth wt. and gain in wt. of a child born of a tuberculous mother, not seriously ill, is similar to that of child born of a healthy mother. C. J. C. B.

Arthritis. Committee of American Rheumatism Association (*J. Amer. Med. Assoc.*, 1942, **119**, 1089—1104).—Classification and description of types of arthritis. C. A. K.

Healing of wounds. W. F. Bowers (*J. Lab. clin. Med.*, 1943, **28**, 451—462).—A lecture. C. J. C. B.

Wound healing : effect of sterile abscess on fibroplasia in wound healing. G. B. Sanders and W. S. Garrison (*Arch. Surg., Chicago*, 1943, **46**, 40—48).—The presence of a sterile abscess, induced by Na ricinoleate, retarded the velocity of fibroplasia in the healing of abdominal incisions in rats on a diet containing only 1·0% of protein. There was therefore no evidence that protein split products liberated by the breakdown of tissue in a sterile abscess were utilised in wound healing. F. S.

Significance of subcutaneous scar tissue. R. E. Mosiman (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 397—401).—Sections of scar tissue show healing to be incomplete even when epithelium covers the wound. Monocytic infiltration about the capillaries may persist for 2 or more years. Superabundance of collagen and elastic fibres was noted throughout the series, bringing about contractility and occasional scar deformity. P. C. W.

Immediate strength of sutured wound. E. L. Howes (*Surgery*, 1940, **7**, 24—31).—The strength of a sutured wound depends more on the holding power of the tissue than on the strength of the gut or silk used. The holding power of the tissue is increased more by the multiplication of sutures than by the increase in size of the suture material used. There was little difference in the strength of the repair effected by continuous and interrupted sutures. P. C. W.

Relative value of catgut, silk, linen, and cotton as suture materials. W. H. Meade and A. Ochsner (*Surgery*, 1940, **7**, 485—514).—The tensile strengths of the various materials were determined before and after sterilisation and after remaining in animal tissues of the rabbit for varying periods. Tissue reactions and wound healing were studied in the rabbits. The bacteriology of the sutures was also studied before and after boiling and autoclaving. Non-absorbable sutures are preferable to catgut as they can always be heat-sterilised, allow rapid wound healing, allow reliable square knots to be tied, and produce no allergic reactions. Silk and linen are stronger than cotton when implanted in animal tissues but show an earlier decrease in tensile strength. Cotton and linen may contain spore-forming anaërobic pathogens. Silk-sutured wounds in the presence of infection may develop sinuses which do not heal until the suture is removed; sinuses are less likely to develop with cotton sutures as there is no ingrowth of infected tissue into the cotton thread. Cotton produced the least local reaction and the earliest wound healing and is recommended for use in surgery. 91 surgical patients had cotton sutures and primary healing occurred in 88. P. C. W.

Silk [operation] technique. P. Shambaugh (*Surgery*, 1940, **7**, 9—23).—Experiments were carried out to determine in detail the optimal methods of sterilisation, lubrication, and knotting in silk sutures. Sterilisation by autoclave, lubrication with a mixture of wax and vaseline, and use of the triple-throw knot with fine silk (0·005 in. diameter and tensile strength of 3 lb.) in interrupted stitches is recommended. The best method of increasing strength of the suture is to multiply the no. of individual stitches. P. C. W.

Inorganic constituents of bone. S. B. Hendricks and W. L. Hill (*Science*, 1942, **96**, 255—257).—Consideration of *X*-ray and chemical analyses of bone, dentine, and human enamel suggests that bone contains a hydrate of the type $Ca_3(PO_4)_2.\frac{1}{2}H_2O$ rather than a hydroxyapatite; $Na^{\cdot}$ and CO_3'' are essential constituents of the type. E. R. R.

Colloid degeneration (collagen degeneration) of skin. M. J. Reuter and S. W. Becker (*Arch. Dermat. Syphilol.*, 1942, **46**, 695—704).—A case report with review of the literature. C. J. C. B.

New technique for cutting skin grafts with new instruments. E. J. Poth (*Surgery*, 1939, **6**, 935—939). P. C. W.

Hydroxyl-ion concentration of the saliva of partly desiccated beet leaf hoppers. J. M. Fife (*Phytopath.*, 1940, **30**, 433—437).—In fasting hoppers the pH of the saliva was in the range 10—11. A. G. P.

Effects of desiccation procedures on chemical composition of fæces, urine, and milk. D. M. Teague, H. Galbraith, F. C. Hummel, H. H. Williams, and I. G. Macy (*J. Lab. clin. Med.*, 1942, **28**, 343—348).—The removal of water from fæces, urine, and milk by the cryochem process (dehydration in vac. from the frozen state by means of chemicals) permits preservation of the dry material indefinitely in an undenatured form. Oven-drying at 70° and under hydrolyses the soaps in fæces, although the total free fatty acid + soap vals. are the same for both methods of drying. C. J. C. B.

Environment and growth of trout. C. A. Wingfield (*J. Exp. Biol.*, 1940, **17**, 435—448).—Water temp. and available food supply were limiting factors in laboratory grown brown trout (*Salmo trutta*, L.). Differences in growth in " hard " and " soft " waters are probably due to departure from the optimum ionic balance rather than a sp. effect of Ca. D. M. Sa.

Carotene—principal pigment responsible for variations in coloration of adult grasshopper, *Melanoplus bivittatus*, Say. J. McD. Grayson and O. E. Tauber (*Iowa State Coll. J. Sci.*, 1943, **17**, 191—196).—The light-to-dark variation in colour types of adult grasshoppers was largely determined by the amount of yellow pigment (mainly carotene) immediately beneath the cuticula. The average content of carotene per g. body wt. (after removal of intestines) was 0·0436 mg. in females and 0·0397 mg. in males, and that per g. of tissue in the reproductive organs and surrounding fatty materials was 0·266 mg. R. H. H.

Effect of parental feeding on rate of development and mortality of *Tribolium destructor*, Uyttenboorgaart (Coleoptera, Tenebrionidæ). J. M. Reynolds (*Nature*, 1943, **151**, 55).—The period between emergence of the first instar from the egg and eclosion of the adult from the pupa was the same for individuals reared on 85% and 60% extraction flours when the parents were fed on 85% flours, but greater when parents were fed 60% flours (period for larvæ fed 60% flours was greater than for larvæ fed 85% flours). Larval, prepupal, and pupal deaths were least when larvæ and parents were fed 85%, most when both were fed 60%, flours. E. R. S.

Chemistry of *Macracanthorhynchus hirudinaceus*. T. Brand and J. Saurwein (*J. Parasit.*, 1942, **28**, 315—318).—This worm contains, besides true glycogen, small amounts of a polysaccharide resembling and perhaps identical with galactogen. Na, K, Ca, Mg, Mn, Al, Fe, and Cu were detected by spectrographic analysis. F. S.

Nutritional requirements of fowl cestode *Raillietina cesticillus* (Molin) as demonstrated by short periods of starvation of the host. W. M. Reid (*J. Parasit.*, 1942, **28**, 319—340).—Starvation of the host for 24 hr. reduced the glycogen content of this cestode to $\frac{1}{11}$ of its normal val. There was a daily fluctuation in glycogen level under normal feeding conditions from 7·14% at 6 p.m. to 3·68% at 6 a.m. The mean composition of cestodes removed at 6 p.m. was water 79·46, glycogen 6·51, ether-sol. extract 3·20, N 1·14, and ash 2·36%. F. S.

Nature of peptones. P. J. Fodor, S. Kuk, and J. Diamante-Lichtenstein (*Nature*, 1943, **151**, 280).—Exhaustive proteinase digestion of casein, ovalbumin–pepsin peptone, and an edestin product yields peptones which represent mixtures of tetrapeptide chains, whereas the pepsin-peptone obtained from ovalbumin which has been subjected to additional splitting by pancreatic proteinase yields still lower peptide chains. A. A. E.

Structure of keratin fibres. J. L. Stoves (*Nature*, 1943, **151**, 304—305).—The behaviour of cuticle, cortex, and medulla of guard hairs of *Mustela siberica* on treatment with various chemical reagents is recorded, together with the results of dyeing tests on those of *Lepus variabilis* and *M. erminæ*, and notes on physicochemical differences between guard hairs of the skunk and human hair and wool. A. A. E.

Partial acid hydrolysis of cow-hide gelatin.—See A., 1943, II, 179.

XVII.—TUMOURS.

Induction of leukæmia in mice by methylcholanthrene and *X*-rays. D. P. McEndy, M. C. Boon, and J. Furth (*J. Nat. Cancer Inst.*, 1942, **3**, 227—247).—Mice from a low-leukæmic strain *Rf* and crosses of *Rf* with *Ak* (a high-leukæmia stock) were painted with methylcholanthrene. The high incidence of leukæmia in the mice was slightly raised if they were exposed to *X*-rays. Changes were noticed, 8 weeks or more after painting, in the spleen and lymph nodes but not in the bone marrow or liver. The leukæmia was successfully transmitted from 45 out of 46 mice which were used. E. B.

Action of 5 : 9 : 10-trimethyl-1 : 2-benzanthracene on skin of mouse. J. L. Hartwell and H. L. Stewart (*J. Nat. Cancer Inst.*, 1942, **3**, 277—285).—Of 124 mice of *dba*, *C*57 black, and *I* strains and *dba*–*C*57 black crosses painted with 0·06% trimethylbenzanthracene 79 developed malignant tumours. The first papillomata appeared after 39 days. Pigmented foci were common but no melanomata were found. E. B.

Intestinal adenocarcinoma and intra-abdominal hæmangio-endothelioma in mice ingesting methylcholanthrene. J. White and H. L. Stewart (*J. Nat. Cancer Inst.*, 1942, **3**, 331—347).—Young mice of the *C3H* and *C* strains were fed on a diet containing 0·055% of methylcholanthrene. Of 50 *C3H* mice 12 had adenocarcinomata and 18 precancerous lesions. Of 32 strain *C* mice 4 developed adenocarcinomata and 5 had precancerous lesions. Hæmangio-endotheliomas occurred in 11 *C3H* mice and in 21 strain *C* mice. Metastases were found in lymph nodes, livers, and lungs. No tumours occurred in the glandular stomach or large intestine but pulmonary tumours were induced in strain *C* mice. (12 figures.) E. B.

Cytology of hepatic tumours and proliferating bile duct epithelium induced with *p*-dimethylaminoazobenzene in rat. A. J. Dalton and J. E. Edwards (*J. Nat. Cancer Inst.*, 1942, **3**, 319—329).—The Golgi apparatus of hepatoma cells is juxtanuclear. Hepatomata of type I have spherical mitochondria while type II have filamentous mitochondria. It is suggested that the transplantable hepatoma 31 originated as a type II hepatoma and that a hepatic adenocarcinoma is derived from parenchymal cells rather than from bile duct epithelium. (12 figures.) E. B.

Induction of carbon tetrachloride hepatoma in strain *L* mice. J. E. Edwards, W. E. Heston, and A. J. Dalton (*J. Nat. Cancer Inst.*, 1942, **3**, 297—301).—Mice were dosed orally with an olive oil solution of CCl_4 so that they received 0·04 c.c. of CCl_4 twice weekly. Hepatomas occurred in 47% of the treated mice. The normal incidence of hepatomas in this strain is 1·3%. E. B.

Possible carcinogenic activity of wood smoke. F. Dickens and H. Weil-Malherbe (*Cancer Res.*, 1942, **2**, 680—684).—4 groups of 20 mice were painted twice weekly up to 24 months with 4 fractions of wood smoke condensates. At the site of application only one papilloma was obtained which appeared after 22 months and spontaneously regressed a month later. Single and multiple pulmonary adenomas were found in 8 of 17 mice painted for 18 months or more with tar fractions from the pyroligneous liquor. No neoplasms appeared in rats fed smoked fish or meat 3 times weekly up to 20 months. F. L. W.

Incidence of primary lung tumours in mice with induced sarcomas. C. E. Dunlap and S. Warren (*Cancer Res.*, 1942, **2**, 685—687).—*C3H* mice are more resistant than Swiss mice to the induction of primary lung tumours. In Swiss mice carcinogenic agents increase the incidence and hasten the appearance of lung tumours. The incidence of primary lung tumours in Swiss mice is higher in those developing neoplasms at the site of injection of a carcinogenic agent than in mice treated identically but failing to develop such growths. F. L. W.

Relationship between the lethal yellow (A^y) gene of mouse and susceptibility to induced pulmonary tumours. W. E. Heston (*J. Nat. Cancer Inst.*, 1942, **3**, 303—308).—Yellow (A^yA^y) and brown (*aa*) hybrids of strain *A* females and strain *y* males were injected intravenously with 20-methylcholanthrene. The yellow mice were much more susceptible to pulmonary tumours and were much heavier at the same age. E. B.

Technique for quantitative studies on mammary tumour inciter in mice. H. B. Andervont, M. B. Shimkin, and W. R. Bryan (*J. Nat. Cancer Inst.*, 1942, **3**, 309—318).—Mice bred from strain *I* females and *C3H* males are suitable for quant. studies of the factor as they are susceptible, but do not obtain the inciter from the milk of their mothers. Oral administration of 0·1 to 0·8 c.c. of milk from *C3H* mice, or subcutaneous injection of 0·15 to 0·25 c.c. of milk or of lactating mammary gland or spleen, induced tumours in young nursing mice. Older mice are more resistant to the effect of the inciter. E. B.

Ultra-violet spectrographic analysis of the fat fraction of mouse milk and mammary glands [in relation to cancer]. K. B. DeOrme, L. A. Strait, and E. L. McCawley (*Science*, 1942, **96**, 301—302).—The similarity in the absorption spectra of the fat fractions of milk and mammary glands from high- and low-tumour strain mice indicates that the milk-borne factor may not be carried in the fat fraction or, if it is, is not spectrographically similar to the carcinogenic hydrocarbons or œstrogens. E. R. R.

Possible relationship of œstrogenic hormones, genetic susceptibility, and milk influence in production of mammary cancer in mice. J. J. Bittner (*Cancer Res.*, 1942, **2**, 710—721).—A review. F. L. W.

Creatine and creatinine content of transplanted hepatomas of normal and regenerating liver. J. P. Greenstein (*J. Nat. Cancer Inst.*, 1942, **3**, 287—291).—Normal and regenerating rat liver and transplanted rat hepatomata contained 1·5 mg. of creatinine and 11 mg. of creatine per 100 g. of tissue. Mouse hepatic tissues contained 1·1—1·4 mg. of creatinine and 5—6 mg. of creatine per 100 g. E. B.

Incubation of citrulline and ammonia with normal and neoplastic hepatic tissues. J. P. Greenstein (*J. Nat. Cancer Inst.*, 1942, **3**, 293—296).—Slices of tissue were incubated in the presence of NH_3, CO_2, and O_2 with and without added citrulline. The normal liver synthesised urea in the presence of citrulline but hepatoma tissue did not. Both normal and malignant tissues took up NH_3 in the presence of serum without added citrulline. E. B.

Metabolism of induced and spontaneous leukæmias in mice. D. Burk, H. Sprince, J. M. Spangler, M. C. Boon, and J. Furth (*J. Nat. Cancer Inst.*, 1942, **3**, 249—275).—The anaërobic glycolysis of lymph nodes and spleen was slightly increased in leukæmia while the glycolysis of the liver tissue increased enormously. The change in anaërobic glycolysis in the liver occurred suddenly. The aërobic glycolysis vals. of preleukæmic, leukæmic, and leukæmoid lymph nodes, spleens, and livers were all slightly higher than for corresponding normal tissues. The glycolysis of the leukæmia cells ($Q_A^{N_2} = 6$—10) is lower than that of most tumour tissues. The respiration of lymph nodes and spleen was slightly raised in leukæmic and leukæmoid organs. E. B.

Inhibition of sulphhydryl-containing enzymes by split products of *p*-dimethylaminoazobenzene.—See A., 1943, III, 428.

Effect of riboflavin on liver changes produced in rats by *p*-dimethylaminoazobenzene. W. Antopol and K. Unna (*Cancer Res.*, 1942, **2**, 694—696).—The feeding of large amounts of riboflavin (10 mg. 3 times a week) retards the occurrence of pathological changes in the liver produced by *p*-dimethylaminoazobenzene in rats maintained on a synthetic diet free from riboflavin and nicotinic acid. Nicotinic acid does not have this effect. F. L. W.

Effect of vitamin-B_1 deprivation on appearance, growth rate, and course of Jensen rat sarcoma. J. L. Jones (*Cancer Res.*, 1942, **2**, 697—703).—Tumour growth rates were not affected in rats deprived of vitamin-B_1 12 days after transplantation of the tumour. Deprivation started on the day of transplantation slowed the tumour growth rate. Deprivation started 12 days before grafting resulted in a still later appearance of the tumour; it also decreased the growth rate. Return of tumour-bearing rats to a normal diet 25 days after transplantation temporarily increased the tumour growth rate. F. L. W.

Occurrence of *d*-glutamic acid in protein of malignant tumours and healthy organs. E. Abderhalden (*Z. physiol. Chem.*, 1942, **275**, 135—154).—Descriptions are given of acid hydrolysis of healthy and tumour tissue and of the isolation of *l*- and, in a few cases, *dl*-glutamic acid from the hydrolysates. The difficulties in isolating the pure acid and of determining the yield are great. Strict criteria of purity, which must be adopted, are given. The yields of *dl*-acid obtained are lower than those of Kögl *et al.* (A., 1940, III, 317) and it is suggested that *d*-amino-acid production in tumours is a phenomenon of secondary importance. Possible methods by which *d*-amino-acids are produced in the organism are discussed. Racemic glutamic acid is best prepared by heating the *l*-acid at 205° for 4—5 hr. and boiling with conc. HCl the pyrrolidonecarboxylic acid thus obtained. The detection by taste of certain impurities in glutamic acid is described. W. McC.

Crystallisation of albumin from human sarcomata. T. Baranovski (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 139—141).—A cryst. albumin has been obtained from sarcoma and chondromyxosarcoma, by dialysis and pptn. from the aq. extract. by $(NH_4)_2SO_4$. A. Li.

Antigens and malignant tumours. IV. F. Micheel and H. Emde. **V.** F. Micheel, H. Emde, and H. Dörner (*Z. physiol. Chem.*, 1942, **275**, 215—216, 258—266; cf. A., 1943, III, 128).—IV. Cancer probably occurs less frequently in persons who have suffered from infectious disease than in those who have not. Benzpyrene does not produce tumours in mice having infected wounds.

V. Production of tumours in mice by benzpyrene is diminished by administration of substances having antigenic action [aq. extract of tumour, serum-albumin (horse), and the glucosido-carbobenzyloxy-derivative of gelatin] but not by insulin which has been reduced with cysteine or by untreated gelatin. The development of formed tumours is retarded by the antigens. An anti-serum obtained from rabbit by treatment with the glucosido-carbobenzyloxy-derivative

of serum-globulin (horse) gives a precipitin reaction with the gelatin antigen and an anti-serum obtained by the use of this antigen reacts similarly with the serum-globulin derivative (cf. Clutton *et al.*, A., 1938, III, 854). W. McC.

Participation of anterior chamber of eye in resistance phenomena related to tumour growth. H. S. N. Greene (*Cancer Res.*, 1942, **2**, 669—674).—Tumours *H*31, *T*36, and *B*240 were grafted into the anterior chambers of the eyes of rabbits. Following tumour growth in the anterior chamber of one eye, both the testicle and the anterior chamber of the opposite eye were resistant to reinoculation. The resistance-provoking powers of the tumours were directly related to their growth rates and longevity. The ability of the various tumours to grow in partially resistant hosts depended on their stromal requirements. F. L. W.

Mechanism of tumour immunity as investigated by intraocular inoculation of the Brown–Pearce carcinoma. F. S. Cheever and H. R. Morgan (*Cancer Res.*, 1942, **2**, 675—679).—Implantation of Brown–Pearce carcinoma into the anterior chamber of the eye of normal rabbits was successful whether unilateral or bilateral. Secondary intraocular inoculation in animals immunised by standard methods was unsuccessful in 18 of 20 cases. Secondary transplants as long as 4 months after primary inoculation in the other eye were successful regardless of the state of activity of the first growth at this time. Of 11 transplants remaining as long as 14 days in the eyes of immune animals only 2 proved viable. F. L. W.

Reaction of experimental sarcomas to wound-healing stimulus. O. C. Julian and A. Brunschwig (*Surgery*, 1940, **7**, 32—36).—A wedge-shaped wound was made in subcutaneous sarcomas produced by methylcholanthrene in rats. The wounds healed normally and the normal tumour contours were regained. The repair was accomplished by proliferation of tumour cells. There was no localised increase in growth. P. C. W.

Three carcinomas of tongue in two monkeys. P. E. Steiner, H. Klüver, and A. Brunschwig (*Cancer Res.*, 1942, **2**, 704—709).—Three squamous-cell carcinomas of the tongue occurred simultaneously in 2 macaque monkeys. Attempts at transmission were made and remained negative after 3½ months. F. L. W.

Intracellular inclusion bodies in carcinoma of adrenal gland. R. J. Stein (*Amer. J. clin. Path.*, 1942, **12**, 630—633).—A case is described of carcinoma of the breast, adenocarcinoma of the rectum, and carcinoma of the adrenal. In the sections of the adrenal carcinoma numerous intracellular inclusion bodies were found that correspond closely to the inclusion bodies of virus diseases. (3 photomicrographs.) C. J. C. B.

Mixed tumours of salivary glands. W. H. Sheldon (*Arch. Path.*, 1943, **35**, 1—20).—A review based on 54 cases. (15 photomicrographs.) C. J. C. B.

Mixed tumour (carcinosarcoma) of breast. S. W. Harrington and J. M. Miller (*Surgery*, 1940, **7**, 122—128).—A case is described and discussed. P. C. W.

Fibrosarcoma of mammary gland. S. W. Harrington and J. M. Miller (*Surgery*, 1940, **7**, 129—132).—Incidence of pure fibrosarcoma (spindle-cell sarcoma) is lower than that of adenofibrosarcoma. Differential diagnosis is discussed; prognosis is better in adenofibrosarcoma. P. C. W.

Surgical treatment of tumours of stomach. R. Zollinger (*Surgery*, 1940, **7**, 619—643).—Review with 93 references. P. C. W.

Lymphoid tumours of colon and rectum. H. T. Hayes, H. B. Burr, and L. T. Pruit (*Surgery*, 1940, **7**, 540—545).—A discussion of lymphoid tumours with a report of a case of simple lymphoma of the rectum. P. C. W.

Multiple primary cancers of uterus. R. G. Maliphant (*J. Obstet. Gynaec.*, 1943, **50**, 59—62).—A case is described and discussed. P. C. W.

Chorionepithelioma. H. E. Murray and H. Ahmed (*J. Obstet. Gynaec.*, 1943, **50**, 55—58).—Brief descriptions of 5 cases with discussion. P. C. W.

Anlagen and rest tumours of lung inclusive of " mixed tumours " (Womack and Graham). W. H. Harris and H. J. Schattenberg (*Amer. J. Path.*, 1942, **18**, 955—959).—4 tumours of the lung, showing evidences of origin either in anlagen or from more than 1 germinal layer, are described. (8 photomicrographs.) C. J. C. B.

Initiation of secretory changes in transplanted mammary adenocarcinoma of rat by pituitary lactogenic hormone.—See A., 1943, III, 324.

Primary sarcoma of choroid.—See A., 1943, III, 317.

XVIII.—NUTRITION AND VITAMINS.

Calories in medical practice. E. F. Du Bois and W. H. Chambers (*J. Amer. Med. Assoc.*, 1942, **119**, 1183—1188).—A review. C. A. K.

Food consumption in Halifax. E. G. Young (*Canad. Publ. Health J.*, 1942, **33**, 480—485).—Data obtained in the dietary survey of the Canadian Council of Nutrition carried out in Halifax in 1939—40 were re-examined and results compared with similar data in the U.S.A. and Gt. Britain and in relation to total income and food expenditure. Consumption of butter, eggs, milk, cheese, fish, and meat was most notably contracted by falling expenditure. Bread and potatoes were independent and relatively const. Other dietary items with the exception of sugar did not show a consistent relationship. The Halifax dietary was relatively high in fish and low in milk consumption. C. G. W.

Nutritional requirements in infancy and in childhood. A. M. Butler (*Amer. J. Dis. Child.*, 1942, **64**, 898—918).—A general review. C. J. C. B.

Feeding newborn high-protein, low-fat, low-carbohydrate mixtures. T. H. Goldman (*Arch. Pediat.*, 1942, **59**, 756—759).—Artificially fed young infants thrive better on milk formulæ higher in protein and lower in fat than on standard nursery feedings. C. J. C. B.

Dietary ratios for the child with diabetes mellitus. R. L. Jackson and J. Kenefick (*Amer. J. Dis. Child.*, 1942, **64**, 807—814). C. J. C. B.

Chemical composition of twenty-two common foods and comparison of analytical with calculated values of diets. F. C. Hummel, M. L. Shepherd, H. Galbraith, H. H. Williams, and I. G. Macy (*J. Nutrition*, 1942, **24**, 41—56).—Variations in the composition of composite diets are less than those of individual constituents. Analyses of composite diets show good agreement with vals. calc. from standard tables in respect of fat, cals., Mg, P, K, and S but may diverge considerably in the case of Ca, Na, and Cl. A. G. P.

Nutritive value of certain fish meals for swine and rats. E. R. Barrick, C. M. Vestal, and C. L. Shrewsbury (*J. Agric. Res.*, 1943, **66**, 125—134).—Menhaden, sardine, and herring fish meals were of equal val. in a mixed protein supplement fed to swine. In the rations of rats, sardine was slightly superior to the other meals in palatability and nutritive val. R. H. H.

Coconut water, clinical and experimental study. E. S. Pradera, E. Fernandez, and O. Calderin (*Amer. J. Dis. Child.*, 1942, **64**, 977—993).—The proteins of coconut water contain most of the essential amino-acids. Its subcutaneous administration produced in 4 of the 13 patients a transitory local reaction, inflammatory and painful, comparable with that produced by 5% glucose. C. J. C. B.

Salt mixture for use with basal diets either low or high in phosphorus. J. H. Jones and C. Foster (*J. Nutrition*, 1942, **24**, 245—256).—The new salt mixture (NaCl 292·5, KH_2PO_4 816·6, $MgSO_4$ 120·3, $CaCO_3$ 800·8, $FeSO_4,7H_2O$ 56·6, KI 1·66, $MnSO_4,2H_2O$ 9·35, $ZnCl_2$ 0·5452, $CuSO_4,5H_2O$ 0·9988, $CoCl_2,6H_2O$ 0·0476 g.) is shown to be superior to that of Hubbel *et al.* (A., 1937, III, 472). A. G. P.

Nutritive value and chemical composition of certain fresh-water plants of Minnesota.—See B., 1943, III, 107.

Digestion of national wheatmeal.—See A., 1943, III, 246.

Soya-bean protein as a source of amino-acids for the chick. H. J. Almquist, E. Mecchi, F. H. Kratzer, and C. R. Grau (*J. Nutrition*, 1942, **24**, 385—392).—The principal limiting deficiency factor in raw soya bean is methionine. Heated protein given at the rate of 20% of the diet was slightly deficient in methionine but adequate for all other amino-acid requirements of the chick. A. G. P.

Nutritional studies on powdered chicken feathers. J. I. Routh (*J. Nutrition*, 1942, **24**, 399—404).—Powdered hen feathers if supplemented with tryptophan, methionine, lysine, and histidine produced moderate growth in young rats. Similar results were obtained when 5% but not when 3% of casein was used in place of the supplementary amino-acids. Powdered wool + 5% of casein had substantially the same effect. A. G. P.

Potassium, sodium, and chlorine balances of pre-school children receiving medium- and high-protein diets. J. E. Hawks, M. M. Bray, S. Hartt, M. B. Whittemore, and M. Dye (*J. Nutrition*, 1942, **24**, 437—448).—Children received diets containing at first 3 and then 4 g. of protein per kg. body wt. The higher-protein diet caused little, if any, change in K retention but a slight increase in Na and a more marked increase in Cl retention. Vals. for Na and K retentions indicate that increase in dietary protein with corresponding increase in minerals caused more muscle production than when dietary minerals remained at the lower level. K is probably a limiting factor in muscle growth. The higher Cl retention associated with higher-protein rations may be due to formation of special high-Cl tissues, *e.g.*, blood cells. A. G. P.

Urea as partial protein substitute in feeding of dairy cattle. E. C. Owen, J. A. B. Smith, and N. C. Wright (*Biochem. J.*, 1943, **37**, 44—53; cf. A., 1941, III, 890).—Urea has been fed to lactating cows in an amount equiv. to 25% of the total N intake. Milk yields are well maintained and in some cases show a decrease when urea is removed from the food, and body wt. is maintained better on urea than on blood meal. Approx. 25% of the urea is not utilised but

this wastage is reduced if preceded by a period with a deficiency of total N. Blood-urea increases in the early stages and then returns to normal and the urea content of the milk approximates to that of the blood but is never greater than 28 mg. per 100 ml. No variations in the protein, fat, lactose, or total solids of the milk are observed. H. G. R.

Utilisation of urea by young calves. J. K. Loosli and C. M. McCay (*J. Nutrition*, 1943, **25**, 197—202).—2-month-old calves are unable to grow on a diet containing 4·4% of protein, are in negative N balance, and the apparent digestibility of the dry matter and carbohydrates is 57—63%. On adding urea to the diet to give a calc. protein content of 16·2% increases in body wt. and height are satisfactory, the animals exhibit positive N balance, retaining 24—36% of the dietary N, and the digestibility of the dry matter and carbohydrate increases to 74—80%. Supplements of the vitamin-*B* complex do not increase the rate of growth or the efficiency of utilisation of N nor increase the riboflavin content of the organs or edible meat. H. G. R.

Rôle of fat in diet. W. R. Bloor (*J. Amer. Med. Assoc.*, 1942, **119**, 1018—1025).—A review. C. A. K.

Comparative nutritive value of butter fat and vegetable oils. E. B. Hart (*Amer. J. Publ. Health*, 1943, **33**, 265—266).—A review of the author's work. C. J. C. B.

Comparative nutritional value of butter and margarine. Council on Foods and Nutrition (*J. Amer. Med. Assoc.*, 1942, **119**, 1425—1427).—A review. C. A. K.

Effect of fats and fat-soluble substances on growth of rats. II. B. von Euler, H. von Euler, and I. Såberg (*Arkiv Kemi, Min., Geol.*, 1942, **15**, **B**, No. 8, 3 pp.; cf. A., 1942, III, 909).—Young rats receiving a diet adequate in protein, carbohydrate, mineral salts, and vitamins increased in wt. more with margarine than with butter as source of fat. M. H. M. A.

Influence of dietary fat on excretion of urobilin. H. W. Josephs, L. E. Holt, jun., H. C. Tidwell, and C. Kajdi (*Bull. Johns Hopkins Hosp.*, 1942, **71**, 84—95).—Feeding high-fat diets, independent of the type of fat, or comparatively small amounts of free fatty acids and soaps, to normal infants increases fæcal urobilin possibly because absorption of increased amount of soap leads to increased hæmolysis. A high-fat diet temporarily increases fæcal Fe. T. F. D.

Body fats in rat acrodynia. F. W. Quackenbush and H. Steenbock (*J. Nutrition*, 1942, **24**, 393—398).—Development of acrodynia in rats receiving a low-fat diet is accompanied by decrease in crude fatty acid content of the body and an increase in I val. of the fat. Supplementary dietary factors which cured or alleviated the dermal symptoms of acrodynia (ethyl linoleate, rice-bran concentrate, pyridoxine + pantothenic acid) also increased the total body-fat and decreased its I val. Fatty acids from acrodynic rats or rats cured by rice-bran concentrate did not cause acrodynia. A. G. P.

Water and salt requirements in health and disease. J. H. Talbot (*J. Amer. Med. Assoc.*, 1942, **119**, 1418—1425).—A review. C. A. K.

Relation of sulphur-amino-acids to toxicity of cobalt and nickel in rat. W. H. Griffith, P. L. Pavcek, and D. J. Mulford (*J. Nutrition*, 1942, **23**, 603—612).—Addition of 0·12% of $CoSO_4$ to a rat diet containing 18% of casein inhibited growth, the effect being largely counteracted by further supplementation with cystine, methionine, or (especially) cysteine. High mortality due to oral or intraperitoneal administration of Ca or Zn is prevented by simultaneous or separate feeding of cysteine. The Co–cysteine complex formed *in vitro* is relatively harmless. Co poisoning may result from fixation of thiol compounds and consequent inhibition of oxidative mechanisms. A. G. P.

Influence of aluminium sulphate and hydroxide on absorption of dietary phosphorus by rats. H. R. Street (*J. Nutrition*, 1942, **24**, 111—119).—Addition to rat diets of $Al_2(SO_4)_3$ equiv. to the P content of the food rendered all P unavailable. When $Al(OH)_3$ was given at the rate of 0·5 and 1% of the diet ¼—¼ of the Al was converted into a form which reacted with dietary P. A. G. P.

Fluorosis and the parathyroid glands. L. Spira (*J. Hygiene*, 1942, **42**, 500—504).—The dental changes in rats produced by parathyroidectomy resemble the mottled teeth in man due to ingestion of F′. Hence, in man, mottled teeth, certain dermatoses, mottled nails, and alopecia may all be due to parathyroid disturbance caused by F′ in drinking water. J. H. B.

Enzymic therapy in infant feeding. W. C. Davison (*J. Pediat.*, 1942, **21**, 727—732).—Commercial enzymic preps., which contained 7500—350,000 amylase units and 550—72,000 trypsin units per g., were administered orally to 23 infants suffering from digestive disturbances in doses of 0·3—1·5 g. of holadin, 0·4 g. of taka-diastase, 2·5—5·0 g. of pancreatin, or 2·5 g. of desiccated pancreas 6—8 times daily for 3—18 days (1 infant received only 1 dose). 16 of the patients benefited with gain in wt., improvement in appetite, and reduction in no. of stools. C. J. C. B.

Incidence of nutritional and vitamin deficiency. M. A. Krupp (*J. Amer. Med. Assoc.*, 1942, **119**, 1475—1479).—About ¼ of 400 consecutive patients admitted to Stanford University Hospital were taking inadequate diets, and 11·5% of these showed signs of vitamin deficiency (compared with 2 out of 297 patients who had an adequate diet). C. A. K.

Nutritional defects and eyes.—See A., 1943, III, 235.

Vitamin therapy in dermatology and syphilology. P. A. O'Leary (*Arch. Dermat. Syphilol.*, 1942, **46**, 628—634).—A review. C. J. C. B.

Vitamin and endocrine preparations in arthritis. R. H. Freyberg (*J. Amer. Med. Assoc.*, 1942, **119**, 1165—1171).—There is no evidence from the literature or from the author's reported cases that rheumatoid and osteo-arthritis are significantly improved by administration of vitamins-*A*, -B_1, -*C*, or -*D*. Apart from the benefit produced by œstrogens in menopausal arthritis there is little evidence for the val. of endocrine preps. C. A. K.

Vitamin control of honeys. M. H. Haydak, L. S. Palmer, M. C. Tanquary, and A. E. Vinino (*J. Nutrition*, 1942, **23**, 581—588).—Honey contains thiamin, riboflavin, pyridoxine, and ascorbic, nicotinic, and pantothenic acids, in amounts which vary considerably with the source of nectar. Clarification of honey with diatomaceous earth lowers the vitamin content. A. G. P.

Rôle of honey in prevention and cure of nutritional anæmia in rats.—See A., 1943, III, 225.

Distribution of minerals and vitamins in different parts of leafy vegetables.—See A., 1943, III, 294.

Rôle of vitamins and metallic elements in nutrition of crown-gall organism.—See A., 1943, III, 279.

Vitamin synthesis by a yeast converted from heterotrophic into autotrophic habit.—See A., 1943, III, 274.

Absorption and retention of carotene and vitamin-*A* by hens on normal and low-fat rations. W. C. Russell, M. W. Taylor, H. A. Walker, and L. J. Polskin (*J. Nutrition*, 1942, **24**, 199—211).—Absorption of cryst. carotene by hens is facilitated by dietary fat. On a low-fat ration hens excrete a yellow pigment which resembles carotene in solubility but is not a carotenoid pigment. Carotene and vitamin-*A* are not eliminated from body reserves through the kidneys or intestine. Absorption of -*A* was not affected by low proportions of dietary fat. The % absorption of -*A* was not influenced by the length of the previous depletion period. With increase in the amount fed the % of -*A* excreted remained substantially const. at levels which were characteristic for each bird. The presence of a small quantity of fat as a vehicle for -*A* ester may favour absorption. Retention of -*A* in the liver was higher in hens receiving a normal than in those receiving a low-fat diet. A. G. P.

Minimum vitamin-*A* requirement of fox. S. E. Smith (*J. Nutrition*, 1942, **24**, 97—109).—The earliest symptom of vitamin-*A* deficiency in foxes is that of nervous disturbance. At a later stage the growth rate declines. No sp. effects on fur quality are apparent. The min. requirement of -*A* necessary to prevent nervous symptoms is 15—25 i.u. per kg. body wt. daily. Liver storage of -*A* begins with feeding levels of 50—100 i.u. daily. A. G. P.

Mobilisation by alcohols of vitamin-*A* from its stores in tissues. S. W. Clausen, W. S. Baum, A. B. McCoord, J. O. Rydeen, and B. B. Breese (*J. Nutrition*, 1942, **24**, 1—14).—Alcohols (methyl, ethyl, *n*- and *iso*-propyl) administered to dogs by mouth, vein, or injection into the peritoneal cavity caused a marked increase in serum-vitamin-*A*, the max. effect being reached in approx. 24 hr. The mobilised -*A* is derived from liver and fat depots and is not the result of increased absorption from the gastro-intestinal tract. Nearly all the mobilised -*A* and the majority of that in tissues is in ester form. -*A* is probably stored as the ester, and its conversion into the free form is an essential preliminary to its utilisation by tissues. A. G. P.

Effect of high vitamin-*A* intake on blood- and milk-carotene of Holstein and Guernsey cows. H. J. Deuel, jun., L. F. Hallman, C. Johnston, and F. Mattson (*J. Nutrition*, 1942, **23**, 567—579).—Administration of shark-liver oil to cows caused a decrease in milk-carotene, the max. effect being reached in approx. 4 weeks. Vals. returned to normal 7—10 weeks after cessation of feeding the oil. The -*A* content of butter from Holstein and Guernsey cows was directly proportional to the -*A* intake. The levels of blood- and milk-carotene were proportional in both breeds although the vals. for Holsteins were the lower throughout. A. G. P.

Utilisation of carotene and vitamin-*A* in rats. R. Treichler, A. R. Kemmerer, and G. S. Fraps (*J. Nutrition*, 1942, **24**, 57—64).—Compared with the vitamin-*A* of cod-liver oil the efficiency, in increasing rat liver-*A*, of carotene dissolved in cottonseed oil was 59 and of that contained in lucerne leaf meal 21%. On an -*A*-free diet rats showed increase in liver-*A* for 2 weeks after weanin yeast present in the diet provided a factor contributory to increase. A. G

Treatment of ichthyosis with vitamin-*A*. H. G. Rapaport, H. Herman, and E. Lehman (*J. Pediat.*, 1942, **21**, 733—745).—6 individuals with ichthyosis were improved after prolonged treatment with large doses of vitamin-*A*. 5 of these patients, who were examined by photometric test, had dark dysadaptation, which also improved with the administration of -*A*. C. J. C. B.

Cystic pituitary in young cattle with vitamin-*A* deficiency. L. L. Madsen, S. R. Hall, and H. T. Converse (*J. Nutrition*, 1942, **24**, 15—24).—Cystic pituitary glands occurred in young cattle deficient in vitamin-*A* or having suffered -*A* depletion at an earlier age. The injury is not repaired by ingestion of adequate supplies of carotene. A. G. P.

Vitamin-*A* deficiency and intestinal permeability to bacteria and toxin. W. A. Stryker and M. Janota (*J. infect. Dis.*, 1941, **69**, 243—247).—There was no difference in intestinal permeability to *Bact. enteritidis* and *Cl. bolulinum* toxin between normal and vitamin-*A*-deficient rats. F. S.

Vitamin-*A* deficiency in tuberculosis and diabetes and effect of various therapeutic preparations. B. A. Dormer and M. Gibson (*S. Afr. J. Med. Sci.*, 1942, **7**, 109—119).—Vitamin-*A* deficiency was determined in normal young adults, and in cases of pulmonary tuberculosis or diabetes, using the Frober–Faybor biophotometer. 20—30% of the 92 normal individuals, 50—60% of the 86 tuberculosis patients, and all the 10 diabetics showed deficiency. The degree of deficiency in the tuberculous patients was correlated with the severity of the condition. -*A* therapy was ineffective in the diabetics. The improvements effected in the biophotometric curve produced by various forms of -*A* therapy are compared. P. C. W.

Attempted purification of vitamin-A_2.—See A., 1943, II, 149.

New source of carotene. L. G. Gomoljako (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 142—143).—The currant *Ribes aureum* contains vitamin-*C* 21—58, carotene 0·6—5·25 mg., and sugar 5·5—12·9 g. per 100 g. A. Li.

Inhibition of symbiotic synthesis of vitamin-*B* complex factors by sulphonamides. R. F. Light, L. J. Cracas, C. T. Olcott, and C. N. Frey (*J. Nutrition*, 1942, **24**, 427—435).—In rats receiving all cryst. constituents of vitamin-*B*, ingestion of 0·5% of sulphaguanidine in the diet depressed growth. Natural sources of -*B* (yeast) counteracted this effect as also did the feeding of fæces of rats receiving a normal diet. Sulphaguanidine inhibits the bacterial synthesis of essential factors present in the natural -*B* complex. A. G. P.

Factors required by chicks maintained on a heated diet. H. A. Waisman, R. C. Mills, and C. A. Elvehjem (*J. Nutrition*, 1942, **24**, 187—198).—Chicks receiving a heated diet require, in addition to the 6 cryst. factors of vitamin-*B* (complex), the eluate factor in yeast (factor *U*), cartilage, and biotin. Factor *U* and biotin can be supplied by liver residue. Panthothenic acid, biotin, and one or more constituents of factor *U* are destroyed by heat. A. G. P.

Effect of protein and vitamin-*B* levels of the diet on the tissue content and balance of riboflavin and nicotinic acid in rats. H. P. Sarett and W. A. Perlzweig (*J. Nutrition*, 1943, **25**, 173—183).—Variation in the protein and vitamin-*B* complex in the diet limits the wt. gain of rats but the riboflavin and nicotinic acid contents of the carcass, excluding the liver, do not vary. The concn. of riboflavin and nicotinic acid in the liver varies directly with the level of protein but is independent of the -*B* intake. The concn. of thiamin in the carcass and liver varies directly with the -*B* intake but is not affected by the protein level. Deposition of liver- and body-fat is increased by increasing the -*B* or lowering the protein content of the diet. Balance studies show a synthesis of nicotinic acid by the rats and economy of utilisation of riboflavin on low-*B* diets. H. G. R.

Effect of vitamin deficiencies on basal metabolism and respiratory quotient in rats. D. Orsini, H. A. Waisman, and C. A. Elvehjem (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 99—102).—Basal metabolic rate is not altered by deficiency of riboflavin or pantothenic acid, but is decreased by deficiency of pyridoxine. All these deficiencies increase R.Q., possibly through incomplete combustion of intermediate metabolites. V. J. W.

Effect of vitamin-*B* deficiency on intestinal absorption of galactose in rats. A. H. Free and J. R. Leonards (*J. Nutrition*, 1942, **24**, 495—502).—The rate of intestinal absorption of galactose was increased by feeding vitamin-*B* (complex), the effect being unaffected by the rate of emptying of the stomach. Blood-galactose observed 1 hr. after ingestion serves as an indirect measure of galactose absorption. A. G. P.

Relation of *B*-vitamins and dietary fat to the lipotropic action of choline. R. W. Engel (*J. Nutrition*, 1942, **24**, 175—185).—Rats receiving a purified diet (18% casein) supplemented with thiamin, riboflavin, pantothenic acid, pyridoxine, maize oil, and choline accumulated larger proportions of liver-fat than when the vitamins were omitted. With increased proportions of choline kidney hæmorrhage was prevented but liver-fat levels did not return to normal. Further supplements of inositol to diets adequate in choline and vitamin-*B* caused a return to normal liver-fat levels. Diets deficient in pyridoxine or essential fatty acids produced fatty livers even when adequate supplies of choline were given. Pyridoxine and a source of essential fatty acids are necessary for choline to exert its full lipotropic action. Inositol in addition to choline is an essential dietary factor for rats. A. G. P.

Choline and pyridoxine as factors in prevention of epithelial hyperplasia in the fore-stomach of rats fed white flour. G. A. Sharpless and M. Sabol (*J. Nutrition*, 1943, **25**, 113—117).—The incidence of lesions in the fore-stomach of rats receiving cystine and white flour as the only source of protein is reduced and better growth obtained by the addition of choline and pyridoxine whereas Ca pantothenate is without effect. It is suggested that the lesions are produced by regurgitation of bile and that this is prevented by the stimulating effect of choline on the smooth muscle of the intestinal tract. H. G. R.

Blood level of vitamin-B_1 in healthy children and its relation to urinary thiamin. R. A. Benson, C. M. Witzberger, L. B. Slobody, and L. Lewis (*J. Pediat.*, 1942, **21**, 659—664).—In 177 determinations on 45 healthy children, blood-vitamin-B_1 was 4·8—12·3 μg. (mean 7·8±1·3). The daily variations in blood-B_1 in an individual child did not follow the daily urinary thiamin outputs. Blood-B_1 concn. had no relationship to the amount or % of dietary thiamin excreted in the urine. C. J. C. B.

Thiamin requirement of albino rats as influenced by substitution of protein for carbohydrate in the diet. W. W. Wainio (*J. Nutrition*, 1942, **24**, 317—329).—The average thiamin requirement of rats (approx. 400 g.) maintained in energy equilibrium at 26—30° was 33 μg. on a high-carbohydrate and 20 μg. daily on a high-protein diet. Increased urinary pyruvate excretion, indicating disturbance of intermediate carbohydrate metabolism, serves as an index of subacute thiamin deficiency. A. G. P.

Nature of *Eimeria nieschulzi* growth-promoting potency of feeding stuffs. II. Vitamins-B_1 and -B_6. E. R. Becker and R. I. Dilworth (*J. infect. Dis.*, 1941, **68**, 285—290).—In rats inoculated with a uniform dose of *E. nieschulzi* and fed on a vitamin-B_1- and -B_6-deficient diet, the addition to the diet of 10—20 μg. of thiamin chloride per rat per day reduced the nos. of oocysts eliminated. The addition of 50—200 μg. of -B_6 increased the yield of oocysts, but the addition of both -B_1 and -B_6 reduced the yield to below that of the recipients of -B_1 alone. F. S.

Polyneuropathy in thiamin-deficient rats delayed by alcohol or whisky. J. V. Lowry, W. H. Sebrell, F. S. Daft, and L. L. Ashburn (*J. Nutrition*, 1942, **24**, 73—83).—Ingestion of alcohol or whisky delayed the onset of polyneuropathy in thiamin-deficient rats. A. G. P.

Thiamin, riboflavin, pyridoxine, and pantothenic acid deficiencies as affecting appetite and growth of albino rat. LeR. Voris, A. Black, R. W. Swift, and C. E. French (*J. Nutrition*, 1942, **23**, 555—566).—Each of the vitamins had a definite and characteristic effect on appetite. Riboflavin, pyridoxine, and pantothenic acid exhibited sp. growth-promoting effects unrelated to appetite. Thiamin improved the growth rate of female but not that of male rats. Liver extract added to a "complete" diet containing all four vitamins did not improve appetite or growth rate. A. G. P.

Cardiac failure in thiamin-deficient pigeons. R. L. Swank and O. A. Bessey (*Arch. intern. Med.*, 1942, **70**, 763—776).—Chronic thiamin deficiency without starvation produces cardiac failure with tachycardia, abnormalities of e.c.g., and necrosis of heart muscle in pigeons. The cocarboxylase content of heart muscle is markedly reduced. Administration of thiamin hydrochloride or cocarboxylase restores the normal state. Starvation alone produced bradycardia and variable heart block. C. A. K.

Average American diet. I. Thiamin content. R. L. Lane, E. Johnson, and R. R. Williams (*J. Nutrition*, 1942, **23**, 613—624).—Prior to the introduction of enriched bread and flour the average thiamin content of American diets was 0·8 mg. per 2500 cal. Use of enriched flour increased the val. to 1·3 mg. per 2500 cal. Thiochrome assays of cooked flesh foods (notably lean pork) tend to yield low vals. for thiamin content due to incomplete extraction. In prevailing diets lean pork, bread, and milk are the chief sources of thiamin. A. G. P.

(A) **Thiamin clearance as an index of nutritional status.** D. Melnick and H. Field, jun. (B) **Thiamin requirement of man.** D. Melnick (*J. Nutrition*, 1942, **24**, 131—138, 139—151).—(A) Four clearance tests described consisted of basal 24-hr. and fasting 4-hr. urinary excretion of thiamin, response to oral administration of 5 mg. of thiamin, and 4-hr. excretion when 350 μg. of thiamin per sq. m. body area was administered parenterally. Good correlation between results of these tests was established. All normal but none of the deficient subjects (human adults) excreted more than 50 μg. of thiamin in the 4-hr. period following dosage.

(B) The vitamin-B_1 requirement of adults is 350 μg. and the recommended daily intake 500 μg. per 1000 cal. Only 73% of

so-called normal subjects on unrestricted diets excreted sufficient thiamin in urine to pass all clearance tests. A. G. P.

Thiamin and riboflavin contents of citrus fruits. M. I. Bailey and A. W. Thomas (*J. Nutrition*, 1942, **24**, 85—92).—The mean contents of vitamin-B_1 and -B_2 in orange juice were 65—70 and 15—16 and of grapefruit juice 32—35 and 11—12 μg. per 100 c.c. respectively. Tangerine juice contained 69 μg. of -B_1 per 100 c.c. A. G. P.

Peanut butter as a source of thiamin, calcium, phosphorus, and iron. C. D. Miller, L. Louis, and C. Peterson (*Food Res.*, 1943, **8**, 27—32).—Peanut butter contains thiamin 324—450 (average 380) μg. per 100 g., Ca 0·034—0·048 (average 0·038)%, P 0·404%, and Fe 0·00167—0·00198 (average (0·00187)%. H. G. R.

Rôle of gastro-intestinal tract in absorption and excretion of riboflavin. H. Selye (*J. Nutrition*, 1943, **25**, 137—142).—Intravenously administered riboflavin is rapidly excreted into the small intestine (especially the duodenum) of bilaterally nephrectomised rats; excretion through the bile is unimportant. Riboflavin is destroyed rapidly in the isolated large intestine but slowly in an isolated loop of the duodenum. If injected directly into the isolated lower small intestine absorption is more rapid than destruction and the absorbed vitamin rapidly reappears in the duodenum. Intravenously injected riboflavin is nor destroyed or eliminated by rats without the intestinal canal and both kidneys. H. G. R.

Riboflavin requirement of dogs. R. L. Potter, A. E. Axelrod, and C. A. Elvehjem (*J. Nutrition*, 1942, **24**, 449—460).—The riboflavin requirement of growing dogs is 60—100 μg. per kg. body wt. The requirement is not affected by substitution of lard for sucrose in the diet. Riboflavin deficiency is associated with fatty liver, dermatitis, muscular weakness in hind quarters, conjunctivitis, vascularisation of the cornea, corneal opacities, and tachycardia. A. G. P.

Significance of liberal levels of intake of riboflavin. L. N. Ellis, A. Zmachinsky, and H. C. Sherman (*J. Nutrition*, 1943, **25**, 153—160).—A diet containing 3 μg. of riboflavin per g. of air-dried food is on the " plateau " which supports optimal performance for rats and amply supports adult vitality and length of life. Increasing this val. to 10 μg. increases the body wt. slightly and produces better growth and a greater ability to withstand deprivation of either riboflavin or thiamin in the offspring. H. G. R.

Effect of level of protein intake on urinary excretion of riboflavin and nicotinic acid in dogs and rats. H. P. Sarett, J. R. Klein, and W. A. Perlzweig (*J. Nutrition*, 1942, **24**, 295—306).—The amounts of riboflavin and nicotinic acid excreted in dog urine are inversely related to the level of protein intake. A. G. P.

Pseudoariboflavinosis. M. Ellenberg and H. Pollack (*J. Amer. Med. Assoc.*, 1942, **119**, 790—792).—A form of cheilitis, angular stomatitis, and glossitis occurred in 34 patients with no signs of riboflavin deficiency, and was attributed to badly fitting dentures. C. A. K.

Riboflavin, vitamin-B_6, and filtrate factors in wheaten flours and offals. A. M. Copping (*Biochem. J.*, 1943, **37**, 12—17).—Using the increase in wt. of young rats, the amounts of riboflavin, vitamin-B_6, and filtrate factors in white flour, national wheatmeal and wholemeal, and in wheat germ, bran, and middlings or weatings are determined. All the flours are poor sources of riboflavin, but there is 300% increase with the rise of extraction from 73% for white to 85% for national wheatmeal flour. The riboflavin content of wholemeal is slightly greater than that of wheatmeal. Wheat germ contains more than 3 times, and bran and weatings twice, as much riboflavin as does wholemeal. There are less marked differences in -B_6 content in the three flours, indicating a more even distribution of -B_6 in the grain. Wheat germ and weatings contain approx. 3 times as much -B_6 as does wholemeal. The contents of filtrate factors are very similar to those of -B_6. J. N. A.

Assay of riboflavin in cereals and other products. I. Microbiological assay. II. Fluorometric assay. E. C. Barton-Wright and R. G. Booth (*Biochem. J.*, 1943, **37**, 25—30; cf. A., 1942, III, 701).—The microbiological assay of Snell and Strong (A., 1939, III, 766) with certain modifications is recommended. The response of the organism (*Lactobacillus helveticus*) to added riboflavin is obtained by direct titration in the fermentation tubes of the acid formed during growth using a Cole comparator. If the nephelometric method is employed at least five tubes for each level of concn. should be used together with three blanks. The fluorometric method is based on that of Najjar (A., 1942, III, 254), adsorption on " Superfiltrol " being more satisfactory than on PbS. Vals. obtained for cereal products are 2—10 times those previously reported. The low results are due possibly to the use of too highly conc. extracts or incorrect adjustment of pH. H. G. R.

Unusual sites of lesions in pellagra. T. J. Riordan, S. Gellis, and A. M. Rubinowitz (*Arch. Dermat. Syphilol.*, 1942, **46**, 661—664).—3 cases of pellagra with lesions in unusual sites (the areas beneath the breasts, the intergluteal region, the area around the vulva, and the inner aspects of the thighs) are reported; in 1 case there was local gangrene of the right great toe on the basis of a pellagrous dermatitis. C. J. C. B.

Nicotinic acid excretion in normal men and cases of Vincent's gingivitis. L. Golberg and J. M. Thorp (*S. Afr. J. Med. Sci.*, 1942, **7**, 85—94).—The use of the König reaction for assay of urinary nicotinic acid is reviewed; the effect of different types of hydrolysis, filtration, and dilution of acid hydrolysates was investigated with special reference to trigonelline. With 30 min. hydrolysis with 4N-HCl the excretion of nicotinic acid and its derivatives was higher in 9 normal men than in 8 patients with Vincent's gingivitis; the difference is due to nicotinic acid excretion since it is not shown after further hydrolysis for 30 min. with 9N-NaOH. There is no correlation between trigonelline excretion and smoking. The urinary excretion following the ingestion of a test dose of nicotinic acid is recorded in 2 normal men and 2 cases of Vincent's gingivitis. P. C. W.

Function of nicotinic acid in bacterial metabolism.—See A., 1943, III, 286.

Nicotinic acid, pantothenic acid, and pyridoxine in wheat and wheat products. L. J. Teply, F. M. Strong, and C. A. Elvehjem (*J. Nutrition*, 1942, **24**, 167—174).—Data for numerous samples of wheat, patent flour, and wheat germ are recorded. Patent flour showed $\frac{1}{6}$ of the nicotinic acid and $\frac{1}{2}$ of the pantothenic acid and pyridoxine contents of whole wheat. A. G. P.

Nicotinic acid in foods. R. W. McVicar and G. H. Berryman (*J. Nutrition*, 1942, **24**, 235—243).—Published data for a large no. of foodstuffs are summarised. A. G. P.

Nicotinic acid content of meat. W. J. Dann and P. Handler (*J. Nutrition*, 1942, **24**, 153—158).—Nicotinic acid contents of meats as determined by the chemical method (A., 1941, III, 777) using completely decolorised extracts of the tissues were lower than those obtained by the dog assay method or by the chemical method using partly decolorised extracts. Vals. obtained correspond more closely with those given by microbiological assay. During cooking meat loses $\frac{1}{4}$—$\frac{1}{2}$ of its nicotinic acid content. A. G. P.

Microbiological and chemical assay of nicotinic acid in [vitamin-]*B* complex products. R. D. Greene, A. Black, and F. O. Howland (*Ind. Eng. Chem.* [*Anal.*], 1943, **15**, 77—78).—Preliminary acid treatment of cereals leads to high microbiological assys for nicotinic acid. Comparative assays of various pharmaceutical vitamin-*B* complex products for nicotinic acid by the microbiological method and by the CNBr method show substantial agreement. In testing materials of low nicotinic acid content, the microbiological assay is the more suitable. J. D. R.

Storage of pyridoxine in rats. L. R. Cerecedo and J. R. Foy (*J. Nutrition*, 1942, **24**, 93—96).—Rats receiving a pyridoxine-free diet developed dermatitis at periods which increased with their body wt. at the beginning of the test period. Weanling rats from mothers, deprived of vitamin-B_6 in the later stages of lactation, showed inferior growth rates and accelerated onset of dermatitis when placed on the pyridoxine-free diet. Depleted rats given graded sub-optimal doses of pyridoxine showed accelerated growth and delayed dermatitis directly related to the amount of vitamin ingested. A. G. P.

Pyridoxine nutrition of lactic acid bacteria.—See A., 1943, III, 279.

Sensory neuron degeneration in pigs. IV. Protection afforded by calcium pantothenate and pyridoxine. M. M. Wintrobe, M. H. Miller, R. H. Follis, jun., H. J. Stein, C. Mushatt, and S. Humphreys (*J. Nutrition*, 1942, **24**, 345—366).—Normal development without nervous derangement occurred in pigs receiving a crude casein–lard–sucrose–salt ration supplemented with thiamin, riboflavin, nicotinic acid, pyridoxine, choline, Ca pantothenate, and cod-liver oil. Omission of Ca pantothenate and pyridoxine resulted in abnormal gait and degenerative changes in peripheral nerves, posterior root ganglia, posterior roots, and posterior funiculi of the spinal cord. In addition to nervous degeneration the omission of Ca pantothenate caused sub-acute inflammation of the colon, and that of pyridoxine caused epileptiform convulsions and anæmia. Omission of thiamin or choline did not result in characteristic nervous changes. Pyridoxine and pantothenate are necessary factors in the normal maintenance of the nervous system. A. G. P.

Relationship between pantothenic acid requirement and age in the rat. K. Unna and G. V. Richards (*J. Nutrition*, 1942, **23**, 545—553).—The daily maintenance requirement of pantothenic acid decreases from 100 at 3 weeks of age to 25 μg. at 10 weeks but is unrelated to the wt. or food consumption of the rat. A. G. P.

Effect of pantothenic acid deficiency on blood-lipins in dog. J. V. Scudi and M. Hamlin (*J. Nutrition*, 1942, **24**, 273—282).—Dogs receiving diets deficient in pantothenic acid showed lowered blood-cholesterol, -cholesteryl esters, -lipin-P, and -total lipin. The deficiency was more crit. in weanlings than in adult dogs. Administration of pantothenic acid rapidly increased blood-lipin. Deficien dogs developed extremely fatty livers. Liver damage was min.

dogs receiving supplements of pantothenic acid and dried whole liver; it was greater when pantothenic acid alone was given. A. G. P.

Eimeria nieschulzi-growth-promoting potency of feeding stuffs. V. **Dry-heating ingredients of ration.** E. R. Becker, M. Manresa, jun., and L. Smith (*Iowa State Coll. J. Sci.*, 1943, **17**, 257—262).—Reduction in the pantothenic acid content of the ration by dry-heating ingredients (wheat middlings and crude casein) significantly lowered the no. of oocysts eliminated by rats infected with *E. nieschulzi*. R. H. H.

Synthesis of inositol in mice [rôle of pantothenic acid]. D. W. Woolley (*J. Exp. Med.*, 1942, **75**, 277—284).—Mice on a diet containing pantothenic acid synthesise inositol. Animals recovering spontaneously from alopecia yield alimentary micro-organisms which synthesise more inositol than those from non-recovering animals. Inositol without pantothenic acid does not protect against inositol deficiency. A. C. F.

Excretion of biotin in human urine. Relationship between the biotin content of diet and its output in urine and fæces. Excretion of two biotin-like substances in urine. T. W. Oppel (*Amer. J. med. Sci.*, 1942, **204**, 856—875).—Normal subjects on unrestricted diets excreted 7—89 μg. of biotin (measured by yeast growth stimulation) per l. of urine (14—111 μg. per 24 hr.). There was an increase immediately after a large dose of crude biotin. Average diets contain 30—40 μg. of biotin a day, which increased to 64 μg. when liver was included. Urinary biotin output varied with intake. The daily biotin content of fæces exceeded that of the diet. Total biotin output in urine + fæces was 3—6 times as great as the intake. The material in urine which gives the biotin test by the yeast growth assay can be separated into avidin-combining and non-avidin-combining fractions (man, dog, rabbit, rat). The avidin-combining fraction is probably biotin, and its excretion in the urine varies with biotin intake; the other fraction is unaffected by diet and is not present in food or fæces. C. J. C. B.

Linoleic acid, pyridoxine, and pantothenic acid in rat dermatitis. F. W. Quackenbush, H. Steenbock, F. A. Kummerow, and B. R. Platz (*J. Nutrition*, 1942, **24**, 225—234).—Diets containing 0·003% of unsaturated fat caused acrodynia in rats. Supplements of pantothenic acid had no beneficial action, pyridoxine temporarily alleviated the symptoms, and ethyl linoleate cured the acrodynia. Sub-curative doses of ethyl linoleate administered with pyridoxine became curative. Pantothenic acid and pyridoxine improved the dermal condition and ethyl lineolate, given subsequently, produced further improvement: the three substances given simultaneously cured acrodynia but did not eliminate completely the scaliness of tail and hind paws. A. G. P.

Reproduction and lactation of mice on highly purified diets. C. Foster, J. H. Jones, F. Dorfman, and R. S. Kobler (*J. Nutrition*, 1943, **25**, 161—171).—A diet consisting of all the vitamins, the essential fatty acids and salts as chemically pure compounds, together with regenerated cellulose, glucose, and purified fibrin, is inadequate for mice. Fertility, as measured by the no. and size of the litters, is normal but growth is subnormal and the mortality rate high during the preweaning period. The inadequacy is not completely corr. by 2% of liver extract and may be due to lack of an unknown substance or inadequate amounts or an imbalance of the known essentials. H. G. R.

Adequacy of simplified diets for guinea-pigs and rabbits. A. G. Hogan and J. W. Hamilton (*J. Nutrition*, 1942, **23**, 533—543).—Rations in which all recognised water-sol. vitamins were supplied as pure compounds caused subnormal growth and high mortality in rabbits and guinea-pigs. When these vitamins were given in the form of dried yeast, yeast extract, or extract of dried liver normal growth ensued. With a further supplement of vitamin-*K* females were enabled to rear litters. A. G. P.

Liver concentrate as a source of unrecognised vitamins required by the chick. L. R. Richardson, A. G. Hogan, and R. J. Karrasch (*J. Nutrition*, 1942, **24**, 65—72).—Chicks receiving diets containing all recognised vitamins in pure form grew slowly and developed perosis. Aq. extracts of ox liver provided all unrecognised vitamins required by chicks. The active factor in the extract is adsorbed by fuller's earth at pH 1·0 and eluted by 0·2N-aq. NH_3. A. G. P.

Effect of vitamin-*C* on respiration of living cells. P. Joyet-Lavergne (*Compt. rend.*, 1942, **214**, 685—687).—Cellular oxidation of leuco-derivatives of methylene-blue etc. in the isolated salivary gland of the larva of *Chironomus* is unaffected by addition of ascorbic acid. P. G. M.

Renal threshold for ascorbic acid in twelve normal adults: state of tissue reserves of subjects on an intake of ascorbic acid approximating to the suggested daily allowance. J. S. Lewis, C. A. Storvick, and H. M. Hauck [with I. Patterson, S. Higano, and B. Hawthorne] (*J. Nutrition*, 1943, **25**, 185—196).—Renal threshold vals. for ascorbic acid were 1·1—1·8 mg.-% but for 10 of the 12 subjects were within the range of 1·1—1·3. 3 of 6 subjects receiving 74 mg. per day exhibited saturation but the others gave evidence of slight depletion of reserves on this intake. H. G. R.

Ascorbic acid requirements of children of early school age. V. M. Roberts and L. J. Roberts (*J. Nutrition*, 1942, **24**, 25—39).—Children of 7—12 years required 65—75 mg. of ascorbic acid to ensure saturation (50% excretion of a test dose of 300 mg. in 24 hr.) and to maintain blood levels exceeding 0·7 mg. per 100 c.c. with average retention. A. G. P.

Adequacy of vitamin-*C* in Alberta diets. H. K. Waagen and L. B. Pett (*Canad. J. Res.*, 1942, **20**, **B**, 246—254).—Excretion of vitamin-*C* by university men was higher in autumn after high intake than in spring after the low winter supply. The average daily intake of -*C* from November to May was 41 mg. and from June to October, 82 mg. In spring the tissues of all persons tested by a test dose method were unsaturated whereas in autumn 2 persons out of 6 showed tissue saturation. No frank scurvy existed among the subjects and no marked incidence of gum-bleeding was reported. H. W.

Ascorbic acid content of ewes' blood, colostrum, and milk: effect of ascorbic acid injections. G. H. Satterfield, E. A. Bailey, jun., J. E. Foster, and E. H. Hostetler (*J. Nutrition*, 1942, **24**, 121—129).—Blood-ascorbic acid in ewes ranged from 0·43 to 0·82 mg. per 100 c.c. of plasma. In colostrum before suckling, the val. was 2·01—9·94 mg. per 100 c.c. During the first 5—6 days of suckling the val. declined to a more or less const. level of 0·80 mg. per 100 c.c. Injection of ascorbic acid increased the levels in both blood and milk to widely varying extents. Subsequently the blood level returned to normal within 1 day and the milk level within 3 days. A. G. P.

Ascorbic acid content of cow's milk after five years of continuous lactation.—See B., 1943, III, 101.

Synthesis of vitamin-*C* by rice moth larvæ (*Corcyra caphalonica*, Staint). P. S. Sarma and K. Bhagvat (*Current Sci.*, 1942, **11**, 394).—Rice moth larvæ fed on whole wheat or other diet deficient in vitamin-*C* synthesised 2·4—4·0 mg. of -*C* per g. dry wt. Addition of -*C* or various sugars to the diet did not affect the amount of -*C* synthesised. R. H. H.

Lead intoxication and scurvy.—See A., 1943, III, 268.

Hæmorrhagic sweet clover disease. Induced vitamin-*C* excretion in rat and its effect on the hypothrombinæmia caused by 3 : 3-methylenebis-(4-hydroxycoumarin).—See A., 1943, III, 227.

Vitamin-*C* in the protozoic cell.—See A., 1943, III, 275.

Inactivation of diphtheria toxin by *l*-ascorbic acid.—See A., 1943, III, 282.

Influence of ascorbic acid on pancreatic lipase.—See A., 1943, III, 272.

Physiological activity of ascorbic acid in plant life.—See A., 1943, III, 292.

Ascorbic acid values of fruits and vegetables for dietary surveys. M. Olliver (*Chem. and Ind.*, 1943, 146—148).—The average ascorbic acid vals. of a no. of freshly harvested uncooked and cooked (under controlled but normal conditions) fruits and vegetables are given, together with observations on the effect of various methods of cooking and preserving. H. G. R.

Vitamins in rose hips. F. Wokes, E. H. Johnson, J. G. Organ, and F. C. Jacoby (*Nature*, 1943, **151**, 279).—Dried extracts of ripe hips of (British) *R. canina* and *R. dumetorum* contained carotene equiv. to about 6000 i.u. of vitamin-*A* per 100 g. Other species gave similar results. The -*C* content was 1300—1500 mg. per 100 g.; loss in 6 months at normal temp. is negligible. High vals. were obtained for -*P* (520 G.L. units per g.), but -B_1 is absent. A. A. E.

Application of the Spekker photoelectric absorptiometer to the determination of vitamin-*C*. A. McM. Taylor (*Biochem. J.*, 1943, **37**, 54—58).—A step-titration method involving readings on a no. of solutions with different amounts of excess indophenol has been evolved to differentiate between the rapid reduction of the dye effected by ascorbic acid from the slower reduction due to non-sp. reductants. Satisfactory recovery of ascorbic acid is obtained in presence of 10 times the amount of cysteine and glutathione. The presence of appreciable amounts of non-sp. reducing substances is shown by the shape of the fading curve in the Spekker titration, which then gives appreciably lower vals. than a visual titration. H. G. R.

Kinetics of the reaction between ascorbic acid and oxygen in presence of copper ions.—See A., 1943, I, 158.

Vitamin-*D* and fluorine. B. R. East (*Amer. J. Dis. Child.*, 1942, **64**, 867—871).—A review. C. J. C. B.

Valuation of some sources of calcium in production of experimental rickets. R. Lecoq (*Compt. rend.*, 1942, **214**, 688—690).—When there is a deficiency of P as PO_4''' in the diet, the particular Ca salt administered has no influence on the rate of development or the intensity of experimental rickets. The Ca : P ratio is only of val. in so far as it is a measure of available PO_4'''. F. G. M.

Vitamin-*E* content of serum during pregnancy. J. Varangot (*Compt. rend.*, 1942, **214**, 691—692).—The average vitamin-*E* content of serum rises from 1·25 during the first 4 months of pregnancy, to 1·65 from the 4th to the 7th months, and to 1·82 mg.-% from the 7th month to term. It rapidly returns to normal after delivery. The increased -*E* content is probably of endogenous origin. P. G. M.

Vitamin-*E* content of certain varieties of wheat, maize, grasses, and legumes as determined by rat assay. C. A. Cabell and N. R. Ellis (*J. Nutrition*, 1942, **23**, 633—644).—A modified vitamin-*E* assay is based on the use of synthetic α-tocopherol as a reference substance. The -*E* content of 5 wheat varieties was 2·3—5·4, of 6 maize varieties 1·5—3·6, and of 5 species of grasses and legumes 7·1—28·1 mg. of α-tocopherol per 100 g. The -*E* contents of these crops are probably influenced by growth conditions. A. G. P.

Tocopherols in treatment of fibrositis. Oxygen consumption and creatine and chloride content of muscles from vitamin-*E*-deficient animals as influenced by feeding α-tocopherol. Effect of parenteral administration of α-tocopherol phosphate on metabolism of dystrophic muscle. *In vitro* effect on oxidation in muscle tissue.—See A., 1943, III, 232, 233.

Bleeding tendency in obstructive jaundice and correction by vitamin-*K*.—See A., 1943, III, 227.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Basal temperature and basal metabolism. B. Barnes (*J. Amer. Med. Assoc.*, 1942, **119**, 1072—1074).—Studies in over 1000 cases showed that basal subnormal body temp. is a better index for thyroid therapy than the basal metabolic rate. C. A. K.

Physiological effects of high temperatures [on blowfly larvæ]. G. S. Fraenkel and G. V. B. Herford (*J. Exp. Biol.*, 1940, **17**, 386—395).—O_2 consumption of blowfly larvæ at sublethal and lethal temp. is dependent at low O_2 pressures on the O_2 pressure but later it is highest at 20% O_2. Basal O_2 consumption remains unchanged for some time after irreversible injury by high temp. D. M. Sa.

Critical temperature of the albino rat as affected by feeding. A. Black and R. W. Swift (*J. Nutrition*, 1943, **25**, 127—136).—The temp. of min. heat production of mature or growing rats on full feed is not lowered below 30° (the crit. temp. for the fasting rat) by feeding when the environmental temp. is between 12° and 34°. Below 25° no variation is observed between the curves for heat production for fasting rats and rats receiving feed when computed on the same live wt. basis. Above 25° the heat production of rats receiving food is higher than that of fasting animals. The % of total heat eliminated as water vapour is const. at temp. from 12° to 32° but as the room temp. is increased an increase in both the amount and % of heat eliminated is observed. H. G. R.

Metabolism and growth rate of rats. H. H. Kibler and S. Brody (*J. Nutrition*, 1942, **24**, 461—468).—The metabolic rate of rats increases from 500 to 1100—1200 Cal. per sq. m. per day from birth to 45 days of age: subsequently the val. declines to 800—850 (more rapidly in females) in accordance with the diminution in growth rate. Curves relating metabolism and body wt. show " breaks " which agree, in part, with changes in growth rate. A. G. P.

Effect of glucose and sucrose on respiratory quotient and muscular efficiency of exercise. M. Wrightington (*J. Nutrition*, 1942, **24**, 307—315).—In human subjects the observed rest and recovery and excess R.Q. vals. before and after sugar meals accord with the view that when fat is in excess it is partly converted into carbohydrate and stored; the reverse obtains if carbohydrate is in excess. Sucrose increases the rest R.Q. more than does glucose maize syrup. Following ingestion of the sugars more glucose than sucrose is metabolised during work but muscular efficiency is not significantly affected by ingestion of either sugar. A. G. P.

Cyanide-resistant respiration of sea-urchin's eggs. P. E. Lindahl (*Arkiv Kemi, Min., Geol.*, 1941, **14**, **A**, No. 12, 31 pp.).—The proportion of normal respiration resistant to the action of CN′ (0·001M.) is much smaller in the fertilised than in the unfertilised egg, although both are equally dependent on O_2 pressure. The respiration of the unfertilised egg is inhibited by as much as 70% by HCN, but the effective, residual respiration can not be determined when HCN is present owing to the CN′-resistant respiration. The R.Q. of CN′-resistant respiration is $1·22 \pm 0·01$ and has about the same val. at 1—2 and 7—9 hr. after fertilisation. In presence of HCN, production of acid is marked. With comparative experiments on baker's yeast, HCN increases R.Q., whilst O_2 consumption and CO_2 production increase with increase in O_2 pressure. Oxidation of HCN does not contribute to the CN′-resistant respiration. Addition of glyceric or pyruvic acid, up to a max. concn., increases the CN′-resistant respiration of sea-urchin's eggs. F. O. H.

Influence of thiamin, riboflavin, pyridoxine, and pantothenic acid on nitrogen metabolism. B. Sure and Z. W. Ford, jun. (*J. Nutrition*, 1942, **24**, 405—426).—Thiamin deficiency in rats is associated with marked creatinuria, relatively large proportions of NH_3, creatine, and preformed creatinine being eliminated. In this condition correlation is established between excretion of preformed creatinine (but not creatine) and body wt. Even in mild chronic deficiency blood-urea and -non-protein-N increase considerably. Deficiency of riboflavin is accompanied by mild creatinuria and slight diminution in urinary allantoin. In pyridoxine deficiency there is mild creatinuria, diminution in urinary uric acid, and increase in blood-creatine and -uric acid. Deficiency of pantothenic acid is marked by moderate creatinuria, slight decrease in urinary allantoin, and, in advanced stages, increase in blood-urea and -non-protein-N. A. G. P.

Maintenance of nitrogen equilibrium by intravenous amino-acids. S. S. Altshuler, H. M. Hensel, P. Hecht, and R. Pursley (*Arch. intern. Med.*, 1942, **70**, 749—762).—Solutions of amino-acids were given intravenously to patients with cancer and other diseases. 1—2 g. of amino-acid-N per hr. were well tolerated, but more rapid rates produced flushing of skin, headache, chills, etc. The amino-acids were largely utilised to create a positive N balance. C. A. K.

Nitrogen in ornithine cycle of urea formation. A. G. Gornall (*Canad. Med. Assoc. J.*, 1942, **47**, 421—423).—In urea synthesis studies, accumulation of citrulline occurred in a liver-slice saline containing NH_3, CO_2, lactate, and ornithine. The ratio of NH_3-N used up to urea-N produced, normally 1·0, may be raised considerably above this val. under such conditions. The " missing " N is then exactly accounted for by the NH_3 which has become part of the uramido-group of the accumulated citrulline. C. J. C. B.

Creatinine excretion in women: clinical significance in obesity. B. N. Tager and H. W. Kirsch (*J. Clin. Endocrinol.*, 1942, **2**, 696—699).—Linear equations for the relation between body wt. and creatinine excretion are derived from a study of 50 adult women. For a known level of creatinine excretion in a given case an optimal wt. may be determined by the application of the equation for well-proportioned women. This " creatinine optimal " wt. may be calc. through a conversion equation from the Willoughby optimal wt. estimation based on bone measurements. Creatine optimal wt. is compatible with clinical wt. evaluations, and offers a basis for the quant. expression of the nutritional state. Obese women generally excrete less creatinine than well-proportioned ones, and show greater variations between one individual and another of the same wt. These variations generally agree with clinical impressions concerning muscularity of the cases. P. C. W.

Influence of methyltestosterone on muscular work and creatine metabolism in normal young men.—See A., 1943, III, 233.

Intractable hypophosphatæmic rickets with renal glycosuria and acidosis (the Fanconi syndrome). D. J. McCune, H. H. Mason, and H. T. Clarke (*Amer. J. Dis. Child.*, 1943, **65**, 81—146).—Report of a case in which increased urinary org. acids, chiefly amino-acids, were detected and identified. (Review of literature.) C. J. C. B.

Fat metabolism and goitre. R. E. Remington and P. L. Harris (*J. Nutrition*, 1943, **25**, 203—206; cf. A., 1939, III, 283).—Experiments with diets more abundantly supplied with protective factors without lessening goitre-producing properties and balancing the protein and protective foods so that the supply of each is more const. indicate that the function of the thyroid gland is not specifically related to the metabolism of fat, either saturated or unsaturated, at least at levels lower than that which might be expected to produce ketosis. H. G. R.

Obesity. L. H. Newburgh (*Arch. intern. Med.*, 1942, **70**, 1033—1096).—A review. C. A. K.

Two-dose glucose-tolerance test. E. Wayburn and H. Gray (*Amer. J. med. Sci.*, 1942, **204**, 823—837).—The 2-dose glucose-tolerance test (unlike the single-dose test) is little affected by changes in the composition of the preceding diet. C. J. C. B.

Intravenous glucose-tolerance equation. G. D. Greville (*Biochem. J.*, 1943, **37**, 17—24).—A detailed account of work already noted (A., 1943, III, 46). J. N. A.

Diabetic coma. E. P. Joslin, H. F. Root, P. White, and A. Marble (*J. Amer. Med. Assoc.*, 1942, **119**, 1160—1165).—62 successive cases of diabetic coma were treated without a death. Administration of large amounts of insulin is the most important step and intravenous glucose is not necessary at first. Large amounts of fluid and NaCl are necessary to combat dehydration but there is no need to give alkalis. C. A. K.

Pyruvic acid metabolism in diabetes mellitus. E. Bueding, H. Wortis, H. D. Fein, and D. Esturonne (*Amer. J. med. Sci.*, 1942, **204**, 838—845).—In diabetes mellitus there is no increase in blood-pyruvate following ingestion of glucose; if insulin is then administered, a rise occurs. C. J. C. B.

Carotenoid metabolism. III. Effect of a high-vitamin diet on carotenoid metabolism of chickens. F. H. Mattson and H. J. Deuel, jun. (*J. Nutrition*, 1943, **25**, 103—112).—The decrease in blood- and liver-carotenoids in chicken on a high-vitamin-*A* diet is greater than that in the blood and milk of cows on a similar diet (cf. Deuel *et al.*,

A., 1942, III, 829). The main pigments in chickens are carotenols and the greater decrease is due to more rapid transformation of carotene into non-chromogenic compounds rather than to lack of adsorption. Large doses of -*A* in the form of shark-liver oil have a toxic effect on 2-week-old chicks, particularly on the smallest birds. H. G. R.

Interrelationship of calcium, phosphorus, and nitrogen in metabolism of pre-school children. J. E. Hawks, M. M. Bray, M. O. Wilde, and M. Dye [with V. H. Wiltgen and A. Kilpatrick] (*J. Nutrition*, 1942, **24**, 283—294).—Increase of dietary protein from 3·0 to 4·0 g. per kg. body wt. increased N absorption without affecting that of Ca; absorption of P diminished but the % utilisation improved. The higher gain in wt. produced was represented mainly by muscle and soft tissues. A. G. P.

Calcium, phosphorus, and nitrogen metabolism of young college women. H. McKay, M. B. Patton, M. A. Ohlson, M. S. Pittman, R. M. Leverton, A. G. Marsh, G. Stearns, and G. Cox (*J. Nutrition*, 1942, **24**, 367—384).—The intake and retention of Ca, P, and N on self-chosen or controlled diets were significantly related irrespective of age, wt., and location of the women. The % retention of Ca was influenced by the type of diet. In predicting population requirements of N, Ca, and P short-time observations of a large group are more valuable than an intensive study of one individual. A. G. P.

Sulphur metabolism of children. E. F. Beach, D. M. Teague, O. D. Hoffman, B. Munks, F. C. Hummel, H. H. Williams, and I. G. Macy (*J. Nutrition*, 1942, **24**, 257—271).—Relationships between N and S metabolism in children of 8—12 years are examined. Urinary elimination of ingested N and S averaged 82·8 and 77% respectively. Of the excreted S 84% was in inorg. form. With advancing age laxation rates diminished and urinary excretion of ethereal S increased. Excretion of neutral S was related to recumbent body length but not to age, body wt., or surface area. The ratio N/S retained averaged 8·8 but if corr. for losses via the skin the val. approached 15, which accords with that for the whole body as established by muscle analysis. A. G. P.

Penetration of radioactive phosphorus into encysted *Trichinella* larvæ. O. R. McCoy, V. F. Downing, and S. N. Van Voorhis (*J. Parasit.*, 1941, **27**, 53—58).—Radioactive P was detected in encysted larvæ in rats 2 hr. after feeding; the amount increased rapidly for 24 hr., and reached a max. at 4 days. Radioactive P was taken up more rapidly by the muscles and was also lost more rapidly. The results implied that the larvæ were undergoing active metabolism. F. S.

Calculation of "turnover time" and "turnover rate" from experiments involving use of labelling agents. D. B. Zilversmit, C. Entenman, and M. C. Fishler (*J. Gen. Physiol.*, 1943, **26**, 325—331).—A new method for determining an immediate precursor of a substance occurring in the animal body is described. Formulæ for determining the rate of turnover of a substance and their application to the use of labelling agents are given. These formulæ take into account loss of isotopic substance by decomp. or transport. J. N. A.

Turnover rate of phospholipins in dog plasma determined with radioactive phosphorus. D. B. Zilversmit, C. Entenman, M. C. Fishler, and I. L. Chaikoff (*J. Gen. Physiol.*, 1943, **26**, 333—340; cf. preceding abstract).—A method for determining time and rate of turnover of plasma-phospholipin is described. During the post-absorptive state 5·2—8·0 mg. of phospholipin-P is turned over per hr. in the plasma of dogs 6—9 kg. in wt. 1% of the phospholipin in the liver is obtained directly from plasma-phospholipin per hr., whilst with kidney and small intestine the amount is approx. 0·5%. 76—83% of the injected phospholipin-^{32}P is accounted for by plasma, liver, kidney, small intestine, spleen, cells, and muscle. J. N. A.

Metabolic studies on neoplasm of bone with radioactive strontium. —See A., 1943, III, 251.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Chemotherapy. VI. Sulphanilamido-heterocyclic compounds.—See A., 1943, II, 175.

Chemotherapy. VII. Theory of relation of structure to activity of sulphanilamide type compounds. P. H. Bell and R. O. Roblin, jun. (*J. Amer. Chem. Soc.*, 1942, **64**, 2905—2917; cf. A., 1943, II, 175).—Since sulphonamides exert their effect by displacing *p*-aminobenzoic acid in an enzymic system, it is noteworthy that *p*-aminobenzoyloxy- and sulphanilyl groups are spatially very similar. The similarity is also the greater the more acidic is the SO_2; evidence is adduced to prove the consequence that the bacteriostatic activity of a sulphonamide is the greater the more negative is the H on the SO_2·N. The acid and base dissociation consts. and *in-vitro* activity against *E. coli* are determined for more than 100 sulphonamides (recorded for 50). The range of basic consts. is small ($0·5—2·3 \times 10^{-12}$) and unconnected with activity. The acid dissociation consts. cover a wide range (10^{-3}—below 10^{-11}); the activity at pH 7 is a max. when $pK_a = 6·1 \pm 0·3$. At pH 7, strong acids (pK_a below 5—6) are almost completely ionised, very weak acids are almost completely non-ionised, acids of intermediate strength are partly ionised. The ionised form of a sulphonamide is much more negative, and thus more active, than the non-ionised form. The N^1-substituent exerts its effect by influencing the amount of ionised form and the availability of electrons on the SO_2. Quant. pursuit of these mutually divergent influences shows a max. for pK_a 6·7 at pH 7. It follows that the effect of N^1-substituents can thus be prophesied, that no more active sulphonamides can be found (although they may be improved as regards toxicity etc.), and that the relative efficiencies of various sulphonamides may vary with pH. Exceptions are discussed. R. S. C.

Sulphonamide compounds. N. Sapeika (*Clin. Proc.*, 1942, **1**, 162—166).—A brief review. P. C. W.

Indications and contra-indications of sulphanilamide therapy. R. Staehelin (*Schweiz. med. Wschr.*, 1942, **72**, 225—229).—A lecture. A. S.

Diffusion of sulphonamides out of certain bases. R. A. Waud and A. Ramsay (*Canad. Med. Assoc. J.*, 1943, **48**, 121—123).—The rate of diffusion of sulphathiazole out of various bases into agar was studied. Certain fatty and paraffin bases are unsatisfactory for use with the sulphonamides and delivery of the latter takes place most readily from bases containing water. The Na salt diffuses faster than sulphathiazole itself. Thin layers of the prep. deliver sulphathiazole almost as fast as thick layers. C. J. C. B.

Filtration method of sterilising sulphanilamide powder. W. S. Salter and R. H. Morgan (*Brit. Med. J.*, 1942, II, 482).—After sterilisation by dry heat at 140° for 1 hr. the powder is dissolved in acetone and passed through a Seitz filter. The acetone is subsequently evaporated. C. A. K.

Determination of sulphonamides in bile. H. M. Carryer and A. E. Osterberg (*J. Lab. clin. Med.*, 1942, **28**, 110—112).—A method is described for determination of sulphanilamide, sulphapyridine, sulphadiazine, or sulphathiazole in bile. C. J. C. B.

Action of sulphanilamide compounds on the lethal factor of bacterial toxins. S. H. Hutner and P. A. Zahl (*Science*, 1942, **96**, 563—564).—Sulphanilamide compounds, especially sulphanilamide, protected mice against multiple lethal doses of purified *Salmonella* endotoxin. This protective action is inhibited by *p*-aminobenzoic acid. E. R. R.

Experimental gas gangrene [sulphonamide treatment]. W. R. Sandusky and F. L. Meleney (*Arch. Surg., Chicago*, 1942, **45**, 890—912).—Sulphanilamide, sulphadiazine, and sulphathiazole, applied locally within 2 hr. of infection, were effective in prevention of death in guinea-pigs with wounds infected with *Cl. welchii* or *Cl. septique*. ZnO_2 was of no val. against these organisms but had a slight effect on wounds infected with *Cl. œdematiens*, which were also slightly amenable to treatment with sulphathiazole but not with the other sulphonamides. Death from *Cl. sordelli* infection was not prevented by any of the drugs but sulphathiazole and sulphadiazine delayed death. F. S.

Therapeutic effectiveness of certain sulphonamides on infection by an intracellular protozoan (toxoplasma).—See A., 1943, III, 360.

Effect of certain antiprotozoal drugs on toxoplasma *in vitro* and *in vivo*.—See A., 1943, III, 360.

Comparative therapeutic activity of sulphonamides against bacterial infections in mice. E. K. Marshall, J. T. Litchfield, H. J. White, A. C. Bratton, and R. G. Shepherd (*J. Pharm. Exp. Ther.*, 1942, **76**, 226—234).—The therapeutic activity of 33 sulphonamide derivatives was tested in mice. Only sulphapyridine was more active than sulphanilamide in protecting the mice against streptococcus infection; most of the other compounds were less active. Sulphapyridine, sulphathiazole, sulphadiazine, sulphamethyldiazine, sulphapyrazine, and sulphaguanidine were all more active than sulphanilamide against pneumococcus infection. All compounds with *in-vitro* activity possess *in-vivo* activity though the two are not quantitatively related. P. C. W.

Clinical use of dimethylacrylsulphanilamide. N. G. Markoff (*Schweiz. med. Wschr.*, 1942, **72**, 334—340).—N^1-Dimethylacrylsulphanilamide (Irgamid) was successfully used in the treatment of streptococcal tonsillitis, erysipelas, otitis media, mixed infection of lungs and urinary tract, and pyodermic conditions. Body temp. returned to normal in 12—48 hr.; there were no untoward effects or formation of met- or sulph-hæmoglobin. A. S.

Sulphabenamide. I. Blood levels and elimination in urine of uninfected rabbits. II. Therapeutic value, blood levels, and elimination in urine of rabbits infected with β-hæmolytic streptococci. L. Hansen and W. A. Kreidler (*J. infect. Dis.*, 1942, **70**, 208—214, 215—220).—Sulphabenamide (*p-n*-hexoamidobenzenesulphonhydroxylamide, n-C_5H_{11}·CO·NH·C_6H_4·SO_2·NH·OH) was not rapidly absorbed from the intestinal tract after oral administration in rabbits. The blood level of total sulphabenamide changed slowly for a given dose and had a tendency to rise to higher levels on successive days

with continued administration and sometimes remained high or rose for a day or two after administration ceased. The recovery rate in rabbits infected with β-hæmolytic streptococci was 26·5% in 40 untreated rabbits and 60·9% in 69 treated rabbits. Sulphabenamide has therefore approx. the same val. against β-hæmolytic streptococcal infections as sulphanilamide. F. S.

Survival of pneumococci in empyemic fluid. Effect of sulphapyridine on their viability. E. Neter (*J. infect. Dis.*, 1940, **67**, 84—87).—The survival time of pneumococci in empyemic fluids free from sulphapyridine was the same as that of pneumococci in empyemic fluids containing sulphapyridine in concns. of 1·4—4·8 mg.-%. Sulphapyridine added to pneumococcal empyemic fluids caused sterilisation in some, but failed in others, even in concns. up to 50 mg.-%. F. S.

Response of different types and strains of pneumococcus to sulphapyridine. L. H. Schmidt, C. Hilles, H. A. Dettwiler, and E. Starks (*J. infect. Dis.*, 1940, **67**, 232—242).—Differences in type and strain response were related to differences in antigenicity, the effectiveness of therapy being proportional to the capacity of the organisms to stimulate antibody formation. F. S.

Therapeutic properties of sulphanilamide and related drugs in experimental typhoid infection of mice. R. T. Fisk (*J. infect. Dis.*, 1941, **68**, 20—23).—Sulphanilamide, sulphapyridine, and sulphamethylthiazole had a significant therapeutic action on experimental *Bact. typhosum* infection in mice. F. S.

Sulphathiazole in treatment of measles and its complications. H. Gibel and A. M. Litvak (*J. Pediat.*, 1942, **21**, 315—320).—Sulphathiazole did not reduce the length of the primary pyrexia caused by measles or the duration of complications. C. J. C. B.

Use of sulphathiazole in pediatrics. T. Baumann (*Schweiz. med. Wschr.*, 1942, **72**, 263—268).—A review. A. S.

Prolonged use of sulphonamide compound in prevention of rheumatic recrudescences in children. A. E. Hansen, R. V. Platou, and P. F. Dwan (*Amer. J. Dis. Child.*, 1942, **64**, 963—976).—Sulphanilamide (1—3 g. daily) was given to 53 patients daily from October to June for a total of 78 season-cases. Only 2 of the 53 had a rheumatic flareup. 17 of the 32 controls had 21 rheumatic recrudescences. C. J. C. B.

Pneumonia in infants, children, and adults [bacteriology and treatment]. G. Ormiston, D. Woodman, and F. J. W. Lewis (*Quart. J. Med.*, 1942, **11**, 155—180).—139 cases of pneumonia, clinically diagnosed as 110 primary, 29 secondary to measles or pertussis, and 3 secondary to other conditions, were examined bacteriologically and the pneumococci were typed. Most were treated with sulphapyridine, but none with serum. 41 infants and 25 children had primary pneumonia with a fatality rate of 3%. 41% of the 42 pneumococcal cases were types I, II, or III. 44 adults had primary pneumonia, with a fatality rate of 8%, the rate in the 30 sulphapyridine cases being 3%. 39% of 34 pneumococcal cases were types I, II, or III. In 20 cases of measles pneumonia, various pneumococci were found in 9, and hæmolytic streptococci in 2. Sulphapyridine gave favourable results in 10 of 13 cases. There were no deaths. In 9 cases of pertussis pneumonia, various pneumococci were found in 5, and were of doubtful significance, and no hæmolytic streptococci were found. There were two deaths. Sulphapyridine was unsatisfactory, and in most cases there was delayed resolution. The relation of the pneumococcal type to the infection, age incidence, complications, mortality, and treatment is discussed. R. K.

Analysis of pneumonia deaths since introduction of sulphonamide therapy. J. C. Meakins and R. D. McKenna (*Canad. Med. Assoc. J.*, 1943, **48**, 104—107).—An analysis is made of 21 fatal cases among 200 cases of pneumococcal lobar pneumonia. All deaths (excluding infants) occurred in persons over 40 years of age (average age of fatal cases 56·3 years, of survivors 36·1 years). The mortality rate among type III infections was high (9 in 39 cases). The incidence of bacteriæmia in fatal cases was striking. Malnutrition or associated disease was present in over 90% of the fatal cases and in only 30% of the survivors. C. J. C. B.

[Treatment of] chronic meningococcæmia complicated by acute endocarditis. R. B. Nye, C. W. Semisch, and L. Merves (*Ann. int. Med.*, 1942, **16**, 1245—1252).—The American literature is reviewed and a case reported. The patient died, in spite of sulphapyridine and serum treatment. A. S.

Subcutaneous administration of sodium sulphadiazine. G. M. Jorgenson and D. McL. Greeley (*J. Pediat.*, 1942, **21**, 325).—3 c.c. of 5% solution in distilled water was used in infants repeatedly without local reaction. C. J. C. B.

Chemotherapy of typhoid carriers. W. C. Cutting and G. B. Robson (*J. Amer. Med. Assoc.*, 1942, **118**, 1447—1449).—6 typhoid carriers and 1 dysentery carrier were not cured by thionol, phenothiazine, sol. iodophthalein, sulphaguanidine, or sulphadiazine. C. A. K.

Sulphaguanidine in dysentery carriers. L. A. Rantz and W. M. M. Kirby (*J. Amer. Med. Assoc.*, 1942, **118**, 1268—1271).—Sulphaguanidine was successfully used in 9 of 11 patients whose stools contained dysentery bacilli. C. A. K.

Sulphaguanidine in dysentery carriers. L. Opper and V. Hale (*J. Amer. Med. Assoc.*, 1942, **119**, 1489—1491).—22 of 38 patients with dysentery due to *B. flexneri* had positive stools one month or more after the acute stage (not treated by chemotherapy) and 29 out of 33 similar cases treated with sulphaguanidine (total dose 28 g.) showed negative stools up to 3 months after treatment. C. A. K.

Sodium salts of sulphonamide compounds: their local use in wounds. C. L. Fox (*Arch. Surg., Chicago.*, 1942, **45**, 754—763).—The dissociation consts. of sulphanilamide, sulphapyridine, sulphathiazole, and sulphadiazine are, 10·55, 8·5, 6·8, and 6·4 respectively. Sulphathiazole and sulphadiazine therefore exist chiefly in ionised form in biological fluids (pH 7·5) and their solubility in these fluids may be many times greater than in water. Na sulphadiazine intramuscularly or intraperitoneally implanted in dogs causes little irritation and is continuously absorbed over 24—48 hr. Na sulphathiazole caused more irritation. F. S.

Effect of sulphanilamide accompanied by acid or alkali on the acid–base equilibrium of the dog.—See A., 1943, III, 337.

Local treatment of burns with sulphadiazine spray. G. J. Coloviras, jun., W. T. West, and J. C. Armour (*Canad. Med. Assoc. J.*, 1942, **47**, 505—514).—Diazine spray has a high chemotherapeutic activity against Gram-positive and -negative organisms commonly infecting burns. Pain is relieved in 15 min. The eschar (a solidification of the vehicle) can be adjusted to any depth by varying the amount of spray applied, and is soft, pliable, translucent, and not easily cracked. It can be used for burns of the face. Toxicity is low. Disadvantages are that the eschar is relatively slowly formed, toxic reactions may occur in cases involving large areas of body surface, and grafting is impeded. C. J. C. B.

Use of sulphanilamide and its derivatives in ointment form. J. L. Miller (*Arch. Dermat. Syphilol.*, 1942, **46**, 379—385).—115 patients with various dermatoses were treated with 5—50% sulphanilamide, sulphathiazole, sulphadiazine, and Na sulphathiazole ointments. Cure was obtained in all patients with superficial pyogenic infections, in a shorter time than with previous methods of treatment. Secondary infections of cutaneous diseases were quickly cured, but the ointment did not affect the primary disease. Results in patients with deeper pyogenic infection (*e.g.*, sycosis) depend on the ability of the ointment to reach the seat of infection. 5% sulphanilamide or sulphathiazole ointment is recommended. C. J. C. B.

Sulphonamide sunlight eruptions. R. G. Park and W. M. Platts (*Brit. Med. J.*, 1942, II, 308—309).—27 cases are reported, 21 associated with sulphanilamide and 6 with sulphapyridine. Photosensitivity develops about the 8th—10th day of administration. Melanin pigmentation of the skin protects against the eruptions, which were mostly erythematous in type and often associated with fever. Most rashes subside in 2—4 days and in mild cases there is no reason to discontinue the drug. C. A. K.

Sulphadiazine and sulphathiazole in diabetes. C. W. Styron, H. Bromley, and H. F. Root (*J. Amer. Med. Assoc.*, 1942, **118**, 1423—1427).—Sulphadiazine and sulphathiazole were no more toxic in diabetics with various infections than in non-diabetics, and did not appear to alter insulin requirements or produce acidosis. C. A. K.

Hyperbilirubinæmia following administration of sulphonamides. A. Cantarow and C. W. Wirts (*J. Lab. clin. Med.*, 1942, **28**, 71—74).—20 cases are reported. Visible icterus was present in 6. All the drugs caused hyperbilirubinæmia in some cases. C. J. C. B.

Acute agranulocytosis following sulphadiazine. J. J. Curry (*J. Amer. Med. Assoc.*, 1942, **119**, 1502—1503).—A non-fatal case of agranulocytosis occurred after administration of over 60 g. of sulphadiazine when the blood level of the free drug was 25·5 mg.-%. C. A. K.

Renal complications following sulphathiazole. T Winsor and G. E. Burch (*J. Amer. Med. Assoc.*, 1942, **118**, 1346—1353).—6 cases, 3 fatal, of renal damage following administration of sulphathiazole are described. The total dosage was 10, 18, and 62 g. in the fatal cases and 8, 9, and 16 g. in those that recovered. Methods for avoiding this complication are discussed. C. A. K.

Solubility of sulphathiazole and acetylsulphathiazole in urine. J. Druey and R. Meier (*Schweiz. med. Wschr.*, 1942, **72**, 316—318).—The solubility of sulphathiazole and acetylsulphathiazole in urine increases rapidly if the pH is varied from 7·0 to 8·5. Administration of $NaHCO_3$ is recommended if large doses of thiazoles are given therapeutically. A. S.

Xanthopterin in treatment of leucopenia and weight-loss in rats fed succinylsulphathiazole. J. R. Trotter and P. L. Day (*J. Biol. Chem.*, 1943, **147**, 257—258).—Xanthopterin (Simmons and Norris, A., 1941, III, 961) alleviates the leucopenia and counteracts the inhibition of growth produced by succinylsulphathiazole (fed with the diet). F. O. H.

Treatment of scabies. K. Mellanby, C. G. Johnson, and W. C. Bartley (*Brit. Med. J.*, 1942, II, 1—4).—Of various agents used in the treatment of scabies only S ointment and benzyl benzoate are satisfactory. C. A. K.

New remedy for scabies. G. H. Percival (*Brit. Med. J.*, 1942, II, 451—452).—5% tetraethylthiuram monosulphide cures human scabies without skin irritation. It is cheap and clean. C. A. K.

Benzyl benzoate in scabies. K. C. Mallen (*Brit. Med. J.*, 1942, II, 452—453).—Aq. emulsion of benzyl benzoate was as efficient as a spirit emulsion in 1000 cases of scabies. C. A. K.

Diagnosis and treatment of malaria in England. W. Yorke (*Brit. Med. J.*, 1942, II, 61—63).—A review. C. A. K.

Drug-resistance acquired during treatment of sleeping-sickness with tryparsamide and with Bayer 205. F. Hawking (*Amer. J. trop. Med.*, 1941, **21**, 469—479).—The min. effective dose of tryparsamide for strains of *T. rhodiense* from untreated patients was 25—50 mg. per 100-g. rat and for strains from 3 treated patients 50, 100, and 200 mg. The min. effective dose for a strain from one patient who relapsed after one course of tryparsamide was 200 mg. and after a further course 400 mg., suggesting that the trypanosomes acquired As-resistance. Trypanosomes from patients relapsing after treatment with Bayer 205 showed no increased resistance to this compound. F. S.

Attempts to reduce acquired atoxyl-resistance in *Trypanosoma gambiense*. F. U. Steinfeld (*Ann. trop. Med. Parasit.*, 1940, **34**, 45).—Exposure of infected blood to temp. of 0° for 2½ hr. and 49° for 1 hr. had no effect. Treatment with KOH, KCl, $MgCl_2$, tannic acid, Na taurocholate, urea, caffeine, $Na_2S_2O_3$, and 0·35% NaCl had no effect. In several experiments a reduction was obtained by treating infected blood for several passages with an equal vol. of 10% glucose for 50—110 min. F. S.

Dissociation constants of plasmoquin. S. R. Christophers and J. D. Fulton (*Ann. trop. Med. Parasit.*, 1940, **34**, 1—11).—Plasmoquin has one dissociation const. of 3·93, probably connected with the diethylamino-group of the side-chain, and another of uncertain origin, much weaker, of 10·51. These determinations were made by titrations of suitable concns. of the dihydrochloride. F. S.

Influence of certain antimalarials and related agents on lethal effects of anoxia. E. J. Van Liere and G. A. Emerson (*J. Aviat. Med.*, 1942, **13**, 182—189).—Quinine, atabrin, and plasmoquin had no effect on the tolerance of mice to the lethal effects of anoxia (by decompression to 141 mm. Hg). Optochin decreased and vuzin slightly increased the lethal effect. F. S.

Course of *Plasmodium relictum* infection in canaries and treatment of bird and monkey malaria with synthetic bases. J. D. Fulton (*Ann. trop. Med. Parasit.*, 1940, **34**, 53—66).—4 : 4′-Diamidinostilbene and 4 : 4′-diamidino-αε-diphenoxypentane had anti-malarial properties against *P. knowlesi* infections in monkeys. They acted more slowly than atebrin; the phenoxypentane derivative was less effective. In bird malaria, the stilbene derivative was inactive. The phenoxypentane derivative, in well tolerated doses, was active. β-Amino-ε-diethylaminopentane was also active. F. S.

Blood changes produced by administration of 4 : 4′-diamidinostilbene. J. Devine (*Ann. trop. Med. Parasit.*, 1940, **34**, 67—71).—In rabbits injections of 5 mg. per kg. per day are tolerated well, without apparent effect. N retention follows a dose of 15 mg. per kg. which is tolerated without alteration in blood-sugar. Higher doses, which may be lethal, cause an increased and prolonged N retention, with hyperglycæmia of short duration. F. S.

Treatment of early cases of Nigerian trypanosomiasis with 4 : 4′-diamidinostilbene. J. L. McLetchie (*Ann. trop. Med. Parasit.*, 1940, **34**, 73—82).—Of 14 treated cases, 9 were in good health after 6 months. F. S.

Cases of Sudan kala-azar treated with 4 : 4′-diamidinostilbene. R. Kirk and M. H. Sati (*Ann. trop. Med. Parasit.*, 1940, **34**, 83—92).—Of 8 treated cases, 2 died early in the treatment and 6 had not relapsed after 4 months. F. S.

Trial with 4 : 4′-diamidinostilbene in treatment of sleeping sickness at Gadua, Northern Nigeria. R. D. Harding (*Ann. trop. Med. Parasit.*, 1940, **34**, 101—105).—Of 13 cases, 3 mild cases were clinically cured and one improved. Of the 9 moderate or severe cases, 8 were worse and one was clinically unchanged. F. S.

Use of aromatic diamidines in treatment of kala-azar. R. Kirk and M. H. Sati (*Ann. trop. Med. Parasit.*, 1940, **34**, 181—197).—In 28 cases treated by 4 : 4′-diamidinostilbene the immediate recovery rate was 86%. In 13 cases treated by 4 : 4′-diamidinodiphenoxypentane the immediate recovery rate was 75%. 2 cases only were treated by 4 : 4′-diamidinodiphenoxypropane with one death. F. S.

Action of 4 : 4′-diamidinostilbene on various piroplasms. S. Adler and I. Tchernomoretz (*Ann. trop. Med. Parasit.*, 1940, **34**, 199—206).—The drug in doses up to 10 mg. per kg. had no therapeutic action on *Theileria annulata* and *Anaplasma marginale* infections in calves, or on *Anaplasma ovis* infection in goats. In doses of 2—4 mg. per kg. the drug is effective in treating infections of *Babesiella ovis* in goats and *Babesia bigemina* in calves. F. S.

Action of furmethide (furfuryltrimethylammonium iodide) on cardiovascular system in man. P. K. Bondy and M. D. Altschule (*Amer. J. med. Sci.*, 1942, **204**, 334—340).—Transient fall of systolic and diastolic pressure, tachycardia, and rise of venous pressure occurred in 29 patients receiving the drug parenterally, but not orally. The side reactions include flushing, sweating, and urgency of micturition. In the doses recommended for the treatment of atonic bladders (3—5 mg. subcutaneously or 10—25 mg. orally) these reactions were not so marked as to make the patient uncomfortable. The drug may safely be repeated after 1 hr. when given subcutaneously or after 4 hr. when given orally.. Patients receiving furmethide parenterally should be kept covered and in bed until the flush reaction has worn off, to guard against excessive heat loss. C. J. C. B.

Effect of pholedrine and neosynephrin on blood pressure. P. C. Elmes and A. A. Jefferson (*Brit. Med. J.*, 1942, II, 65—67).—Cat experiments showed that when the blood pressure was lowered by giving nembutal, ephedrine and pholedrine produced a longer rise of pressure than neosynephrin and phedracin, but that when injections were repeated hourly the effects of neosynephrin and pholedrine were well maintained, whereas the actions of ephedrine and phedracin rapidly fell away. Experiments on the isolated cat heart and on the perfused rabbit's ear or dog's hind limb showed that ephedrine and pholedrine act predominantly on the heart, phedracin on the blood vessels, and neosynephrin on both. It is suggested that neosynephrin and pholedrine should be used clinically instead of ephedrine to raise a lowered blood pressure, and that neosynephrin may be useful as a vasoconstrictor in conjunction with local anæsthetics. C. A. K.

1-Phenyl-2 : 3-dimethylpyrazol-5-one-4-carboxylic acid. Antipyryl ketones.—See A., 1943, II, 174.

Experimentally induced disappearance and re-appearance of lesions of hidrocystoma [by means of atropine and pilocarpine]. A. Dostrovsky and F. Sagher (*J. invest. Dermat.*, 1942, **5**, 167—172).—After treatment with atropine *per os* the vesicles of hidrocystoma disappeared in 3—7 days. Pilocarpine caused them to reappear in 2—10 days, a single injection being less effective than protracted treatment by mouth. C. J. C. B.

Comparative studies of toxic effects of digitoxin and ouabain in cats. E. Krueger and K. Unna (*J. Pharm. Exp. Ther.*, 1942, **76**, 282—294).—Toxic effects of digitoxin and ouabain were studied in 65 cats anæsthetised with Na pentobarbital or urethane–chloralose. There was a consistent relation between cardiac irregularities and toxicity; cardiac irregularities appeared after infusion of 75% of the fatal dose of digitoxin or of 60% of the fatal dose of ouabain. These relative vals. were unaffected by the type of anæsthetic used. The cardiac irregularities produced by ouabain were delayed until 75% of the fatal dose had been infused if atropine was injected previously; atropine had no effect on the irregularities produced by digitoxin. Ouabain thus has an effect on the vagus which digitoxin has not. P. C. W.

Ether anæsthesia in pulmonary tuberculosis. H. K. Beecher and R. Adams (*J. Amer. Med. Assoc.*, 1942, **118**, 1204—1209).—Closed ether anæsthesia with CO_2 absorption was very satisfactory in 147 cases of pulmonary tuberculosis. C. A. K.

Neurological changes following spinal anæsthesia. G. Light, W. H. Sweet, H. Livingstone, and R. Engel (*Surgery*, 1940, **7**, 138—156).—Review of literature and report of a case. (110 references.) P. C. W.

Concentration of procaine in cerebrospinal fluid of man after subarachnoid injection. H. Koster (*Arch. Surg., Chicago*, 1943, **46**, 301—306).—There was no difference between the concn. curves of procaine at different levels after lumbar subarachnoid injection in patients in the Fowler and in the Trendelenburg positions. Procaine therefore does not settle into dependent portions of the subarachnoid space. F. S.

Human plasma in spinal anæsthesia. E. M. Papper and E. A. Rovenstine (*J. Amer. Med. Assoc.*, 1942, **119**, 1248—1250).—The duration of spinal anæsthesia was somewhat prolonged when procaine was dissolved in human plasma instead of c.s.f. C. A. K.

Antispasmodics. Basic esters of arylacetic acids.—See A., 1943, II, 161.

Narcoanalysis in war neuroses. J. F. Wilde (*Brit. Med. J.*, 1942, II, 4—7).—The use of pentothal Na in 50 cases is described. C. A. K.

Anticonvulsant action of diphenylhydantoin and some related compounds. P. K. Knoefel and G. Lehmann (*J. Pharm. Exp. Ther.*, 1942, **76**, 194—201).—Diphenylhydantoin (20 mg. per kg.) raises the threshold of electrically induced convulsions in cats; it does not affect the slightly raised threshold present in decerebrated cats. The compound does not affect the production of convulsions

in cats by the injection of strychnine or cocaine, nor is it excreted in the urine of rabbits or dogs following the administration of large quantities (200—1000 mg. per kg.). Diphenylacetylurea and diphenylthiohydantoin are without anticonvulsant activity; diphenylbarbituric acid and diphenylenehydantoin possess $\frac{1}{2}$—$\frac{1}{4}$ the anticonvulsant activity of diphenylhydantoin. Fluorenone, in oral administration, has a slowly-developing anticonvulsant action. Acute and chronic toxicity of the compounds in rats is determined. P. C. W.

Effect of morphine and prostigmine methosulphate on measurements of pain threshold.—See A., 1943, III, 320.

Toxic eruptions due to phenobarbital. R. E. Moss and W. E. Long (*Arch. Dermat. Syphilol.*, 1942, **46**, 386—393).—2 cases of severe toxic eruption following the use of phenobarbital are reported; both patients recovered. All the mucosal surfaces (except of the bronchial and urinary systems) were also affected. No loss of hair occurred but all finger and toe nails were shed. 1 patient took a total dose of 1·53 g. of phenobarbital over 20 days; the other 4·8 g. in 39 days. C. J. C. B.

Effect of trasentin *A*, trasentin, and morphine on respiration. N. Tobolowsky, D. Slaughter, T. U. Johnson, and R. E. Van Duzen (*J. Lab. clin. Med.*, 1942, **28**, 31—37).—Trasentin *A* or trasentin given after or before morphine, or with it, annuls depression of respiration by morphine in dogs and cats. C. J. C. B.

Release mechanism of Bezold effect. A. Amann and A. Jarisch (*Naturwiss.*, 1942, **30**, 605).—Intravenous injection of KCl (20 mg.), $BaCl_2$ (1—2 mg.), or RbCl (20 mg.) in cats, following treatment with 0·2—0·5 mg. of veratrine, enhances the activity of the latter. $CaCl_2$ depresses it. P. G. M.

Anterior pituitary-stimulating action of yohimbine.—See A., 1943, III, 323.

Effects of potassium salts in man. N. M. Keith, A. E. Osterberg, and H. B. Burchell (*Ann. int. Med.*, 1942, **16**, 879—892; cf. A., 1942, III, 843).—7 normal subjects ingested 12·5—17·5 g. of KCl or $KHCO_3$. Renal K clearance rose from the normal fasting level of 6—14 c.c. to 41—105 c.c.; that of inulin was normal. Serum-K varied from 22 to 28 mg.-% during the clearance period. In 2 subjects, simultaneous inulin and urea clearances fell below normal. Intravenous injection of a 1% solution of KCl produced severe burning sensations of the vein to the shoulder; severe paræsthesia in hands and feet occurred in 2 subjects after ingestion of 12·5 g. of KCl (serum-K 33·2 mg.-%). Increase in amplitude of the *T* waves in the e.c.g. was noted in 2 normal subjects and 1 patient with diffuse cardiovascular disease and hypertension. A. S.

Experimental production of primary optic atrophy in monkeys by administration of organic arsenical compounds.—See A., 1943, III, 317.

Radioactive tracer studies on arsenic injected as potassium arsenite. I. Excretion and localisation in tissues. F. T. Hunter, A. F. Kip, and J. W. Irvine. **II. Chemical distribution in tissues.** O. H. Lowry, F. T. Hunter, A. F. Kip, and J. W. Irvine (*J. Pharm. Exp. Ther.*, 1942, **76**, 207—220, 221—225).—I. The distribution of As was determined in the tissues of rats, rabbits, guinea-pigs, chimpanzees, a baboon, and in 1 patient dying of lymphoblastic leukæmia. In rats the As is conc. in the red cells and appears to be bound to the hæmoglobin mol. In other animals the distribution is wider, the largest amounts being stored in the skeletal muscles. Excretion in man and most animals is almost entirely by the kidneys. As does not pass into the c.s.f. in detectable amounts in man; some passes in monkeys. There was no accumulation of As in rapidly growing tissues. In 2 patients with leukæmia, of the small amount of As in the blood there was 10 times as much per leucocyte as per red cell; distribution between plasma and red cells was about equal.

II. The bulk of the As administered to various mammals was present in the protein fraction of the tissues; less was found in the acid-sol. fraction and almost none in the lipin fraction. The As in the protein fraction was chiefly present in those proteins pptd. by half-saturation with $(NH_4)_2SO_4$. There was little evidence of the replacement of P by As. P. C. W.

Severe reaction after mapharsen. H. Rattner and A. B. Falk (*J. Amer. Med. Assoc.*, 1942, **118**, 1368).—Acute glomerulonephritis (with uræmia), hepatitis, ileus, and pericarditis followed administration of 1·2 g. of mapharsen in 5 days to a 23-year-old negro with primary syphilis. The patient recovered and the Kahn test became negative. C. A. K.

Comparison of distribution between various organs of arsenicated serum-proteins and colloidal thorium dioxide (thorotrast) following their intravenous injection. W. E. Gaunt and G. P. Wright (*J. infect. Dis.*, 1940, **67**, 217—221).—High concns. of As and thorotrast were found in the spleen, bone marrow, and liver, lower concns. in the lungs, and scarcely any in the brain and skeletal muscles of rabbits after intravenous injection of the two substances. In the kidney the thorotrast concn. was low and the As concn. high, due to the rapid excretion of the foreign protein in the urine. The findings show that sol. As-containing proteins, like particulate antigens, are removed from the blood stream by the reticulo-endothelial system. F. S.

Pulmonary fat embolism following [arsenical] infusions via the bone marrow. U. J. Wile and I. L. Schamberg (*J. invest. Dermat.*, 1942, **5**, 173—177).—7 rabbits were given massive arsenotherapy by bone marrow infusion drip (4 mg. of mapharsen per kg. daily for 5 days). In 2 control rabbits, intravenous massive arsenotherapy was administered. Pulmonary fat emboli were demonstrated in 5 of the 7 treated via the bone marrow; none were seen in the 2 controls. C. J. C. B.

Gold salts in treatment of rheumatoid arthritis. R. L. Cecil, W. H. Kammerer, and F. J. De Prume (*Ann. int. Med.*, 1942, **16**, 811—827).—Au salts produced remission or marked improvement in 62% of 245 patients suffering from rheumatoid arthritis; 1 out of 10 patients with ankylosing spondylitis improved. The results were better in arthritis of less than 1 year's duration. Toxic reactions, chiefly dermatitis or stomatitis, were frequent. 1 patient died of ulcerative enteritis. Relapses occurred in 42% of the patients who had improved on Au therapy; they were milder than the original attack but less susceptible to Au treatment. A. S.

Lead poisoning caused by plaster of lead oleate (diachylon). M. H. Matz (*Arch. Pediat.*, 1942, **59**, 805—808).—Report of a case occurring during the treatment of infantile eczema. C. J. C. B.

Toxic effects of mercurial diuretics. A. C. De Graff and J. E. Nadler (*J. Amer. Med. Assoc.*, 1942, **119**, 1006—1011).—A review. C. A. K.

Acute toxic effects of mercurial diuretics. W. H. Higgins (*J. Amer. Med. Assoc.*, 1942, **119**, 1182—1183).—Case report. C. A. K.

Hypersensitiveness to mercupurin. T. Fox, H. Gold, and J. Leon (*J. Amer. Med. Assoc.*, 1942, **119**, 1497—1499).—A patient with congestive heart failure showed marked hypersensitiveness to mercupurin and to mercurin whether given intravenously in doses of 0·1—2·0 c.c. or as a suppository per rectum. The reaction included cutaneous erythema, paresthesiæ, substernal constriction, vomiting, swelling of lips, soreness of mouth, blurring of vision, and rise of temp. to 103° F. Injections of mersalyl, neptal, $HgCl_2$, and $HgO,3Hg(CN)_2$ produced little or no reaction, even when the quantity of injected Hg was 4 times that in mercupurin. A cutaneous scratch test with mercupurin was negative. C. A. K.

Intravenous mercurial diuretic and gum saline potentiation. S. T. Winter (*Brit. Med. J.*, 1942, II, 367).—A case of chronic nephritis with œdema showed no response to mercurial diuretics alone or gum saline alone, but the simultaneous intravenous injection of gum saline and neptal produced a good diuresis. C. A. K.

Magnesium silicate granuloma. T. L. Ramsey (*Amer. J. clin. Path.*, 1942, **12**, 553—557).—Lesions may be produced by use of Mg silicate (talcum powder) during surgical procedures. The use of polaroid light is of great help in finding the crystals in the microscopic sections of tissue from these lesions. 4 cases are described. (10 photomicrographs.) C. J. C. B.

Toxicity of metals to sticklebacks. J. R. E. Jones (*J. Exp. Biol.*, 1939, **16**, 425—437).—Mn, Co, Cr, Ni, Au, Zn, Cd, Pb, Al, Cu, H, Hg, and Ag (in order of increasing toxicity) caused death by asphyxiation following pptn. of gill-secretions. This series is markedly similar to a descending scale of solution pressures. Alkaline-earth metals, less toxic in general, act as true internal poisons. D. M. Sa.

Toxicity of metals for *Polycelis*. J. R. E. Jones (*J. Exp. Biol.*, 1940, **17**, 408—415).—Salts of various metals produced a degree of toxicity for *P. nigra* proportional to their solution pressures. D. M. Sa.

Fate of nicotine in the body. I. Effect of pH on urinary excretion of nicotine by tobacco smokers. II. Fate of nicotine in dog. H. B. Haag and P. S. Larson (*J. Pharm. Exp. Ther.*, 1942, **76**, 235—244).—I. The urinary nicotine was determined by a silicotungstic acid method. When the urine was alkaline the excretion was 25% of what it was when the urine was acid. Only 3—13% of the nicotine retained from the smoke was eliminated in the urine.

II. The urine of dogs was collected 10 hr. after the last of 15 hourly subcutaneous injections of 0·2 mg. of nicotine per kg. Only 10% of the injected nicotine appeared in the urine; the remainder was present at least in part in the nicotinic acid fraction (determined by the method of Perlzweig *et al.*; A., 1941, III, 285). Detoxified nicotine is not excreted as 1-methylpyridinium hydroxide, nicotinic acid, nicotinuric acid, or trigonelline in measurable amounts. The urine of the dog after nicotine injection gives a rose colour with CNBr; the colour does not appear after the urine is boiled. P. C. W.

Toxicological and pharmacological studies on 3 : 5-dinitro-*o*-cresol. A. M. Ambrose (*J. Pharm. Exp. Ther.*, 1942, **76**, 245—251).—The m.f.d. was found to be 20 mg. per kg. subcutaneously, and 30 mg. per kg. orally, in rats. Daily injection of 15 mg. per kg. for 30 days did not affect the growth or organs of rats. Given in the food in

concn. of 0·00078—0·00625% 3 : 5-dinitro-*o*-cresol did not affect the growth or health of young rats; concns. of 0·0125% were fatal to 60% of the rats and growth and food intake of survivors were increased; inhibition of growth, in spite of increased food intake, was found with concns. of 0·025%. Repeated cutaneous application of 2% solutions to the bared skin of rats, rabbits, or men gave rise to no local irritation; conjunctival instillation of 1% solutions in rabbits caused no visible irritation. Intramuscular injection in dogs (10 mg. per kg.) produced increases in O_2 consumption, rate and depth of respiration, and body temp. and a fall in blood pressure preceding death. Intravenous injection of 2 mg. per kg. produced similar effects more rapidly; there was an initial fall, and secondary rise, in blood pressure. Intravenous doses of 3 mg. per kg. were fatal. P. C. W.

Relative pharmacological effects of 2-alkyl-3 : 4-dihydro*iso*quinolinium chlorides. A. M. Hjort, E. J. de Beer, J. S. Buck, and L. O. Randall (*J. Pharm. Exp. Ther.*, 1942, **76**, 252—257).—The chemical and pharmacological properties of 3 series of 2-alkyl-3 : 4-dihydro-*iso*quinolinium chloride derivatives were studied; the substituents were hydroxy-, ethoxy-, and methoxy-groups in the 6 or 6 : 7 positions. The toxicity of the compounds in albino mice was similar to that of 2-alkyl-1 : 2 : 3 : 4-tetrahydroquinolinium hydrochlorides. Lengthening of the side-chain attached to the N atom in the dihydroxy-compounds converted pressor activity in dogs into depressor activity; the methoxy- and ethoxy-derivatives were either depressor or biphasically depressor–pressor with the exception of the pressor 6 : 7-dimethoxy-2-methyl derivative (Lodal). No tolerance developed. Vagotomy did not affect pressor activity, sensitised depressor action, and abolished the depressor component of some of the biphasically acting compounds. Response to adrenaline was enhanced by the pressor substances. There was little effect on pulse rate or respiration. The dihydroxy-derivatives stimulated isolated intestine; effects of other compounds were inconst. Rabbit and guinea-pig uteri were stimulated by all compounds. P. C. W.

Relative pharmacological effects of 3-methyl-3 : 4-dihydro- and 3-methyl-1 : 2 : 3 : 4-tetrahydro-*iso*quinoline derivatives. A. M. Hjort, E. J. de Beer, J. S. Buck, and L. O. Randall (*J. Pharm. Exp. Ther.*, 1942, **76**, 258—262).—The 6 : 7 positions were substituted with dihydroxy-, methylenedioxy-, or dimethoxy-groups and the toxicology, circulatory and smooth muscle effects studied. Secondary tetrahydro*iso*quinoline hydrochlorides were least toxic and quaternary salts were most toxic. Substitution on the 6 : 7 position had less influence on toxicity than substitution on N. Exophthalmos was most pronounced with methylenedioxy-derivatives. In dogs substitution on the 6 : 7 position had little influence on pressor activity, indicating neutralisation of the pressor potency of the dihydroxy-groups by the 3-methyl substitution. Quaternary NH_4 salts were pressor, while *sec.* and *tert.* compounds gave biphasic depressor–pressor responses. There was little tolerance developed. Vagotomy or atropine inhibited the pressor response to the pressor compounds and vagotomy abolished the depressor phase of the biphasically-acting compounds. The effect of adrenaline was enhanced, and respiration usually stimulated; pulse rate was usually decreased. Isolated intestine was usually relaxed, and rabbit and guinea-pig uteri were stimulated. P. C. W.

Relative pharmacological effects of 1-methyl-3 : 4-dihydro- and 1-methyl-1 : 2 : 3 : 4-tetrahydro-*iso*quinoline derivatives. A. M. Hjort, E. J. de Beer, J. S. Buck, and L. O. Randall (*J. Pharm. Exp. Ther.*, 1942, **76**, 263—269).—The above compounds with 6 and 6 : 7 substitution of hydroxy-, methoxy-, and ethoxy-groups and having H or methyl in the 2 position were studied. Toxicity in mice was decreased by the presence of hydroxy-groups in positions 6 and 7; quaternary salts were usually more toxic than *sec.* and *tert.* amines. The 1-methyl substituent had little qual. effect on the blood pressure response; in dogs tolerance to the pressor effect was occasionally developed. Blood pressure responses were unaffected by vagotomy or atropine. Respiration was consistently stimulated and pulse rate usually unaffected. Adrenaline was potentiated by the dihydro*iso*quinoline compounds and by the dihydroxy-tetrahydro*iso*quinoline derivatives; the other tetrahydro-compounds had an inhibitory effect. Tremors were usually produced and 4 of the tetrahydro*iso*quinoline derivatives produced strychnine-like convulsions; the dihydroxy-compounds had inconst. effects on the isolated intestine, which was depressed by all other compounds. Uteri of rabbit and guinea-pig were consistently stimulated. P. C. W.

Effect of ascorbic acid on sensitivity to salicylates in rheumatic fever. L. Pelner (*J. Lab. clin. Med.*, 1942, **28**, 28—30).—A severe case of rheumatic carditis became intolerant to Na salicylate early in the course of the illness. A low plasma-ascorbic acid content, positive tourniquet test, and severe nosebleeding suggested vitamin-*C* deficiency. After -*C* intake was increased, Na salicylate was again given in large amounts with impunity. C. J. C. B.

Studies on glucophylline. A. H. Maloney (*J. Lab. clin. Med.*, 1942, **28**, 38—43).—Treatment of young rabbits and dogs with methylglucamine (6 mg. per kg.) and glucophylline (10 mg. per kg.) had no harmful effects. C. J. C. B.

Acute phosphorus poisoning. M. A. Brescia and J. M. Dobbins (*J. Pediat.*, 1942, **21**, 378—381).—Report of a case due to rat paste with recovery. C. J. C. B.

Treatment of phosphorus burns. A. T. Jones (*Brit. Med. J.*, 1942, II, 244—245).—P burns should be at once flooded with water, 5% $NaHCO_3$ solution applied, and then the area should be swabbed with 1% $CuSO_4$ solution, particles of P being mechanically removed. The wound is then soaked in $NaHCO_3$ solution and subsequently dressed with acriflavine emulsion (1/1000). C. A. K.

Effect of sodium nitrite on experimental animals. H. L. A. Tarr and N. M. Carter (*J. Fish. Res. Bd. Canada*, 1942, **6**, 63—73).—The incorporation of $NaNO_2$ in the diet of cats and white rats, in amounts equiv. per body wt. to that consumed by an average sized man eating 1 lb. of fish containing 2000 p.p.m. of $NaNO_2$ daily for 6 days per week, does not affect their growth rate or the development of the thyroid, heart, lungs, spleen, liver, kidneys, or adrenals. The fecundity of white rats appears to be unaffected. The lethal dose given orally is 1·1—2·0 g. per kg. for male, and 0·46—1·2 g. per kg. for female rats and 0·073 g. per kg. for cats (one animal). When aq. $NaNO_2$ is injected subcutaneously, the lethal dose is 0·19—0·20 g. for male and 0·057—0·13 g. per kg. for female rats. R. G. W.

Fatal bee sting poisoning. A. J. Jex-Blake (*Brit. Med. J.*, 1942, II, 241—242).—2 fatal cases of multiple stings by *Apis mellifica adansoni* in Kenya are reported, also 3 cases where recovery occurred. Death is due to a form of anaphylactic shock. C. A. K.

Industrial illness due to tetryl. L. J. Witkowski, C. N. Fischer, and H. D. Murdock (*J. Amer. Med. Assoc.*, 1942, **119**, 1406—1409).—Toxic effects due to tetryl (trinitrophenylmethylnitroamine) were seen in 1258 industrial workers. Dermatitis was the commonest sign, epistaxis and respiratory irritation were frequent, but there were also systemic symptoms such as headache, irritability, lassitude, insomnia, and anorexia. Secondary anæmia was seen in some cases. Prophylactic measures are discussed. C. A. K.

Mustard gas burns. J. Grant and T. F. Ritchie (*Brit. Med. J.*, 1942, II, 217—218).—10 accidental cases are reported. C. A. K.

Fatal poisoning from potassium thiocyanate. W. O. Russell and W. C. Stahl (*J. Amer. Med. Assoc.*, 1942, **119**, 1177—1181).—A patient with hypertension died after receiving 5·6 g. of KCNS in 14 days. The highest blood concn. was 21·7 mg.-%. 6 fatal cases from the literature are reviewed. C. A. K.

Effect of potassium thiocyanate on occurrence of migraine. D. E. Engle and C. O. Evanson (*Amer. J. med. Sci.*, 1942, **204**, 697—703).—KCNS in daily dosages sufficient to produce a blood concn. of the drug of 2·5—8 mg.-% is effective in reducing the frequency and severity of migraine headaches. KCNS in 6-grain dosage taken during the pre-headache phase of a migraine attack is useful in aborting the headache, but taken after the onset of actual headache is of no val. C. J. C. B.

Fundamentals of inhalation therapy. H. Fischer (*Schweiz. med. Wschr.*, 1942, **72**, 232—239).—A review. A. S.

Expectorant action of creosote and guaiacols. M. E. Stevens, A. K. Ronan, T. S. Sourkes, and E. M. Boyd (*Canad. Med. Assoc. J.*, 1943, **48**, 124—127).—Guaiacol, guaiacol carbonate, guaiacol glycerol ether, and creosote increased the output of respiratory tract fluid (up to 50% for 4 hr.) when given by stomach tube (cats, rabbits) in doses up to 5 g. or c.c. per kg. The drugs act both reflexly from the stomach and after absorption. Guaiacol glycerol ether given in daily doses of 1·2 g. to medical students reduced the frequency of coughing during colds. C. J. C. B.

Thiourea and wound repair. W. R. Fearon (*Brit. Med. J.*, 1942, II, 95).—1% thiourea, in water or as a paste, was successfully used by local application in 47 cases of chronic ulcers of legs etc. It stimulates proliferation of granulation tissue. C. A. K.

Parenteral use of organic esters. W. L. Lipschitz, S. D. Upham, C. N. Hotchkiss, and G. H. Carlson (*J. Pharm. Exp. Ther.*, 1942, **76**, 189—193).—25 liquid org. esters were injected into the gluteal muscles of guinea-pigs; toxicity, local irritation, and effects on neuromuscular function were determined. Butyl succinate and ethyl pimelate were found to be least toxic and suitable for parenteral administration. Ethyl or butyl succinate was used as the solvent for the parenteral administration of menadione in 7 patients without any untoward effects. P. C. W.

Pharmacology of colour regulation in amphibia, and importance of endocrine glands. A. O. M. Stoppani (*J. Pharm. Exp. Ther.*, 1942, **76**, 118—125).—In the frog and toad adrenaline, ephedrine, cocaine, and Ca cause paling of the skin; veratrine, K, and Ba darken it. Nicotine and caffeine cause darkening in frogs and irregular effects in toads. Veratrine and nicotine darken the hypophysectomised frog but not the toad, which is darkened by caffeine and Ba. Acetylcholine has no action on skin colour. V. J. W.

Amyl nitrite in treatment of acute aero-otitis media.—See A., 1943, III, 318.

Pharmacology of fatigue. H. Staub (*Schweiz. med. Wschr.*, 1942, **72**, 303—304).—A lecture. A. S.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Chronic pulmonary changes and bronchial ulceration in electric arc welder. H. R. Nayer (*J. Amer. Med. Assoc.*, 1942, **119**, 1500—1501).—Case report. C. A. K.

Failure of aluminium to prevent experimental silicosis. T. Belt and E. J. King (*J. Path. Bact.*, 1943, **54**, 69—73).—Powdered metallic Al mixed with quartz dust in the ratio of 2 mg. or more to 100 mg. of quartz failed to check the development of experimental silicosis in laboratory rats. Al alone in powdered form can set up an extensive foreign-body reaction. (5 photomicrographs.) C. J. C. B.

Bagassosis. L. I. M. Castleden and J. L. Hamilton-Paterson (*Brit. Med. J.*, 1942, II, 478—480).—Bagasse (broken sugar-cane after extraction of sugar) contains 5—7% of SiO_2. 4 cases of acute inflammatory lung disease in workers who inhaled bagasse are described. C. A. K.

Occurrence of chloracne from cutting oils. L. Schwartz and F. A. Barlow (*U.S. Publ. Health Repts.*, 1942, **57**, 1747—1753).—Workers who are exposed to the mists of chlorinated cutting oils used for heavy cutting and grinding operations develop lesions on the face and other parts of the body. These lesions resemble chloracne both clinically and microscopically. C. G. W.

Metabolic disturbances in workers exposed to dinitrotoluene.—See A., 1943, III, 269.

XXII.—RADIATIONS.

Disturbance of nucleic acid metabolism produced by therapeutic doses of *X*- and *γ*-radiations.—See A., 1943, III, 259.

Effects of *X*-rays on mitosis in neuroblasts of *Chortophaga*.—See A., 1943, III, 223.

Carcinogenic effectiveness of ultra-violet radiation of wave-length 2537 A.—See A., 1943, III, 250.

Effect of ultra-violet light on cross-infection in an infants' ward. H. E. Sommer and J. Stokes, jun. (*J. Pediat.*, 1942, **21**, 569—576).—Ultra-violet light reduced the no. of air-borne organisms and cross-infections in a hospital ward. C. J. C. B.

Efficiency of headgear as insulation against radiation. J. Glover (*Trans. R. Soc. trop. Med. Hyg.*, 1942, **36**, 195—196).—The rise in temp. inside headgear exposed to a standard source of radiation at a fixed distance from the crown of each hat was measured. The most efficient hats were of pith and of these the heaviest (having an Al paint lining) was the best. Of the remaining types, the cork helmets were the most efficient (white and khaki equally so) for short exposures up to 10 min. duration but not so efficient as the Panama hats at the end of 45 min. C. J. C. B.

Possible hazards of repeated fluoroscopies in infants. F. Buschke and H. M. Parker (*J. Pediat.*, 1942, **21**, 524—533).—A lecture. C. J. C. B.

Physical representation of mechanisms of energy transfer in the zone of interaction [between radiation and molecules] in biological processes initiated by radiation. F. Möglich, R. Rompe, and N. W. Timoféeff-Ressovsky (*Naturwiss.*, 1942, **30**, 409—419).—Interaction between radiation and matter, *e.g.*, phosphorescence, gene-mutation, deactivation of viruses, can involve spatial separation between the point of absorption and that of the effect produced. Four mechanisms of energy transfer in such cases are distinguished: (1) electronic energy transfer, *e.g.*, through activated energy bands in phosphors, (2) energy transfer by dipole resonance forces, distinguished from (1) by the transfer being confined to neighbouring mols., (3) energy transfer by diffusion, *e.g.*, fluorescence of Tl sensitised by Hg vapour, (4) energy transfer involving several degrees of freedom in complex mol. structures. Any of these mechanisms may take part in biological processes induced by radiation. L. J. J.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Physical properties of living matter. C. H. Norris (*J. Physical Chem.*, 1942, **46**, 1111—1117).—A review of present knowledge. C. R. H.

Diffusion potentials in models and living cells. W. J. V. Osterhout (*J. Gen. Physiol.*, 1943, **26**, 293—307).—The behaviour of guaiacol resembles that of certain protoplasmic surfaces to such an extent that it can be used with advantage in models to imitate certain aspects of protoplasmic behaviour. In these models electrical potentials appear to consist of diffusion potentials and this may be true of certain living cells. Ionic mobilities are determined with the models and are used to predict potentials. Potentials are determined in living cells and these are used to calculate ionic mobilities. To test whether the method is justified, guaiacol is treated like a living cell, the potentials are determined, and the ionic mobilities calc. from these. The results justify the use of the method. The latter enable changes in mobilities and partition coeffs. due to reagents and metabolism to be determined. J. N. A.

Freezing out of colloids and colloid mixtures with reference to the plasmatic resistance of plants to frost. H. Ullrich and P. van Veen (*Kolloid-Z.*, 1942, **100**, 388—400).—The physical properties of gelatin, agar, pectin, and lecithin and mixtures thereof, when frozen out of their aq. solution, and the effect of pH and the addition of sucrose, urea, and KCNS to the solutions prior to freezing out has been examined. The data are discussed in relation to plasma structure and the frost-resistance of plants with special reference to Frey-Wyssling's "Haftpunkt" theory. C. R. H.

Density of viruses and proteins by comparative ultracentrifuging in heavy water. P. Lépine, J. C. Levaditi, and J. Giuntini (*Compt. rend.*, 1942, **214**, 768—769).—The method consists in the ultracentrifuging of the freshly suspended substance in two physiologically inactive media of identical composition and mol. and ionic concn., but of different densities. The media are solutions of NaCl in distilled water (d = 1·0052) and in D_2O (d = 1·1119). The particle density is found by application of Stokes' law. The val. found for the vaccinal virus is 1·25—1·32. N. M. B.

Sedimentation in angle centrifuge.—See A., 1943, I, 126.

XXIV.—ENZYMES.

Enzyme action. E. Geiger (*Science*, 1942, **96**, 426).—Eyster's explanation of the action of narcotics on luminous bacteria (cf. A., 1943, III, 273) is questioned. E. R. R.

Fatty acid dehydrogenase in adipose tissue. B. Shapiro and [illegible] Wertheimer (*Biochem. J.*, 1943, **37**, 102—104).—The fatty acid dehydrogenase in adipose tissue extracts requires the presence of adenylic acid as co-enzyme together with inorg. P. It is more active with long-chain fatty acids, *e.g.*, palmitic and stearic, than with the lower acids, *e.g.*, butyric and valeric. The optimum pH is 8·0, and it is not inhibited by iodoacetate, fluoride etc. O_2 rapidly inactivates the enzyme. Other tissues, *e.g.*, liver, muscle, etc., also contain it. Phospholipins are also attacked at the same optimum pH, but not neutral fats. P. G. M.

Lipin oxidase. Determination of lipoxidase activity. R. J. Sumner (*Ind. Eng. Chem.* [*Anal.*], 1943, **15**, 14—15).—A rapid colorimetric method for determining the activity of lipoxidase is based on the oxidation of $Fe^{\cdot\cdot}$ by the resulting fat peroxide. $Fe^{\cdot\cdot\cdot}$ formed is determined as $Fe(CNS)_3$ by a photo-electric colorimeter. J. D. R.

Action of inhibitors on hydrogenase in *Azotobacter*. J. B. Wilson and P. W. Wilson (*J. Gen. Physiol.*, 1943, **26**, 277—286).—0·001M-KCN at pH 7·5 completely inhibits hydrogenase in *A. vinelandii*. The enzyme is also very sensitive to CO, and a definite effect is observed with 5—10% of CO, whilst with 56% of CO the rate of oxidation of H_2 is inhibited 50%. Respiration on glucose or succinate media is scarcely affected by this concn. of CO. Inhibition is not reversed in light. NaN_3 at the optimum pH, 6·5, inhibits less than does KCN; with low concn. there is frequently stimulation; 0·01M-NaN_3 causes 25% inhibition, whilst 0·1M-NaN_3 increases the inhibition to 75—85%. A pronounced differential inhibition of oxidation of H_2 and other substrates occurs within the range 0·01—0·001M-NaN_3. NH_2OH has a marked differential inhibiting effect on respiration and hydrogenase activity, and whilst respiration on glucose or succinate is almost completely suppressed by 0·001—0·002M-NH_2OH, oxidation of H_2 is decreased by only 0—25%. Iodoacetate and NaF cause differential inhibition of respiration and H_2 oxidation, which is particularly noticeable with 0·01M-iodoacetate. The differential inhibition by NH_2OH explains the results of Kubo (A., 1937, III, 486), and differential inhibitors can be used to detect hydrogenase in cultures having high endogenous respiration. No hydrogenase is present in root nodule bacteria from pea and cowpea nodules. J. N. A.

Crystalline beef liver catalase dried in the frozen state. A. L. Dounce and J. W. Howland (*Science*, 1943, **97**, 21—23).—The properties of the enzyme dried by the lyophile process were compared with those of the undried cryst. catalase. The dried material is not crystallisable, is only ½ as active, and its hæmatin-Fe is reduced by $Na_2S_2O_4$. It is suggested that mild denaturation occurs during the process or during subsequent dissolution. E. R. R.

Respiration and oxidase and catalase activity of apples in relation to maturity and storage.—See A., 1943, III, 292.

Choline-esterase. I. Choline-esterase and pseudo-choline-esterase. B. Mendel and H. Rudney. **II. Purification of pseudo-choline-esterase from dog pancreas.** B. Mendel and D. B. Mundell (*Biochem. J.*, 1943, **37**, 59—63, 64—66).—I. The esterase present in serum

etc. which hydrolyses choline esters is non-sp. (pseudo-cholinesterase), whilst there is a sp. enzyme present in mammalian red cells and brain. The latter is probably the chief enzyme that destroys acetylcholine in the body, since it exhibits max. activity at low concns. (3 mg.-%) and is largely inhibited by high concns. (0·5%). The non-sp. enzyme shows a max. activity at a concn. of 0·3%. Choline-esterase free from other non-sp. enzymes is prepared by hæmolysis of washed red cells, adsorption on kieselguhr, and elution with 0·001N-NaOH. The turbid orange-red fluid is 20—30 times as active as the original red cells per unit dry wt.

II. The prep. is described of a purified choline-esterase which is 2000 times as active per unit dry wt. as the starting material (dog pancreas) and 15,000 times as active as horse serum. It depends on extraction of minced pancreas with water, fractional pptn. with $(NH_4)_2SO_4$, adsorption on kieselguhr, and elution with 10%-saturated $(NH_4)_2SO_4$. P. G. M.

Pure crystalline rennin. N. J. Berridge (*Nature*, 1943, **151**, 473—474).—A prep. consisting largely of flat cryst. plates has been obtained; probably no major impurity is present. The crystals contain 13% N (Kjeldahl) and are more sol. in cold than in warm salt solutions. A. A. E.

Influence of papain and pepsin on proteins of meat and gluten. I. A. Smorodincev and V. P. Shigalov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 70—72).—The relative activities of pepsin, activated papain, and non-activated papain on wheat gluten are 166 : 132 : 100, and on meat protein 342 : 163 : 100. Self-digestion is greater in meat protein than in gluten. R. L. E.

Comparative hydrolysis of proteins from food grains. N. V. Bhide and D. L. Sahasrabudhe (*J. Univ. Bombay*, 1942, **11**, **A**, Part 3, 151—155).—The rate of hydrolysis of the protein of bajri, vari, gram, and black gram flours by pepsin (0·2—1%) and by pepsin followed by trypsin has been determined. With pulse flours, hydrolysis begins immediately and goes almost as far with pepsin as with trypsin; with cereal flours there is an induction period, and trypsin hydrolyses a considerable amount left unhydrolysed by pepsin. A. Li.

New protease [" pinguinain "] from *Bromella pinguin*, L. C. F. Asenjo and M. del C. C. de Fernandez (*Science*, 1942, **95**, 48—49).—100 c.c. of the fresh fruit juice were filtered with celite; the crude enzyme was pptd. with 300 c.c. of acetone, the ppt. dispersed in 0·02M-NaCN and pptd. with acetone, washed with acetone and ether, and dried in vac. over $CaCl_2$. The enzyme (yield, 5 g.) is a typical papainase. E. R. R.

New protease from [latex of] *Pileus mexicanus*. M. Castaneda, F. F. Gavarron, and M. R. Balcazar (*Science*, 1942, **96**, 365—366).—An enzyme, mexicain, of the papain type, activated by HCN, H_2S, or cysteine, and inactivated by H_2O_2 or I, which does not clot citrated blood, is described. The milk-clotting activity and the anti-helminthic activity on *Ascaris lumbricoides* from pig intestine are tabulated. E. R. R.

Digestive enzymes of wood-boring beetles. E. A. Parkin (*J. Exp. Biol.*, 1940, **17**, 364—377). D. M. Sa.

Action of *macerans* enzyme on a component of maize starch. R. W. Kerr (*J. Amer. Chem. Soc.*, 1942, **64**, 3044—3045).—An essentially linear, cryst. amylose with a *macerans* enzyme gives 70% of dextrin, pptd. by trichloroethylene. R. S. C.

Significance of the degradation of starch by *macerans* amylase.—See A., 1943, II, 157.

Mechanism of inhibition of β-amylase by vitamin-*C*. P. Seshagirirao and K. V. Giri (*Proc. Indian Acad. Sci.*, 1942, **16**, **B**, 190—204).—Hydrolysis of starch by β-amylase is inhibited by vitamin-*C* alone and still more by the -*C*–Cu complex. Even greater inhibition is caused by the products of oxidation of -*C* by Cu. In addition to inhibition of hydrolysis the -*C*–Cu complex and the oxidation products inactivate the enzyme in absence of substrate, whilst -*C* alone causes only very slight inactivation. Oxalic, uric, and yeast-nucleic acids, xanthine, guanine, theophylline, creatinine, cysteine, cystine, glutathione, histidine, KCN, and H_2S which inhibit catalytic oxidation of -*C* by Cu also annul the inhibition and inactivation caused by -*C*, the -*C*–Cu complex, and the oxidation products. Inhibition of hydrolysis of starch by β-amylase and inactivation of the enzyme by -*C* are very closely related to oxidation of -*C*. The physiological significance of the results in relation to the effect of purines and other stabilisers of -*C* oxidation in regulating the activity of amylases in plants is discussed. J. N. A.

Hyaluronidase and polysaccharide from tumours.—See A., 1943, III, 250.

Sucrose-free taka-sucrase. J. Feigenbaum (*Science*, 1942, **96**, 521—522).—2 g. of commercial taka-diastase in 15 ml. of water were dialysed through Cellophane until free from reducing substances. The solution was filtered into a stoppered bottle and reduced for 24 hr. by 0·3 g. of $Na_2S_2O_4$, which was then removed by dialysing for 2 days. The solution was conc. by dialysing against 96% alcohol for about 6 hr., and the enzyme, which retained completely the maltose-splitting power, but was inactive against sucrose, was pptd. by abs. alcohol. The yield is 50 mg. E. R. R.

Daily rhythm in action of invertase and its dependence on illumination.—See A., 1943, III, 293.

Does the parathyroid hormone influence phosphatase activity? T. R. Wood and W. F. Ross (*J. Amer. Chem. Soc.*, 1942, **64**, 2759—2760).—Activation of phosphatase by parathyroid hormone differs only in degree from that by ovalbumin or carbohydrate-free horse serumalbumin. In all cases increase in concn. of the addendum leads to a const. max. activity. R. S. C.

Effect of magnesium-deficient diet on serum-phosphatase activity in albino rats.—See A., 1943, III, 253.

Interrelationship of manganese, phosphatase, and vitamin-*D* in bone development.—See A., 1943, III, 258.

Adaptive enzymes of certain strains of yeasts.—See A., 1943, III, 274.

Inhibition of sulphhydryl-containing enzymes by split products of *p*-dimethylaminoazobenzene. V. R. Potter (*Cancer Res.*, 1942, 688—693).—Split products of *p*-dimethylaminoazobenzene are highly toxic to urease. The split products are non-toxic in the reduced state (as diamines) but become toxic when oxidised. The inhibition is prevented but not reversed by cysteine. F. L. W

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Alcohol tolerance of yeasts. W. D. Gray (*J. Bact.*, 1941, **42**, 561—574).—21 strains of yeast differed widely in alcohol tolerance. In an alcohol concn. of 4·7% by wt. one yeast utilised 97·5% of the available glucose whereas another utilised only 47·3%. Sugar losses in commercial fermentations can therefore be reduced by selecting a yeast of high alcohol tolerance or by adjusting the glucose content so that it is not great enough to yield more alcohol that the yeast can tolerate. F. S.

Enzymic processes in yeast. I. Reactions of pyruvic acid. H. von Euler and B. Högberg (*Arkiv Kemi, Min., Geol.*, 1941, **14**, **B**, No. 13, 6 pp.).—Pyruvate, added in small amounts to fresh or dried yeast preps. in PO_4''' buffer at pH 5 and 30°, is completely metabolised in about 30 min. The reaction is only slightly diminished by KCN, NaF, or, to a somewhat greater extent, bromoacetic acid. The disappearance of pyruvate is also rapid with a yeast of only slight fermentative activity (*e.g.*, after freezing in liquid air and thawing). Reduction of methylene-blue by yeast preps. is accelerated by addition of pyruvate or lactate. The decomp. of pyruvate in aq. solutions at room temp. or 30° is unaffected by KCN. F. O. H.

Transformation of pyruvic acid by baker's yeast. J. Runnström and E. Sperber (*Arkiv Kemi, Min., Geol.*, 1942, **15**, **A**, No. 5, 25 pp.; cf. A., 1939, III, 626).—Baker's yeast, aërated during growth, oxidises pyruvic acid in succinate buffer, approx. 40% of the oxidation products being acetic or, more probably, succinic acid and the remainder CO_2 and water. The R.Q. of the process is 1·3. No acetaldehyde, acetic acid, or alcohol is obtained. Oxidation product (not glycogen) is accumulated during the process and increases the wt. of the yeast. When succinate buffer is replaced by $NaHCO_3$ (pH approx. 6·3), some acidic material is produced and the amount of CO_2 bound is less than equiv. to the amount of pyruvic acid degraded. If vitamin-B_1 is added, the degradation is accelerated and the R.Q. increased. Yeast grown anaërobically oxidises approx. 30% of pyruvic acid to CO_2 and water. Approx. 50% of the remainder is converted into acetic acid. Varying amounts of alcohol are also produced but no acetaldehyde. The R.Q. of the process is 1·54. This val. is increased by addition of yeast extract. As pH increases from 4·20 to 7·16, consumption of pyruvic acid and O_2 uptake decrease, but the rate of the uptake remains const.; at higher pH the rate decreases greatly. W. McC.

Effect of carbon monoxide, cysteine, glutathione, iodoacetic acid, and fluoride on transformation of pyruvic acid by baker's yeast. J. Runnström and K. Brandt (*Arkiv Kemi, Min., Geol.*, 1942, **15**, **A**, No. 6, 29 pp.; cf. A., 1940, III, 867).—CO inhibits oxidation of pyruvic acid by baker's yeast. No accumulation of acetaldehyde is observed although O_2 consumption decreases and the R.Q. increases to a val. frequently exceeding 2, indicating that simple decarboxylation occurs. Such decarboxylation is probably always the initial stage of the oxidative degradation of the acid, although if inhibition by CO is slight the extent of degradation is not affected. O_2–CO mixtures, which inhibit degradation of pyruvic acid, greatly increase degradation of glucose in consequence of increased aërobic fermentation. The oxidation and other transformations of pyruvic acid are inhibited by cysteine, O_2 uptake and CO_2 production decreasing exponentially with time. If dried yeast is used, cysteine has no effect. Aërobic fermentation of glucose is greatly increased by cysteine. Glutathione is less effective than cysteine as inhibitor of oxidation of pyruvic

acid : it stimulates transformation of glucose but does not affect the non-oxidative transformation of pyruvic acid. Iodoacetic acid and NaF inhibit the oxidation and also, to some extent, the decarboxylation of pyruvic acid. Acetaldehyde is oxidised by the yeast more rapidly than is pyruvic acid. When added acetaldehyde and pyruvic acid are present together, the oxidation of each is but little affected by that of the other and the same holds for acetaldehyde and acetic acid. The results show that, although it does not accumulate in the living cell, acetaldehyde is probably an intermediate in the oxidation of pyruvic acid by baker's yeast. Probably carboxylase plays a part in the process. W. McC.

Carboxylase-cocarboxylase system of *Fusaria*. A. A. Tytell and B. S. Gould (*J. Bact.*, 1941, **42**, 513—526).—Carboxylase was a constitutive enzyme in both living and dried preps. of *Fusarium tricothecoides*. The pH optimum range was 6·2—6·4. Cryst. cocarboxylase reactivated alkaline washed, dried *Fusaria* to most of its original activity. The amount of cocarboxylase found in dried *Fusaria* was 1·8—2·8 μg. per g. by the chemical (thiochrome) method and 2·8—4·2 μg. by the biological (replacement in alkaline washed yeast) method. This difference may have been due to a non-thiamin decarboxylating factor. *Fusaria* grown on Czapek–vitamin-B_1 medium showed greatly increased carboxylase activity without a corresponding increase in alcohol production. There was no synthesis of -B_1 with inorg. or org. phosphates as donors. The absence of high carboxylase activity is not the limiting factor in alcohol production by *Fusarium*. F. S.

Influence of halide concentration on the metabolism of *Penicillium sclerotiorum* Van Beyma. D. Reilly and T. P. Curtin (*Biochem. J.*, 1943, **37**, 36—39).—Replacement of KCl by KI or KBr in the media does not yield halide derivatives analogous to sclerotiorine and growth on KCl-free media does not assist isolation of the red component (A., 1941, III, 138). Increasing the concn. of Cl′ does not affect the production of sclerotiorine but only the Cl content of other products of extraction of the mycelium. KCl is rapidly utilised in the initial period of growth when sugar metabolism is rapid and then becomes regular. The activation of yeast extract is first directed towards the sugar metabolism to the detriment of the Cl′, but when the sugar has been completely metabolised utilisation of Cl′ is then stimulated. It is suggested that the pigment is a metabolic by-product rather than the fundamental end-product of Cl′ metabolism. H. G. R.

Polarographic studies. Mould metabolites.—See A., 1943, I, 155.

Apparent stimulative effect on mould growth of a mercurial preparation. M. E. Robertson (*Nature*, 1943, **151**, 365).—An org. mercurial (1 in 2—4 × 10^6) stimulated mould growth on leather. A. A. E.

Another mould with antibacterial ability. M. I. Timonin (*Science*, 1942, **96**, 494).—A culture of *Aspergillus* sp. (*Candidus* group) gave a bactericidal product similar to citrinin. E. R. R.

Value of pigmentation in classifying *Actinomycetes*. H. J. Conn and J. E. Conn (*J. Bact.*, 1941, **42**, 791—799).—Pigment production is fairly const. for any strain. The colour, however, varies because the pigments act as H ion indicators and the appearance of a culture may vary according to whether the pigment is present in its alkaline or acid phase or partly in each form. F. S.

Bactericidal substances from sterile culture media and bacterial cultures, with special reference to bacteriolytic properties of *Actinomycetes*. M. Welsch (*J. Bact.*, 1941, **42**, 801—814).—The presence in sterile culture media of bactericidal substances which are pptd. by $(NH_4)_2SO_4$ or acidification and may be extracted by org. solvents suggests that at least part of the toxic agents isolated by various investigators from bacterial cultures in complex media need not be of bacterial origin. F. S.

***Entamœba histolytica*. I. Effect of hydrogen-ion concentration on encystation of *E. histolytica* in culture.** S. L. Chang (*Amer. J. trop. Med.*, 1942, **22**, 471—484).—The most suitable medium for the encystation of *E. histolytica* was 15—20 ml. of M/30 PO_4''' buffered to pH 7·6, ¼—½ ml. of liver extract (40 g. of liver extract powder (Lilly) made up to 50 ml. with 4 g. of $Na_2HPO_4.12H_2O$), and 2—3 loopfuls of rice starch. F. S.

Effect of sulphanilamide compounds on growth of *Entamœba histolytica* in culture. E. C. Rodaniche and J. B. Kirsner (*J. Parasit.*, 1942, **28**, 441—449).—Sulphanilamide, sulphathiazole, sulphapyridine, sulphaguanidine, and sulphadiazine all inhibited the growth of *E. histolytica*. Sulphanilamide was the most active. The drugs often permitted the persistence of living amœbæ in cultures for longer periods than in media without drugs. The amœbæ readily developed tolerance to the action of sulphanilamide. F. S.

Enteritis associated with *Giardia lamblia*. G. Ormiston, J. Taylor, and G. S. Wilson (*Brit. Med. J.*, 1942, II, 151—154).—An outbreak of enteritis in children and adults at a nursery home for evacuees was associated with *G. lamblia* in the stools in 19 of 51 cases. The infection was rapidly cured with mepacrine. C. A. K.

Experimental attempts to infect man with avian malaria. S. B. McLendon (*Amer. J. Hyg.*, 1943, **37**, 19—20).—*Plasmodium relictum* was inoculated intravenously into 7 male Negro neurosyphilitics without harmful effects. The organism could live in the circulation and remain infective to pigeons for 4·5 hr. B. C. H.

Permeability of *Gregarina*. E. M. Adcock (*J. Exp. Biol.*, 1940, **17**, 449—463).—Gregarine protozoa from mealworm gut have no apparatus for osmotic adjustment. Permeability is greater for substances of high lipoid solubility regardless of mol. size. The parasites contain much glycogen and other osmotically inactive material. D. M. Sa.

Protoplasmic viscosity of *Paramecium*.—See A., 1943, III, 225.

Toxic effects of tyrothricin, gramicidin, and tyrocidine.—See A., 1943, III, 266.

Selective bacteriostatic effect of slow oxidising agents. W. L. Mallmann, W. E. Botwright, and E. S. Churchill (*J. infect. Dis.*, 1941, **69**, 215—219).—$K_2Cr_2O_7$, 1/20,000, and NaN_3, 1/5000, in solid media prevented the growth of Gram-negative organisms and allowed the growth of Gram-positive organisms. F. S.

Luminous bacterial auxanograms in relation to heavy metals and narcotics, self-photograped in colour. F. H. Johnson, C. M. Carver, and W. K. Harryman (*J. Bact.*, 1942, **44**, 703—714).—A few crystals or particles of the substance to be tested were placed in the centre of an agar plate inoculated with *Achromobacter fischeri* or *Photobacterium phosphoreum*. Cu, Co, Cd, and As were inhibitory to growth; Zn, Pb, and Ni were slightly inhibitory, Mn, Mg, and Bi were doubtful, and Al and Au had no effect. There was pronounced inhibition with the chlorides of Cu, Co, Mn, Ni, and Ag and slight with the chlorides of Pb and Mg. There was pronounced inhibition with benzamide, *p*-aminobenzoic acid, novocaine, sulphapyridine, sulphanilamide, and Na phenobarbital, and less with sulphonmethane and Na barbital. Glucose inhibited by the production of acid. In most cases the central zone of inhibition was separated from the area of normal growth by a zone of stimulation. F. S.

Chemotherapeutic testing with sodium sulphathiazole in the developing chick embryo. A. J. Weil and L. S. Gall (*J. infect. Dis.*, 1941, **69**, 97—101).—The injection of 5 mg. of Na sulphathiazole into the yolk sac of 10-day incubated eggs infected in the chorioallantoic membrane with *Bact. pullorum* increased the no. of organisms required to produce a 50% embryo mortality from 5 to 3500. The same treatment increased the 50% mortality dose of *Bact. flexneri* from 3 to 5700. F. S.

Antibacterial properties of protamine and histone. B. F. Miller, R. Abrams, A. Dorfman, and M. Klein (*Science*, 1942, **96**, 428—430).—Protamine sensitises the Gram-positive bacterium *Escherichia coli* to the inhibiting action of gramicidin and anionic detergents which attack selectively Gram-positive organisms. Salmine sulphate and histose (prepared from fresh calf thymus) themselves exhibit antibacterial properties. E. R. R.

Changes in the bacterial cell brought about by the action of germicides and antibacterial substances as demonstrated by the electron microscope. S. Mudd (*Amer. J. Publ. Health*, 1943, **33**, 167—168).—The structural changes revealed depend on (*a*) penetration of heavy metal ions or mols. into the bacterial cell and interaction with the inner protoplasm, (*b*) formation of surface films (probably unimol.) of antibody on flagella and cell-walls, and (*c*) impregnation of a capsule outside the cell-wall with great increase in size and density. J. H. B.

Micro-organisms in simulated room environments. I. Performance of Wells air centrifuge and of settling rates of bacteria through air. E. B. Phelps and L. Buchbinder. **II. Survival rates of streptococci in dark.** L. Buchbinder and E. B. Phelps. **III. Survival rates of streptococci in presence of natural daylight and sunlight, and artificial illumination.** L. Buchbinder, M. Solowey, and E. B. Phelps (*J. Bact.*, 1941, **42**, 321—344, 345—351, 353—366).—II. The average estimated times for 50% survival in a dark room at 25° for 3 strains of streptococci were 1 day (group *B*, α-hæmolytic), 5·5 days (group *B*, β-hæmolytic), and 13 days (group *A*). The temp. coeff. of the death rate of the α-hæmolytic group *B* strain had the usual logarithmic form between 45° and 55° and a val. of 1·2. At 25—40° the death rate was doubled with a coeff. of 1·047. At 40—45° there was a sudden increase in death rate to 6-fold.

III. An average of 50 min. exposure to daylight was necessary to kill 50% of the group *B* α-hæmolytic streptococcus. The group *B* β-hæmolytic streptococcus was slightly less and the group *A* streptococcus much less susceptible probably because it is a long-chain type. The lethal effect of light was due mainly to the blue region of the spectrum. F. S.

Effects of ultra-violet irradiation and propylene glycol vaporisation on prevention of experimental air-borne infection of mice by droplet nuclei. W. Henle, H. E. Sommer, and J. Stokes, jun. (*J. Pediat.*, 1942, **21**, 577—590).—Groups of white mice were placed in cubicles while cultures of the hæmolytic streptococcus of Lancefield's group *C* or of the virus of influenza *A* were atomised in one of the cubicles.

With heavy concns. of air-borne streptococci (more than 3000 cells per cu. ft. of air) most of the control mice died from streptococcal pneumonia and septicæmia; propylene glycol vapour protected them completely aud ultra-violet irradiation failed to prevent death only in the cubicle containing the atomiser. With low concns. of the streptococcus (200—500 organisms per cu. ft. of air), all mice survived. A carrier state was induced in the animals exposed under control conditions and not in those protected by ultra-violet light barriers. Ultra-violet irradiation and propylene glycol vapour were also effective in preventing the air-borne infection with the virus of influenza. C. J. C. B.

Apparatus for determination of bacterial content of air.—See B., 1943, III, 112.

Simple method of diminishing incidence of primary and secondary infection in surgical wounds. R. H. Jackson and R. H. Jackson, jun. (*Surgery*, 1939, **6**, 398—409).—Every surgical wound develops a sticky fibrinous nutrient film which catches and holds bacteria. The amount of contamination and potential source of wound infection are directly proportional to the size of the wound and the duration of its exposure to the air. Mechanical cleaning of the wound with soap and water just before closure removes this chance of infection and aids ideal wound healing. P. C. W.

Detergents and staining of bacteria. S. F. Snieszko (*Science*, 1942, **96**, 589).—Addition of solutions of " aerosol OT " in water or " aerosol Ma " in saline to the suspension of bacteria obviates the necessity for chemically cleaning slides before mounting. E. R. R.

Advantage of thioglycollate medium in routine diagnostic bacteriology. M. Mollov, J. E. Winter, and P. Steinberg (*Amer. J. clin. Path.*, 1942, **12**, 571—579). C. J. C. B.

Preparation of high-percentage starch media and starch-free agar base. R. A. J. Wilson (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 82—84).—The methods of preparing these media are described. C. J. C. B.

Reclamation of used agar. J. Brodie and D. Stiven (*J. Hygiene*, 1942, **42**, 498—499).—A method for the reclamation of agar from all media except those containing tellurite has proved satisfactory. The process can be repeated indefinitely without deterioration of the agar. D. D.

Common aërobic spore-forming bacilli. II. Fermentation reactions in agar butt-slants. K. L. Burdon, J. C. Stokes, and C. E. Kimbrough (*J. Bact.*, 1942, **44**, 163—168).—Agar slopes with deep butts made with 1·5% agar and containing bromocresol-purple as indicator were more sensitive than broth (with Durham tubes) for the detection of slight acid production. F. S.

Bacteriological comparison between synthetic and natural glycerol. H. J. Peppler (*J. Bact.*, 1942, **44**, 233—236).—The growth on glycerol–salts media and the dehydrogenase activity of a no. of bacteria were as good with synthetic glycerol (Shell) as with glycerol derived from fats. The cultivation of *Phytomonas tumefaciens* and *Bact. pullorum* in synthetic glycerol media had no deleterious effect on their virulence. F. S.

Tissue permeability and spreading factors in infection : a contribution to the host : parasite problem. F. Duran-Reynals (*Bact. Rev.*, 1942, **6**, 197—252). F. S.

Cytology of bacteria. I. M. Lewis (*Bact. Rev.*, 1941, **5**, 181—230). F. S.

Antagonistic relations of micro-organisms. S. A. Waksman (*Bact. Rev.*, 1941, **5**, 231—291). F. S.

Marine agar-digesting bacteria. R. Y. Stanier (*J. Bact.*, 1941, **42**, 527—558).—Seven species, belonging to the genera *Vibrio*, *Pseudomonas*, and *Cytophaga*, are described. F. S.

Bacteria attacking petroleum and oil fractions. R. W. Stone, M. R. Fenske, and A. G. C. White (*J. Bact.*, 1942, **44**, 169—178).—Cultures capable of attacking crude oil, lubricating oils, vaseline, asphalt, and all other petroleum fractions used were obtained from garden soil. Medium-wt. fractions were more easily attacked than the heavy viscous portions and the paraffin fractions more easily than the aromatic types. The breakdown of oil was an oxidative change with emulsification and sometimes a decrease in pH. The CO_2/O_2 ratio for the dissimilation of light oils was approx. 0·65. In heavy oils the ratio was much lower, being 0·1 in one case. The organisms were motile Gram-negative rods including *Pseudomonas*, and many white mucoid types. F. S.

Uses of micro-organisms in the production of chemical products. C. G. Dunn (*J. Chem. Educ.*, 1942, **19**, 387—392).—A review. L. S. T.

Glucose metabolism of bacteria from commercial fish. G. J. Sigurdsson and A. J. Wood (*J. Fish. Res. Bd. Canada*, 1942, **6**, 45—52).—The products of fermentation of glucose by " resting cell " suspensions of certain bacteria (*Serratia*, *Achromobacter*, and *Micrococcus*) isolated from decomp. cod muscle include lactic, acetic, and formic acids, alcohol, CO_2, and small amounts of acetylmethylcarbinol. With increased acidity in the fermentation system there is a marked increase in the % of lactic acid formed with a corresponding decrease in the other products. The optimum pH for glucose fermentation is about 6·8, *i.e.*, approx. that of fresh cod muscle. R. G. W.

Hydrogen in metabolism of *Azotobacter*. J. B. Wilson and P. W. Wilson (*J. Bact.*, 1942, **44**, 250—251).—*Azotobacter vinelandii* decomposes carbohydrate in anaërobic conditions with the production of acid and a gas which is probably H_2. F. S.

Formation of ammonia in the process of fixation of molecular nitrogen by *Azotobacter*. V. S. Butkevitsch and N. A. Kolesnikova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 66—69).—NH_3 is formed at an early stage in N fixation and not by autolysis, during which stage it decreases. R. L. E.

Bacterial growth factors in soil. A. G. Lochhead and F. E. Chase (*Science*, 1942, **96**, 387).—The factors are sol. in acetone, insol. in ether, adsorbed by Norit, and eluted by ammoniacal alcohol. E. R. R.

" Catalase test," with special reference to *Acetobacter* species. T. K. Walker and J. Tošić (*Biochem. J.*, 1943, **37**, 10—12).—The acid produced by species of *Acetobacter* in a medium containing malt extract inactivates catalase. Young cultures that have not grown beyond the early logarithmic phase show a positive catalase reaction even in unbuffered media. Older cultures should be tested for catalase activity in a medium buffered with $CaCO_3$, the test made as soon as growth is well established, and the cultures incubated at the lowest optimum temp. J. N. A.

Physiological characteristics of lactic acid bacteria near the maximum growth temperature. I. Growth and acid production. II. Studies on respiration. R. M. Stern and W. C. Frazier (*J. Bact.*, 1941, **42**, 479—499, 501—512).—I. At 37° there was a close relationship between the growth of *Lactobacillus bulgaricus* and the rate of production of lactic acid. At 49·5° the logarithmic phase was shorter and less lactic acid was produced, but as much acid was produced after reproduction had ceased as was produced during growth. The enzyme system responsible for the production of acid was therefore inactivated to a smaller degree than were the enzymes involved in the multiplication of the organisms. The production of volatile acids by *Streptococcus thermophilus* and by *L. bulgaricus* was affected only slightly at 49·5°. *L. bulgaricus* produced more volatile acid at 49·5° than at 37° although there was less growth and less total acidity at 49·5°.

II. The O_2 uptake of resting cells of *L. bulgaricus* was more rapid during the first 30 min. at 49·5° than at 37° and then dropped at the higher but not at the lower temp. F. S.

Bacteriology of perforation peritonitis. C. R. Owen (*Surgery*, 1940, **7**, 37—46).—Guinea-pigs, rabbits, and mice were inoculated with the cæcal contents from guinea-pigs, rabbits, and man. Samples containing few or no coliform organisms rarely gave rise to peritonitis. A large proportion of the strains of colon bacilli are potentially virulent. Pathogenic strains of the coliform group could not be distinguished from non-pathogenic strains by cultural characteristics, hæmolysis, agglutinations, or any combination of those properties. P. C. W.

Relation of volatile fatty acids and hydrogen sulphide to intestinal flora. O. Bergeim, A. H. Hanszen, L. Pincussen, and E. Weiss (*J. infect. Dis.*, 1941, **69**, 155—166).—Recovery of *B. prodigiosus* from the large intestine in man when ingested with 100 c.c. of olive oil was 57%, with 100 g. of butter fat 12%, and with 100 c.c. of an alcoholic extract of butter with a high butyrate content 1·7%. *In vitro*, *B. acidophilus* was very resistant to butyric acid, yeast came next, and then *Bact. coli* and *Proteus*. Most of the other 20 organisms, including a no. of pathogenic organisms, had a low resistance to butyric acid. Yeast was inhibited or killed by 0·0005—0·001N-H_2S. *Bact. coli*, *Proteus*, *Enterococcus*, and *B. acidophilus* were much more resistant. Human fæces contained a trace of free H_2S but the large intestine may contain sufficient to exert a killing action on yeast. F. S.

Synthesis of vitamins by intestinal bacteria.—See A., 1943, III, 253.

Sanitary significance of pectin-fermenting, lactose-fermenting, Gram-negative, non-spore-forming bacteria in water. D. B. McFadden, R. H. Weaver, and M. Scherago (*J. Bact.*, 1942, **44**, 191—199).—Since relatively more pectin-fermenting coliform organisms were found in water than in the fæces of animals, some of them, at least, are probably not of fæcal origin. F. S.

Comparative study of organisms of the Friedländer and *coli-aërogenes* groups. I. Morphological and cultural characteristics, with emphasis on variation. II. Pathogenicity, biochemical reactions, and serological relationships. E. Osterman and L. F. Rettger (*J. Bact.*, 1941, **42**, 695—718, 721—743). F. S.

Action of *B. coli* on dehydronorcholene.—See A., 1943, II, 167.

Assimilation of acetic and succinic acids containing heavy carbon by *Aërobacter indologenes*. H. D. Slade and C. H. Werkman (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 65—66).—When the acetic acids $CH_3{\cdot}^{13}CO_2H$ and $^{13}CH_3{\cdot}^{13}CO_2H$ are fermented, the succinic

acids formed have ^{13}C only in the carboxyl group in the first case, and in both methylene and carboxyl groups in the second, indicating that the methyl group does not become oxidised to CO_2 in the reaction. The reactions are reversible. The $\beta\gamma$-butylene glycol formed in presence of $CH_3 \cdot {}^{13}CO_2H$ contains ^{13}C only in the hydroxyl C, and the ethyl alcohol formed in presence of $^{13}CH_3 \cdot {}^{13}CO_2H$ contains ^{13}C equally distributed between methyl and carboxyl groups. V. J. W.

Bacteria from fermenting egg white and production of pure culture fermentations. L. S. Stuart and H. E. Goresline (*J. Bact.*, 1942, **44**, 625—632).—Sterile egg white inoculated with *Bact. aërogenes* fermented similarly to natural fermentations (A., 1943, III, 276) and the rate of fermentation was directly proportional to the no. of bacteria inoculated. Inoculation with a strain of *Bact. freundii* gave a similar fermentation, but produced acid more rapidly and maintained a lower pH longer than *Bact. aërogenes*. Inoculation with *Serratia marcescens*, *Proteus*, and *Ps. pyocyanea* gave less and slower decreases in pH and sugar content, and fermentation was characterised by rapid and great increases in the amount of formol-N, indicating strong proteolytic action. F. S.

Methionine made an essential growth factor by cultivation of *E. coli* in the presence of methionine and sulphanilamide. H. I. Kohn and J. S. Harris (*J. Bact.*, 1942, **44**, 717—718).—The ability of a strain of *Bact. coli* to grow in medium SG, composed of salts and glucose (A., 1943, III, 194), was not lost when it was subcultured daily for several months in medium SG containing (*a*) 1% proteose-peptone, (*b*) *l*-methionine and xanthine at 1×10^{-5}M. and glycine and *dl*-serine at 4×10^{-5}M., or (*c*) sulphanilamide 2×10^{-3}M. gradually increased to 2×10^{-2}M. In the presence of both (*b*) and (*c*), however, methionine became an essential growth factor. This result supports the view that synthesis of methionine is one of the anabolic reactions inhibited by the sulphonamides. In a methionine-free medium the development of resistance to sulphanilamide must involve metabolic adjustments to protect methionine synthesis. F. S.

Occurrence of aldolase and isomerase equilibria in bacterial metabolism. M. F. Utter and C. H. Werkman (*J. Bact.*, 1942, **42**, 665—676).—Aldolase and isomerase were demonstrated in a prep. obtained from *Bact. coli* by grinding with powdered glass. The equilibrium was independent of substrate concn. but dependent on temp. The rate at which the equilibrium point was reached depended on enzyme concn. Mg displaced the equilibrium towards hexose diphosphate. NaF and iodoacetic acid were ineffective. 95% or more of the triose phosphate obtained from an equilibrium mixture was dihydroxyacetone phosphate. 55—70% of triose phosphate isolated by addition of $NaHSO_3$ was glyceraldehyde phosphate. The equilibrium was truly reversible. F. S.

Accessory growth factor requirements of *Brucella* group. S. A. Koser, B. B. Breslove, and A. Dorfman (*J. infect. Dis.*, 1941, **69**, 114—124).—On an amino-acid–glucose–inorg. salt medium the growth of 4 strains of *Brucella* was supported when thiamin and nicotinamide were added. Addition of pantothenic acid accelerated growth. Further addition of a biotin concentrate allowed the growth of 3 more strains of *Brucella*. The growth of another strain was more stimulated by pantothenic acid than by either one or both parts of the mol. Other accessory factors did not substitute for the required factors nor have an added effect on growth. Lowering of the oxidation–reduction potential by thioglycollic acid increased the growth of some strains. The optimal concn. of NaCl was 0·6—1·0%. F. S.

Electrophoresis studies on *Brucella*. T. W. Stearns and M. H. Roepke (*J. Bact.*, 1941, **42**, 411—430).—Smooth strains of *Brucella* showed no change in mobility (approx. 0·8 μ. per sec. per v. per cm.) between pH 3·75 and 6·75 when suspended in buffers of const. ionic strength. The organisms showed little change and were negatively charged in buffers of an ionic strength of 0·01 between pH 2·1 and 8·4. The electrophoretic mobilities of dissociated strains were reduced to zero at pH 2·3—3·3, indicating irreversible changes in the surface. F. S.

Effect of dissociation on electrophoretic mobility of *Brucella*. T. W. Stearns and M. H. Roepke (*J. Bact.*, 1941, **42**, 745—755).—Dissociated forms (mucoid) having a greater mobility than the smooth forms appear after a few days in broth without the complete disappearance of organisms having the mobility vals. of smooth forms. Longer passage in broth causes further increases in mobility of dissociated forms and the gradual disappearance of organisms of mobility comparable with that of the smooth strains. Passage through guinea-pigs of dissociated forms with high mobility causes a decrease in mobility val. to that of the smooth forms without the loss of mucoid character. F. S.

Relapsing fever in Abyssinia. J. S. Minett (*Trans. R. Soc. trop. Med. Hyg.*, 1942, **36**, 189—194).—28 bacteriologically confirmed cases of relapsing fever occurring in Gold Coast soldiers in Abyssinia are reviewed. C. J. C. B.

Infection from cotton bacterium. P. A. Neal, R. Schneiter, and B. H. Caminita (*J. Amer. Med. Assoc.*, 1942, **119**, 1074—1082).—An acute illness among rural mattress makers was attributed to inhalation of Gram-negative, rod-shaped bacteria or their products contained in dust from stained cotton. The febrile illness began 1½—3 hr. after exposure and lasted 24—48 hr.; headache, weakness, generalised pains, respiratory, alimentary, and nervous symptoms were associated with a sudden high leucocytosis. C. A. K.

Diffusing factors. X. Formation of viscous materials by *Clostridium butylicum*. B. Lythgoe and J. Madinaveitia (*Biochem. J.*, 1943, **37**, 6—9; cf. A., 1941, III, 587).—*Cl. butylicum* produces viscous materials when grown in a medium containing glucose, asparagine, inorg. salts, and a peptone prep. as source of biotin. The viscous material does not appear to contain glucosamine and its η is not destroyed by hyaluronidase, but growth and production of viscous polysaccharides are inhibited to a certain extent when hyaluronidase is present in the medium. At any given concn. of peptone, the optimum concn. of glucose for max. growth and max. formation of viscous material are very nearly the same, but with const. amount of glucose the concn. of peptone that causes max. formation of viscous material is much less than that producing max. growth. With very high concn. of peptone, there is practically no formation of viscous material irrespective of the amount of glucose present, and yet the optimum concn. of peptone for growth is not attained. J. N. A.

Action of nitrites on bacteria. H. L. A. Tarr (*J. Fish. Res. Bd. Canada*, 1942, **6**, 74—89; cf. A., 1941, III, 536, 925).—Growth of the obligate anaërobes *Clostridium botulinum* and *C. sporogenes* in fish digest broth was inhibited by 0·02% of $NaNO_2$ at acid pH. $NaNO_2$ inhibits the growth of facultative anaërobes in nutrient broth under both strictly and semi-anaërobic conditions over a greater pH range than in fish digest broth or in a synthetic NH_4 lactate medium. $NaNO_2$ can be either bactericidal or bacteriostatic under different conditions and will inhibit growth of the human pathogens *Eberthella typhosa* and *Staphylococcus aureus*. R. G. W.

Gas gangrene. A. J. Williams and H. V. Hartzell (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 561—565).—There was 1 death among 12 cases of gas gangrene following trauma which were treated with *X*-irradiation; there were 7 deaths in 12 cases not so treated. P. C. W.

Significance of incubation temperature of recovery cultures in determining spore resistance to heat. O. B. Williams and J. M. Reed (*J. infect. Dis.*, 1942, **71**, 225—227).—Greater thermal death times were recorded for spores of *Cl. botulinum*, types *A* and *B*, and of an unidentified putrefactive anaërobe when the recovery cultures were incubated at 24—27° than when incubated at 31—37°. F. S.

Absorption of *botulinum* toxin from colon of *Macaca mulatta*. G. M. Dack and D. Hoskins (*J. infect. Dis.*, 1942, **71**, 260—263).—Amounts of *botulinum* toxin type *A* which were lethal when fed to 2 monkeys were without effect when injected into the colon of 4 others. Only 1 of 3 monkeys developed botulism after injection into the colon of large doses of toxin on 2 successive days. The relation of the permeability of the colon to toxin and the delayed symptoms sometimes occurring in human botulism is discussed. F. S.

Utilisation of amino-acids and related compounds by *Clostridium tetani*. C. E. Clifton (*J. Bact.*, 1942, **44**, 179—183).—Glutamic and aspartic acids and serine were decomposed by suspensions of *Cl. tetani*, CO_2, NH_3, and acetic and butyric acids being the main products of degradation. Lactic acid and alcohol were also produced from aspartic acid. The "Strickland reaction" was not involved in the metabolic activities of *Cl. tetani*. Essentially the same products were produced during the dissimilation of pyruvic and fumaric acids, malic acid being an additional product in fumarate utilisation. Glucose was not attacked. F. S.

Tetanus from implantation of infected pellets. H. Welch, G. G. Slocum, and J. J. Durrett (*J. Amer. Med. Assoc.*, 1942, **119**, 1396—1401).—Pellets contaminated with spores of *Cl. tetani* produced tetanus after subcutaneous implantation in guinea-pigs. Incorporation of antiseptics in the pellets did not prevent infection. The importance of sterility in preparing such pellets is emphasised. C. A. K.

Titration of tetanal toxins, toxoids, and antitoxins with flocculative test. H. Goldie, C. H. Parsons, and M. S. Bowers (*J. infect. Dis.*, 1942, **71**, 212—219).—A standard tetanus antitoxin giving only a simple and sp. flocculation zone was prepared by diluting, blending, and heating selected lots of refined tetanus antitoxin (Lederle). High toxicity ($L+$) was always associated with high flocculative potency (Lf) but high Lf val. was not always associated with high $L+$ val. Comparative titration between the standard antitoxin and serum from 43 immunised horses showed close agreement with animal tests for tetanus antitoxin. F. S.

Individual variation in immunity. D. J. Stewart and F. G. Jones (*Canad. Publ. Health J.*, 1942, **33**, 588—592).—Individual diphtheria antitoxin response, as determined by titrations of sera from guinea-pigs immunised with two 1-c.c. injections of fluid

diphtheria toxoid, was studied. The difference in potencies due to variation in individual response was greatest immediately following immunisation. Those individuals which deviated greatly from the average were in the minority. C. G. W.

Diphtheria immunisation of adults. H. M. Leete (*Brit. Med. J.*, 1942, II, 121—123).—388 adults were immunised against diphtheria with A.P.T. or T.A.F., the former being more efficient on the Schick test basis. There were no severe and only a few moderate local reactions, more with A.P.T. than T.A.F. Pseudo-reactors to the Shick test were the most likely to show local reactions, but they need not be immunised at all. The doses of A.P.T. for adults are the same as for children, *i.e.*, 0·2 c.c. and 0·5 c.c. with 1 month between injections. C. A. K.

Diphtheria immunisation in Islington. V. Freeman (*Brit. Med. J.*, 1942, II, 123—125).—Schick tests in 2862 children in Islington showed that A.P.T. in doses of 0·2 c.c. and 0·5 c.c. at 2 weeks' interval was as efficient as T.A.F. in 3 fortnightly doses of 1 c.c., 1 c.c., and 1·5 c.c., the Schick conversion rate being over 99% in both cases. C. A. K.

Resistance against toxigenic *Corynebacterium diphtheriæ* in rabbits following injections of non-toxigenic diphtheria bacilli. M. Frobisher, jun., and E. I. Parsons (*Amer. J. Hyg.*, 1943, **37**, 53—66).—23 rabbits were given repeated injections (intravenous, subcutaneous, and intracutaneous) of broth cultures of avirulent non-toxigenic diphtheria bacilli followed 11—13 days later by test doses consisting of an intradermal injection of 0·2 ml. of a living virulent broth culture, a similar dose of an avirulent strain, and 1 minimal intradermally-reactive dose = 0·002 m.l.d. of toxin. 11 control animals received the test doses only. There was a longer average period of survival in the test animals compared with controls. The resistance was not due to demonstrable antitoxin. The appearance of the skin reactions suggested an " anchoring " action of the cutaneous tissues. It is possible that diphtheria immunising agents should contain somatic antigens as well as toxoid derived solely from exotoxin. B. C. H.

Lipoid antigens of *C. diphtheriæ* and *C. hofmannii*. L. Hoyle (*J. Hygiene*, 1942, **42**, 416—422).—Antisera prepared by immunising rabbits with *C. diphtheriæ gravis*, *mitis*, and *intermedius* and *C. hofmannii* contain antibodies giving complement-fixation reactions with alcoholic extracts of the organisms. Three different lipoid antigens can be demonstrated : (*a*) a sp. antigen *h* present only in *C. hofmannii*, (*b*) a sp. antigen *d* characteristic of *C. diphtheriæ mitis*, but present in small amount in *gravis* and *intermedius*, (*c*) a complex non-sp. or group antigen *G* present in large amount in *gravis* and *intermedius* and *C. hofmannii* and in small amount in *mitis*. Sera from *mitis* cases of human diphtheria convalescents usually contain only *d* antibody, those from *gravis* or *intermedius* usually only *G*. J. H. B.

Purification of alum-precipitated diphtheria toxoid. S. C. Seal and S. J. Johnson (*J. infect. Dis.*, 1941, **69**, 102—107).—Diphtheria toxoid made from toxin produced in Mueller's casein hydrolysate medium had 52 *Lf* and 2·0 mg. N per c.c. Absorption with charcoal and the addition of $NaHCO_3$ before pptn. with alum gave a higher Al content and antigenic val. than was obtained with alum pptn. alone, confirming Lingood (A., 1940, III, 263). Elution of the alum-pptd. toxin with 0·5% Na_2HPO_4 was not advantageous. F. S.

Schick test reactions and serum antitoxin titres after injections of toxoid. B. Benjamin, G. Fleming, and M. A. Ross (*J. Pediat.*, 1942, **21**, 665—672).—No child with less than 0·002 unit of antitoxin per c.c. of serum up to 5 days after the test gave a negative Schick test. 2 children who had positive reactions in spite of previous subcutaneous injections of diphtheria toxoid but who responded rapidly and to a high level of antitoxin following the Schick test and control injections returned to a low level within 19 months. C. J. C. B.

Improved unheated blood tellurite medium for diagnosis of *C. diphtheriæ*. K. I. Johnstone and K. Zinnemann (*J. Path. Bact.*, 1943, **54**, 53—60).—An unheated blood–tellurite medium is described which allows growth of sensitive *gravis* strains which will not grow on heated blood–tellurite media and at the same time makes early diagnosis and type differentiation on the plate possible. The new medium compared favourably with other media. Figures for the distribution of the 3 types of *C. diphtheriæ* in Leeds for a period of 7 months during 1941—42 are given. (4 photomicrographs.) C. J. C. B.

Microscopic alkali-solubility test for identification of gonococcus colonies. A. Cantor, H. A. Shelanski, and C. Y. Willard (*J. Bact.*, 1942, **44**, 237—240).—A loopful of a colony suspension is mixed with a loopful of 0·2—0·1N-NaOH on the slide and neutralised with a corresponding amount of HCl after 30—60 sec. *Neisseria gonorrhœæ* are dissolved whereas normal flora *Neisseria* species are not dissolved. F. S.

Determination of factor *V* by measurement of nitrite produced by *Hæmophilus influenzæ*.—See A., 1943, III, 259.

Acute laryngitis and septicæmia due to *H. influenzæ* (type *B*). S. De Navasquez (*Brit. Med. J.*, 1942, II, 187—188).—Case report. C. A. K.

Growth factor requirements of *Bacillus larvæ*, White. A. G. Lochhead (*J. Bact.*, 1942, **44**, 185—189).—*B. larvæ* grew well on a medium containing salts–sugar solution, peptone, and thiamin. Biotin, vitamin-B_6, pantothenic acid, inositol, nicotinic acid, and riboflavin were without effect and did not increase the effect of thiamin in promoting growth either singly or in combination. F. S.

Pigments of *Micrococcus tetragenus*. VI. *Micrococcus tetragenus* infection. H. A. Reimann and C. M. Eklund (*J. Bact.*, 1941, **42**, 605—614).—Several pigments of *M. tetragenus* were identified as carotenoid pigments and had analogues in other bacteria and in plants. Xanthophyll was present in the yellow type, lycopene in the mucoid-pink, and rhodoxanthin in the pink type. Bacteria of the pink–yellow type and the brown type contained γ-carotene or rubixanthin in common, and also other unidentified pigments. F. S.

Respiration of micrococci. T. D. Nunheimer and F. W. Fabian (*J. Bact.*, 1942, **44**, 215—232).—When methylene-blue was used as the H_2 acceptor in Thunberg tubes, the substrates most readily activated by *Micrococcus luteus*, *M. flavus*, *M. aurantiacus*, *M. cinnebareus* and *M. freundenreichii* were raffinose, maltose, sucrose, glucose, ethyl alcohol, succinate, maleate, and glutamate. When mol. O_2 was used as the H_2 acceptor the most readily activated substrates were sucrose, maltose, glucose, ethyl alcohol, succinate, lactate, glutamate, and asparagine. The O_2 uptake of most of the substrates was const. or decreased slightly with time, whereas some, mainly glutamate and *dl*-phenylalanine, showed an increasing oxidation rate. The dehydrogenases of *M. luteus* and *M. flavus* were stimulated by $1{\cdot}4 \times 10^{-2}$M-CN'; the others were inhibited. Dehydrogenases active against the amino-acids were most susceptible to CN'. *M. luteus* and *M. flavus* were stimulated by 1 mg. of methylene-blue in the presence of all substrates except succinate; the others were inhibited. Na monochloroacetate, $1{\cdot}4 \times 10^{-2}$M., inhibited the oxidation of all substrates except glucose, with which there was stimulation. All the organisms except *M. freundenreichii* possessed moderate oxidase and catalase activity. Quinol was not oxidised by any of the micrococci, while *p*-phenylenediamine was oxidised by all. This suggests that cytochrome-*b* is abundant in these organisms and that cytochrome-*c* has a protein bearer which causes its potential to be negative with respect to quinol and hence inactive. F. S.

Myxobacteria. III. Utilisation of carbohydrates. J. M. Beebe (*Iowa State Coll. J. Sci.*, 1943, **17**, 227—240).—Cellulose, starch, dulcitol, and inulin were readily utilised by the bacteria. Pentoses and hexoses inhibited the development of both vegetative colonies and fruiting bodies. Disaccharides had little effect on growth. R. H. H.

Preparation and properties of the amylases produced by *Bacillus macerans* and *Bacillus polymyxa*.—See A., 1943, III, 273.

Pertussis toxin. M. E. Roberts and A. G. Ospeck (*J. infect. Dis.*, 1942, **71**, 264—269).—*Hæmophilus pertussis* produced a sol. toxin when grown in buffered ox heart infusion, with 2% peptone and 0·1% sol. starch, adjusted to pH 7·8 at 32° in 80% O_2 and 20% CO_2. The toxin was thermolabile, lethal in animals, produced dermal necrosis in rabbits and other animals, and could be detoxified by formalin. Injection of the toxin or formolised toxin in rabbits produced a sp. neutralising antitoxin demonstrable *in vitro* and *in vivo*. F. S.

Comparative antigenic analysis of *Bacillus parapertussis* and *Hæmophilus pertussis*, phase I ; clinical significance. E. W. Flosdorf, A. Bondi, H. Felton, and A. C. McGuinness (*J. Pediat.*, 1942, **21**, 625—634).—Cross agglutination between *B. parapertussis* and *H. pertussis* in phase I was shown by absorptive tests to be due to a common minor antigen. There is a general wide incidence of parapertussis agglutinins among the general population. By agglutinin absorption, it was shown that these agglutinins for *B. parapertussis* were due to infection by *B. parapertussis* and not the result of common minor antigen in both *B. parapertussis* and *H. pertussis*. As a result of intensive immunisation of man or animals, the agglutinative titre versus the heterologous species is increased through the agency of the common minor antigen, but it is not known whether such agglutinins are effective in clinical cross protection against either disease. Skin testing for susceptibility to whooping cough with purified agglutinogen also stimulates production of these same agglutinins as well as those versus the major phase I antigen. The use of purified agglutinogen as an interdermal reagent for stimulation of immunity, as well as in skin testing for susceptibility to whooping cough, is suggested. C. J. C. B.

Childhood pneumonia. I. J. Wolman (*Amer. J. med. Sci.*, 1942, **204**, 894—905).—A general review. C. J. C. B.

Dissociative aspects of bacteriostatic action of the sulphonamide compounds. R. A. McKinney and R. R. Mellon (*J. infect. Dis.*, 1941, **68**, 233—245).—Mice with experimental pneumococcal peri-

tonitis were treated with sulphanilamide and sulphapyridine. From these mice a no. of variants of the pneumococcus, type II, were isolated. The variants constituted a series of diminishing metabolic activity with respect to the formation of H_2O_2, fermentation of inulin, and virulence. All the changes were reversible. (19 photomicrographs.) F. S.

Preservation of pneumococcus by freezing and drying. E. G. Stillman (*J. Bact.*, 1941, **42**, 689—693).—57% of specimens of pneumococci remained viable for 3 years after drying while in the frozen state. The serological specificity and virulence of recovered pneumococci remained unaltered. F. S.

Use of sodium deoxycholate-lysed antigen for production of pneumococcus antiserum. H. A. Iverson and L. W. Pratt (*J. Lab. clin. Med.*, 1942, **28**, 314—316).—Sera from rabbits immunised with lysate, filtered or not, freshly prepared by treating young virulent cultures of type I pneumococci with Na deoxycholate, gave sp. mouse protection and caused some agglutination and "Quellung" in sp. type sera but gave no group reaction. C. J. C. B.

Immunisation by a species antigen. I. Preparation of species antigen from pneumococci. H. B. Day (*J. Hygiene*, 1942, **42**, 532—546).—From pneumococci a species antigen can be obtained which on injection protects against pneumococci of different types. The antigen is a somatic constituent of pneumococci and can be obtained in solution free from protein. It may be of carbohydrate nature but is not derived from type-sp. material. The bodies of pneumococci contain another substance associated with the protein, which opposes sp. immunisation. By use of species antigen freed from opposition factor a high degree of species immunity can be secured. J. H. B.

Gas ratio and some correlated distinguishing properties of bacteria of genus *Proteus*. M. L. Speck and C. N. Stark (*J. Bact.*, 1942, **44**, 687—701).—66 recently isolated cultures of *Proteus* formed 3 distinct groups on the basis of the CO_2/H_2 ratio. The average ratio was 6·28 for group I (26 cultures), 1·60 for group II (23 cultures), and 1·05 for group III (17 cultures). Of 42 stock cultures of *Proteus* 1 belonged to group I, 3 to group II, and 38 to group III. It is suggested that *Proteus* should be divided into 3 species on the gas ratio basis thus: group I, *P. hydrophilus*; group II, *P. mirabilis*; group III, *P. vulgaris*. F. S.

Inhibition of spreading growth of *proteus* and other bacteria to permit isolation of associated streptococci. H. C. Lichstein and M. L. Snyder (*J. Bact.*, 1941, **42**, 653—664).—Chemicals were more successful for this purpose than alterations in fluid content of the media or the addition of sp. antisera. NaN_3 (1 in 5000) completely inhibited the growth of *proteus* while streptococci grew readily in this concn. F. S.

Spore formation by *Bacillus subtilis* in peptone solutions altered by treatment with activated charcoal. J. L. Roberts and I. L. Baldwin (*J. Bact.*, 1942, **44**, 653—659).—A greater % of *B. subtilis* sporulated in Bacto-peptone broth treated with C at pH 3—5 than in untreated peptone broth. The % spores was independent of the concn. of the treated solution but was inversely proportional to the concn. of the untreated solution, indicating the presence of some food or some factor directly inhibitory to sporulation. Bacto and Parke–Davis peptones but not Witte or proteose peptone responded to C treatment. Sporulation could also be increased by adsorption of the medium with kaolin, $Fe(OH)_3$, or $Al(OH)_3$. F. S.

Bacteriological classification of principal cultures used in rat and mouse control in Great Britain. P. H. Leslie (*J. Hygiene*, 1942, **42**, 552—562).—Six "viruses" (bacterial cultures) used for anti-rodent control were examined. Two belonged to the classic *S. enteritidis* type and 4 to the sub-group *danysz*. Both groups are pathogenic for man and probably for domestic animals. Evidence cited shows that human cases of gastroenteritis (some fatal) have been caused by the use of "virus" preps. J. H. B.

***Staphylococcus aureus* in the milk of nursing mothers and the alimentary canal of their infants.** J. T. Duncan and J. Walker (*J. Hygiene*, 1942, **42**, 474—484).—A high incidence of *Staph. aureus*, unassociated with serious disturbance of health, was found in the milk of nursing mothers and throats and intestines of their infants. A technique for the staphylocoagulase test is described, and its use as an index of virulence discussed. J. H. B.

Effect of staphylococcus enterotoxin on isolated rabbit gut segments. J. J. Richmond, C. I. Reed, H. J. Shaughnessy, and V. Michael (*J. Bact.*, 1942, **44**, 201—205).—Staphylococcus enterotoxin produced an increase in tonicity of the smooth muscle of rabbit gut *in vitro*. Absorption of enterotoxin through the mucosa was not necessary to produce this effect. F. S.

Group *N* streptococci. A. T. R. Mattick and P. M. F. Shattock (*Nature*, 1943, **151**, 278).—The serological group of *S. lactis* is given the designation *N*. A. A. E.

Variations in peroxide production by β-hæmolytic streptococci. F. P. Hadley, P. Hadley, and W. W. Leathen (*J. infect. Dis.*, 1941, **68**, 264—277).—Eight type 3 and 2 type 5 strains of group *A* β-hæmolytic streptococci failed to give evidence of peroxide production by the usual tests. When grown for 4 days in benzidine–blood agar and then kept at room temp. all strains produced black papillæ or secondary colonies. The black colonies were pure, stable peroxide-producing variants which also differed from their parent strains in cell morphology, virulence, phagocytability, and amount of type- and group-sp. substance. (6 photomicrographs.) F. S.

Additional growth factor needed by some hæmolytic streptococci. A. Bass, S. Berkman, and F. Saunders (*J. infect. Dis.*, 1941, **68**, 220—225).—Two strains of β-hæmolytic streptococci failed to develop in the presence of the known growth factors which support ready growth of other strains. The required additional growth factor was present in yeast, spleen, liver, and fresh tomato juice. The factor was sol. in water and glacial acetic acid, slightly sol. in anhyd. solvents, and insol. in fat solvents. It withstood autoclaving at 15 lb. for 15 min. and pH 4—9. Norite was the only effectual adsorbent. Purification was attempted with limited success. F. S.

Beta hæmolytic streptococci isolated from public room floors. W. G. Walter and G. J. Hucker (*J. infect. Dis.*, 1942, **71**, 237—240). F. S.

Micro-organisms in simulated room environments. IV. Effect of survival on pathogenic properties of streptococci: mouse virulence. L. Buchbinder, M. Solowey, and M. Solotorovsky. **V. Effect of survival on pathogenic properties of streptococci: properties other than mouse virulence.** L. Buchbinder, M. Solotorovsky, M. Solowey, and J. Ruhl-Koupal. **VI. Disappearance of vaccinia virus from air.** L. Buchbinder and M. Solotorovsky (*J. Bact.*, 1941, **42**, 615—630, 631—634, 635—641).—IV. There was no loss of virulence in β-hæmolytic streptococci after 8—10 days' exposure in an experimental room.

V. 7 days' exposure produced no change in ability to grow in defibrinated human blood in two group *A* strains, in ability to lyse human blood clot in one group *A* strain, in toxigenic property in one group *A* strain, or in agglutinability in one group *C* strain.

VI. Vaccinia virus was more susceptible to the deleterious effect of room environment and died more rapidly than streptococci. F. S.

Streptococcic antifibrinolysin in newborn infants. J. A. Lighty, jun., and G. K. Anderson (*Amer. J. Dis. Child.*, 1943, **65**, 60—66).—Tests for β-streptococcal antifibrinolysin were performed on the blood of 50 unselected newborn infants and 26 of their mothers. The reactions of the infants were classified as: negative—plasma clot showing no resistance to lysis; false positive—plasma clot resisting lysis in the routine test but not in the modified tests (addition of normal adult serum or euglobulin fraction); true positive—plasma clot resisting lysis in all tests. That blood of a newborn infant with a reaction in the 3rd group possesses true antifibrinolysin was confirmed by demonstrating increased antibody in its serum and in the blood of its mother. C. J. C. B.

(A) Technique for determination of sensitivity of a strain of streptococcus to bacteriophage of type *A*, *B*, *C*, or *D*. (B) Another serologic type of streptococcic bacteriophage. A. C. Evans and E. M. Sockrider (*J. Bact.*, 1942, **44**, 207—209, 211—214). F. S.

Influence of sulphanilamide on mucoid and smooth-phase cultures of hæmolytic streptococci *in vitro*. P. Hadley and F. P. Hadley (*J. infect. Dis.*, 1941, **68**, 246—263).—Serial passage of a type 5 β-hæmolytic streptococcus of group *A* in the mucoid phase in neopeptone broth containing increasing concns. of sulphanilamide caused progressive transformation into the smooth phase. F. S.

Action of sulphanilamide on hæmolytic streptococci Lancefield groups *A* and *D* in growth-promoting and non-growth-promoting mediums. E. Neter (*J. infect. Dis.*, 1941, **68**, 278—284).—Sulphanilamide (1·0%) had no bactericidal effect on washed streptococci suspended in physiological salt solution at 37° or 43° but exerted bacteriostatic activity on these organisms suspended in broth at 37° for the same period. The action of sulphanilamide is therefore primarily bacteriostatic. F. S.

Nutritive requirements of salmonellas. III. Typhoid bacillus: carbon source and amino-acid requirements. W. Burrows (*J. infect. Dis.*, 1942, **70**, 126—130).—The amino-acid requirements of the typhoid bacillus are not fixed and may be made to vary within strains by alteration of the C compounds included in synthetic media. The general problem of the function of "essential" amino-acids is discussed. F. S.

Oxidation–reduction potentials in salmonella cultures. III. Relation between characteristic potential and antigenic structure. W. Burrows (*J. infect. Dis.*, 1941, **69**, 141—147).—There was some association between the species-characteristic potentials and the antigenic structure of 31 species of *Bacterium*. F. S.

Isolation of *Bacterium typhosum*. A. W. Pot (*J. Path. Bact.*, 1943, **54**, 100—103).—In 135 tests, Wilson and Blair's medium was best for isolation of this organism. C. J. C. B.

Study of two atypical strains of *E. typhosa*. D. N. Sage and E. H. Spaulding (*J. Bact.*, 1942, **44**, 647—651).—When the two strains were isolated lactose and sucrose were fermented, but H_2S was not produced. The strains became typical after one year of cultivation. All attempts to reinduce lactose fermentation failed. F. S.

Microcinematography of agglutination of typhoid bacilli. A. Pijper (*J. Bact.*, 1941, **42**, 395—409).—Typhoid bacilli are propelled by a very elongated spiral tail, consisting of two spiral flagella. Addition of *O*-serum causes a direct formation of clumps by the bacteria attracting one another instead of avoiding one another as in normal conditions. Addition of *H*-serum covered the motile organs with small granules which coalesce and form a sheath. This impedes motility and changes the thin flagella into thick, stiff, broadly wound spiral structures, which become entangled with one another and so produce agglutination. F. S.

Chorioallantoic membrane of chick embryos and its response to inoculation with mycobacteria. M. Moore (*Amer. J. Path.*, 1942, **18**, 827—839).—Strains of human, bovine, avian, fish, and snake tubercle bacilli and of rat leprosy bacilli were inoculated into the chorioallantoic membrane of the developing chick. The histopathogenesis of the lesion produced by these various acid-fast organisms is described. The type of reaction and the degree of response of the membrane to the inoculum serve to determine virulence in a short time. (25 photomicrographs.) C. J. C. B.

Growth of small numbers of tubercle bacilli, *H*37, in Long's liquid synthetic medium and some interfering factors. W. F. Drea (*J. Bact.*, 1942, **44**, 149—161).—Very small amounts of contaminating org. substances, adsorbed by glassware, inhibited the growth of tubercle bacilli in Long's liquid synthetic medium. Na oleate in concns. of 0·1—1·0 mg. per l. and distillates from bleached non-absorbent cotton stoppers inhibited growth. It is recommended that glassware should be cleaned with a saturated solution of KNO_3 in conc. H_2SO_4 and that cotton-wool plugs should be replaced by Cellophane or Al caps. F. S.

Death of tubercle bacilli subjected to oxygen deprivation in presence of moisture and warmth. Asphyxiated bacteria as vaccine in tuberculosis. T. S. Potter (*J. infect. Dis.*, 1942, **71**, 220—224, 232—236).—I. Bovine, avian, and human tubercle bacilli were gradually killed when stored at 38° in the absence of O_2 and in the presence of moisture. A few bacilli were viable for 25 days, but after a month the bacilli failed to develop either on culture media or in guinea-pigs.

II. Avian tubercle bacilli, killed by this method, retained constituents capable of conferring on the rabbit considerable protection against infection with virulent avian tubercle bacilli. F. S.

Sputum concentration for culture of tubercle bacillus. M. Gerundo (*J. Lab. clin. Med.*, 1942, **28**, 328).—A pepsin–HCl–NaF mixture is used. C. J. C. B.

Mechanism of immunity in tuberculosis. Fate of tubercle bacilli ingested by mononuclear phagocytes from normal and immunised animals. M. B. Lurie (*J. Exp. Med.*, 1942, **75**, 247—267).—Active tuberculosis confers increased bacteriostatic properties on mononuclear phagocytes independently of the organ environment or of immune body fluids. A. C. F.

Possibility of artificial sensitisation to tuberculin. M. I. Levine and M. F. Sackett (*Amer. J. Dis. Child.*, 1942, **64**, 1014—1022).—62 children received frequent inoculations of tuberculin, ranging from 3 to 61, during periods of 1—5 years. Doses of tuberculin (0·1—100 mg.) were used for testing. Cutaneous sensitisation was not induced by frequent inoculations with these doses of old tuberculin and there was no local sensitisation of the tissues from repeated tuberculin tests in the same dermal area. C. J. C. B.

Relation of allergy to immunity in experimental tuberculosis. E. F. Geever (*Amer. J. clin. Path.*, 1942, **12**, 606—615).—13 male guinea pigs were vaccinated with 1·0 mg. of B.C.G. and subsequently desensitised to 0·1 mg. of tuberculin (Seitz filtrate) from both general and local allergic standpoints. They were compared immunologically with the same no. of similarly vaccinated animals which were allowed to retain general and local allergy to the same dose of tuberculin. Both groups, together with 10 normal non-vaccinated controls, were infected with 0·0001 mg. of virulent human tubercle bacilli and anatomical examinations made 12 weeks later. The desensitised vaccinated group showed no corresponding decrease in immunity on comparison with the allergic vaccinated animals. The controls developed massive, generalised tuberculosis. General allergic reactions were evaluated in guinea-pigs by a study of rectal temp. changes. The skin reaction was a more accurate index of the allergic state in this animal than the response. Both general and local allergy were depressed in B.C.G.-vaccinated animals without associated changes in the immunity. C. J. C. B.

Cultural characters and pathogenicity for some laboratory animals of the vole strain of acid-fast bacillus. A. S. Griffith (*J. Hygiene*, 1942, **42**, 527—531).—The colonies on plain egg somewhat resemble those of tubercle bacilli but are of much slower growth. Growth is also scanty on glycerol media. In rabbits, guinea-pigs, and rats lesions are produced resembling those of tuberculosis but the strain is not virulent for the fowl. J. H. B.

Phenol and alcohol in T.A.B.C. vaccine. J. C. Cruickshank, B. C. Hobbs, A. M. McFarlan, and I. Maier (*Brit. Med. J.*, 1942, II, 182—183).—The disinfectant action of 22·5% and 25% alcohol was compared with that of 0·5% phenol in T.A.B.C. vaccine. There was no action on spores of *B. subtilis* and *Cl. sporogenes*; against *Staph. aureus*, *B. coli*, and *Ps. pyocyanea* 25% alcohol was most effective, 0·5% phenol next, and 22·5% alcohol only slightly inferior to phenol. There is no reason to suppose that the 22·5% alcohol in Felix's new T.A.B.C. vaccine is likely to be inefficient as a preservative. C. A. K.

Effect of sulphur-containing compounds on growth and hydrogen sulphide production by *B. tularense*. J. C. Ransmeier and J. A. Stekol (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 85—88).—Cystine and cysteine were the only compounds able to promote growth, and H_2S was produced in amounts proportional to growth. No growth occurred with methionine or homocystine. V. J. W.

Production of hydrogen sulphide from sulphur-containing compounds by various bacteria. I. Beef infusion agar medium. II. Synthetic medium. J. C. Ransmeier and J. A. Stekol (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 88—91, 92—94).—All the 22 bacteria examined produced H_2S in culture from cystine or cysteine, but not from cysteic acid, methionine, or *S*-benzylhomocysteine. Benzylation of the SH group of cysteine did not prevent desulphurisation by these organisms, but benzylation of the α-amino-group did so. No H_2S was formed from cysteic acid, methionine, or *S*-benzylhomocysteine. In a medium containing asparagine, glucose, and inorg. salts H_2S was produced in considerable quantities from cysteine or cystine by *E. coli*, *K. pneumoniæ*, and *B. subtilis*. Only *K. pneumoniæ* produced H_2S from *N*-benzylcysteine, and none did so from *S*-benzylcysteine. V. J. W.

Factors in preservation of the distemper virus. H. A. Siedentopf and R. G. Green (*J. infect. Dis.*, 1942, **71**, 253—259).—Homogenised, modified distemper virus of ferret origin, diluted in 25% horse serum and stored at −24°, retained its virulence for at least 693 days. Virus dried from the frozen state in vac., stored at 7°, remained infectious for 430 days. Quick freezing was not necessary. Dry air and commercial N_2 containing 0·5% of O_2 were deleterious to dried virus. F. S.

Isolation of virus from a patient with fatal encephalitis complicating measles. M. F. Shaffer, G. Rake, and H. L. Hodes (*Amer. J. Dis. Child.*, 1942, **64**, 815—819).—By experimental inoculation no virus other than the agent of measles was demonstrated in the brain material from this patient with encephalitis complicating measles. The application of the material to the skin, cornea, testis, foot pad, or brain of animals susceptible to herpes virus by one or more of these routes (rabbits, guinea-pigs, and mice) did not show the presence of the latter agent. This was confirmed by the egg inoculations. C. J. C. B.

Equine encephalomyelitis (Western) in man—a histologic and anatomic study. J. H. Peers (*Arch. Path.*, 1942, **34**, 1050—1064).—Full histological details. (9 photomicrographs.) C. J. C. B.

Mosquito vectors and inapparent animal reservoirs of St. Louis and Western equine encephalitis viruses. W. McD. Hammon, W. C. Reeves, and M. Gray (*Amer. J. Publ. Health*, 1943, **33**, 201—207).—*Culex tarsalis* was incriminated and the common domestic fowl was found to be a reservoir of infection. C. J. C. B.

Influence of ultra-violet light on equine encephalomyelitis virus protein (Eastern strain). A. R. Taylor, D. G. Sharp, D. Beard, H. Finkelstein, and J. W. Beard (*J. infect. Dis.*, 1941, **69**, 224—231).—The absorption spectrum of solutions of purified virus protein showed a pronounced peak at 2600 A., a broad min. at 2450 A., and increased absorption towards complete extinction at 2200 A. The absorption curve was qualitatively similar to that of nucleic acid, of which the virus protein contains only 4·4%. A similar concn. of pure nucleic acid gave a much smaller extinction coeff. There was linear relationship between the log of the survival rate (determined by infectivity) and time of irradiation with monochromatic light of 2537 A. for dil. solutions, indicating a primary photochemical reaction. With more conc. solution (0·2 mg. per c.c.) the rate of inactivation decreased with time, indicating an increase in absorption. Inactivation of infectivity did not affect the sedimentation pattern or const. of the protein. F. S.

Poliomyelitis following tonsillectomy. T. Francis, C. E. Krill, J. A. Toomey, and W. N. Mack (*J. Amer. Med. Assoc.*, 1942, **119**, 1392—1396).—5 healthy children of one family developed bulbar poliomyelitis after tonsillectomy (all done at the same time) and 3 died. Investigations of the source of the virus are described. C. A. K.

Penetration of poliomyelitis virus from gastro-intestinal tract in chimpanzee. H. A. Howe and D. Bodian (*J. Pediat.*, 1942, **21**, 713—716).—A young chimpanzee inoculated by stomach tube with human stool containing active poliomyelitis virus became infected. C. J. C. B.

Attempts to produce absorption of poliomyelitis virus by peripheral nerves *in vitro*. J. A. Toomey, L. A. Tischer, and W. S. Takacs (*Amer. J. Dis. Child.*, 1942, **64**, 1008—1013).—There was no difference between the absorptive power of peripheral nerves of non-rachitic and of rachitic *M. mulatta* monkeys (3½ years old) when ground with purified eluted poliomyelitis virus. C. J. C. B.

Pneumotropic strain of lymphogranuloma venereum virus. M. van den Ende and D. Lush (*J. Path. Bact.*, 1943, **54**, 81—92).—A method for titration of lymphogranuloma vereneum virus is described, depending on counting the focal lesions produced in the lungs of mice after the intranasal inoculation of appropriate dilutions of the virus. The method was used to determine the rate of multiplication of the virus in mouse lungs, for the estimation of neutralising antibodies in immune sera, and in chemotherapeutic experiments. The infectivity of the pneumotropic strain of lymphogranuloma venereum virus for the lung by this method was as high as its infectivity for the brain. C. J. C. B.

Lymphogranuloma venereum. I. Development of agent in yolk sac of chicken embryo. G. Rake and H. P. Jones (*J. Exp. Med.*, 1942, **75**, 323—337).—The agent of lymphogranuloma venereum inoculated in the yolk sac of the developing embryo undergoes a well defined cycle similar to that of psittacosis in the spleen and lymphogranuloma in the brain of infected mice. A. C. F.

Experimental transmission of lymphogranuloma venereum virus through placenta. H. Hellendall (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 140—141).—When pregnant mice were injected with this virus, extracts of the fœtal brains of their young were able to cause the disease when injected into normal mice. V. J. W.

Typhus in previously vaccinated laboratory workers. H. Gold and F. Fitzpatrick (*J. Amer. Med. Assoc.*, 1942, **119**, 1415—1416).—2 cases of atypical typhus fever in previously vaccinated laboratory workers are described. In one case the virus was isolated from the blood and in both there was a marked rise in agglutinin titre to *Proteus vulgaris* 0 × 19 and to typhus rickettsia. The clinical course at first resembled influenza. C. A. K.

Effect of under-nourishment on susceptibility of rabbit to infection with vaccinia. D. H. Sprunt (*J. Exp. Med.*, 1942, **75**, 297—304). A. C. F.

Concentration of lapine-virus by means of foaming. E. Weineck (*Kolloid-Z.*, 1942, **100**, 403—404).—By foaming its solutions, lapine-virus becomes conc. at the bubble surfaces. By separating foam from residual liquid a highly virulent solution is obtainable. C. R. H.

Ultrafiltration of plant viruses. K. M. Smith and W. D. MacClement (*Parasitology*, 1941, **33**, 320—330).—Tomato bushy stunt, tobacco necrosis, and tobacco ringspot viruses all had a filtration end-point of 40 mμ., giving a particle diameter of 13—20 mμ. With tobacco necrosis virus filtration was irregular, suggesting a polydisperse system or some degree of dissymmetry of the particle. Filtration of tobacco mosaic was difficult, giving a particle diameter of 13—20 mμ. and evidence of considerable variation in the length of the particle. Similarly potato virus *X* appeared rod-shaped with a diameter of 33—50 mμ. F. S.

Basic amino-acids in strains of tobacco virus. C. A. Knight (*J. Amer. Chem. Soc.*, 1942, **64**, 2734—2736).—Seven strains of tobacco virus yield 9·2±0·1% of arginine, as also do Holmes' masked and ribgrass and J14D1 strains. Green and yellow aucuba strains yield 10%. Cucumber viruses 3 and 4 yield 8·7%. Seven strains contain no histidine, but the ribgrass strain yields 0·55%. Small amounts of lysine are indicated by indirect analysis. R.S. C.

Purification of tomato bushy stunt and tobacco mosaic viruses. F. C. Bawden and N. W. Pirie (*Biochem. J.*, 1943, **37**, 66—70).—The prep. of both tomato bushy stuut and tobacco mosaic viruses from the sap is described. In both cases the initial step involves repeated pptn. with $(NH_4)_2SO_4$ at different pH vals. Partly purified solutions of the former, in which the concn. of virus exceeds 1%, begin to crystallise at 10% concn. of $(NH_4)_2SO_4$ and pH 3—7 at 0°. In neither case are centrifuge speeds higher than 3500 r.p.m. required. Some aggregation of tobacco mosaic virus occurs. P. G. M.

Inactivation of tomato bushy stunt virus by heating and freezing. Ultracentrifugal examination. A. G. Ogston [with W. Weinstein] (*Biochem. J.*, 1943, **37**, 70—78, 78—79).—Unlike tobacco mosaic virus, the loss of serological activity of which resembles protein denaturation in having a large temp. coeff., tomato bushy stunt virus loses its infectivity almost completely when heated to 70°, at which temp. the serological activity is unaffected. Such inactivated solutions are chemically and physically indistinguishable from active virus preps. Heat-denaturation is more marked at pH 4 than at a more alkaline reaction. Both serological activity and infectivity are completely destroyed by keeping at −10° for 14 hr., but addition of 1·6% of pseudoglobulin preserves 100% of the serological activity and approx. 25% of the infectivity. Salts, *e.g.*, KNO_3, KCl, etc., also exert a protective effect, which depends on the eutectic temp. The rate of inactivation of the virus by freezing varies as its concn. or the duration of freezing, but inversely as the pH val. The sedimentation const. (mean of 3 vals.) determined in the ultracentrifuge by the " diagonal schlieren " method is 129. P. G. M.

(A) Active immunity of mice against *Trichinella spiralis*. (B) Passive transfer of immunity against *Trichinella spiralis* in rat. J. T. Culbertson (*J. Parasit.*, 1942, **28**, 197—202, 203—206).—(A) Mice were partially immune after previous infection with the sp. parasite or after vaccination with a suspension of *T. spiralis* powder. The immunity was directed against the intestinal phase of the parasite.

(B) Immunity was passively transferred to normal rats by the injection of blood serum from immune rats. F. S.

Immunological reactions in subclinical trichinosis. S. E. Gould (*Amer. J. Hyg.*, 1943, **37**, 1—18).—Results of intradermal and precipitin tests and eosinophilic cell counts among 3398 hospital patients and 103 aged Jews were studied in relation to the finding of *Trichinella spiralis* in 1231 consecutive autopsies including 388 hospital patients who had been skin-tested during life. The intradermal test was of little val. in the diagnosis of old subclinical trichinosis and whereas susceptibility to infection increased with age sensitivity to trichina antigens decreased. Skin response to infection persisted less than 10 years. Precipitin reactions were related to recently acquired infection. Tests on the Jewish patients were mostly negative, indicating that the antigens were highly sp. No correlation existed between subclinical trichinosis and eosinophilia. No evidence was found that allergic patients reacted to trichina antigens. B. C. H.

Serologically active polysaccharide from *Trichinella spiralis*. L. R. Melcher and D. H. Campbell (*Science*, 1942, **96**, 431—432).—Worms liberated from the host (pig) by peptic digestion were washed with sterile saline, frozen in dry-ice, dehydrated, finely ground, suspended in 20 vols. of pH 8·0 buffer, heated on a water-bath, and stirred for 30 min. After centrifuging and adding 0·5% of NaCl, the polysaccharide was ppted. by 5 vols. of cold 95% alcohol. The ppt. was resuspended in pH 4·6 buffer, centrifuged, and repptd. at pH 8·0. 5—8 treatments were given, and 0·3 g. of polysaccharide was isolated from 3·0 g. of worms. The product was water-sol. (colloidal), N-free, and showed reducing properties after hydrolysis with N-HCl. It is a sp. antigen for sera from infected rabbits. E. R. R.

Serologically reactive polysaccharides produced by bacterial enzymes. I. Dextran of *Leuconostoc mesenteroides* from sucrose. E. J. Hehre and J. Y. Sugg (*J. Exp. Med.*, 1942, **75**, 339—353).—Sterile filtered extracts derived from sucrose broth cultures of *Leuconostoc mesenteroides* contain a heat-labile agent, probably an enzyme, capable of producing a serologically reactive dextran from sucrose. A. C. F.

Serological properties of simple substances. I. Precipitation reactions between antibodies and substances containing two or more haptenic groups. L. Pauling, D. Pressman, D. H. Campbell, C. Ikeda, and M. Ikawa. **II. Effects of changed conditions and of added haptens on precipitation reactions of polyhaptenic simple substances.** L. Pauling, D. Pressman, D. H. Campbell, and C. Ikeda. **III. Composition of precipitates of antibodies and polyhaptenic simple substances. Valency of antibodies.** L. Pauling, D. Pressman, and C. Ikeda. **IV. Hapten inhibition of precipitation of antibodies and polyhaptenic simple substances.** D. Pressman, D. H. Brown, and L. Pauling (*J. Amer. Chem. Soc.*, 1942, **64**, 2994—3003, 3003—3009, 3010—3014, 3015—3020).—I. Twenty synthetic compounds (see A., 1943, II, 177) containing at least two *p*-azo-, *p*-azobenzeneazo-, or *p*-carbamyl-phenylarsonic acid groups as haptens give ppts. with antisera (4 used) made by injecting rabbits with azophenylarsonic acid sheep serum. Seven similar substances containing only one such hapten do not give ppts. These results confirm the Marrack–Heidelberger framework theory. In all cases the amount of antisera pptd. increases to a max. with increasing amounts of antigen; the subsequent decrease is due to formation of sol. complexes. Relative efficiencies of antigens are almost identical for different antisera. The relations between structure and efficiency are discussed: in general, efficiency increases with the length of the mol. separating the haptenic groups, this length aiding sterically interaction of the hapten with a second antibody. Tri- and tetra-haptenic mols. are only slightly superior to dihaptenic mols. The optimum concn. of antigen is lower for tri- than for di-haptenic mols., but the same for tri- and tetra-haptenic substances, steric reasons being responsible for this also. The most effective antigen, tri-(*p*-*p*'-arsonobenzeneazobenzeneazo)resorcinol, ppts. as much antibody as does the test azoprotein. Normal sera give no ppts.

II. Washing the ppt. 8—10 times with saline or borate buffer solution causes 5—15% loss. The amount of ppt. is increased by about 10% by keeping for 2 days and possibly a little by increase in temp., but is decreased, although not proportionally, by adding buffer solution to the mixture. pH, but not the nature of the buffer, affects the amounts of ppt., which for oxdi-*p*-arsonoanilide is a max. at pH 8·1. Diluting the antibody with normal serum affects the amount of ppt. but does not change the optimum antibody–antigen ratio. Presence of more than 5% (not less than 5%) of hapten reduces the amount of ppt., but has only slight effect on the optimum

antibody–antigen ratio; possible impurities in the polyhaptens are thus negligible. The order of mixing antigen, antibody, and hapten is immaterial. Different polyhaptenic antigens containing the same haptenic group give max. amounts of ppt. when they have the same molar concn., although the actual amounts of ppt. vary; this is because the antibody–antigen bond const. is the same whilst the solubility of the ppt. varies. A mathematical explanation of the above results is offered and discussed.

III. 400 analyses of ppts. (7 antigens; pH 7·8—9·2) give antibody–antigen mol. ratios, 0·75 for di-, 0·85 for tri-, and 0·83 for tetrahaptenic dyes. These indicate that the effective valency of polyhaptenic dyes is generally limited to 2; this is caused by the large size of the antibody mol. usually sterically preventing higher valencies of the antigens from operating. A structure is presented in which $[–\text{antibody–antigen}–]_x$ chains are cross-linked in two ways: first, an occasional third haptenic group of the antigen is linked to a third antibody mol.; secondly, some antibody mols. can accommodate 3 antigen mols. and some of these "extra" antigens are linked to other antibody mols. Thus there are structures, [–antibody–antigen–]$_x$, –antibody–antigen<(antibody–antigen–)$_2$, –antigen–antibody(–antigen)–antigen–antibody–, and antigen–antibody<(antigen–antibody–)$_2$.

IV. The inhibiting action is recorded of 24 haptens (substituted phenylarsonic acids) on pptn. of polyhaptenic dyes containing at least two phenylarsonic acid groups by antisera obtained by inoculating rabbits with sheep serum coupled with diazotised *p*-arsanilic acid. The relative inhibiting activities of four haptens was the same for each of five antigens with a given antiserum, but varied with variation of the antiserum. The antiserum showing stronger inhibition by amide- than by azo-haptens gives a larger amount of ppt. with amide- than with azo-antigens. Results are interpreted by the theory previously discussed. Relative effects on the antigen–antibody bond const. are: *p*-series, $NO_2 > NHAc > PhN_2 > NHBz > Cl, Br, I, Me > OH > NH_2 > CO_2H > H$; *o*- and *m*-series, $NO_2 > Me > NH_2$; *p*-Me > β-naphthyl > *m*-Me > *o*-Me = α-naphthyl. R. S. C.

Precipitin formation in guinea-pig. C. A. Colwell and G. P. Youmans (*J. infect. Dis.*, 1941, **68**, 226—232).—Multiple intraperitoneal injections of cryst. ovalbumin failed to produce circulating precipitin in 10 guinea-pigs. Similar injections of sheep serum produced strongly flocculating antisera in 20 guinea-pigs. Antigen dilution titres did not exceed 1/1000 whereas antiserum dilution titres were in some cases as high as 1/2000 or 1/3000. Antigen dilution titres reached a max. after 12 injections, but antiserum dilution titres continued to rise and const. antiserum optimal ratios to fall as immunisation proceeded. Multiple zones of flocculation were observed in antisera of 14 of the 20 guinea-pigs. F. S.

Substitutes for milk in treatment of allergies. L. Z. Wolpe and P. C. Silverstone (*J. Pediat.*, 1942, **21**, 635—657).—9 milk substitutes made from oat, barley, soy, lima bean, pea, taro, rice, rye, and corn flours were prepared with the addition of oil (cottonseed, olive, sesame, corn, peanut, and soya) and gelatin, glucose, imitation vanilla, salt, crushed bone phosphate or $CaHPO_4$, 10% $FeCl_3$, and saccharin. 10 mg. of Fe, 1 g. of Ca, and 1·3 g. of P with a Ca : P ratio of 1 : 1 to 2 : 1 were the daily min. intake. Correct physical constitution of the substitutes with surface tension approx. that of milk, curd tension that of a soft curd milk, and pH about the neutral point was attained. These substitutes combine the advantages of a soft curd and acidified milk. C. J. C. B.

Allergic factor in idiopathic epilepsy.—See A., 1943, III, 234.

[Cokus ebony] bracelet dermatitis.—See A., 1943, III, 269.

Zinc dermatitis. H. E. Freeman (*J. Amer. Med. Assoc.*, 1942, **119**, 1016).—A case report. The allergic nature of the response was shown by patch testing. C. A. K.

Ragweed dermatitis among workers in flour and grain industries. J. W. Jordon, P. C. Campbell, and E. D. Osborne (*Arch. Dermat. Syphilol.*, 1942, **46**, 721—724).—Ragweed dermatitis is a common industrial hazard among this group of workers. 9 cases are described. C. J. C. B.

General electrophoretic pattern in extracts of pollens causing hay fever. H. A. Abramson, D. H. Moore, and H. H. Gettner (*J. Physical Chem.*, 1942, **46**, 1129—1139).—Electrophoretic patterns of pollen extracts of timothy, Bermuda, June, and orchard grasses, sheep sorrel, birch, oak, and plantain are similar to those of ragweed. The colourless fractions of the first three grasses and of sorrel are biologically active. The mol. wts. of the biologically active components of timothy pollen and ragweed are similar, viz., approx. 5000. C. R. H.

Preparation of house dust extracts. C. Sutherland (*Brit. Med. J.*, 1942, II, 280).—The allergen of house dust can be extracted with 0·01N-NH_3 solution. 2% Na benzoate is added, then HCl to ppt. benzoic acid which adsorbs the active substance, which can then be separated by dissolving the benzoic acid in acetone. 80 of 100 asthmatic soldiers showed strong scratch test reactions to the extract and desensitisation was effective in 20 cases. C. A. K.

Skin test to diodrast.—See A., 1943, III, 248.

Match test. H. Vollmer, H. W. Hyslop, and H. V. Lomant (*J. Pediat.*, 1942, **21**, 747—756).—The match test simplifies von Pirquet's cutaneous test by combining a skin abrasive with the test substances. Fine pumice powder is attached by a cement substance to one end of a wooden applicator. 2—3 turning movements with the match perpendicularly placed on the stretched skin painlessly abrade the stratum corneum and carry the accompanying test substances into the reactive epidermal cell layers. C. J. C. B.

XXVI.—PLANT PHYSIOLOGY.

Culture of vegetable tissues. A Guilliermond (*Arch. Sci. phys. nat.*, 1942, [v], **24**, 178—190, 247—257).—A review. W. Mc.C.

Physical chemistry of non-wettable, especially waxy, leaves. H. Ziegenspeck (*Kolloid-Z.*, 1942, **100**, 401—403).—The possibility of using physico-chemical methods for investigating the resistance of leaf surfaces to wetting is discussed. Changes in leaf surfaces and their reaction towards water after treatment with wetting agents and other org. liquids have been examined microscopically. C. R. H.

Protein metabolism in plants cultivated under light of varying intensity. R. Combes, A. Brunel, and A. Chabert (*Compt. rend.*, 1942, **214**, 681—683).—In *Veronica anagallis* just before flowering, the sol. nitrogenous constituents are mainly amides under conditions of direct sunlight, and mainly nitrates under light conditions of only half that intensity. Only plants grown under very feeble light conditions (⅛ the intensity of sunlight) retain nitrates beyond the flowering period. P. G. M.

Albinism in sugar cane. K. G. Joshi and D. B. Panditrao (*Current Sci.*, 1942, **11**, 402—403).—Albino patches on the midribs of sugar cane leaves were observed only in crops grown under sewage irrigation and were restricted to the lower leaves. New leaves formed after the start of the monsoon were of a normal green colour. The disease was not due to insect, fungal, or bacterial infection, or to any known disease causing chlorophyll deficiency. The green and albino parts of leaves were not markedly different in their content of protein- or non-protein-N, water, SiO_2, P, K, or Ca. R. H. H.

Diurnal changes in carbohydrates of wheat leaves. G. Krotkov (*Canad. J. Res.* 1943, **21, C**, 26—40).—The total sugar content of the leaves rose in the afternoon, reached max. between 3 and 6 p.m., and then declined. Diurnal variations in the reducing and invert sugar contents of young and old leaves were compared. Attached and detached leaves collected at various times during the day and then subjected to a short period of starvation showed in some cases a decrease and in others an increase in sugar content. The increase suggested hydrolysis of complex insol. substances. Diurnal variations in the hydrolysis, synthesis, and translocation of sugars were influenced by the conditions of illumination. R. H. H.

Development of plants growing under different light conditions as affected by mineral nutrition. M. C. Tschajlachjan and E. K. Lukovnikov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 152—155).—Oats and millet grow taller under long-day than under short-day conditions, but without adequate minerals they become stunted whatever the light conditions. With unfavourable light periods (short for oats, long for millet), reproduction development is unaffected by mineral supply, but with favourable light periods mineral supply is a potent factor. A. Li.

Tuber formation as controlled by photo-period and pruning. M. C. Tschajlachjan and L. P. Shdanova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 156—160).—Removal of above-ground shoots increases tuber formation in *Helianthus tuberosus* with short or long day-lengths, and in *Ullucus tuberosus* with short day-lengths, but does not induce tuber formation in the latter with long day-lengths. Pruning too early or too late has no effect. A. Li.

Photosynthesis and phosphorylation. S. Ruben (*J. Amer. Chem. Soc.*, 1943, **65**, 279—282).—Theoretical. The equilibrium consts. for carboxylation of org. compounds bear no relation to that for CO_2 fixation in *Chlorella pyrenoidosa*. Fixation of CO_2 probably occurs after interaction of an energy-rich phosphate donor with the org. compound. Similar reactions are discussed. R. S. C.

Rate of photosynthesis and respiration of the leaf in relation to its age. T. V. Voblikova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 76—77).—The rates of photosynthesis and respiration of spinach leaves continuously exposed to artificial light rapidly decrease with increasing age. R. L. E.

Tyrosinase and plant respiration. D. Baker and J. M. Nelson (*J. Gen. Physiol.*, 1943, **26**, 269—276).—At least 85% of the O_2 uptake of respiring tissue of potato tuber enters the chemistry of the cell by way of a tyrosinase-catalysed oxidation (cf. Boswell and Whiting, A., 1939, III, 321). J. N. A.

Hereditary transmission of induced tetraploidy and compatibility in fertilisation. A. B. Stout and C. Chandler (*Science*, 1942, **96**, 257—258).—Tetraploid seedlings, from selfed flowers on branches of *Petunia axillaris* in which tetraploidy was induced, are all self-compatible. There is also self-compatibility for all cross-relations among each series of these seedlings. E. R. R.

Colchicine-induced univalents in diploid *Antirrhinum majus*, L. A. H. Sparlow (*Science*, 1942, **96**, 363—364).—An increase of 37% in the no. of lagging univalents after treatment with colchicine is reported. Crossing-over in at least one pair of chromosomes is apparently reduced. In some cases meiosis did not occur until 8 weeks or longer after treatment, indicating a long-term effect of colchicine. E. R. R.

Behaviour of thiuram sulphides etc. in spore germination tests. H. B. S. Montgomery and H. Shaw (*Nature*, 1943, **151**, 333).—"Inversion" of toxicity (toxicity decreasing as concn. increases within a limited range) is confirmed for various thiuram sulphides. The explanation probably lies primarily in chemical reactions. A. A. E.

Effects of synthetic growth-substances on cuttings, seeds, and transplants. J. C. Swartley and L. C. Chadwick (*Ohio Agric. Exp. Sta. Bimo. Bull.*, 1942, **27**, 125—144).—The growth-substances were mostly commercial preps. containing either indolylbutyric or naphthylacetic acid, or naphthylacetamide, and were applied as talc dusts. Treatment of leafy cuttings of woody plants was beneficial with 8 of 17 species tested due to quicker production of a greater no. of roots. Amide preps. compared favourably with the acid compounds for cuttings, but acids are more effective if the concn. is adjusted for the individual plant. Preps. adjusted to pH 3·0 act in the same manner as higher concns. at other pH. Seeds of 41 varieties of perennials were treated with an indolylacetic acid and a naphthylacetamide prep. The % germination for acid-treated seed was definitely higher than that of the amide or control lots. Treatment accelerated the growth of certain annual and perennial seedlings, including tomato plants, and chrysanthemum cuttings treated in early spring; the practical benefit of such treatment is doubtful. No effect was noticed with other seedlings, both annual and perennial, or with peony divisions. A. A. M.

Auxin production during development of the grain in cereals. E. S. J. Hatcher (*Nature*, 1943, **151**, 278—279).—In rye the auxin is formed inside the grain, in the aleurone region near the embryo. It is not derived by translocation to the ear, and is not produced directly from the products of assimilation. In both the developing anther and the developing carpel auxin first accumulates and then disappears, but whereas in the carpel an inactive derivative, from which auxin can be recovered by alkaline hydrolysis, is formed, in the case of the anther there is no evidence of the same reversibility. A. A. E.

Sexual hormones in *Achyla*. V. Hormone *A'*, a male-secreted augmenter or activator of hormone *A*. J. R. Raper (*Proc. Nat. Acad. Sci.*, 1942, **28**, 509—516).—In addition to the 4 sp. substances already described as initiating and co-ordinating the sexual reaction in *Achyla bisexualis* and *A. ambisexualis* (cf. A., 1940, III, 451; 1941, III, 149) there is a 5th, hormone *A'*, secreted by the male mycelium. Hormone *A'* increases the action of hormone *A*, which is secreted by the female and induces the formation of antheridial branches in the male. The variation in the response of male plants to hormone *A* depends on rhythmic variations in the quantity of hormone *A'* produced by the male plant. F. S.

Foot and root rot of wheat. VII. Factors affecting health of wheat seedlings in nutrient solutions. L. E. Tyner and W. C. Broadfoot (*Canad. J. Res.*, 1943, **21**, C, 18—25).—Treatment thrice weekly with 1 ml. of 0·5% aq. Fe tartrate per l. of nutrient solution prevented chlorosis in seedlings inoculated with *Helminthosporium sativum* or *Fusarium culmorum*. Less Fe was required in summer than in winter plantings, and in nutrient solutions of pH approx. 7·0 than in those of pH 5·5. Chlorosis was not prevented by the addition of Mn to Fe-deficient solutions. Sterilised or unsterilised filtered aq. extracts of the pathogens inhibited seedling growth. R. H. H.

Effect on seed potatoes of formalin treatment for the destruction of adherent eelworm cysts. M. T. Franklin (*J. Helminth.*, 1940, **18**, 85—88).—There was a 6—9% mortality in tubers soaked for 6 hr. in 5% commercial formaldehyde. There was no difference in the total yield but the yield of chats was greater with treated tubers than with controls. F. S.

***Pseudomonas aëruginosa*; its rôle as plant pathogen.** R. P. Elrod and A. C. Braun (*J. Bact.*, 1942, **44**, 633—644).—Fifteen strains of *Ps. aëruginosa* (*Ps. pyocyanea*) derived from many sources were pathogenic to tobacco plants by needle puncture, leaf smears, or spraying. The lesions were identical with those produced by *Phytomonas polycolor*. Many of the organisms produced a soft-rot of vegetables like that ascribed to *Bact. marginale*. The ability of *Ps. pyocyanea* to thrive in both plants and warm-blooded animals makes it unique in bacteriology. F. S.

XXVII.—PLANT CONSTITUENTS.

Nutritive value and chemical composition of certain fresh-water plants of Minnesota.—See B., 1943, III, 107.

Mineral pattern of stems from vegetative and flowering plants as determined by micro-incineration. B. E. Struckmeyer (*Science*, 1942, **96**, 346).—Shrinking and distortion of the section during ashing is avoided by using an ashless adhesive "Nevillite 123." The pattern of the ash differs in vegetative and flowering stems, and there is more ash in the latter. E. R. R.

Isolation and constitution of an acid from the root bark of *Ixora coccinea* (Linn.).—See A., 1943, II, 151.

Synthesis of β3β-trichloroethyl-*d*-glucoside and its isolation from maize and dandelion plants treated with chloral hydrate.—See A., 1943, II, 156.

Æscigenin, algucon of saponin from seeds of horse chestnut.—See A., 1943, II, 169.

Ascorbic acid content of fruits and vegetables.—See A., 1943, III, 256, 257.

Vitamin-*A* assays of plant tissues. Potential sources of errors in sampling.—See A., 1943, III, 254.

Pyridoxine and coacervates in plant cells. H. S. Reed and J. Dufrenoy (*Science*, 1942, **96**, 470).—The presence of pyridoxine-indophenol was demonstrated in globular aggregates, apparently autocomplex coacervates, in the vacuoles of senescent stem cells of mustard plants grown without Zn. If Zn is included in the nutrient solution, pyridoxine is randomly distributed in the vacuolar solution. E. R. R.

Vitamins, minerals, carbohydrates, and proteins in tubers, I. A. N. Namjoshi and S. C. Devadatta (*Current Sci.*, 1942, **11**, 463—464).—Vitamins-B_1 and -*C*, Ca, P, Fe, protein-N, and carbohydrates were determined in a representative collection of tubers available in Bombay province. P. G. M.

Non-carbohydrate substances in the cereal starches. T. J. Schoch (*J. Amer. Chem. Soc.*, 1942, **64**, 2954—2956).—Solvents, best hydrophilic fat solvents, remove free fatty acids from maize starch when it is present as such. Similar treatment of rice starch yields a soap and of wheat starch yields a phospholipin containing all the P of the starch; the P content is thus not characteristic of starch fractions. The P of potato starch is unaffected by extraction. Fatty acids can be replaced on the starch by the hydrophylic solvents. The added fatty acid can be removed only by the same type of solvent and is thus present as adsorbent (cf. Lehrman, A., 1943, III, 150). Defatted starches give clearer pastes, are unaffected as regards stability to alkali but are more stable to autoclaving (owing to removal of the acid), and have increased pH (6). Fat is generally best removed by boiling with five portions, each 3 parts, of 85% (vol.) methyl alcohol. R. S. C.

Composition of various starches.—See A., 1943, II, 156.

[Constitution of] a crystalline wheat protein.—See B., 1943, III, 99.

***Viburnum opulus*.** C. H. Costello and E. V. Lynn (*J. Amer. Pharm. Assoc.*, 1943, **32**, 20—22).—The bark of *V. opulus* contains substances which have a depressant action on the uterus. These substances are present in the volatile oil, the aq. solution from an alcoholic extract, the amyl alcohol extract of the resin left after evaporation of the alcoholic extract, and in the ppt. and filtrate obtained by treatment with basic Pb acetate of the liquid obtained by extraction with amyl alcohol. The volatile oil contains more than 50% of org. acids which contain 2—10 C, together with phenols, esters, and aldehydes or ketones. Similar oils are obtained from *V. prunifolium* and *V. alnifolium*. The bark of *V. opulus* contains a β-glucosidase. J. N. A.

Chromatographic removal of growth-promoting factors from natural glycerides. V. De Souza and M. Sreenivasaya (*Current Sci.*, 1942, **11**, 462—463).—Arachis oil, diluted with an equal vol. of light petroleum (40—60°), was passed 3 times through a fresh column of Al_2O_3 (Brockmann). Growth-promoting factors for the larvæ of *Corcyra cephalonica*, Staint, were completely removed, but they could be eluted in an active state, and such eluates caused rapid recuperation of larvæ previously maintained on a sterol-free diet. P. G. M.

Constitution of natural coumarins of *Toddalia aculeata*.—See A., 1943, II, 170.

Kanugin, crystalline component of roots of *Pongamia glabra*.—See A., 1943, II, 170.

Chemical components of Indian tulip flowers.—See A., 1943, II., 170.

Determination of carotene in plant tissues. Rapid chromatographic method. M. E. Wall and E. G. Kelley (*Ind. Eng. Chem. [Anal.]*, 1943, **15**, 18—20).—The dehydrated product is extracted

with a boiling mixture of acetone–light petroleum, filtered, and the filtrate conc. and passed through a column of Hyflo Supercel (3 parts) and Micron brand MgO (1 part). The chlorophyll and xanthophyll are held at the top of the column and the carotene is eluted with light petroleum–acetone and determined in a photo-electric colorimeter. J. D. R.

Pigments of flowers of *Hibiscus sabdariffa*. Sabdaretin, new hydroxyflavone.—See A., 1943, II, 170.

State of chlorophyll in chloroplast. B. N. Singh and N. K. A. Rao (*Current Sci.*, 1942, **11**, 442—443).—Colloidal aq. dispersions of chloroplast from leaves of *Phaseolus vulgaris* exhibit fluorescence which is destroyed by adding trypsin and lipase. Fluorescence is also exhibited by alcoholic solutions of chlorophyll and by aq. lecithin–chlorophyll sol but not by colloidal aq. dispersions of chlorophyll, chlorophyll sol + lecithin sol, or chlorophyll sol + lecithin solution. The results suggest that, in the chloroplast, chlorophyll is closely associated with lipin and protein. Possibly it is dissolved in lipin, the solution being colloidally dispersed over protein. W. McC.

Toxic principles of poison ivy. H. S. Mason and L. Schwartz (*J. Amer. Chem. Soc.*, 1942, **64**, 3058).—"Mol." distillation of an extract (prep.: Hill *et al.*, A., 1935, 246) of poison ivy gives vesicant fractions, b.p. (bath) (**I**) 125°, 165°, and 170°. Chromatography of (**I**) on $BaCO_3$–"Super Cel" (N_2) gives stearic acid and an unstable, oily phenol [absorption max. at 265 (log ε 3·02) and 273 mμ. (log ε 3·09) in alcohol], and on Al_2O_3 4 fluorescent and 2 coloured, non-fluorescent bands. One fluorescent substance was isolated as an unstable phenol, the other three were too unstable to be isolated but are highly toxic. R. S. C.

Histological distribution of alkaloids in Himalayan *Berberes*. R. Chatterjee (*J. Amer. Pharm. Assoc.*, 1943, **32**, 1—7).—The structures of the root, stem, and leaf tissue of *Berberis aristata*, D.C., *B. insignis*, Hook, *B. lycium*, Royle, *B. nepalensis*, Spreng, *B. wallichiana*, D.C., and var. *latifolia*, *B. umbellata*, and *B. vulgaris*, which grow at high altitudes, are described. The alkaloids are stored mainly in dead cells and in other cells which are not connected with metabolism. Very bitter alkaloids accumulate in the epidermis of the stem bark, and probably afford protection against animals. They are end products of metabolism rendered harmless to the plant and stored mainly in special cells and regions where they are not readily re-absorbed into active tissues. J. N. A.

Quassin. IV. Minor constituent of Jamaican quassia wood.—See A., 1943, II, 180.

Structure of riddelliine, the alkaloid of *Senecio riddellii*.—See A., 1943, II, 176.

Alkaloids of seeds of *Delphinium elatum*, L.—See A., 1943, II, 176.

Alkaloids of *Corydalis platicarpa*, Makino.—See A., 1943, II, 176.

Alkaloid from *Menispermum canadense*, L.—See A., 1943, II, 177.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Improved rabbit cage. R. T. Smith and B. H. Steele (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 77—78). C. J. C. B.

Gravity writing lever for respiratory tambours. H. R. Hulpieu and R. C. Welch (*Science*, 1942, **96**, 590). E. R. R.

Further improvement in the Harvard kymograph. A. N. Solberg (*Science*, 1942, **96**, 590). E. R. R.

Slide shaker for Kline and blood matching test. E. B. Atkinson (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 98). C. J. C. B.

Direct smear method for counting microscopic particles in fluid suspension. S.-H. Wang (*J. Bact.*, 1941, **42**, 297—319).—0·01 ml. of a suitably diluted suspension is smeared on a marked area (5 × 10 mm.) on a slide. The smear is dried, fixed, and stained. The no. of particles in a microscopic field in each sq. mm. of the smear (50 fields in all) is then counted. F. S.

Microscalpel for use in experimental embryology. A. B. Burch (*Science*, 1942, **96**, 387—388). E. R. R.

Platinum scoop for transferring sterile powders. A. Packchanian (*Science*, 1942, **96**, 522). E. R. R.

Simplified photomicrography with a hand camera. R. P. Loveland (*Science*, 1943, **97**, 24—26). E. R. R.

Problems in chromatography and in colloid chemistry illustrated by leaf pigments. H. H. Strain (*J. Physical Chem.*, 1942, **46**, 1151—1161).—Recent progress in chromatographic analysis as applied to leaf pigments is discussed. C. R. H.

Indirect analysis of organic mixtures by combustion with particular application to plant and animal physiological chemical problems. P. Fuchs (*Z. anal. Chem.*, 1942, **124**, 260—270).—The derivation of the relative proportions of the constituents in binary org. mixtures from the results of combustion analysis is discussed with particular reference to the determination of lignin and cellulose in lignified vegetable matter and of fat and carbohydrates in animal tissues. From the combustion results combined with, *e.g.*, N determinations, the compositions of multi-component mixtures can also be derived. J. W. S.

Rapid method for determination of nitrogen in plant tissue. R. C. Lindner and C. P. Harley (*Science*, 1942, **96**, 565—566).—The fresh or dried sample (about 100 mg. dry) is heated with conc. H_2SO_4 until disintegration occurs, or, if NO_3' is present, for 1 min. after the H_2SO_4 fumes. 30% H_2O_2 is added to the cold residue, and the mixture evaporated until the H_2SO_4 fumes; this treatment is repeated with 5-drop additions of H_2O_2 until the solution is clear and colourless. The solution is diluted, partially neutralised with 2·5N-NaOH, Na_2SiO_3 added to prevent turbidity, and the N determined colorimetrically with Koch–McMeekin Nessler reagent. The method, which takes 10 min., compares in accuracy with the Kjeldahl method. E. R. R.

Determination of 2 : 3-diketo-*l*-gulonic acid. J. R. Penney and S. S. Zilva (*Biochem. J.*, 1943, **37**, 39—44).—Diketogulonic acid is determined by measuring the red colour of the NaOH solution of the 2 : 4-dinitrophenylhydrazone. Owing to the instability of the colour it is preferable to use a photometric technique rather than direct matching. The calibration curve (reciprocal colorimetric reading against ascorbic acid equiv.) does not pass through the origin; this is due to some adsorption produced by the reagents since the colour obeys Beer's law even in very dil. solution. The determination is carried out on a trichloroacetic acid extract of blood or tissue (liver, kidney, or muscle) but directly on urine. H. G. R.

Purification of gum ghatti. L. F. Wicks (*J. Lab. clin. Med.*, 1942, **28**, 349—353).—Reducing substances naturally present in most samples of gum ghatti will often cause turbidity of Nessler's reagent when that protective colloid is employed. The greater part of the interfering materials can be removed by treatment of the hot gum solution with acid-washed bone charcoal (or less well by wood charcoal) followed by permutit. C. J. C. B.

Semi-micro-method for determination of reducing sugars in fermentation media. L. A. Underkofler, J. F. Guymon, M. M. Rayman, and E. I. Fulmer (*Iowa State Coll. J. Sci.*, 1943, **17**, 251—256).—A modification of the Shaffer–Somogyi method (A., 1933, 699) is described, which determines a max. of 11 mg. of sugar in 5 c.c. of solution. A. Li.

Recovery of solvents used in the chemical determination of thiamin. M. Pader (*Ind. Eng. Chem.* [*Anal.*], 1943, **15**, 25).—*iso*Butanol and xylene containing thiamin are purified for re-use by shaking with activated charcoal (Darco G. 60) and filtration. J. D. R.

Comparison of direct diazo-reaction by photo-electric colorimeter and oxidation test for bilirubin.—See A., 1943, III, 235.

α-Naphthol colour test for dihydroxyacetone and hydroxymaleic acid. W. J. Turner, B. H. Kress, and N. B. Harrison (*J. Bact.*, 1942, **44**, 249—250).—With α-naphthol and KOH a blue colour is given by dihydroxyacetone, pyruvic acid, and acetoacetic ester. Hydroxymaleic acid turns blue, then red. F. S.

Determination of methyl alcohol and formaldehyde in air. C. F. Ackerbauer and R. J. Lebowich (*J. Lab. clin. Med.*, 1942, **28**, 372—377).—A simple and reliable method is described, employing the modified Schiff's reagent of Wright (A., 1927, 687), and having a technical error up to 7%. C. J. C. B.

Micro-determination of chloride in viscous biological fluids and its reliability. F. Hollander and J. Stein (*J. Lab. clin. Med.*, 1942, **28**, 363—370).—The Van Slyke method for the determination of Cl′ in biological fluids can be improved by addition of nitrobenzene to the titration mixture and agitation to keep the pptd. Ag salts adsorbed on the nitrobenzene layer. The standard deviation of a single titration is 0·0001 m-equiv. C. J. C. B.

Determination of aluminium in biological material. J. Cholak, D. M. Hubbard, and R. V. Story (*Ind. Eng. Chem.* [*Anal.*], 1943, **15**, 57—60).—The sample is ashed and the residue in HNO_3 is determined spectrographically, using Bi as an internal standard. The precision of analysis in the range 0·01—0·10 mg. Al is improved by correcting for background fog. The chemical method, which equals the spectrographic method in precision, consists in isolating $AlPO_4$, removal of Fe with cupferron, development of an Al lake with Alizarin Red S, and measurement of the mixed colour by means of a photo-electric spectrophotometer. J. D. R.

Colorimetric determination of boron.—See A., 1943, I, 162.

Ultra-micro-method for sodium.—See A., 1943, I, 162.

Analytical patterns in the study of mineral and biological materials.—See A., 1943, I, 168.

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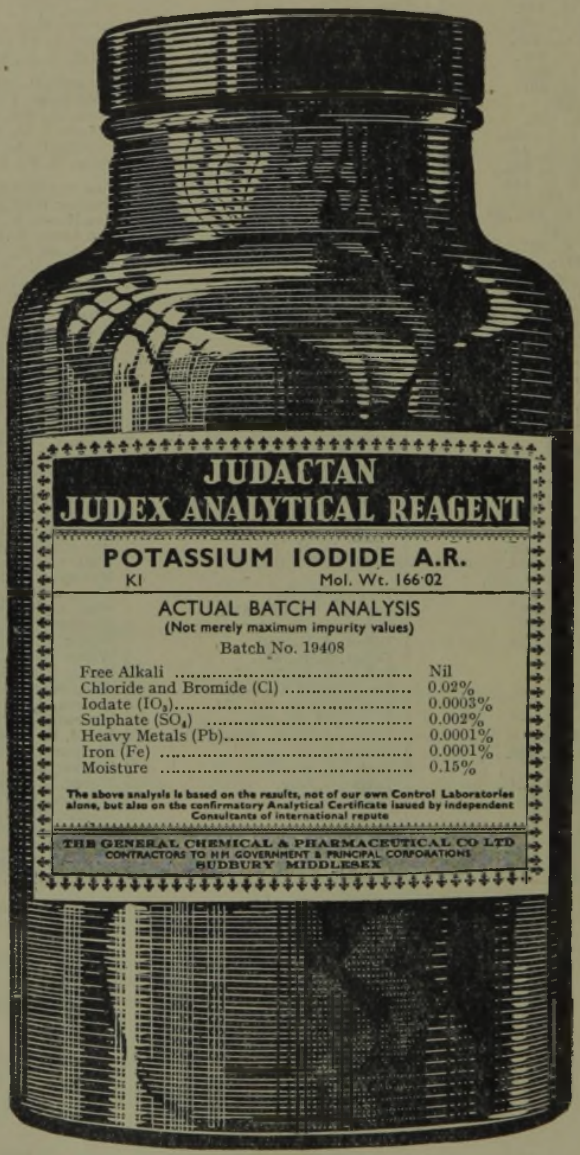

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