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NOVEMBER, 1943

A., III.—PHYSIOLOGY & BIOCHEMISTRY

(INCLUDING ANATOMY)

CONTENTS

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

NOVEMBER, 1943.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Normal cardiovascular roentgen silhouette. J. M. Hoyos and J. J. Quesada (*Arch. intern. Med.*, 1943, **71**, 666—674).—Roentgenograms of the chests of cadavers after opaque solutions had been injected into the large vessels and chambers of the heart showed that the right side of the cardiac silhouette is formed from the cranial end downward by a short, nearly vertical segment (= innominate vessels), the right superior arch (= superior vena cava) placed to the right of the ascending aorta, and the inferior right arch (= right atrium). The short straight segment sometimes visible in the lower part of this silhouette is the inferior vena cava. The left side of the cardiac silhouette is formed from the cranial end downward by a straight segment (= left carotid and left subclavian arteries), middle arch (upper portion = left division of the pulmonary artery, middle portion = pulmonary artery, lower portion = left atrium), and the inferior left arch (= left ventricle). The lower and outward pole of the shadow of the heart, usually called the apex, corresponds entirely to the left ventricle. The shadows normally obtained at the sites of the pulmonary hila correspond to the branching of the right and the left division of the pulmonary artery. They are mainly vascular and even arterial in nature. The silhouette of the heart and vessels in a right anterior oblique position is formed on the spinal side by the superior vena cava on its upper portion and the right atrium on its lower portion. This same silhouette is formed on the ventral side from the cranial end downward by the ascending aorta (the innominate vessels and left carotid and subclavian arteries are nearly transparent to roentgen rays), the pulmonary artery and its left division, and the left ventricle. The silhouette of the heart and large vessels in roentgenograms taken in a left anterior oblique position is formed on the ventral side by the superior vena cava on the upper portion, ascending aorta on the middle portion, and right ventricle on the lower portion. On the spinal side it is formed on the upper part by the aorta, on the middle portion by the pulmonary artery, and on the lower portion by the left atrium. Normally, only the ascending portion of the aorta is visible on a roentgenogram taken in a left anterior oblique position, the transverse portion being superimposed on the trachea clearness and the descending portion of the shadow of the vertebræ. C. J. C. B.

Specialised conducting tissue in heart of hedgehog (*Erinaceus europaeus*). E. W. Walls (*J. Anat., London*, 1943, **77**, 294—298).—The specialised conducting system of the heart of the common hedgehog is described. There is an intersepto-valvular space but the sinu-atrial tissue is limited to the right side of the sinu-atrial junction. There is specialised tissue between the sinu-atrial node and the atrio-ventricular node. All nerve cells in the heart of *E. europaeus* are found on the atrial side of the coronary sulcus. Nerve fibres are less numerous in the atrio-ventricular node and bundle than in the sinu-atrial node. W. J. H.

Main arteries in neck and thorax of *Rhea americana*. F. H. Glenny (*Canad. J. Res.*, 1943, **21**, **D**, 189—193).—A description of the main arteries in a single specimen of a late *Rhea* embryo and a comparison with the arterial pattern of the kiwi and cassowary. J. D. B.

Superficial hepatic branches of vagi and their distribution to the extrahepatic biliary tract in certain mammals. S. L. Chiu (*Anat. Rec.*, 1943, **86**, 149—155).—The distribution of the superficial branches of the vagi in the lesser omentum and to the cystic duct and gall bladder of the dog and guinea-pig is described. More nerves follow this superficial pathway in the dog than in the guinea-pig, and the pattern in the former is considered to be specially favourable for experimental procedures. No ganglion cells were found in sections made from the larger plexuses. W. F. H.

Inclination of saddle surface of trapezium with respect to the angle between the thumb and wrist. R. J. Terry (*Amer. J. phys. Anthrop.*, 1943, [ii], **1**, 157—169).—The direction of the axis of the saddle surface of the trapezium influences the divergence of the first metacarpal from the position held by other metacarpals. The angle made by this axis with the axis of the trapezoid articular surface of the trapezium (trapezial angle) was taken as a criterion for comparing the divergence of the thumb in respect to age, side, and sex. The mean of the angles in Whites and Negroes is given. W. F. H.

Mesethmoid–presphenoid relationships in primates. M. F. A. Montagu (*Amer. J. phys. Anthrop.*, 1943, [ii], **1**, 129—141).—The relationships were studied in the gibbon, gorilla, orang, chimpanzee, and man. Occasionally in the human infant but rarely in the adult human skull the frontal superficially intervenes between the mesethmoid and presphenoid. The orang in 100%, the chimpanzee in 84·6%, and the gorilla in 47·0%, in one form or another still show contact between mesethmoid and presphenoid. In platyrrhine and catarrhine monkeys, the frontal bones generally occupy a broad area between the mesethmoid and presphenoid. This is directly related to the great prognathism, the ethmoidal complex being situated more anteriorly in relation to the anterior cranial fossa. In man (extreme orthognathous) the mesethmoid–presphenoid contact is the rule. The evidence suggests that the relationships of the bones of the anterior cranial fossa of man indicate an origin from a primate stock which was also ancestral to the anthropoids. W. F. H.

Adaptive series of protractile jaws in Cichlid fishes. T. H. Eaton (*J. Morph.*, 1943, **72**, 183—190). J. D. B.

Morphogenesis of gonopodium in *Mollienisia latipinna*. J. B. Cummings (*J. Morph.*, 1943, **73**, 1—17).—A description of the development and morphology of the gonopod of this Poeciliid fish as a basis for the study of the effects of sex hormones on its morphogenesis. J. D. B.

Arachnodactyly (dolichosténomélie of Marfan). E. C. Dax (*J. ment. Sci.*, 1941, **87**, 434—438).—4 cases of "spider digits" are described in mental defectives, one uncomplicated, two associated with retinitis pigmentosa, and one with juvenile amaurotic idiocy. Arachnodactyly is contrasted with chondrodystrophy. G. D. G.

Conjoined fœtuses (thoracopagus disymmetros) occurring in set of monozygotic triplets. R. F. Messinger and E. H. Shryock (*Amer. J. clin. Path.*, 1943, **13**, 215—224).—Report of case. C. J. C. B.

To Vesalius on the fourth centenary of his "De Humani Corporis Fabrica." C. Singer (*J. Anet., London*, 1943, **77**, 261—265).—A review. W. J. H.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Causes of fœtal and neonatal death. A. R. Macgregor (*Edinb. Med. J.*, 1943, **50**, 332—342).—A lecture. 760 autopsies in 945 deaths were analysed. Developmental defects represent the "irreducible min." and occupy 18·7%. Intracranial hæmorrhage and asphyxia account for 36·4 and 40·3% respectively. Prematurity is an important contributing factor but is not in itself a sufficient cause of neonatal death. Infection was the chief cause of death in the neonatal group. H. S.

Origin of vertebral column in deer-mouse, *Peromyscus maniculatus*. E. C. Sensenig (*Anat. Rec.*, 1943, **86**, 123—141).—In all regions of the column the sclerotomes are divided by fissures into cranial and caudal halves—the sclerotomites. The latter recombine to form definitive vertebræ. In early embryos sclerotomic cells migrate into the notochord and share with its cells in the formation of the nucleus pulposus. The neural arch and transverse processes are formed from a dorsal migration of cells from the caudal sclerotomite. The articular processes are formed by similar cell migration from the cranial sclerotomite. The perichordal disc and primary centrum are formed by cellular migration from the caudal and cranial sclerotomites respectively. Lateral cell migration from both cranial and caudal sclerotomites forms the rib. W. F. H.

Aplasia of umbilical cord. P. Gruenwald (*J. Morph.*, 1943, **73**, 103—109).—Aplasia of the umbilical cord is described in a 35-mm. cat embryo, litter mate of several normal 70-mm. embryos. The malformation is interpreted as persistence of an early embryonic condition due to a failure of the somatopleure to constrict the communication between the extra- and intra-embryonic coeloms and form a solid umbilical cord. J. D. B.

Embryological development and physiology of endocrine organs of common fowl (*Gallus domesticus*). W. G. Venzke (*Iowa State*

Coll. J. Sci., 1942, **17**, 145—148).—The morphology of the developing pituitary, thyroid, parathyroid, thymus, and adrenal glands, ovaries, and testes of chick embryos ranging in age from 12 hr. of incubation until hatching, determined by means of serial sagittal, transverse, and frontal sections taken at approx. 12-hr. intervals, is described. J. N. A.

Embryonic grafts in regenerating tissue. I. Late gastrula ectoderm of *Rana pipiens* with and without chordamesoderm. H. S. Emerson (*J. exp. Zool.*, 1943, **93**, 185—203).—The mesenchymatous blastema of the regenerating tails of larvæ of *R. pipiens* constitutes a favourable medium for the study of the histogenesis and morphogenesis of embryonic grafts made into the blastema. By the use of this method a study was made of the potentialities of late gastrula ectoderm. Presumptive neural plate from this source formed brain, eyes with lenses, and cartilage. Both presumptive neural plate and epidermis formed definitive epidermis, suckers, horny jaws, and nasal sacs. Lenses developed from late gastrula ectoderm in the entire absence of an optic cup. When the grafts included both ectoderm and chorda mesoderm, neither ear vesicles nor any other new structures develop which were not formed by the ectoderm alone. Suckers, horny jaws, and nasal sacs came from a more limited region when the grafts included both ectoderm and substrate. The data are statistically significant for the suckers and horny jaws, and the restriction is in the direction of the presumptive locations of all three organs. J. D. B.

Factors inhibiting differentiation of proctodæum. A. M. Schechtman and J. A. Cannon (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 628—631).—The capacity of an implanted ventral blastoporal lip of *Hyla regilla* embryos to induce a proctodæum is inhibited by proximity of rudiments of the axial organs. V. J. W.

Properties and function of surface coat in amphibian embryos. J. Holtfreter (*J. exp. Zool.*, 1943, **93**, 251—323).—Amphibian eggs are provided with a special surface layer of plastic elasticity capable of expansions and contractions. It develops before fertilisation, simultaneously with the vitelline membrane, as the result of a peripheral coagulation process. Experiments suggest that this layer has a significant function in regulating the internal osmotic pressure. This pressure, from the time of oviposition up to the neurula stage, is approx. equal to 0·38% salt concn. ($\Delta = -0{\cdot}20°$). Any reduction of the elasticity of the surface layer suppresses or deflects the movements of gastrulation and neurulation. J. D. B.

Distribution of phosphatase in the spinal cord of chick embryos of one to eight days' incubation. F. Moog (*Proc. Nat. Acad. Sci.*, 1943, **29**, 176—183).—Acid and alkaline phosphatase were detected by a histochemical technique (Gomori, A., 1941, III, 1063) from the first day of incubation. With development, the alkaline phosphatase became localised mainly in the white matter throughout, and in the grey matter and ventral half of the cord. The acid phosphatase became mainly restricted to the ventral half, especially conc. in the motor groups. These enzymes are phosphomonoesterases of classes A I and A II. They play a part in early differentiation and later are involved in sp. functions of the cells in which they become conc. (3 photomicrographs.) F. S.

Critical periods in the embryonic development of *Salmo fontinalis* and their physiological characteristics. M. T. Vernidub (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 293—296).—Eggs were exposed at various stages of development to high temp., to H_2, and to KCN (M./2000). Sensitivity to these agents was greatly increased at crit. periods of development, viz., at the beginning of cleavage, at the transition to gastrulation, at the beginning of formation of axial organs, and at the closing of the blastopore. Rate of growth was decreased at these crit. periods when the intensity of the differentiation processes increased. At these periods the respiration intensity increases and the aërobic glycolysis decreases. M. A. B.

Effects of reduced oxygen tension on development of early chick embryos. F. Sevket (*Rev. Fac. Sci. Istanbul*, 1942, **7**, 263—286).—Chick embryos incubated under water with removal of all available sources of air exhibit normal development up to the early primitive streak stage. They then show progressive retardation in development up to the 48th hr. Reduced O_2 tension causes œdema formation, structural distortion, and other abnormalities which show progressive intensity with increasing embryonic age. Degenerative changes exhibit general antero-posterior and mediolateral gradients, similar to the differentiation gradients of the normal. The rate of degeneration is greater for more highly specialised structures. The results are discussed in relation to Child's conceptions of axial gradients and it is suggested that, during normal development, oxidation plays a restorative rôle as in normal muscle contraction. J. D. B.

Developmental potencies of eye primordia of homozygous creeper chick embryos tested by orthotopic transplantation. K. Gayer and W. Hamburger (*J. exp. Zool.*, 1943, **93**, 147—181).—An experimental study, using the method of transplantation, of the determination of the eye defects exhibited by phocomelic embryos homozygous for the creeper factor. Orthotopic eye transplants were made reciprocally between 2- to 17-somite embryos (30—40 hr. of incubation) of *CpCp* and of *Cpcp* and *cpcp* constitution, the latter two types being free from eye abnormalities. The results indicate that the eye deficiencies resulting from the presence of the *Cp*-factor are not due to "local gene action" in the eye primordia but that the primary action of the factor is on structures extrinsic to the eye. It is suggested that a revision is required of the current concept that coloboma is the result of a "primary" growth disturbance of the ectodermal optic cup. J. D. B.

Rumplessness of chick embryos produced by mechanical shaking of eggs prior to incubation. W. Laudauer and L. Baumann (*J. exp. Zool.*, 1943, **93**, 51—74).—Mechanical shaking of eggs previous to incubation, in a stock of White Leghorn fowl, markedly increased the incidence of rumplessness and of other developmental abnormalities. The frequency of abnormality increased with the length of time during which the eggs were shaken. J. D. B.

Congenital hydrocephalus in mouse, a case of spurious pleiotropism. H. Grüneberg (*J. Genet.*, 1943, **45**, 1—21).—The gene for congenital hydrocephalus (*ch*) is recessive and lethal at birth. It segregates normally without selective pre-natal elimination. It is autosomal and is not closely linked to albinism. The development of *ch/ch* presents a case of spurious pleiotropism, the effects of the gene being ultimately due to a defect of a single tissue (cartilage). The cartilage anomaly was traced to the 12⅔-day stage, when it is most marked. The development and the effects of the condition are described. The principle of the unity of gene action, which excludes the existence of genuine pleiotropism, and the principle that the primary action of a gene is either cell-sp. or tissue-sp., are put forward. W. F. H.

Two new mutant genes in house mouse. H. Grüneberg (*J. Genet.*, 1943, **45**, 22—28).—"Fidget," a recessive gene, has regular manifestation and nearly normal viability. Affected animals shake their heads in the horizontal plane and often run in circles. Hypersensitivity in early life is followed by deafness of varying degree. Corneal lesions are common and polydactylism of the hind feet occurred in 15 out of 86 "fidgets." "Hydrocephalus-3," a recessive gene, overlaps normal. Clinical signs appear early in the second week. Growth is markedly retarded and the animals rarely reach the age of 2 months. Nasal discharge is a common feature in hydrocephalic young, even in mild cases with no recognisable skull anomaly. W. F. H.

Viability interactions between chromosomes of *Drosophila melanogaster* and *D. simulans*. G. Pontecorvo (*J. Genet.*, 1943, **45**, 51—66).—A range of viability effects of chromosomal origin occurs in full hybrids as well as partial hybrids. Viability effects show high degrees of variability between individuals carrying the same chromosomal combinations. Viability effects arise from interaction between non-homologous chromosomes of the two species, the *X* and the two major autosomes playing the predominant part. No connexion was detected between the interactions and the structural differentiation of salivary gland chromosomes of the two species. W. F. H.

Phenogenetic studies of homoeotic mutants of *Drosophila*. I. Effects of temperature on expression of aristapedia. C. A. Villee (*J. exp. Zool.*, 1943, **93**, 75—98). J. D. B.

Meiosis without chiasmata. S. Hughes-Schroder (*J. Morph.*, 1943, **73**, 111—114).—A study of the diploid and tetraploid spermatocytes of the mantid *Callimantis antillarum* leads to the conclusion that chiasmata are not essential to the maintenance of the meiotic association of homologous chromosomes. J. D. B.

III.—PHYSICAL ANTHROPOLOGY.

Anthropological approach to dietary problems. M. Mead (*Trans. New York Acad. Sci.*, 1943, [II], **5**, 177—182).—A statement of possible contributions by anthropology to current food problems and a plea that anthropology should participate in planned social change. J. D. B.

Distribution of cranial height in South America. T. D. Stewart (*Amer. J. phys. Anthrop.*, 1943, [ii], **1**, 143—155).—"Low-headed" peoples in South America are located mainly in northern parts. The report gives this evidence in the form of the mean height index. The fact that the modern Maya of Yucatan also are "low-headed" suggests a more or less continuous distribution of low-headedness from western North America, through Central America, into northern South America. W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Cytology of pituitary in developing and adult *Triturus viridescens*. D. E. Copeland (*J. Morph.*, 1943, **72**, 379—409).—The pars buccalis is formed by a solid invagination of cells. The pars nervosa is the first portion to show cytological differentiation. Azan stains reveal a blue "colloid" in this portion and Bodian's technique shows the

presence of ependymal cells (? unipolar neurons) and pituicytes. The pars intermedia differentiates cytologically and morphologically at the initiation of metamorphosis and its cytological differentiation coincides with the appearance of the tawny colour of early metamorphosis. It is always basophilic. The pars tuberalis arises early in larval development; its cells are chromophobe. The pars distalis possesses four distinct types of cells, two basophilic and two acidophilic. One basophile has no visible inclusions, the other has globular acidophilic spheres and is called the "globular basophil." Of the acidophils, one, the "carmine cell," has a marked affinity for azocarmine. The other is termed "Orange G acidophil" as it stains with the Orange G in the counterstain. The Golgi apparatus of the pars distalis cells is described and the changes in the latter during different stages of the sex cycle are recorded. J. D. B.

Function of mammalian epididymis. J. B. Gatenby and L. Collery (*Proc. Roy. Irish Acad.*, 1943, **49**, **B**, 103—108).—From histological observations in the guinea-pig and the dog it is concluded that the function of the epididymis is to secrete granules which become mixed with the passing spermatozoa and adhere to the latter in such a way as to form the so-called neck bead. The chemical constitution of the bead is unknown. Similar beads probably exist in all classes of mammals except certain primates including man. J. D. B.

Effects of centrifugation on intranuclear inclusions produced by subcutaneous injections of aluminium oxide. F. M. Birch and A. M. Lucas (*Amer. J. Path.*, 1942, **18**, 1051—1057).—The earliest stage in the development of inclusion bodies is the appearance of an amphinucleolus. The plasmosome portion becomes the future inclusion body. The chromatin, which in early stages was adherent to the inclusion body (plasmosome), leaves it and moves to the margin. Across the resulting halo are strands of the linin network; these break down and the inclusion body resembles the amorphous or droplet-like inclusion body characteristic of some virus diseases. The last stage is necrosis with shrinkage of the nuclear membrane and loss of nucleoplasm until all that remains is inclusion body surrounded by basichromatin and a nuclear membrane. Centrifugation of these stages lead to the conclusion that the nuclear sap is the lightest substance, the inclusion body is heavier, and the basichromatin heaviest. C. J. C. B.

Hæmatoxylin stains. E. C. Cole (*Stain Tech.*, 1943, **18**, 125—142).—The composition of routine hæmatoxylin solutions is reviewed with reference to such factors as artificial ripening, the maintenance of stock solutions, the selection of mordants, and the control of colour, density, and contrast. Useful modifications of routine techniques are suggested. K. C. R.

Ripening of Ehrlich's hæmatoxylin. J. M. Watson (*J. Roy. Micros. Soc.*, 1943, **63**, 20—25).—Of a no. of oxidising agents the most efficient ripening agents were $KMnO_4$, chloramine *T*, and BaO_2. The first produced a more rapidly staining fluid than the other two or naturally ripened stain, the tinctorial substance being either a mixed K–Al lake or a Mn–Al lake. F. S.

Convenient method for handling chick embryos. W. W. Mathews (*Stain Tech.*, 1943, **18**, 119—120).—A method for preparing large nos. of chick embryos before sectioning is described. K. C. R.

Further uses for chlorazol-black E and a new stain for botanical sections. F. D. Armitage (*J. Roy. Micros. Soc.*, 1943, **63**, 14—19).—The staining of paper fibres with chlorazol-black E and the use of chlorazol-azurine G200 as a botanical stain are described. (8 photomicrographs.) F. S.

Root-tip smears following fixation with boiling water. A. G. Law (*Stain Tech.*, 1943, **18**, 117—118).—Root-tips of *Vicia faba* and *Allium cepa* fixed in boiling water, macerated in acid–alcohol, and smeared in aceto-carmine were suitable for detailed study of chromosomes. K. C. R.

Curdled milk for supporting tissues in celloidin embedding. J. R. Baker (*Stain Tech.*, 1943, **18**, 113—115).—Blocks of milk curd, prepared from fresh milk and rennin, are dehydrated in alcohol, extracted with ether, and stored in ether–alcohol. The tissue to be embedded in celloidin, if placed on top of a piece of curd, is prevented from sinking to the bottom of the embedding container and losing its orientation. K. C. R.

Synthetic mounting medium of high refractive index. W. D. Fleming (*J. Roy. Micros. Soc.*, 1943, **63**, 34—37).—Full details are given of the synthesis of a resin of *n* 1·7—1·8. The principal ingredients are formalin 200 c.c., naphthalene 200 g., glacial acetic acid 600 c.c., and conc. H_2SO_4 300 c.c. F. S.

V.—BLOOD AND LYMPH.

Erythrocyte longevity in dogs and rabbits. J. E. Davis (*J. Lab. clin. Med.*, 1943, **28**, 848—850).—Based on the rate of depression of the blood count of experimental (*e.g.*, Co) polycythemias which was caused by administration of raw liver or vasodilator drugs, the min. life duration of erythrocytes was 20 days in the dog, and 22·4 in the rabbit. C. J. C. B.

Permeability and lipin content of immature red cells. A. J. Dziemian (*J. Cell. Comp. Physiol.*, 1942, **20**, 135—150).—Large amounts (0·5 mg. per ml.) of phenylhydrazine hydrochloride have no effect on rabbit red cells *in vitro*, but subcutaneous injection of 50 mg. causes red cell destruction, increase of reticulocytes, decrease followed by increase in red cell diameter, increased permeability to glycerin and diethylene glycol, and increased followed by decreased permeability to NH_4 propionate and salicylate. There is no correlation between permeability and lipin content. V. J. W.

Permeability of chicken erythrocyte after reversal of hæmolysis. F. R. Hunter, L. D. Stringer, and F. R. Sterling (*J. Cell. Comp. Physiol.*, 1942, **20**, 225—230).—Cells from which hæmoglobin has been partly dissolved out and which are thereafter shrunk with NaCl solution are hæmolysed by glycerin 3·5 times as rapidly as normal cells. For monoacetin and malonamide the ratios are 3·2 and 4·8 respectively. Though the shrunken cells are more fragile and more permeable, they remain impermeable to hæmoglobin. V. J. W.

Survival of preserved erythrocytes after transfusion. O. F. Denstedt, D. E. Osborne, H. Stansfield, and I. Rochlin (*Canad. Med. Assoc. J.*, 1943, **48**, 477—486).—Specimens stored up to 2 months were used without reactions. Cells stored up to 18 days survive as well as fresh cells after transfusion. Even with 25- or 30-day-old blood, cell survival after transfusion is sufficiently high during the first 3 weeks to warrant the use of these specimens. Some of the transfused cells may be stored in the body instead of being destroyed and are released into the circulation again at 15—25 days. A 2nd and less marked rise in donor-cell count is often observed about the 60th day. C. J. C. B.

Excretion of keto-acids and hydroxyphenyl compounds in pernicious anæmia. M. E. Swendseid, I. F. Burton, and F. H. Bethell (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 202—203).—Urinary excretion of both classes of compound is approx. doubled in pernicious anæmia patients as compared with controls. It falls to normal during successful treatment. V. J. W.

Elliptical erythrocytes. W. Evans (*J. Path. Bact.*, 1943, **55**, 378—381).—Report of a case. C. J. C. B.

Familial blood studies in cases of Mediterranean (Cooley's) anæmia. C. H. Smith (*Amer. J. Dis. Child.*, 1943, **65**, 681—699).—In 16 families with Mediterranean anæmia, 63 persons were examined and 54 revealed abnormalities of the blood. 12, all children, were severely anæmic, and 42, including parents and siblings, had the mild type of this condition. In all the 16 families blood changes occurred in at least 1 parent, and in 1 family changes were noted in 3 generations. C. J. C. B.

Erythroblastosis fœtalis (acute hæmolytic anæmia of newborn). W. Dameshek, T. J. Greenwalt, and R. J. Tat (*Amer. J. dis. Child.*, 1943, **65**, 571—581).—In 3 cases fæcal bilirubin excreted was 19·4—109·0 mg. per day during the first 15 days of life. The hæmolytic index (see A., 1943, III, 710) was extremely high (71—293) and fæcal excretion of urobilinogen was 0·25—11·0 mg. per day. C. J. C. B.

Nutritional anæmia in children and women : a war-time problem. H. M. M. Mackay, L. Wills, R. H. Dobbs, and (Lady) Bingham (*Proc. Roy. Soc. Med.*, 1942, **36**, 69—84).—Because of poorer nutrition and omission of prophylactic treatment the general hæmoglobin level in working-class children has fallen during the war, although the poorest class show improvement. L. Findlay: Hæmoglobin and the red-cell count are not a true index of the health of a child, nor of the Fe content of the diet; it is unjustifiable to ascribe a low hæmoglobin to dietary error. The max. hæmoglobin obtainable by administration of Fe is not the physiological level because it is not maintained under continued medication. Existence of anæmia is confirmed by R. H. Dobbs, L. S. P. Davidson, and others. W. J. G.

Nutritional availability of iron in molasses.—See A., 1943, II, 751.

Effects of intravenous injections of ether-insoluble fraction of lipins of beef brain [on blood-forming organs]. E. H. Tomkins (*Arch. Path.*, 1943, **35**, 787—802).—Repeated intravenous injections in rabbits of the ether-insol. lipins of ox brain (mixture of galactolipins and the sphingomyelins) cause an increase in neutrophils and lymphocytes and less regularly in monocytes; a generalised infiltration of the reticuloendothelial organs with macrophages similar to the foam cells found in Gaucher's disease; hyperplasia of the marrow with increased myelopoiesis at late levels of maturation; increase of the myeloid–erythroid ratio and infiltration of the characteristic macrophages; splenomegaly associated with massive infiltrations of the characteristic macrophages; depletion of the Malpighian corpuscles and constriction of the sinusoids, and diffuse pulmonary infiltrations of the characteristic macrophages with restrictions of alveolar space. (14 photomicrographs.) C. J. C. B.

Influence of pH on *in-vitro* hæmolysis in nocturnal hæmoglobinuria. J. V. Dacie and N. Richardson (*J. Path. Bact.*, 1943, **55**,

375—378).—The optimum pH is 7·2, with inhibition above pH 8 and below pH 6. C. J. C. B.

Effect of oxygen on hæmorrhagic shock. H. A. Frank and J. Fine (*J. clin. Invest.*, 1943, **22**, 305—313).—The course of events in hæmorrhagic shock in dogs is not altered when venous anoxæmia is prevented by administering O_2 at high pressure. C. J. C. B.

Preparation and uses of human serum. M. Bick (*J. Proc. Austral. Chem. Inst.*, 1943, **10**, 130—136).—A short review. C. J. C. B.

Plasma model.—See A., 1943, III, 768.

Estimation of third component (*C'3*) of complement. C. L. San-Clemente and E. E. Ecker (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 173—174).—Equal quantities of the insol. carbohydrate from yeast (A., 1941, III, 304), now named "zymosan," are incubated with varying amounts of guinea-pig serum, and with or without 10% NaCl which inhibits zymosan activity. From N contents of zymosan which has adsorbed *C'3*, and of zymosan where adsorption has been inhibited, the quantity of *C'3* can be calc. V. J. W.

Concentration of human isohæmoagglutinins in various conditions. L. Bardeci (*Rev. Soc. argent. Biol.*, 1942, **18**, 469—471).—Isohæmoagglutinins of human subjects did not vary during the day, the menstrual cycle, after physical exercise, or childbirth. J. T. L.

Method for determination of blue dye T-1824 in plasma. R. A. Phillips (*J. Exp. Med.*, 1943, **77**, 421—434).—The method is based on the fact that T-1824 can be reduced in alkaline solutions to a colourless compound by $Na_2S_2O_4$. The extinction coeff. is determined before and after reduction of the dye. Hæmolysis does not vitiate the results, even if hæmoglobin is partly present as CO-hæmoglobin or methæmoglobin. Absorption of light by plasma-lipins or pigments is also unaltered by the $Na_2S_2O_4$, hence variations from sample to sample in the degree of hæmolysis or lipæmia do not affect the accuracy of the determinations. The method may also be used with vital-red and brilliant-vital-red as $Na_2S_2O_4$ reduces these dyes to colourless compounds. A. S.

Hæmorrhage and skeletal muscle tone. W. F. Kiely, S. L. Hamilton, and E. Gellhorn (*Amer. J. Physiol.*, 1942, **137**, 251—255).—Hæmorrhage leads in unanæsthetised decerebrate dogs to a rise in muscle tone which is reversed on reinfusion of the blood. Pressor doses of adrenaline (but not of ephedrine) increase muscle tone. A rise in muscle tone occurs from hæmorrhage even when a fall in blood pressure is prevented by simultaneous injection of ephedrine. Bilateral denervation of the carotid sinus area does not prevent the rise in muscle tone during hæmorrhage. M. W. G.

Acute thrombocytopenic hæmorrhagic purpura with lymphocytosis. M. Tager and K. A. Klinghoffer (*Ann. int. Med.*, 1943, **18**, 96—100).—The patient responded well to blood transfusions. There were no recurrences within 2½ years. A. S.

Reducing properties of fibrinogen. L. B. Jaques (*Biochem. J.*, 1943, **37**, 344—349).—Fibrinogen rapidly reduces H_2O_2 and I in PO_4''' buffer at pH 6·6 and 25°. The reaction with I is inhibited by KI (completely at a concn. of 6%), increases rapidly with pH, pptn. occurring between pH 3·1 and 7·5, and is associated with aromatic residues of the protein. The I uptake of serum-proteins is less than that of fibrinogen and no pptn. occurs. The reaction with H_2O_2 is bimol., is less affected by pH, and shows a break at the isoelectric point of fibrinogen, the O_2 consumption increasing more slowly on the alkaline side. It is due to a group, the nature of which is unknown, with much stronger reducing properties than tyrosine or tryptophan. Denaturation has little effect on the reducing power of fibrinogen but it increases that of plasma. The reducing power towards H_2O_2 is increased on conversion into fibrin. H. G. R.

Changes of blood pressure and fibrinogen content of plasma. L. Goreczky and G. Berencsi (*Magyar Orv. Arch.*, 1940, **41**, 470—474).—In dogs receiving 0·25 c.c. of 1% adrenaline per 10 kg., the increase of blood pressure was followed by an increase of plasma-fibrinogen. Administration of acetylcholine diminished blood-pressure and -fibrinogen. A. A. M.

Blood pressure and fibrinogen content of arterial blood. L. Goreczky and J. Kovács (*Magyar Orv. Arch.*, 1940, **41**, 475—479).—After injection of adrenaline, the increased fibrinogen content, which accompanies increased blood pressure, decreases while the blood is passing through the lungs. Hence the fibrinogen content of arterial blood is more const. and is less than that of the venous blood. A. A. M.

Coagulation of fibrinogen. E. Chargaff and A. Bendich (*J. Biol. Chem.*, 1943, **149**, 93—110).—The following substances (in decreasing order of activity) coagulate fibrinogen: chloramine-*T*, K 1 : 4-naphthaquinone-2-sulphonate, Na 1 : 2-naphthaquinone-4-sulphonate, ninhydrin, and (much less markedly) alloxan and salicylaldehyde. Since most of these oxidise amino-acids etc., the action of thrombin on fibrinogen may also be oxidative. Tests made for the liberation of CO_2 during the clotting of fibrinogen by ninhydrin or by thrombin gave inconclusive results. Ascorbic acid, inositol, and their oxidation products and derivatives of 2-methyl-1 : 4-naphthaquinone were inactive. E. C. W.

Antithrombic activity of plasma: quantitative inter-relationships. W. H. Seegers and H. P. Smith (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 159—162).—This activity depends on heparin co-factor present (cf. A, 1943, III, 458), and the thrombin–plasma relation is given by $\log(Y/P) = 2{\cdot}235 + 0{\cdot}336 \log(X/P)$, where Y is thrombin destroyed, X is thrombin remaining, and P is plasma present. V. J. W.

Promotion of blood coagulation. J. Roskam (*Schweiz. med. Wschr.*, 1942, **72**, 1202—1204).—A review. A. S.

Standardisation and assay of heparin by toluidine-blue and azure-*A* reactions. A. L. Copley and D. V. Whitney (*J. Lab. clin. Med.*, 1943, **28**, 762—769).—The toluidine-blue reaction for heparin, developed by use of the Duboscq and Evelyn colorimeters, is practical for assay purposes. The same reaction for heparin was sp. with azure-*A*. A titration method of positive val. for heparin assay was established which yielded rapid results, reproducible to +2%, and over-all accuracy about +5%. The colorimetric unit of heparin is defined. 1 unit of heparin decolorises 150 μg. of 100% toluidine-blue dye content. This unit equals 254 of toluidine-blue NU-3 or 172 of azure-A NAz-7. C. J. C. B.

Opsonic activity of serum of right and left ventricles. M. Benard and L. Berta (*Magyar Orv. Arch.*, 1940, **41**, 519—522).—In rabbits the opsonic activity of serum from the right ventricle exceeded that from the left. A. A. M.

Effect of low atmospheric pressure on opsonic activity of serum. G. Ludány, J. Jászberényi, and K. Zsirai (*Magyar Orv. Arch.*, 1940, **41**, 523—526).—The no. of typhoid bacilli and *Staph. aureus* destroyed by 400 leucocytes in rabbits kept at 450—500 mm. Hg was determined. After 45 min. the opsonic properties of the serum were increased. A. A. M.

Effect of high temperature and moccasin venom on viability of rabbit lymphocytes and polymorphonuclear leucocytes as determined by method of unstained cell counts. R. Schrek (*Arch. Path.*, 1943, **35**, 857—868).—By unstained cell counts, the polymorphs of the rabbit survive longer than lymphocytes at temp. of 56°, 50°, and 45°. Moccasin venom kills, agglutinates, and lyses lymphocytes but has little effect on the viability and motility of polymorphs. C. J. C. B.

Agranulocytosis following neoarsphenamine.—See A., 1943, III, 765.

Glycogen in leucocytes fixed by Altmann–Gersh freezing–drying method. R. E. Mancini and R. Celani Barry (*Rev. Soc. argent. Biol.*, 1942, **18**, 367—372).—Fresh blood smears were treated by the Altmann–Gersh method and the glycogen in the leucocytes was studied by means of the I reaction and Bauer's or Best's carmine methods. In normal leucocytes glycogen was limited to the granules; in altered cells the glycogen was diffusely distributed. Glycogen was found only in granulocytes. J. T. L.

Effect of ethyl alcohol intoxication on development of local inflammatory reactions in rabbit. R. H. Rigdon (*J. Lab. clin. Med.*, 1943, **28**, 714—720).—Polymorphs fail to localise and to concentrate about staphylococci in the skin of rabbits intoxicated with ethyl alcohol when the blood pressure is abnormally low, but do concentrate in the colon. This is attributed to impaired skin circulation. Capillary permeability as shown by the localisation of trypan-blue following an intravenous injection is normal (no dye escapes) in areas of injured skin in rabbits intoxicated with ethyl alcohol. It is increased, however, in the injured areas of intestines of the same intoxicated rabbit. C. J. C. B.

Inflammation in embryonic life. I. Changes produced by particulate matter and by chemical agents. II. Infection of chick embryos with avian tubercle bacilli. E. H. Canat and E. L. Opie (*Amer. J. Path.*, 1943, **19**, 371—394).—In chick embryos 3—5 days old, faster proliferation of cells is the chief reaction to trauma or to irritants such as C particles or turpentine; papilla-like projections are formed by the ectoderm. With destruction of ectoderm, proliferation of mesodermal cells may form projections upon the surface; with destruction of the mesothelium small masses of cells may project into the body cavity. Endothelium of a blood vessel may be stimulated to form masses of cells projecting into the lumen. There is also phagocytosis of particulate matter by mononuclear cells resembling histiocytes which engulf erythrocytes and other cells. Granulocytes which are first formed in the somatopleura in contact with the yolk play little part in inflammatory reactions in embryos prior to 6—8 days. These granulocytes are formed locally. Irritants stimulate extravascular cells with the characteristics of hæmocytoblasts to form acidophilic granules (granuloblasts). These cells, dividing by mitosis, produce at the site of inflammation myelocytes and mature polymorphs. Hæmocytoblasts (widely distributed in the tissues) may be transformed by appropriate stimuli into histiocytes (macrophages). Within a few days preceding hatching (17th—19th day of embryonic development) inflammation assumes the postembryonic character and granulocytes accumulate by migration from blood vessels. Avian tubercle bacilli, introduced

into the membranes or into the tissues of early chick embryos, invade both ectodermal and mesodermal cells and accelerate their proliferation. Mononuclears containing tubercle bacilli appear after 12 hr. Circumscribed nodules are produced in the tissues of the embryo by proliferation of embryonic fibroblasts and accumulation of mononuclear wandering cells which ingest tubercle bacilli, but the lesion differs from a tubercle as epithelioid cells are absent. Granulocytes behave as for non-sp. irritation. C. J. C. B.

Lower fractions of plasma-proteins of normal individuals and non-febrile patients. P. Bálint and M. Bálint (*Biochem. Z.*, 1940, **306**, 296—315).—Plasma-proteins of 32 normal and afebrile patients were separated into six fractions by treatment with Na_2SO_4 (fibrinogen, euglobulin, ψ-globulins I and II, albumins I and II). The tyrosine, tryptophan, cystine, arginine, and histidine contents of each were determined. In all cases the vals. for euglobulin and ψ-globulin I were identical. P. G. M.

Factors which interfere with the benzidine and Meyer's tests for blood in milk and urine. M. T. Trainer (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 104—106).—False negative results may be caused by low fragility of corpuscles, increased alkalinity producing alkaline hæmatin, or entanglement of corpuscles in a PO_4''' ppt. Specimens should be acidified and heated, after storage for 12—24 hr. at room temp. V. J. W.

Direct and indirect serum-bilirubin. Retention of bile pigments in serum-protein precipitate. A. Gigon and M. Noverraz (*Schweiz. med. Wschr.*, 1942, **72**, 1227—1229).—The degree of bilirubin retention in the acetone ppt. of serum is used to distinguish between hæmolytic and obstructive jaundice. A bilirubin index, photometrically determined, above 1 means a positive direct diazo-reaction; an index under 1 indicates a direct negative or indirect diazo-reaction. A. S.

Iron proteins of spleen. Structure of ferritin.—See A., 1943, II, 314.

Determination of blood-phospholipins. A. D. Marenzi and C. E. Cardini (*Rev. Soc. argent. Biol.*, 1942, **18**, 275—286).—In the determination of phospholipins in plasma containing choline, sphingomyelin reineckate did not ppt. in a pure form from the alcohol–ether extracts of plasma, so that sphingomyelin had to be estimated from the P content. Total phospholipin was determined by the P content (Fiske and Subbarow) so that total phospholipins minus choline phospholipins = kephalin; choline phospholipins minus sphingomyelin = lecithin. The different vals. obtained in human plasma are given and compared with those obtained by other workers. J. T. L.

Comparison of hypercalcæmic effects of activated sterols in chick. E. W. McChesney (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 147—149).—5-week-old chicks which received by mouth 125 mg. per kg. of vitamin-D_2 had after 72 hr. a blood-Ca of only 12 mg.-%. 10 mg. per kg. of -D_3 gave a blood-Ca of 13·3 mg.-%, which also resulted from 40 mg. per kg. of dihydrotachysterol. The control val. was 10 mg.-%. V. J. W.

Determination of bilirubin with Leifo photometer. A. A. Sanguinetti (*Rev. Soc. argent. Biol.*, 1942, **18**, 584—589).—The method of Jendrassik and Grof has been adapted for use with the "Leifo" photometer. The photometric determination should be made with bilirubin vals. of 0·5—1·5 mg.-%. N-NaOH is used to make the solution alkaline, thus obtaining a more stable reaction. Filter No. 600 of the photometer was chosen for measuring extinction vals. The factor 13·6 is used to convert the vals. to mg.-%. J. T. L.

VI.—VASCULAR SYSTEM.

Experimental coronary sinus occlusion. H. F. Robertson (*Surgery*, 1941, **9**, 1—24).—The coronary sinus was obstructed in 14 acute experiments on 6 dogs, 6 cats, 1 rabbit, and 1 monkey and in 4 dogs which were allowed to survive. In many cases there was no change in cardiac function or morphology. In some, especially in dogs, ligation of the sinus is followed by left heart congestion, cardiac slowing with dilatation of arteries and veins, and some myocardial necrosis. Owing to insufficient or inefficient venous and thebesian anastomoses, no deaths occurred. When the coronary sinus is ligated the thebesian vessels dilate. The e.c.g. is unaffected unless congestion and cyanosis of the left heart wall is produced when there is a splintering (M or W in form) of the *QRS* complex. P. C. W.

Cardiac muscle in poliomyelitis. A. R. Peale and P. F. Lucchesi (*Amer. J. Dis. Child.*, 1943, **65**, 733—738).—In 7 of 9 cases which died of poliomyelitis, myocarditis was present. C. J. C. B.

Excitability and conductivity of ischæmic myocardial fibres produced by coronary occlusion. C. A. Martínez (*Rev. Soc. argent. Biol.*, 1942, **18**, 39—47).—Conductivity was depressed in a strip of dog myocardium taken 2 min. after ligating the descending anterior coronary artery. The duration of the electrical response is temporarily shortened. J. T. L.

Paroxysmal auricular tachycardia in infancy and childhood. W. D. Alsever (*J. Pediat.*, 1943, **22**, 459—467).—The treatment in children is discussed. C. J. C. B.

Treatment of angina pectoris. M. Hochrein (*Schweiz. med. Wschr.*, 1942, **72**, 1171—1174).—A review. A. S.

Circulation time: review of previous methods and introduction of aminophyllin as a new agent. H. Koster and S. J. Sarnoff (*J. Lab. clin. Med.*, 1943, **28**, 812—815).—1 c.c. of aminophyllin (0·24 g.) is rapidly injected intravenously. The end-point is a marked increase in the depth of inspiration. The circulation times in 92 patients was 7·1—20·4 sec. C. J. C. B.

Production of ventricular tachycardia by adrenaline in *cyclo*propane anæsthesia.—See A., 1943, III, 762.

Prophylaxis and treatment of ventricular fibrillation induced by adrenaline during *cyclo*propane anæsthesia.—See A., 1943, III, 763.

Determination of blood pressure in rats by direct observation of blood vessels. G. W. Duncan, C. Hyman, and E. L. Chambers (*J. Lab. clin. Med.*, 1943, **28**, 886—889).—The arterial blood pressure of rats may be rapidly and easily determined by microscopic observation of the arrest of flow of blood in the small arterial vessels of the interdigital web. The vessels are cleared by transmitted light, a cuff being put around the leg and blown up. Vals. obtained by this method agree with pressures determined by aortic cannulation and with those reported in the literature. C. J. C. B.

Comparative study of pepsitensin and hypertensin. O. Alonso, R. Croxatto, and H. Croxatto (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 61—63).—Identity of properties previously observed (A., 1942, III, 669) is confirmed in greater detail. V. J. W.

Hypertensin, hydroxytyramine, and action of renal hypertensor extracts. R. Croxatto, H. Croxatto, and L. Marty (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 64—67).—Hypertensin has little vasoconstrictor effect in the frog but both it and hydroxytyramine act powerfully in the cat. Renal hypertensinase is not affected by presence or absence of O_2, or by CN' or octyl alcohol. It is therefore not an amine-oxidase but a polypeptidase as previously suggested. V. J. W.

Reduction of blood pressure of hypertensive rats by administration of certain marine oils. A. Grollman and T. R. Harrison (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 162—165).—Oils from cod and sardine contain a substance which reduces blood pressure of hypertensive rats by oral administration. It is not present in vitamin-*A* concentrates and effectiveness of the oils is increased by oxidation by CrO_3 or H_2O_2. V. J. W.

Experimental treatment of hypertension with kidney extracts. I. H. Page, O. M. Helmer, K. G. Kohlstaedt, G. I. Kempf, A. C. Corcoran, and R. D. Taylor (*Ann. int. Med.*, 1943, **18**, 29—42).—The method of preparing kidney extracts was improved and local and general reactions following their administration were reduced in no. and severity. The yield of active material is still poor. An *in vitro* assay method is described which depends on the destruction of angiotonin by kidney extracts; there may be a direct relationship between antipressor activity and ability to destroy angiotonin. Kidneys contain two enzymes which destroy angiotonin, one with optimal activity at pH 4·0 and the other at pH 7·5; the latter is abundant in more active antipressor extracts. The antigenic properties of kidney extracts can be determined by using an anti-serum and sensitising a guinea-pig with it and observing the amount of test extract required to kill the animal. Pyrogenic and local tissue reactions may contribute to the lowering of blood pressure in some patients. The extracts increase cardiac output in hypertensive patients when the blood pressure falls, and restores the ballistocardiographic curve to normal. In hypertensive patients and animals the extracts relaxed the efferent glomerular arterioles and increased renal blood flow. The clinical results on 37 patients (24 with the malignant syndrome, 13 with essential hypertension) are encouraging. A. S.

Blood pressure of fœtal rat and its response to renin and angiotonin. P. Burlingame, J. A. Long, and E. Ogden (*Amer. J. Physiol.*, 1942, **137**, 473—484).—There is no rise of fœtal blood pressure after renin injection into the maternal blood stream of rats in late pregnancy. Injections of renin, angiotonin, and adrenaline into fœtal blood stream caused a pronounced rise in fœtal blood pressure. Renin and angiotonin injected directly into maternal circulation in large enough doses to raise maternal blood pressure fail to do so if injected into the fœtal circulation. M. W. G.

Separation from kidney tissue of substance capable of reducing blood pressure in experimentally induced hypertension. A. Grollman and T. R. Harrison (*J. Pharm. Exp. Ther.*, 1943, **78**, 174—179).—The substance previously described (A., 1940, III, 666) has been purified further by pptn. with $(NH_4)_2SO_4$ and org. solvents. It is readily dialysable. V. J. W.

Bilateral nephrectomy as effective as heavy metal injury in production of experimental necrotising arteritis in dogs. Alteration of blood plasma-proteins not essential. R. L. Holman (*Amer. J. Path.*,

1943, **19**, 147—163).—Acute necrotising arterial lesions affecting principally the large elastic arteries (aorta, endocardium of the left auricle, pulmonary and coronary arteries) were regularly produced in dogs on a low-protein diet by bilateral nephrectomy. 4 of 5 dogs, maintained on the standard low-protein diet for 3—5 months and then subjected to renal injury (2 by U nitrate and 2 by bilateral nephrectomy), showed typical necrotising arterial lesions 4—35 days later; the 5th dog, which survived bilateral nephrectomy only 3 days, showed suggestive early changes but no definite necrosis. Prolonged maintenance on the standard low-protein diet is as effective in causing necrotising arteritis as less prolonged maintenance on the diet plus " plasma alteration " by repeated daily injections of 100 c.c. of fresh citrated dog plasma (Holman, A., 1941, III, 733). (14 photomicrographs.) C. J. C. B.

Circulatory effects of some *iso*thiourea derivatives; sensitisation of animals to pressor action of adrenaline. F. N. Fastier and F. H. Smirk (*J. Physiol.*, 1943, **101**, 379—388).—These substances raise the blood pressure, slow the heart, and stimulate respiratory movements. Experiments with anæsthetised dogs, decerebrate cats, perfused hindquarters of rats, and muscle-bath preps. of arterial spirals show the pressor action to be at least partly peripheral. The best pressor agents of the series are the *S*-methyl, -ethyl, and -*iso*propyl derivatives, but the effect of a dose of one derivative is diminished by previous doses of itself or others. They enhance the pressor action of adrenaline by a peripheral action which does not account for the whole of their own pressor effect. *S*-Methyl-, -ethyl-, and -*iso*propyl-*iso*thiourea also caused contraction of atropinised gut, which they did not sensitise to adrenaline. A direct action on smooth muscle is implied. W. H. N.

Biochemical studies on shock. Metabolism of amino-acids and carbohydrate during hæmorrhagic shock in rats. F. L. Engel, M. G. Winton, and C. N. H. Long (*J. Exp. Med.*, 1943, **77**, 397—410).—Fatal hæmorrhage in the intact, adreno-demedullated, and adrenalectomised rat produces a progressive rise in the whole blood- and plasma-amino-acid-N level, the rate of which varies inversely with the survival time. In animals surviving the hæmorrhage there is no increase in whole blood-amino-acid level during 8 hr. following hæmorrhage and a decrease in 24 hr. due to hæmo-dilution; the plasma-amino-acid level, however, rises slightly. The rise in whole blood-amino-acid-N occurs only after the blood pressure has fallen to 80—90 mm. Hg. Blood-keto-acid, -lactate, and -pyruvate are increased during hæmorrhagic shock; the blood-sugar may or may not rise moderately in the normal fasting rat with low liver-glycogen; hyperglycæmia occurs in rats with high liver-glycogen levels; in both groups hypoglycæmia occurs terminally. Hæmorrhagic shock in the adreno-demedullated and adrenalectomised rat is always accompanied by a decrease in blood-sugar level. The hyperglycæmia during shock is due to the discharge of adrenaline. The chemical changes in the blood are attributed to early impairment of hepatic function, resulting from anæmic anoxia, and to tissue anoxia at a later stage, causing increased rate of protein breakdown and of glucose utilisation and an accumulation of lactate and pyruvate in blood and tissues. A. S.

VII.—RESPIRATION AND BLOOD GASES.

Variations in alveolar air due to voluntary slow and rapid breathing. A. Sartori (*Rev. Soc. argent. Biol.*, 1942, **18**, 487—495).—In 50 normal students, alveolar CO_2 at expiration was significantly higher ($0{\cdot}15\% \pm 0{\cdot}042$) than at inspiration. No difference was found in O_2 concn. Slow breathing for 96 sec. did not change alveolar CO_2 and O_2 concn. Tachypnœa for 49 sec. produced the effects of hyperventilation. J. T. L.

Respiration of sloths. L. Irving, P. F. Scholander, and S. W. Grinnell (*J. Cell. Comp. Physiol.*, 1942, **50**, 189—210).—The sloth can withstand respiratory arrest for 20 min. or more. Compared with other mammals it has a low metabolic rate, poor O_2 utilisation, and low alveolar CO_2. Arrested breathing does not cause apnœa as in the seal, but it brings about a reduction of metabolism and some restriction of the circulation involving marked cardiac slowing. V. J. W.

Simple micro-gasometric method of estimating carbon monoxide in blood. P. F. Scholander and F. J. W. Roughton (*J. Ind. Hyg.*, 1942, **24**, 218—221).—Apparatus, reagents, and procedure are described in detail. Analysis is performed on 40 cu. mm. of capillary blood from a finger prick by extraction of gases with ferricyanide and subsequent absorption by pyrogallol solution and Winkler's solution. The accuracy is about 0·2 vol.-% CO or 1% CO-hæmoglobin. E. M. K.

Micro-gasometric estimation of blood gases. I. Oxygen. F. J. W. Roughton and P. F. Scholander. **II. Carbon monoxide.** P. F. Scholander and F. J. W. Roughton. **III. Nitrogen.** G. A. Edwards, P. F. Scholander, and F. J. W. Roughton. **IV. Carbon dioxide.** P. F. Scholander and F. J. W. Roughton (*J. Biol. Chem.*, 1943, **148**, 541—550, 551—563, 565—571, 573—580).—I. The syringe–capillary method (see above) was adapted to the determination of O_2 in 40 cu. mm. of blood. The accuracy is 0·15—0·20 vol.-%, a single determination taking 6—10 min.

II. An improved syringe–capillary method (see above) is described. For 40 cu. mm. of blood, the accuracy of a single determination is 0·15—0 20 vol.-%, but this is increased with 120 cu. mm. of blood to 0·03—0·05 vol.-%, so that the procedure can be used for blood vol. determinations by the CO method. The measurement of both O_2 and CO in a single 40-cu. mm. sample of blood is described. The use of alkaline pyrogallol as absorbent for O_2 and of Horvath and Roughton's method for CO determination (A., 1943, III, 12) are discussed.

III. The syringe–capillary method was used to measure dissolved N_2 in blood, water, and other fluids. The vol. of fluid required for a single determination is 120 cu. mm., time of observation is 6—10 min., and the accuracy $\pm 0{\cdot}05$ vol.-%.

IV. The syringe–capillary method was modified to permit vac. extraction of blood mixtures in the syringe. On addition of a conc. acid buffer, CO_2 was evolved from the blood and measured in the capillary. 13 cu. mm. of blood are needed for a single determination, the time required is 6—10 min., and the accuracy about ± 1 vol.-%. J. E. P.

Aviation medicine. L. H. Bauer (*Ann. int. Med.*, 1943, **18**, 15—20).—A lecture. A. S.

Physiological adjustment in sublethal reduction of lung capacity in dog. F. J. Phillips, W. E. Adams, and L. S. Hrdina (*Surgery*, 1941, **9**, 25—39).—The bronchi in dogs were occluded by painting the circumference of the lumen with a 35% solution of $AgNO_3$, after the entire left lung had been removed surgically. Dogs may remain well and active after a reduction to 15% of the normal lung vol. provided the final stages of the reduction are made at suitable intervals. There is an immediate increase in the hæmoglobin and red cell count which do not return to normal for several weeks. Compensatory emphysema with stretching and fragmentation of the alveolar walls occurs and persists in the remaining over-distended lung tissue. P. C. W.

VIII.—MUSCLE.

Symbiotic cultures of somatic, intestinal, and cardiac muscle of chick embryos. J. Szepsenwol (*Rev. Soc. argent. Biol.*, 1942, **18**, 517—523).—Heart muscle from 2—14-day-old chick embryos was cultured in symbiosis with somatic or plain muscle (intestine); after 24—48 hr. the heart stopped beating. After addition of atropine or isolation and replanting in a fresh medium the heart muscle recovered. To produce this effect the skeletal muscle must still show automatic contractions; when taken from older embryos it did not inhibit cardiac contraction. Myocardium was cultivated with fragments of 2—3-day-old embryos; neurogenic activity of somatic muscle was inhibited, as when adrenaline was added. It is deduced that the active agent in somatic and intestinal muscle is similar to acetylcholine and that an adrenaline-like agent occurs in cardiac muscle. J. T. L.

Muscle automatism in cultures with eserine, acetylcholine, adrenaline, and atropine. E. Sacerdote de Lustig (*Rev. Soc. argent. Biol.*, 1942, **18**, 524—531).—Skeletal, smooth, and heart muscle of chick embryos, cultured separately or in symbiosis, were treated with eserine, acetylcholine, adrenaline, and atropine. Eserine and low concns. of acetylcholine activate automatic contractility of skeletal and smooth muscle. High concns. of acetylcholine and atropine paralyse their activity. Acetylcholine also paralyses heart muscle, but its action is annulled by atropine. Adrenaline activates the myocardium, paralyses the innervated skeletal muscle (of 2—3-day chick embryos), and temporarily the smooth muscle. These results indicate that the automatic activity of the skeletal and smooth muscle is due to an acetylcholine-like substance, while that of the myocardium may be attributed to an adrenaline-like substance. J. T. L.

Effect of skeletal fixation on skeletal muscle. D. Y. Solandt, R. C. Partridge, and J. Hunter (*J. Neurophysiol.*, 1943, **6**, 17—22).—Skeletal fixation in rats produced atrophy and hypersensitivity to intra-arterially injected acetylcholine in the gastrocnemius–soleus group of muscles. The atrophy was initially as marked, but did not progress so far, as that after motor nerve loss; it was sustained during the whole period of fixation. S. Cr.

Relation of fibrillation to acetylcholine and potassium sensitivity in denervated skeletal muscle. J. W. Magladery and D. Y. Solandt (*J. Neurophysiol.*, 1942, **5**, 357—362).—Denervation renders skeletal muscle much more sensitive to acetylcholine and, less markedly, to KCl; when small quantities are injected intra-arterially they produce action potentials comparable to and superimposed on those of fibrillation. It is suggested that the fibrillation seen in skeletal muscle after lower motor neurone denervation arises from an increased sensitivity of denervated muscle to chemically-induced excitation and that acetylcholine and KCl may be the causative agents. S. Cr.

Changes in electrolytes in denervated muscles. V. H. Cicardo and E. Gurevich (*Rev. Soc. argent. Biol.*, 1942, **18**, 425—430).—The

gastrocnemius of *Bufo arenarum* was denervated by cutting the sciatic nerve on one side; Na and K were determined when nerve degeneration had taken place (4—5 days in summer, 15 days in winter). Na and K decreased in atrophied muscles; sometimes an initial transitory increase in K was seen, owing to immobility and consequent absence of liberation of K. Finally K fell to 28% of the control val.; water also diminished slightly. The decrease in Na was less marked and inconst. J. T. L.

Specific excitability of end-plate region in normal and denervated muscle. S. W. Kuffler (*J. Neurophysiol.*, 1943, **6**, 99—110).—Acetylcholine, nicotine, and caffeine set up impulses by depolarising the muscle membrane in the end-plate region of single nerve–muscle fibre preps. of the M. adductor longus and isolated sartorius muscles of Australian frogs. Curarine opposes this depolarisation. K initiates impulses at the end-plate region only, but no striking difference could be detected between the depolarising action at or off the end-plate. The selective depolarisation of the end-plate region is also found in the denervated muscle. S. Cr.

Ultra-violet photomicrography of muscle. G. I. Lavin and C. L. Hoagland (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 80—82).—Photographs are given of longitudinal sections of human striated muscle, 5 μ. thick, up to 2200 magnification, made by radiation of 2537 A. from a Hg arc. Ordinary fixing reagents were used instead of the desiccation necessary for the electron microscope. V. J. W.

Phosphocreatine as energy source of action potential. D. Nachmansohn, R. T. Cox, C. W. Coates, and A. L. Machado (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 97—99).—Activity of the electric organ of the electric eel for 3 min. is accompanied by a fall of 50% in its phosphocreatine content. V. J. W.

Myositis tropica. J. C. Leedham-Green and W. Evans (*Trans. R. Soc. trop. Med. Hyg.*, 1943, **36**, 359—362).—Tropical myositis is primarily an acute degenerative condition, characterised by hæmorrhage into the intermuscular tissue spaces together with a mononuclear cell infiltration, producing an appearance similar to the coagulative necrosis of muscle (Zenker's degeneration). Resolution occurs by fibrosis unless secondary infection intervenes and leads to suppuration (pyomyositis). C. J. C. B.

IX.—NERVOUS SYSTEM.

Electrical field of nerve impulse. J. A. Gengerelli (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 189—190; cf. A., 1943, III, 308).—When a detector, sensitive to lines of electric force, is placed alongside a conducting nerve, the oscillographic record shows two peaks corresponding with the approach and departure of the impulse to and from the involved area if that area is intact, but only one peak when the detector is placed at the boundary of an intact and crushed region. V. J. W.

Potentials recorded from nerve trunk and dorsal root by microelectrodes. H. O. Parrack (*J. Neurophysiol.*, 1942, **5**, 423—434).—The form of the potentials recorded from the nerve trunk by microelectrodes is the same as that recorded by gross electrodes similarly arranged. The ganglionic potential curve is very complex, combining the activities of nerve fibres or cell bodies. A few single cell-body potentials have been recorded. S. Cr.

Action of potential and enzyme activity in electric organ of *Electrophorus electricus* (Linn.). I. Choline-esterase and respiration. D. Nachmansohn, R. T. Cox, C. W. Coates, and A. L. Machado (*J. Neurophysiol.*, 1942, **5**, 499—515).—Observations are described on voltage, amperage, resistance, and choline-esterase activity in single specimens of *E. electricus*. Histological findings are recorded and respiratory rates are compared with choline-esterase concn. S. Cr.

Localisation of enzymes in nerves. II. Respiratory enzymes. D. Nachmansohn, H. B. Steinbach, A. L. Machado, and S. Spiegelman (*J. Neurophysiol.*, 1943, **6**, 203—211).—The distribution of cytochrome oxidase in nerve tissue of the squid is remarkably high in the head ganglion and high in the axoplasm. The oxidation of pyruvic acid and pyruvic dehydrogenation are also studied in these tissues. (Cf. A., 1943, III, 13.) S. Cr.

Electrical polarisation of pacemaker neurones. T. H. Bullock, H. S. Burr, and L. F. Nims (*J. Neurophysiol.*, 1943, **6**, 85—97).—The isolated heart and cardiac ganglion of *Limulus* were used as a test of the hypothesis that the frequency of firing of nerve-cell bodies depends on the d.c. electrical field in which they lie. A d.c. passed through the intact heart gives an abrupt, sustained, reversible increase in frequency of heart beat and changes in wave form of the electrogram. The site of action is apparently the ganglion in the region of the pace-making bodies. S. Cr.

Investigation of epileptiform attacks produced by sudden cooling of frog spinal cord. M. Ozorio de Almeida (*J. Neurophysiol.*, 1943, 6, 73—79).—An account of the conditions of cooling which produce epileptiform attacks in North American frogs (cf. A., 1942, III, 881; 1943, III, 382, 723). S. Cr.

Stimulus frequency as means of analysing synaptic activity. C. G. Bernhard and R. Granit (*J. Neurophysiol.*, 1942, **5**, 381—392).—When trains of electric stimuli are led through needle electrodes to the spinal cord certain wave patterns are set up which were recorded from the sciatic nerve of decerebrate cats. These consist of direct waves caused by stimulation of the ventral horn cells and following frequencies of stimulation above 850 per sec., and relayed waves after different latent periods which follow frequencies which decrease with increasing reflex time. S. Cr.

Mediation of descending long spinal reflex activity. D. P. C. Lloyd (*J. Neurophysiol.*, 1942, **5**, 435—458).—Some aspects of the transmission of reflex effects from the fore limb to the hind limb in cats have been examined. Activity arising on one side of the body may involve propriospinal tracts of both sides of the spinal cord. An attempt has been made to identify these tracts by lesions of the cord and to find the regions of the lumbar cord most actively excited. Inhibitory and excitatory effects are seen and the time relations of these are worked out. S. Cr.

Intersegmental inhibition in spinal cord of frog. H. Winterstein and M. Terzioglu (*J. Neurophysiol.*, 1942, **5**, 459—463).—The effect of cooling and of sectioning the spinal cord of the frog when separated from the brain and removed from the body has been investigated. S. Cr.

Innervation of interosseous muscles and toe spreading reflex. R. Altschul and K. P. Turner (*Amer. J. Physiol.*, 1942, **137**, 247—250).—The dorsal interossei which abduct the toes of the hind limbs in the toe spreading reflex are innervated in cats and rabbits by the common peroneal, but in man by the tibial nerve. The afferent path of the reflex is from proprioceptors in the hind limb, the efferent is in the common peroneal nerve. The spreading reflex may be influenced by changes in the muscle tone in the hind limbs, resulting from bilateral labyrinthectomy, but the reflex proper does not depend directly on the labyrinths. M. W. G.

Reflex discharges in branches of crural nerve. B. Renshaw (*J. Neurophysiol.*, 1942, **5**, 487—498).—In cats reflex discharges were evoked in the motor nerves to sartorius and vastus internus by stimulation of dorsal roots. Consistent results were obtained and suitably spaced stimuli to two roots in some cases produced marked inhibitory effects which are studied in detail. S. Cr.

Reflex action in relation to pattern and peripheral source of afferent stimulation. D. P. C. Lloyd (*J. Neurophysiol.*, 1943, **6**, 111—119).—Two neurone–arc reflex discharges in the dorsal root–ventral root reflex are secured by stimulating the lowest threshold fibres of the dorsal root. Higher threshold fibres lead to multineurone–arc discharges. Nerves from muscles tend to connect directly with motoneurones, while cutaneous nerves have multineurone connexions. S. Cr.

Interaction of antidromic and orthodromic volleys in segmental spinal motor nucleus. D. P. C. Lloyd (*J. Neurophysiol.*, 1943, **6**, 143—151).—A max. antidromic volley backfired into a segmental spinal pool of motoneurones fails to block a reflex volley completely unless the opposed volleys clash in the motor axons. This is explained by many of the antidromic volleys failing to reach the soma of many of the motoneurones. S. Cr.

Spinal distribution of thermoregulatory pathways in monkey. L. E. Beaton and C. R. Leininger (*J. Neurophysiol.*, 1943, **6**, 37—38).—In the monkey thermoregulatory pathways for sweating are located in the lateral and anterolateral columns of the cord; they cross almost completely close to the level of the preganglionic outflow. The pathways for pilo-erection and shivering appear to be in the anterior column and there are more uncrossed fibres. S. Cr.

Monkey (*Macaca mulatta*) after hemisection and subsequent transection of spinal cord. G. P. McCouch, J. Hughes, and W. B. Stewart (*J. Neurophysiol.*, 1943, **6**, 155—159).—Hemisection and subsequent transection gives more rapid recovery in the previously paretic extremity. Crossed reflexes may develop on the chronic side in response to stimulation on the acute side. Crossed inhibition may be more effective if driven from the chronic side. The results are discussed in relation to spinal shock. S. Cr.

Central excitatory state associated with postural abnormalities. J. S. Denslow and C. C. Hassett (*J. Neurophysiol.*, 1942, **5**, 393—402).—Rigid muscles associated with postural abnormalities and possibly due to an area of "irritable focus" in the central nervous system commonly show spontaneous or easily induced action potentials, which may depend on an enduring central excitatory state together with an accessory subliminal stimulus. S. Cr.

Pseudaffective state and decerebrate rigidity in sloth. S. W. Britton and R. F. Kline (*J. Neurophysiol.*, 1943, **6**, 65—69).—Section of the brain stem of the sloth causes profound shock for 5—15 min. Considerable activity may develop after removal of large cortical areas and a pseudo-affective state appears after removal of the upper parts of the tardigrade cortex. Decerebrate rigidity may be either flexor or extensor, the latter tending to be more evident after longer survival periods. S. Cr.

Decerebrate rigidity in bat. N. S. R. Maluf (*J. Cell. Comp. Physiol.*, 1942, **20**, 243—245).—Transection of the brain stem, just anterior to the pons, causes in bats decerebrate rigidity of flexor type, the flexor muscles being those which maintain normal posture against gravity. V. J. W.

Development of corneal reflex in Amphibia. III. Influence of periphery on reflex centre.—See A., 1943, III, 731.

Localisation of salivatory centre in medulla of cat. S. C. Wang (*J. Neurophysiol.*, 1943, **6**, 195—201).—The lower brain stem of cats was stimulated with the aid of a Horsley-Clarke stereotaxic instrument. Copious salivary flow is easily elicited from the homolateral glands when the medulla is stimulated with a weak current. The nerve paths are worked out. S. Cr.

Function of components of [central] respiratory [centre] complex. R. F. Pitts (*J. Neurophysiol.*, 1942, **5**, 403—413).—The central respiratory system may be functionally divided into four subsidiary systems: (i) the respiratory centre–motor neurone; (ii) the vagal inhibitory; (iii) the brain stem inhibitory; and (iv) other excitatory and inhibitory systems. (i)—(iii) have been studied in isolation and in various combinations. S. Cr.

Effect of calcium galactogluconate on excitability of medulla and spinal cord. E. Frommel and A. Wolfermann (*Schweiz. med. Wschr.*, 1942, **72**, 1205—1207).—Epileptiform attacks in guinea-pigs, produced by injection of coramine (0·20—0·35 g. per kg. body wt.), can be prevented by simultaneous administration of Ca galactogluconate; the Ca compound has no effect on the respiratory centre when stimulated by coramine or depressed by morphine (rabbits). A. S.

Oscillographic studies on spinal tract of fifth cranial nerve. F. Harrison and K. B. Corbin (*J. Neurophysiol.*, 1942, **5**, 465—482).—By means of the oscillograph, tactile impulses were traced into the spinal tract of the fifth nerve of the cat. These impulses were compared with synchronous action potentials evoked electrically from a large branch of each of the divisions of the fifth nerve. The results made it possible to confirm evidence regarding the relative positions of the three trigeminal divisions within the spinal tract. The action potentials obtained suggested activity in first- and second-order neurones. [B.] S. Cr.

Termination of ascending trigeminal and spinal tracts in thalamus of cat. H. W. Magoun and W. A. McKinler (*Amer. J. Physiol.*, 1942, **137**, 409—416).—Oscillographic recording of potentials evoked by peripheral nerve stimulation shows the mesencephalic course and thalamic termination of fast conducting pathways from face and limbs of the cat (nembutal) to ascend in and adjacent to the medial lemniscus and terminate in the ventral thalamic nucleus; the limb pathways end in the posterolateral, the trigeminal in its posteromedial, division. The discharge of these pathways fires cells of the ventral thalamic nucleus whose axons pass forward in the internal capsule towards the cortex. By some relay system the centre median is also fired but considerably later. No evoked potentials were detected in other thalamic nuclei. M. W. G.

Thermoregulatory pathways in cat brain stem. L. E. Beaton, C. R. Leininger, and W. A. McKinley (*J. Neurophysiol.*, 1943, **6**, 29—35).—The brain stem pathways subserving temp. regulation in the cat were investigated, by examining the animal's regulation to a hot or cold environment, 2—5 weeks after producing bilateral lesions at anterior and caudal mid-brain and at pontile levels. There is clear evidence of dual mechanisms with independent paths for heat-loss and heat-conservation. S. Cr.

Absence of local sign in visceral responses to pain. D. G. Sattler (*J. Neurophysiol.*, 1942, **5**, 417—422).—A series of experiments which show that there is no localisation of sympathetic responses in the fingers following painful stimuli of the hand. S. Cr.

Cerebellar action potentials in response to stimulation of proprioceptors and exteroceptors in rat. R. S. Dow and R. Anderson (*J. Neurophysiol.*, 1942, **5**, 363—371).—Proprioceptive stimulation showed greatest activity in the pyramis and exteroceptive stimulation affected the culmen. Electrical stimulation of the sciatic nerve resembled exteroceptive stimulation. S. Cr.

Absence of retino-supraoptical connexions in white rat. F. Vidal and J. L. Malbran (*Rev. Soc. argent. Biol.*, 1942, **18**, 373—375).—One or both eyes were enucleated in 35 white rats and 12 days—10 months later the hypothalamus was studied. No cellular atrophy was seen in the supraoptic nuclei; the fibres of Gudden's commissure were intact and could be easily differentiated from the degenerated optic tracts. Thus no retino-supraoptical connexions were found in this species. J. T. L.

Comparison of effects of upper and lower motor neurone lesions on skeletal muscle. D. Y. Solandt and J. W. Magladery (*J. Neurophysiol.*, 1942, **5**, 373—380).—In albino rats both section of the spinal cord at the Th 6 and section of the sciatic nerve produced atrophy of the gastrocnemius–soleus group of muscles for 14 days. After this time the muscles of the animals with the cord section began to recover while in the others atrophy continued. Both types of injury produced hypersensitivity to acetylcholine lasting as long as the atrophic process was active. Fibrillation was only seen after section of the sciatic. S. Cr.

Modification of cortical activity by means of intermittent photic stimulation in monkey. W. C. Halstead, G. W. Knox, and A. E. Walker (*J. Neurophysiol.*, 1942, **5**, 349—355).—Evidence was found of an effect of intermittent photic stimulation on the cortical activity of the monkey; there was increased amplitude of cortical response and stabilisation of cortical rhythm. Max. cortical response was found with stimulating frequencies of 10·5—11·5 per sec. S. Cr.

Motor response to stimulation of cerebral cortex in absence of areas 4 and 6 (*Macaca malatta*). M. A. Kennard and W. S. McCulloch (*J. Neurophysiol.*, 1943, **6**, 181—189).—The cortex of the animal with motor area removed in infancy has greater excitability in the surrounding areas than has either the normal macaque or the animal whose motor area is removed at a later age. This agrees with the motor performance of such animals and points to a functional reorganisation in the motor system. S. Cr.

Functional organisation of temporal lobe of monkey (*Macaca mulatta*) **and chimpanzee** (*Pan satyrus*). P. Bailey, G. von Bonin, H. W. Garol, and W. S. McCulloch (*J. Neurophysiol.*, 1943, **6**, 121—128).—The temporal lobes of macaque and chimpanzee show the same functional organisation; each lobe has an acoustic and a temporal sector with commissural connexions. S. Cr.

Cortical localisation of symbolic processes in rat. II. Effect of cortical lesions on delayed alternation in rat. C. T. Morgan and W. M. Wood (*J. Neurophysiol.*, 1943, **6**, 173—180).—Some "localisation" of recent memory in the anterior areas of the rat is indicated. S. Cr.

Effect of oxygen tension on metabolism of cerebral cortex, medulla, and spinal cord. F. N. Craig and H. K. Beecher (*J. Neurophysiol.*, 1943, **6**, 135—141).—The rates of O_2 uptake of cortex, medulla, and spinal cord were in the ratio 100 : 34 : 12, whereas the ratio for lactic acid production was 100 : 17 : 5. The O_2 uptake of all three tissues was sensitive to O_2 tension. S. Cr.

Long association fibres in cerebral hemispheres of monkey and chimpanzee. P. Bailey, G. von Bonin, H. W. Garol, and W. S. McCulloch (*J. Neurophysiol.*, 1943, **6**, 129—134).—By applying strychnine locally to the cerebral cortex of the monkey and chimpanzee, and recording the electrical activity, the origin and termination of homologues of three of the well-defined long association bundles of the human cerebral cortex have been disclosed. S. Cr.

Effects of hypothalamic lesions on electrical activity of cerebral cortex. S. Obrador (*J. Neurophysiol.*, 1943, **6**, 81—84).—Lesions of the hypothalamus, basal regions of the brain, thalamus, or thalamo-cortical pathways abolish spontaneous electrical activity of the cerebral cortex. It is suggested that the hypothalamus may influence cortical activity through its thalamic connexions. S. Cr.

Liberation of potassium by stimulation of brain in dog. V. H. Cicardo and A. Torino (*Rev. Soc. argent. Biol.*, 1942, **18**, 58—64).—K concn. was determined in the blood of the superior longitudinal sinus before, during 1 min. tetanic stimulation of the cerebral cortex, and 30 min. later. Convulsions were prevented by section of the spinal cord below the medulla or by curarisation with a crude extract of *Erythrina cristagalli*. During stimulation the K concn. was doubled. No increase was observed in the blood from the femoral artery. J. T. L.

Effect of convulsive drugs on liberation of potassium by brain of dogs. V. H. Cicardo, A. Torino, and B. Fendrik (*Rev. Soc. argent. Biol.*, 1942, **18**, 308—314).—K was determined (Marenzi and Gerschman's method) in heparinised plasma of blood taken from the longitudinal sinus before and after intravenous injection of cardiazol (0·1 g.) and azoman (0·025—0·05 g.). The average vals. in 16 dogs were 15·6 mg.-% before and 18·8 mg.-% after injection. Injection of these drugs into dogs curarised with extract of *Erythrina cristagalli* seeds produced a smaller increase in brain venous blood-K. It is suggested that permeability increases in the neurones, allowing K to be liberated and so producing stimulation. J. T. L.

Intravenous potassium, calcium, and magnesium and cortical electrogram of the cat. M. A. Rubin, H. E. Hoff, A. W. Winkler, and P. K. Smith (*J. Neurophysiol.*, 1943, **6**, 23—28).—The cortical electrogram and e.c.g. of the cat were followed continuously during the intravenous injection of salts. K and Ca produced no changes in brain potentials until there was intraventricular block or cardiac arrest and then there was slowing. Mg produced transient periods of slowing before there were changes in the e.c.g. Brain potentials persisted for several min. after complete respiratory and cardiac failure. S. Cr.

Effects on electroencephalogram of lesions of cerebral cortex and basal ganglia in *Macaca mulatta*. M. A. Kennard and L. F. Nims (*J. Neurophysiol.*, 1942, **5**, 335—348).—Lesions were made in cerebral cortex and basal ganglia of 41 monkeys, and electroencephalograms recorded before and after operation. In acute experiments the-

was no change. In chronic experiments there was a temporary change during the first or second day but it was transient. Lesions of the cerebral cortex caused little or no change. Lesions of the head of the caudate nucleus or putamen were followed by hypersynchrony of the 8—10 per sec. waves and diminution of the 15—20 per sec. waves. Combined lesions of the cortex or basal ganglia caused the most marked changes which might persist for as long as two years. All changes were intensified if the lesions were performed in infancy. S. Cr.

Changes in normal electroencephalogram of *Macaca mulatta* with growth. M. A. Kennard and L. F. Nims (*J. Neurophysiol.*, 1942, **5**, 325—333).—In the infant monkey the electroencephalogram (e.e.g.) begins to develop at or before birth but does not resemble that of the adult until the end of six months. A wave frequency of 2—3 per sec. after birth increases to 7—8 per sec. in six months and then slowly to 10—12 per sec. in two years. During the growth period the e.e.g. becomes more complex and more uniform; it is not easy to detect sleep by its means in the newborn animal. The changes are similar to those described for man. S. Cr.

Effect of maté on electroencephalogram. J. B. Odoriz (*Rev. Soc. argent. Biol.*, 1942, **18**, 176—189).—Ingestion of 300 c.c. of 5% infusion of ground maté leaves was followed by transitory modifications in the α rhythm, similar to those seen with increased attention (*i.e.*, modulation of the α rhythm, appearance of spindles, disappearance of α rhythm). The ingestion of caffeine in the same dose as found in the maté produced the same effects but for a shorter time. Larger doses of caffeine (up to 3 times the initial amount) did not increase the response. In subjects sensitive to maté, tea, and coffee, spike waves like those described by Libet and Gerard in the caffeinised frog brain were seen after ingestion of maté or caffeine. Intravenous injection of 0·08 g. of caffeine per kg. produced these spike waves in dogs anæsthetised with nembutal. These spike waves are attributed to propagated depolarisation of the local cortical cellular somatic potential; they have no known pathological significance. J. T. L.

Hypoglycæmia in a murderer.—See A., 1943, III, 715.

Effect of certain choline derivatives on electrical activity of cortex. C. Brenner and H. H. Merritt (*Arch. Neurol. Psychiat., Chicago*, 1942, **48**, 382—395).—Applied to the surface of the cat's cortex acetycholine, acetyl-β-methylcholine, and carbamylcholine chlorides cause an increase of the cortical potentials and variable changes of the frequencies. Atropinisation does not prevent these effects. W. M. H.

Technique and interpretation of electroencephalography in man. M. Monnier (*Schweiz. med. Wschr.*, 1942, **72**, 1253—1258).—A review. A. S.

Factors affecting changes produced in electroencephalogram by standardised hyperventilation. H. Davis and W. M. Wallace (*Arch. Neurol. Psychiat., Chicago*, 1942, **47**, 607—623).—Electroencephalograms were recorded on normal male subjects during and after 3-min. periods of standardised hyperventilation (44 c.c. per kg. body wt. per min). Despite variations in blood-gases in samples from the finger, probably due to vasoconstriction, a fairly const. respiratory alkalosis was produced. Repeated tests produced a fairly const. increase in the 5-cycle cerebral count and a modified delta index. Metabolic alkalosis and acidosis produced by oral ingestion of $NaHCO_3$ and NH_4Cl respectively caused no change in the effect of hyperventilation on the electroencephalogram. Hyperventilation with O_2 produced less alteration in the electroencephalogram than when air was breathed. Low blood-sugar (80 mg.-% or less) favoured the appearance of delta waves, and a high sugar level (over 120 mg.-%) tended to prevent their appearance, although at a const. blood-sugar level subjects varied in their response from day to day. Less peripheral vasoconstriction was found when the subjects were breathing O_2 and when the blood-sugar level was high. It is suggested that hyperventilation causes the appearance of 5-cycle and delta waves by inducing cerebral vasoconstriction, which in turn causes diminution in the supply of O_2 and glucose to the cerebral cortex. W. M. H.

Electroencephalography in post-traumatic syndromes. M. E. Heppenstall and D. Hill (*Lancet*, 1943, **244**, 261—263).—Abnormalities of electroencephalogram were noted in 78 of 150 patients with chronic post-traumatic syndromes, 5 patients being abnormal only on hyperventilation. C. A. K.

Toxoplasmic encephalomyelitis. Clinical diagnosis of infantile or congenital toxoplasmosis: survival beyond infancy. D. Cowen, A. Wolf, and B. H. Paige (*Arch. Neurol. Psychiat., Chicago*, 1942, **48**, 689—739).—9 cases of infantile or congenital toxoplasmic encephalomyelitis recognised at autopsy are described. At birth or soon after the infected infant usually shows multiple focal, bilateral areas of chorioretinitis almost invariably involving the macula, nystagmus ophthalmoplegia; convulsions occur; there is hydrocephalus and multiple foci of intracerebral calcification. On the basis of this description 6 cases have been identified clinically. Most of these children have survived beyond infancy. The infection may become chronic, healed, or latent. The clinical picture consists chiefly of the residual effects of the lesions occurring in the acute stage. Vision is impaired and the foci of healed chorioretinitis may be recognised. Strabismus, microphthalmos, and minor ocular defects may also be present. Generalised convulsions or petit mal attacks may persist or appear later. Internal hydrocephalus may become chronic and progressive. Foci of intracerebral calcification persist and may at first increase in no. and size. Speech development may be slow and minor degrees of mental deficiency occur. The intrauterine origin in many if not all these cases is stressed and the term infantile, or congenital, toxoplasmic encephalomyelitis suggested. Many cases may have been erroneously classified as congenital malformations of the brain, cerebral birth injury, epilepsy, congenital hydrocephalus, etc. The infection is widespread in the United States and cases have occurred in S. America and Europe. Various mammals, and perhaps birds, are probably the animal reservoirs of infection but the mode of transmission to man is not yet known. The use and limitations of a serological method in diagnosis are discussed. W. M. H.

Orientation (temporal-spatial gnosis) following section of corpus callosum. A. J. Akelaitis (*Arch. Neurol. Psychiat., Chicago*, 1942, **48**, 914—937).—Orientation was studied in 26 cases of epilepsy before and after section of the corpus callosum. In 8 cases section was complete, in 3 section was partial and completed at a later date, and in 15 section varied in degree. Temporary confusion was found only in those cases with unilateral lesions of the posterior part of the cerebrum. Section of the fornix in addition to callosal section has no additional effect. It is suggested that in cases of tumour and vascular accidents involving the corpus callosum disorientation and memory impairment arise from neighbourhood or multiple effects. W. M. H.

Choline-esterase in primitive nervous systems. T. H. Bullock and D. Nachmansohn (*J. Cell. Comp. Physiol.*, 1942, **20**, 239—242).—Largest concn. is present in the Platyhelminthes, the first group to develop ganglia, but it is almost absent in the Scyphoza and Ctenophora. V. J. W.

Central nervous system in vitamin-*E*-deficient rats. A. Wolf and A. M. Pappenheimer (*Arch. Neurol. Psychiat., Chicago*, 1942, **48**, 538—551).—No lesions of the central nervous system were found in vitamin-*E*-deficient rats. W. M. H.

Effect of insulin hypoglycæmia on conditioned reflexes. E. Gellhorn and H. Minatoya (*J. Neurophysiol.*, 1943, **6**, 161—171).—The chronic effect of insulin hypoglycæmia on the brain has been studied by means of conditioned reflexes in rats. A reflex which is inhibited by lack of reinforcement can be restored by the action of insulin. S. Cr.

Differential diagnosis of apoplexy. A. von Albertini (*Schweiz. med. Wschr.*, 1942, **72**, 1213—1217). A. S.

Sweat gland responses to sympathetic stimulation studied by galvanic skin reflex method. C. P. Richter and F. Whelan (*J. Neurophysiol.*, 1943, **6**, 191—194).—A single induced shock applied to the sympathetic chain (L2 and L3) of cats caused a galvanic current to be given off by the large central pad of the hind foot. The sweat glands could be tetanised by shocks at the rate of 2—6 per sec. S. Cr.

Composition of cervical sympathetic trunk. J. O. Foley (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 212—214).—The proportion of non-medullated fibres in cats was from 1 to 61% (average 34%). After section of its preganglionic roots 2—33% of the cervical sympathetic fibres remain undegenerated. V. J. W.

Progress in surgery of autonomic nervous system. J. C. White (*Surgery*, 1941, **9**, 115—131).—Review of the literature for 1938 and 1939. P. C. W.

Intravenous sucrose and cerebrospinal fluid pressure. J. H. Paterson (*Proc. Roy. Soc. Med.*, 1942, **35**, 530—534).—Intravenous injection of 100 c.c. of 50% sucrose produced only a small fall in lumbar c.s.f. pressure and is unlikely to be of therapeutic val. W. J. G.

X.—SENSE ORGANS.

Precancerous melanosis and resulting malignant melanoma (cancerous melanosis) of conjunctiva and skin of lids. A. B. Reese (*Arch. Ophthal.*, 1943, **29**, 737—746).—Precancerous melanosis is acquired about middle age or later and affects either the conjunctiva or the adjacent skin or both together in a very diffuse manner with no elevation (except during malignant phase). The condition arises in the basal epidermal layer and is precancerous and radiosensitive. The average duration of this precancerous state from the first appearance to the malignant change is 5—10 years. A. Gl.

"Arc flash" conjunctivitis from electric welding arc. F. E. Rieke (*J. Amer. Med. Assoc.*, 1943, **122**, 734—736).—Treatment for and precautions against "arc flash" conjunctivitis are described. Recently there has been a marked increase in the no. of cases of conjunctivitis of this type among shipbuilding workers. P. G

Vertical ductions. J. I. Pascal (*Amer. J. Ophthal.*, 1943, **26**, 610).—It is wrong to refer to right supraduction and infraduction as if they differed from, respectively, left infraduction and supraduction. In testing vertical as well as horizontal ductions, the ability to maintain single binocular vision when the eyes turn in opposite directions is measured. The term "positive vertiduction" is suggested for right supra- and left infra-duction, and "negative vertiduction" for left supra- and right infra-duction. J. H. A.

Paralysis of divergence. B. M. Canter (*Eye, Ear, Throat*, 1943, **22**, 306).—Description of a case with a short theoretical discussion of this rare condition which is thought to be due to simultaneous contraction of both external recti associated with relaxation of the internal recti. K. T.

Fixational corneal light reflexes as aid in binocular investigation. E. Krimsky (*Trans. Amer. Acad. Ophthal. Otolaryngol.*, 1943, 269—284).—A description of those methods of measuring the degree of ocular deviation in various types of squint which are dependent on the position of the fixational corneal light reflexes. These methods as used by the author involve the artificial restoration of both light reflexes by various means such as: (1) in convergent squint the light source is moved towards the patient until both corneal reflexes are obtained, when the amount of squint can be calc. from the final position of the light and the patient's normal primary deviation; (2) when the position of a light, set on one side of a septum dividing the eyes, which will produce a corneal reflex in the eye on the same side has been found, the amount of vertical or lateral movement of a light on the other side necessary to produce a reflex in the other eye will give the direction and amount of deviation; (3) the synoptophore, where plus lenses are incorporated in order to cut out convergence due to accommodation, and modifications of Brewster's stereoscope in which the deviation for specified amounts of accommodation can be measured; (4) the prism reflex test, where the prisms are manipulated in front of the squinting eye until the corneal light reflex is centred in both eyes. The author describes the way in which a corneal light reflex test may be used for the diagnosis of pseudo-squint, false macula, and amblyopia, abnormal retinal correspondence and ocular torticollis, for finding the cardinal positions of the eyes, which is the fixing eye and the convergence near point, for measuring the extent to which binocular fixation can be maintained against an increasing separation or approximation of the objects viewed (prism-divergence or prism-convergence), the type and amount of objective heterophoria, and the amount of ocular motility, for distinguishing between a phoria and a tropia, and for determining the primary and secondary deviations in paralytic squint. K. T.

Objective binocular examination of the young child. E. Krimsky (*Eye, Ear, Throat*, 1943, **22**, 253—259).—Binocular examinations based on answers to questions are unsuitable for testing young children. A detailed description is given of the objective tests, mostly based on the corneal light reflex, which give accurate information as to the binocular vision of young children, with directions as to the best way of performing them. K. T.

Bowen's disease of cornea. G. Wise (*Amer. J. Ophthal.*, 1943, **26**, 167—171).—Case report with some references. A. GL.

Marginal degeneration of cornea. M. R. Folk (*Arch. Ophthal.*, 1943, **29**, 975—980).—This is not a rare condition, since about 559 cases have been reported, but it is often overlooked because of its mildness. It starts as a finely punctate peripheral opacity, often superimposed on an arcus senilis, with deep vascularisation; a gutter-like furrow appears, and in the course of years as the floor of the gutter grows thinner, it may become ectatic. Myopic astigmatism develops, and is responsible for the accompanying visual deterioration. The prognosis is good, though corneal rupture may occur. In the case here described, improvement was noted on sulphonamide and vitamin therapy. J. H. A.

Riboflavin for rosacea keratitis, marginal corneal ulcers, and catarrhal corneal infiltrates. C. A. Conners, R. E. Eckardt, and L. V. Johnson (*Arch. Ophthal.*, 1943, **29**, 956—967).—Many experiments were made to ascertain whether those suffering from the three conditions named show any biochemical evidence of riboflavin deficiency. The mean 24-hr. urine excretion of the vitamin was considerably less in 16 patients than in 14 controls, suggesting either deficient intake or faulty metabolism of the vitamin in these individuals. After intramuscular injection of 5 mg. of riboflavin in water (6 patients) or in sesame oil (5 patients) 5 of the first group and 3 of the second showed a higher retention after 24 hr. than did the controls. In the authors' combined experience, only one case of rosacea keratitis has been encountered which resisted administration of riboflavin intravenously with the vitamin-*B* complex orally, and even this case responded when whole blood was given concurrently. J. H. A.

Refraction clinic. A. E. Sloane (*Amer. J. Ophthal.*, 1943, **26**, 610—613).—A discussion of two difficult cases of refraction, which exemplify the manner in which the final prescription may have to be modified according to the amount and type of heterophoria, whether astigmatism is with or against the rule, and whether glasses have or have not been worn previously. J. H. A.

New cross-cylinder test for astigmatic axis, without use of test type. W. H. Crisp (*Amer. J. Ophthal.*, 1943, **26**, 571—576).—In the test described, the cross-cylinder is used in association, not with letters, but with the wagon-wheel type of astigmatic chart. The spherocylindrical combination already found by other methods is placed in the trial frame, and the position of the axis checked by means of the cross-cylinder in the usual way. The trial frame cylinder is at its correct axis when there is an equal departure from uniformity in the appearance of the "spokes" for both positions of the cross-cylinder. J. H. A.

Initial and residual effects of ophthalmic prisms on visibility and accommodation. M. Luckiesh and F. K. Moss (*Arch. Ophthal.*, 1943, **29**, 968—974).—The effects of prisms in 2 emmetropic non-presbyopic orthophoric adults were studied. The principal conclusions were as follows: with the test-object at 40 cm., addition of any prism definitely decreases visibility, which is improved by plus lenses if the prism is base-in or minus lenses if base-out; with base-out prisms presented in order of increasing power, a lower degree of visibility is obtained than when they are presented in the reverse order; with base-in prisms the order of presentation is immaterial. In distance vision, maximal visibility is attained with the monocular addition of a 4° base-in prism, when the addition is made in base-in to base-out order. Since abduction decreases the refractive power of the eye, this suggests that the so-called emmetropic eye is slightly myopic at a distance if relative accommodation is avoided. J. H. A.

Comparison of ocular imagery. H. B. Field (*Arch. Ophthal.*, 1943, **29**, 981—988).—A comparison of two instruments designed to measure aniseikonia, viz., the eikonometer and the comparator (Kerry). 25 medical students were examined and measurements taken in horizontal and vertical meridians. In only one case, which exhibited an "induced size effect," was there great discrepancy between the two instruments. Heterophoria is found more frequently and is greater with the comparator than with the eikonometer, and is more pronounced when there is considerable size difference. J. H. A.

Miosis congenita. J. C. Holst (*Acta Ophthal.*, 1942, **20**, 293—306).—A report of the re-examination after 21 years of a case of congenital miosis. The patient was one of a family of 4 of whom 2 others (twins) were affected. The parents were first cousins and the father had abnormally small pupils. The condition consisted of very small pupils with poor night vision and spasm of accommodation giving rise to myopia and headaches. The vision and headaches were improved by mydriatics which enlarged the pupils to 1·1 × 1·2 mm. The older twins having died since the first examination, histological examination of their irises revealed a complete absence of the dilator pupillæ. Cocaine has no effect on these pupils but the other ocular muscles innervated by the sympathetic respond normally. The patient is now 66 and no longer suffers from accommodation spasm. Another case, of a child of 2½ with small pupils due to complete lack of the dilator pupillæ confirmed histologically, is described and the literature reviewed. K. T.

Case of sympathetic heterochromia acquired in adult age. A. J. Rogge (*Acta Ophthal.*, 1942, **20**, 205—211).—Description of a case of unilateral sympathetic paralysis of unknown origin in which the iris of the same side became depigmented. It is suggested that, although the loss of sympathetic function was probably responsible for the loss of pigment, there must have been some predisposing factor (probably hereditary) since unilateral sympathetic paralysis is only occasionally associated with heterochromia. K. T.

Leiomyoma of iris. J. E. Kahler, W. E. Wallace, R. Irvine, and A. R. Irvine (*Arch. Ophthal.*, 1943, **29**, 479—484).—Case report. Only 6 previous cases have been reported in the literature. The lesion is considered to be a benign neoplasm which can be treated by local excision. A. GL.

Restoration of binocular vision after unilateral cataract extraction. T. L. McKee (*Arch. Ophthal.*, 1943, **29**, 996—999).—Report of the case of a man of 37 the lens of whose left eye had to be removed and who not only accepted but welcomed a full correction for the eye. He was able to obtain binocular vision with depth perception, although the other eye was practically emmetropic. Similar cases in the literature are summarised. J. H. A.

On tonometry. E. Kjerrumgaard (*Acta Ophthal.*, 1942, **20**, 351—366).—A description of the calibration, methods of using, and accuracy of the Schiøtz tonometer. K. T.

Nævus flammeus associated with glaucoma. B. Y. Alvis and V. A. Toland (*Amer. J. Ophthal.*, 1943, **26**, 720—723).—A case report of a boy of 14 years with right hydrophthalmos and a nævus flammeus conforming with the distribution of the first two divisions of the right trigeminal nerve. The right disc was deeply cupped, and there was a marked increase in the no. of arterial and venous branches. The use of miotics and a trephine operation controlled the pressure only temporarily. Vogt's perforating cyclodiathermy

operation was twice performed; the tension 5 months after the last operation was 16·5 mm. Hg, and good vision was retained. J. H. A.

Use of furmethide in comparison with other miotics for treatment of glaucoma. E. M. Uhler (*Amer. J. Ophthal.*, 1943, **26**, 710—714).—The use of a 10% furmethide solution was studied in 23 cases of acute primary glaucoma, most of whom had been on pilocarpine previously, and its effect in reducing intraocular tension was compared with that of 20% mecholyl and 5% prostigmine, which were used together in 43 similar cases. The condition was arbitrarily classified as "early" or "late" according to the degree of field loss and enlargement of the blind spot: furmethide was found to be preferable in the late cases, the other drugs in the early ones. In 20 cases of chronic glaucoma, 10% furmethide was slightly more effective in controlling intraocular pressure than 2% pilocarpine. Furmethide is non-irritating, but does not always maintain normal pressure indefinitely. J. H. A.

Case of sulphonamide myopia with investigation of its pathogenesis. O. v. Fieandt (*Acta Ophthal.*, 1942, **20**, 24—39).—A study of 21 cases of transitory myopia following treatment with the sulphonamides, gathered from the literature, showed that, in every case in which they had been examined, the pupil reactions, visual fields, and appearance of the fundus and lens were normal and that the media had remained transparent. Opinion was divided as to whether the myopia is due to changes in the lens or to spasm of the ciliary muscles. A subject, who had already had one attack of transitory myopia following sulphonamide therapy, had the right eye atropinised and was given 0·5 g. of streptolysin (Orion) 14 hr. later. After 4 hr. the left eye began to become myopic and 4 hr. later its near point had come in to 1 m., the distant vision of the atropinised eye remaining normal. Later still the right eye also became myopic, but throughout the experiment it retained better distant vision than the left. Homatropine, 12 hr. after the administration of the sulphonamide, produced a transient incomplete recovery in the left eye while another dose of atropine in the right had no effect on its refraction. After another 2 hr., 2 drops of 0·5% eserine solution instilled into both eyes produced a marked increase of myopia in each. 2 days after the administration of the sulphonamide the refraction of both eyes was nearly normal and the next day it had completely recovered. These results suggest that this form of myopia can only be partly due to spasm of the ciliary muscles since it also appears, although to a smaller extent, in an atropinised eye. Therefore, both spasm of the muscle and lens changes appear to play a part, but the times of onset of the myopia in each eye indicate that the effect on the lens must develop later than that on the ciliary muscle. The results obtained on an atropinised eye also suggest a direct antagonism between this drug and the sulphonamide effect. K. T.

Ætiology of sulphonamide myopia. O. Carlberg (*Acta Ophthal.*, 1942, **20**, 275—292).—Report of 4 cases none of which showed any impairment of accommodation. 2 had a raised intraocular pressure and the anterior chamber became abnormally shallow in all. 2 cases, definitely older than the others, showed a spherical aberration either during the attack or as it was passing off, which disappeared later. The degree of myopia varied from 2·0 D. in the oldest to 4·5 D. in the youngest patient. The myopia lasted 3 days in 2 cases and 5 days in the other 2, but the duration of the attack seems to bear no relation to its severity. In the 2 younger of these cases it is thought that the myopia was not severe enough to have been due to spasm of the ciliary muscles since this should have produced a much more spherical lens. The shallow anterior chamber also indicates that the myopia is due to a swelling of the lens, and the spherical aberration that it is the lens nucleus that is affected. This swelling is thought to be caused by osmotic changes produced by the presence of more sulphonamide in the lens than in the other eye media. It is suggested that where ciliary spasm does appear to be present (see preceding abstract) this may be secondary to the lens change. K. T.

Phospholipin content of cataractous and sclerosed human lenses. P. W. Salit (*Eye, Ear, Throat*, 1943, **22**, 219—222; cf. A., 1941, III, 504).—The phospholipin content was found to be lower for cataractous lenses than for normal ones, while the vals. for lenses with incipient cataract were intermediate. Lenses removed because of intumescent cataract showed the lowest % phospholipin content of all but this appeared to be due to the higher water content of these lenses. Intumescent cataract is probably not an intermediate stage between incipient and mature cataract as has been suggested. Sclerosed lenses (nuclear cataract) did not show an altered phospholipin content. It is suggested that, in the ætiology of cataract, the physical and chemical combinations of the lens phospholipins are first affected by external agents and that this results in disturbances of respiration, water balance, etc. leading to deposition of Ca proteinate and cholesterol crystals with resultant opacities. K. T.

Coloured reflex from anterior capsule of lens occurring in mercurialism. W. S. Atkinson (*Amer. J. Ophthal.*, 1943, **26**, 685—688).—A characteristic brown or greyish-brown reflex from the anterior lens capsule was observed in 37 out of 71 patients who were or had been engaged in work involving the use of Hg, and is believed to be due to a deposit of Hg on or in the capsule. 14 of the 71 cases exhibited signs of chronic mercurialism, of which the commonest were intention tremor and gingivitis. The capsule reflex is permanent, and develops after 3½—5 years of close contact with Hg. The sight is unaffected. J. H. A.

Application of freezing-drying technique to retinal histochemistry. C. B. Anfinsen, O. H. Lowry, and A. B. Hastings (*J. Cell. Comp. Physiol.*, 1942, **20**, 231—237).—The tissue is dropped into *iso*pentane cooled in liquid N_2, and cut after immersion in a mixture of CO_2 snow and light petroleum. After cutting, sections are dried over P_2O_5 and stained in methyl-violet dissolved in xylol. The enzymes of the various layers can then be determined. V. J. W.

Angioma of retina. A. G. Cross (*Brit. J. Ophthal.*, 1943, **27**, 372—373).—A case of angioma at the nasal margin of the left disc is described, in which the eye was excised only a week after the tumour was first observed. The secondary retinal gliosis, which is characteristic of the condition described by von Hippel, was absent in so early a case. J. H. A.

Degeneration and repair of rat retina in avitaminosis-*A*. M. L. Johnson (*Arch. Ophthal.*, 1943, **29**, 793—810).—Further investigations of the structural changes taking place in the retina in avitaminosis-*A* and during recovery were made. A large no. of animals was used, one eye being excised for examination when the animal exhibited the classical signs of avitaminosis-*A*, the other after a variable period on a "recovery diet." The following results were observed. The retinas of rats suffering from acute vitamin-*A* deficiency showed no change apart from a general œdema; those suffering from a prolonged lack of the vitamin showed degenerative changes in the outer segments of the rods and subsequently in the other external layers as far as the inner nuclear layer. When these changes affect only the outer segments of the rods, they are capable of complete resolution, though in severe cases this may take weeks or months, but lesions involving the outer nuclear layer, or more, are irreparable. J. H. A.

Angiomatosis retinæ (von Hippel's disease). Results following irradiation of three eyes. F. C. Cordes and O. C. Dickson (*Amer. J. Ophthal.*, 1943, **26**, 454—463).—Three eyes of two patients with angiomatosis retinæ were treated by *X*-ray therapy. In the first patient, who had an early lesion in one eye, there was definite improvement with retention of 0·8 vision, 3½ years after irradiation. The second patient had bilateral lesions, that in the right eye being advanced, that in the left early. The early lesion showed marked improvement after 2 years, with vision of 1·0; the advanced lesion, however, became progressively worse in spite of treatment, blindness ensuing from complete retinal detachment. The authors believe the use of *X*-rays in early cases to be preferable to electrolysis, diathermy, or Ra. J. H. A.

Diathermy coagulation in treatment of angiomatosis retinæ and of juvenile Coats' disease: report of two cases. J. S. Guyton and F. H. McGovern (*Amer. J. Ophthal.*, 1943, **26**, 675—684).—The first case, a 13-year-old girl, had bilateral angiomatosis retinæ, early in the right eye, advanced in the left. Both eyes were treated by diathermy; the angiomatous masses subsided with scar formation and the dilated vessels were reduced in size. Vision was preserved in the right eye; the left fundus showed increased exudate after the operation, which was repeated, this time using Walker pins instead of surface applications, with better results, though vision was not restored. The second case, a girl of 7 with early Coats' disease of the right eye and an advanced lesion in the left, had the lesion in the right eye obliterated by diathermy punctures, with full preservation of vision; the left eye was enucleated on account of early phthisis, and showed areas of capillary proliferation suggestive of angiomatosis retinæ. Since the results of *X*-ray or Ra therapy for these conditions have been at best uncertain, it seems that diathermy should be tried more frequently than heretofore. J. H. A.

Ophthalmoscopic findings in case of glioma retinæ. W. P. C. Zeeman (*Acta Ophthal.*, 1942, **20**, 213—221).—Comparison of the ophthalmoscopic and histological findings in a case of glioma. A. Gl.

Glioma of retina. W. L. Benedict and E. M. Parkhill (*Amer. J. Ophthal.*, 1943, **26**, 511—521).—Report on 4 cases illustrating the hereditary occurrence of glioma of the retina. There is an extensive survey of literature on this point. A. Gl.

Glioma of the retina. Review of 12 cases. W. B. E. McCrea (*Brit. J. Ophthal.*, 1943, **27**, 259—273).—11 of the cases are classified as retinoblastoma and 1 as neuroepithelioma. A. Gl.

Case of monocular hydrophthalmia. A. Garrow and A. Loewenstein (*Brit. J. Ophthal.*, 1943, **27**, 335—354).—A young girl with unilateral hydrophthalmia resisted two decompression operations and became hypotonic after a third. Three years after the last operation, she appeared with hæmorrhage into the cornea, which led to complete opacity and shrinkage of the globe. The histological appearances of the excised eye are exhaustively described. Apart from widespread retinal calcification, the most remarkable

feature was the presence of three angiomata in the retina and choroid. This raises the question whether monocular hydrophthalmia ever occurs as an isolated entity or is always a part of either the Sturge-Weber or the von Recklinghansen syndrome. Both these diseases are associated with space-occupying lesions in the choroid, which would tend to raise the tension, particularly if there were some congenital defect at the filtration angle. J. H. A.

Multiple primary malignant neoplasms. M. K. Asbury and D. Vail (*Amer. J. Ophthal.*, 1943, **26**, 688—693).—Report of a case in which a malignant melanoma of the choroid arising from a nævus was coexistent with a glioblastoma multiforme cerebri. The eye was enucleated in 1936 and the patient died from the brain tumour in 1941. A. Gl.

Choroideremia as inherited condition. P. J. Waardenburg (*Acta Ophthal.*, 1942, **20**, 235—274).—It is suggested that total atrophy of the choroid (atrophia totalis) is determined by a gene on the *X* chromosome and is probably, but not certainly, due to an inhibition of the development of the choroid. Typical atrophia gyrata, which is sometimes thought to be an early stage of atrophia totalis, is probably a distinct condition. From an examination of the literature it is concluded that no genuine case of an affected female has been recorded and that the gene is, therefore, recessive. The analysis of several pedigrees indicates, however, that the disease is transmitted by the female who may suffer from much less severe related symptoms, such as night blindness and poor pigmentation of the retina. Choroideremia is sometimes associated with high degrees of myopia. In some of the families affected great difficulty was experienced in determining which of the members really did suffer from true atrophia totalis and which from another, rather similar, condition also inherited as a recessive gene on the *X* chromosome, which might be called an atypical atrophia gyrata and which was never associated with myopia. The possible mechanism of the production of these conditions by an abnormality in the development of the choroidal vessels is discussed. K. T.

Current problems in visual function and visual perception. F. C. Bartlett (*Proc. Physical Soc.*, 1943, **55**, 417—425).—Three groups of current visual problems are discussed. The first group, concerned with the purely peripheral mechanism of vision, deals principally with accommodation time and the various factors which increase and decrease it. Secondly, the results of simultaneous excitation of the visual and other sensory functions are discussed, showing how the visual impressions may in some cases predominate and in others give way to kinæsthetic or postural impulses, while in still others some kind of compromise is effected. Finally, the relation of combinations of stimuli to visual perception, with its complex background of central nervous activity, is considered. J. H. A.

Peripheral visual acuity. F. N. Low (*Science*, 1943, **97**, 586—587).—The investigation reveals great spontaneous variability in the peripheral visual acuity of any given individual of which he is always unaware and the method of testing is described. The evidence indicates that peripheral visual acuity can be improved by training. P. G.

Fusion frequency with intermittent light under various circumstances. B. S. Hylkema (*Acta Ophthal.*, 1942, **20**, 159—180).—Under the conditions of experiments the max. fusion frequency was attained between 200 and 800 c.p. per sq. m. luminosity of the test field; the figure was always higher with more strongly illuminated surrounds. The fusion frequency during light adaptation did not, as expected, show a continuous rise with increasing adaptation but reached a max. and then dropped; this drop at high (about 7000 c.p. per sq. m.) intensities is accompanied by temporary diminution of colour vision and points to a generally impaired visual function which may be called "dazzlement." Interaction of one flickering field on another took place far into the periphery and at distances up to 5° (1—2 mm. on the retina). Local adaptation (the alternate appearance and disappearance of flickering on the test patch) seems to be sited in the central nervous system since in some individuals it can be influenced by factors such as concentration of attention, contraction of the arm muscles, acoustic stimuli, etc. In an endeavour to discover whether the highest fusion frequency attainable can be made to approach 160 per sec. (the frequency of stimuli that can be distinguished by the brain) it was found impossible for the eye to appreciate frequencies above 82 per sec. under the most favourable conditions; this finding suggests that the site of fusion is retinal rather than cerebral. K. T.

Examination of visual field by determining fusion frequency. B. S. Hylkema (*Acta Ophthal.*, 1942, **20**, 181—193).—Exploration of the visual field by measuring the flicker fusion frequency revealed: (1) fusion frequency is higher centrally than peripherally with small test fields but this relationship is reversed when the test field is large; (2) the fusion frequency was usually lowest over a large area around the blind spot indicating a local inferiority of visual function in this region; (3) in general the nasal part of the visual field showed a higher fusion frequency than the temporal and it is suggested that in binocular vision the superior visual function of the nasal part of one eye compensates for the inferior performance of the temporal part of the other; (4) in the periphery beyond 30° the temporal half of the field has the higher fusion frequency. K. T.

Case of nyctalopia. H. M. Kar (*Indian J. Ophthal.*, 1943, **4**, 31—32).—Description of a case of jaundice and anæmia, with an enlarged but not tender liver, in which the patient was night-blind. Treatment with liver extracts, both orally and by injection, and vitamins resulted in the cure of the jaundice, anæmia, and night-blindness. K. T.

Physiology of colour vision. F. W. Edridge-Green (*Nature*, 1943, **152**, 331).—The appearance of moving objects as stationary for the first instant of looking is attributed to the persistence of decomposed visual purple until eye-muscle movements sweep it away. K. J. W. C.

Evolution of colour vision tests. E. Murray (*J. Opt. Soc. Amer.*, 1943, **33**, 316—334).—A summary of different types of test, with a discussion of their limitations. A plea is made for the abandonment of obsolete and purely theoretical terms for the description of the type of colour-defect and for the development of tests for grading degrees of colour-defect. K. J. W. C.

Methodology in test preparation. F. L. Dimmick (*J. Opt. Soc. Amer.*, 1943, **33**, 308—315).—A summary of conditions affecting colour vision tests, viz., use of filters, coloured surfaces, field-size, position of stimulated surface on retina, order in which colours are presented, adaptation-level, form of instructions, and practice. K. J. W. C.

Pseudoisochromatic plate test of colour vision: practical application. R. E. Shoemaker (*Arch. Ophthal.*, 1943, **29**, 909—918).—The colour vision of 803 men was tested with the pseudoisochromatic plates prepared by the American Optical Co. Of these, 93 showed some impairment of colour vision, which was graded as slight, moderate, or severe according to an arbitrary classification. 71 of these defectives were further tested for colour "aptitude" by a hitherto unpublished method devised by C. E. Foss, with analogous results. These tests were far more sensitive than the Holmgren wool test. J. H. A.

Facts of colour-blindness. D. B. Judd (*J. Opt. Soc. Amer.*, 1943, **33**, 293—307).—A historical review and a summary of the facts of colour-blindness, with bibliography. K. J. W. C.

Colour-blindness and the detection of camouflage. D. B. Judd (*Science*, 1943, **97**, 544—546).—Colourblind observers may detect camouflaged positions which would be undetectable by a normal person. Normal persons can acquire almost the same ability by the use of suitable filters. P. G.

Effectiveness of vitamin-*A* in treatment of defective colour vision. J. H. Elder (*Science*, 1943, **97**, 561—562).—Vitamin-*A* in doses of 25,000 i.u. daily for 8 weeks fails to produce any significant improvement in colour-sensitivity. P. G.

Indirect injury of optic nerve. J. W. A. Turner (*Brain*, 1943, **66**, 140—151).—46 cases of optic nerve injuries are reported. The site of the injuries was almost invariably in the frontal region. In four cases only radiological abnormalities of the optic foramina could be demonstrated. Findings support the view that the mechanism of the injuries is an intraneural vascular damage. P. G.

Diplopia in narcolepsy. M. Levin (*Arch. Ophthal.*, 1943, **29**, 942—955).—Pavlov's work on cerebral inhibition and sleep is reviewed. Attacks of narcolepsy occur in man under the same conditions as those under which Pavlov was able to produce internal inhibition in dogs. Temporary diplopia and flaccid paralysis occur, probably owing to inhibition of the appropriate cortical centres. The nature of the disturbance which renders the cortex unduly exhaustible or "inhibitable" is unknown. J. H. A.

Micropsia and teleopsia limited to temporal fields of vision. M. B. Bender and N. Savitsky (*Arch. Ophthal.*, 1943, **29**, 904—908).—The case report of a man of 35 with a verified tumour of the chiasmal region, who showed multiple small irregular scotomas in the temporal fields, especially below. Between these scotomas, test-objects of various shapes appeared to be small and distant, and there was a tendency to rotation of the plane of images in both temporal and nasal fields. Micropsia is more commonly seen in patients with lesions of the occipital cortex or retina. J. H. A.

Sulphanilamide treatment in oto-rhino-laryngology. E. Lüscher (*Schweiz. med. Wschr.*, 1942, **72**, 1194—1201).—A review. A. S.

Ætiology of otosclerosis. L. Spira (*J. Laryngol. Otol.*, 1943, **58**, 151—157).—The similarity between the symptoms of fluorosis, otosclerosis, and hypoparathyroidism (deposits of Ca in the teeth, nails, and petrous bone, paresthesia, and hyperirritability of various sensory nerves, etc.) suggests that otosclerosis may be due to the ingestion of F over long periods, resulting in a hypocalcæmia which may or may not be caused by the action of F on the parathyroids. K. T.

Office noises and their effect on audiometry. W. D. Currier (*Arch. Otolaryngol.*, 1943, **38**, 49—59).—A comparison of the accuracy with which an audiogram could be taken in a sound-proof room and in a no. of "quiet" testing rooms belonging to various otolaryngo-

logists as well as in two schools where the children's hearing was normally tested. The results showed that audiometry is always inaccurate, especially for the low tones, unless conducted in a sound-proof room. This does not matter so much where the test is being made for the fitting of a hearing aid but is of the first importance when children are being tested for the early signs of hearing loss. K. T.

Therapy of deafness. L. Guggenheim (*Laryngoscope*, 1943, **53**, 441—456).—It is argued that the audiometer measures cochlear function rather than hearing in the broadest sense. Hearing capacity is dependent on factors other than cochlear function, notably several different central reactions, and it is, therefore, quite possible to understand that an improvement of hearing may be effected without alteration of the audiogram. An account is given of the possible causes of deafness and their most hopeful treatment. K. T.

Hearing aids and rôle of otologist. J. W. Jervey (*Eye, Ear, Throat*, 1943, **22**, 222—225).—A plea for more interest and knowledge of the selection and fitting of hearing aids and of training patients to use them to the best advantage. It is impossible to prescribe a hearing aid simply from an examination of the patient's audiogram but separate consideration of all the factors, psychological as well as physical, is necessary for each case. K. T.

Deafness in infancy and early childhood. I. R. Ewing (*J. Laryngol. Otol.*, 1943, **58**, 137—142).—An investigation of the general abilities and behaviour of partially and totally deaf children between the ages of 12 months and 3 years. Severe partial deafness was not associated with late walking or sitting up but the development of all the totally deaf was markedly retarded in this respect. Neither severe partial nor total deafness caused backwardness in adaptive behaviour (reaching for a spoon etc.) where this was independent of communication. These children use their voices naturally up to about 18 months but then tend to lose interest if left to themselves and the voice is little used and becomes markedly abnormal. If this change in the voice is allowed to take place its natural quality is never recovered. It is strongly urged that deaf children should be encouraged to use their voices even though they cannot hear them, until (at about 3 years) special training in talking and lip reading can be given. K. T.

Nature of deaf mutism : childhood and adolescence. A. W. G. Ewing (*J. Laryngol. Otol.*, 1943, **58**, 143—150).—Tests made on deaf mute children of school age showed that movements necessary for balancing the body are markedly affected and the degree of abnormality is determined by the amount of deafness; manual dexterity is normal or above the average; apart from a small subgroup which were definitely abnormal, practical ability (Spearman's factor *g*) was normal with a slight tendency to be above the average. The total mental development of deaf children was very much below that of their fellows with normal hearing except in cases where the deaf children had had opportunities of hearing speech. The immense importance of the mental stimulus of vocal intercourse is stressed. K. T.

Flying. J. G. Wilson (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, **17**, 89—96).—A review, with emphasis on the function of the labyrinth. A. S.

Vestibular tests as a diagnostic aid. A. F. Moriconi (*Eye, Ear, Throat*, 1943, **22**, 300—306).—A description of the usual tests for vestibular function and their use, with special emphasis on the key position occupied by the nystagmus tests. K. T.

Some functions of the non-acoustic labyrinth. J. G. Mackenzie (*Ann. Otol., etc., St. Louis*, 1943, **52**, 400—408).—Bi- and uni-lateral labyrinthectomies were done on cats. Disturbances of equilibrium and nystagmus, with turning of the head and body towards the operated side, followed unilateral labyrinthectomy. These symptoms mostly disappeared after about five days. After the bilateral operation there were more profound disturbances of equilibrium but compensation was established after a few weeks, leaving little abnormality beyond some variation in gait and head movements. Nystagmus did not occur if both labyrinths were destroyed at the same time, but if the second labyrinth is destroyed some time after the first a type of nystagmus will appear as though the first labyrinth were still intact. On the basis of these results it is suggested that each labyrinth is the functional antagonist of its mate. K. T.

Sense of smell. R. Dinolt (*Eye, Ear, Throat*, 1943, **22**, 259—266).—An account of the anatomical and physiological basis of the ability to recognise odours, with a description of the technique which should be used to examine the sense of smell and of the clinical implications of its disturbance. K. T.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Rôle of bile in absorption of steroids. H. Selye (*Endocrinol.*, 1943, **32**, 279—281).—Following oral administration of large doses of desoxycorticosterone acetate, progesterone, or testosterone to rats, general anæsthesia ensues. This effect of the steroid hormones is not altered if the common bile duct has been previously severed. G. P.

Iodine content of normal human thyroid gland and its correlated histology. J. D. King and F. E. Hamilton (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 231—246).—A review of the world literature on the size, wt., histology, and I content of the normal thyroid gland. There are considerable variations in all vals. in relation to geographical position. In goitrous regions the "normal" gland is largest in size, has lowest I content, smallest follicles, greatest no. of nodules, and most proliferated follicular epithelium. All these vals. vary with the incidence of goitre. P. C. W.

Intracellular colloid of normal, hyper- and hypo-functioning thyroid in *Bufo arenarum*. E. De Robertis and E. Del Conte (*Rev. Soc. argent. Biol.*, 1942, **18**, 547—555).—The thyroids of toads were stimulated by injection of ox anterior pituitary extract or by subcutaneous implantation of toad anterior pituitary. The thyroid was removed at varying intervals (1—24 hr. and 1—12 days), fixed by the Altmann–Gersh freezing–drying method, and stained with aniline-blue and orange G. They were compared with normal thyroids and thyroids in hypofunction produced by hypophysectomy performed 20—60 days before. In normal thyroids the cells measured 2—6 μ.; colloid was uniform and well defined by the apical border of the cells; colloid was found within the cells diffusely or in the form of droplets; no chromophobe vacuoles were seen in the interior of the follicles, nor chromophobe droplets in the cells. Activated thyroids showed a high epithelium, up to 10 μ.; intracellular colloid increased as deeply stained droplets in the basal part. When activation was intense the height of cells reached 14 μ., the follicular cavity was reduced, and the epithelium folded, giving a Y or H shape to the cross-section of the follicle; intracellular colloid was very abundant but there was no colloid between the cells. Implantation of toad anterior lobe produced more effect than injection of ox anterior lobe extract. During hypofunction provoked by hypophysectomy the cells were flattened; no intracellular colloid was found; intrafollicular colloid was intensely and uniformly stained. The degree of atrophy varied in the different follicles. J. T. L.

Intracellular colloid in initial states of thyroid activation in rat. F. De Robertis (*Rev. Soc. argent. Biol.*, 1942, **18**, 29—32).—A single dose of 0·5—10 guinea-pig units of hypophyseal thyrotropic factor was injected intraperitoneally into rats and the thyroids were examined histologically 30 min.—22 hr. later. At first much colloid was formed in the cell and was secreted into the follicle; max. activity occurred 1 hr. after injection. After 3—22 hr. there was an inversion of polarity in the cell; the colloid was reabsorbed from the follicle and excreted by the base of the cell. J. T. L.

Chemical nature of compounds that inhibit function of thyroid gland. E. B. Astwood (*J. Pharm. Exp. Ther.*, 1943, **78**, 79—89).—106 compounds were tested for their antithyroid activities by being given in the food or drinking water of rats for 10 days and subsequent examination of the degree of thyroid hyperplasia. Two classes of active compounds were found, viz., thiourea derivatives and certain aniline derivatives. Compounds more active than thiourea were 2-thiouracil, 2-thiobarbituric acid, *s*-diethylthiourea, and 5-benzylidene-2-thiohydantoin in decreasing order of activity. The aniline derivatives were the sulphonamides, *o*-, *m*-, and *p*-aminobenzoic acid, *p*-aminophenylacetic acid, and *p*-aminoacetanilide. Thiocyanates caused thyroid enlargement only in the absence of added I, whilst org. cyanides did not affect the thyroid gland. P. C. W.

Influence of thyro-active iodocasein on growth of chicks. J. E. Parker (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 234—236).—Addition of this substance (Reineke *et al.*, A., 1942, III, 593) to diet of chicks caused more rapid growth and earlier feathering as compared with controls. V. J. W.

Influence on growth of thyro-active iodocasein. M. Koger, E. P. Reineke, and C. W. Turner (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 236—237).—Oral or subcutaneous administration to immature mice caused increased growth. V. J. W.

Effect of temperature on hypercalcæmia produced by parathormone. T. J. C. Combes (*Rev. Soc. argent. Biol.*, 1942, **18**, 602—604).—At low temp. (5°) parathormone (5 units per kg.) produces a quicker and greater increase on dog's serum-Ca than at higher temp. (32°). J. T. L.

Effect of dinitrophenol on hypercalcæmia produced by parathormone. T. J. C. Combes (*Rev. Soc. argent. Biol.*, 1942, **18**, 605—607).—Dinitrophenol in four daily doses (8 mg. per kg.) delays and increases the effect of parathormone in dogs kept at a low temp. (5°). J. T. L.

Further use of dihydrotachysterol (A.T. 10). H. Blum (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 113—119).—The continued use of A.T. 10 in the treatment of 2 cases of hypothyroidism for 5 years with uniformly good results is reported. P. C. W.

Nature of hyaline changes in islands of Langerhans in diabetes mellitus. J. B. Arey (*Arch. Path.*, 1943, **36**, 32—38).—"Hyaline degeneration" of the islands of Langerhans is actually local deposi-

tion of amyloid. The amyloid is pericapillary in distribution, never intraepithelial. Amyloid deposits in the islands of Langerhans are more frequent in the older age groups. There is no qual. difference in the amyloid deposits in persons with or without diabetes. Amyloid deposits in the islands of Langerhans occur in 17% of non-diabetic and 72% of diabetic patients over 50 years of age. (4 photomicrographs.) C. J. C. B.

Effects of insulin on blood-lipins of man.—See A., 1943, III, 715.

Adrenaline and related substances in human arterial walls and kidneys. W. Raab (*Arch. Path.*, 1943, **35**, 836—845).—Adrenaline and related substances (adrenal catechols) were determined colorimetrically in human aortas, renal arteries, and kidneys. Infantile tissues contained the lowest concns. of chromogenic material, which consisted almost entirely of adrenaline or sympathin. With advancing age, increasing amounts of adrenaline-like substances appeared. Abnormally large concns. were found in the vessels and kidneys of cases with adrenal tumours. Sclerotic aortas more frequently contained high concns. of chromogenic material other than adrenaline. In arteriosclerotic kidneys, adrenaline or sympathin was more commonly encountered than in normal kidneys. In cases of marked albuminuria the renal concns. of the total chromogenic material or of adrenaline were high. C. J. C. B.

Production of ventricular tachycardia by adrenaline in *cyclo*propane anæsthesia.—See A., 1943, III, 762.

Prophylaxis and treatment of ventricular fibrillation induced by adranaline during *cyclo*propane anæsthesia.—See A., 1943, III, 763.

Case of adrenal carcinoma and its hormone diagnosis. A. F. Anderson, A. M. Hain, and J. Patterson (*J. Path. Bact.*, 1943, **55**, 341—349).—A case report. C. J. C. B.

Adrenal functions in opossum. F. A. Hartman, D. E. Smith, and L. A. Lewis (*Endocrinol.*, 1943, **32**, 340—344).—12 of 13 female opossums survived two-stage adrenalectomy more than a month. The animals received cortical extracts for 3 days after operation. Plasma-Na was only occasionally below normal, -K and blood-sugar levels remained normal. Adrenalectomised opossums survive for weeks or months if not subjected to stress. G. P.

Effect of adrenal cortical compounds on œdema formation of frog's hind limbs. C. Hyman and R. Chambers (*Endocrinol.*, 1943, **32**, 310—318).—The hind limbs of transected frogs were perfused with 0·25% gelatin in amphibian Ringer's solution. The rate of œdema formation was measured by the increase in wt. of the limbs; this was const. over a period of 4 hr. Whole adrenal cortical extracts, or cortical and related steroids, added to the perfusion fluid reduced the rate of œdema formation. A rapid method for the bio-assay of adrenal cortical hormone based on this principle is described permitting the detection of 0·000002 dog unit per ml. The effect of cortical extracts to reduce the rate of œdema formation does not parallel other physiological effects of cortin, *e.g.*, maintenance of life. G. P.

Effects in dog of infusion of adrenal cortical extract on exercise tolerance, blood constituents, and adrenal cortex. G. H. Ettinger and D. Jeffs (*Endocrinol.*, 1943, **32**, 351—355).—Intravenous infusion of whole adrenal extract into 5 dogs in doses of 20 dog units per kg. daily for 3 weeks produced no increase in exercise tolerance. 4 of the dogs showed great unwillingness to run in a treadmill during the period of infusions; this reluctance passed off after the infusions were stopped. There was no disturbance of blood-non-protein-N, serum-Na, -K, or blood-sugar levels. The adrenal cortex remained normal. G. P.

Ineffectiveness of adrenal cortical extracts in standardised hæmorrhagic shock. K. A. Huizenga, B. L. Brofman, and C. J. Wiggers (*J. Pharm. Exp. Ther.*, 1943, **78**, 139—153, and *Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 77).—Irreversible shock was produced in dogs by a 2-stage bleeding which reduced blood pressure to 30 mm. Hg. No beneficial or prophylactic results were observed from the injection of various adrenal cortical preps. which in some cases increased the severity of symptoms. (Cf. A., 1942, III, 801.) V. J. W.

Kinetics of phosphorolysis with muscle pulp in normal and adrenalectomised animals.—See A., 1943, III, 723.

Pathologic changes induced by overdosage with deoxycorticosterone. H. Selye and C. E. Hall (*Arch. Path.*, 1943, **36**, 19—31).—In the dog, monkey, and rat, there is no marked retention of water or œdema of tissue even if enormous doses are given (40 mg. per day for small dogs or monkeys and 10 mg. per day for rats) over several weeks or months. Simultaneous treatment with large doses of NaCl also failed to cause retention of water. Severe disturbances, which may progress to complete paralysis and death, result in all these species if NaCl is administered following pretreatment with such high doses of deoxycorticosterone acetate. Withdrawal of NaCl causes the motor disturbances to disappear in spite of continued administration of deoxycorticosterone acetate. Striking changes were observed in the kidneys. In the monkey and rat there is invagination of cells of the proximal tubules into the space between the visceral and the parietal layer of Bowman's capsule. This change was not observed in the dog, which showed sclerosis of individual glomeruli. Following the administration of NaCl to rats pretreated with deoxycorticosterone acetate, there is a greater rise in Cl concn. in the brain and blood than in animals not pretreated. (8 photomicrographs.) C. J. C. B.

Effects of prolactin and cortical hormones on body weight and food intake of adrenalectomised pigeons. R. A. Miller and O. Riddle (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 231—233).—Prolactin maintains appetite and body wt. for a few days, until adrenal insufficiency becomes severe. To maintain life, cortical extract or deoxycorticosterone is necessary. V. J. W.

Mitotic activity in anterior hypophysis of female rats of different age groups and at different periods of day. T. E. Hunt (*Endocrinol.*, 1943, **32**, 334—339).—The postovulatory mitotic activity in the anterior pituitary of mature female rats (cf. A., 1942, III, 507) was greatest in 50—80-day animals and gradually declined in older rats; over 300 days the no. of mitoses was as low as in young rats in diœstrus. Colchicine (3 mg. per kg.) given intraperitoneally 9 hr. before death tripled the no. of mitoses observed in the pituitary. There were fewer mitoses in the pituitary during the 9-hr. period after midnight than during other periods of the day. G. P.

Influence of eosinophil cells of hypophysis on kidney function. H. L. Barnett, A. M. Perley, and P. Heinbecker (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 114—116).—In a case of Cushing's syndrome, presumably involving degeneration of the basophil cells, renal blood flow and clearances were normal. Hypophysectomy depresses both. V. J. W.

Depression of metabolic rate by hypophysis of rats treated with thyroid. J. R. Membrives (*Rev. Soc. argent. Biol.*, 1942, **18**, 556—565). I. C.

Preparation of pituitary adrenotropic hormone. G. Sayers, A. White, and C. N. H. Long (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 199—200).—Extract of pig pituitary made by the method of Lyons (*Physiol. Abs.*, 1937, **22**, 304) is dissolved at pH 9 and ppts. formed at pH 8, 6·6, and 5·4 are successively removed. To each 100 c.c. of filtrate is added 7 c.c. of saturated $(NH_4)_2SO_4$; adrenotropic hormone is pptd. from this filtrate by addition of acetone up to 80%. Preps. were assayed by restitution or maintenance of adrenals in hypophysectomised rats. V. J. W.

Effect of adrenotropic hormone on cholesterol content of rat adrenal. G. Sayers, M. A. Sayers, A. White, and C. N. H. Long (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 200—202).—Single injections of hormone cause a fall in adrenal cholesterol 3 hr. later. Equal or larger doses, spread over 3 days, cause a rise. V. J. W.

Experiments concerning mechanism of pituitary colloid secretion.—See A., 1943, III, 708.

Biological assay of posterior pituitary solution. R. B. Smith, jun., and B. J. Vos, jun. (*J. Pharm. Exp. Ther.*, 1943, **78**, 72—78).—Procedure and calculations are given for a rapid and accurate assay of posterior pituitary extracts based on the fall in blood pressure produced in chickens. P. C. W.

Effect of autolysis on differential solubility of the principles of posterior lobe of pituitary. J. A. Vaichulis (*Endocrinol.*, 1943, **32**, 361—366).—Powders made of posterior lobes of ox pituitaries, incubated at 37° for 6—24 hr., showed no decrease, except in a few cases, of pressor or oxytocic principles. Extraction of glands, incubated at 37° for 12—24 hr., with hot ethanol or acetone–methanol (1 : 10) removed a large proportion of the oxytocic principle, while the pressor principle remained relatively unchanged. Incubation of U.S.P. standard posterior pituitary powder with fresh pituitary or the juice of fresh glands occasionally resulted in inactivation of 10—90% of both pressor and oxytocic principles. G. P.

Cytology of neurohypophysis in rats deprived of water and in rats deprived of water and injected pitressin. E. De Robertis and L. Primavesi (*Rev. Soc. argent. Biol.*, 1942, **18**, 363—366).—The lipoid droplets in the parenchymatous cells of the neurohypophysis were studied in adult male white rats. One group received for 1—4 days a dry diet (dried wheat and maize); a second group on this same diet was injected with 2—5 units of hypophamine tannate in oil, for 1—2 days; a third group on a normal diet received hypophamine tannate; a group on the dried food + free access to water served as control. No differences were observed in the lipoid inclusions of the neurohypophysis parenchymatous cells on these. J. T. L.

Diuretic action of pitressin after acute nephritis. R. Q. Pasqualini and A. C. Avogadro (*Rev. Soc. argent. Biol.*, 1942, **18**, 404—409).—The antidiuretic effect of pitressin was studied in 19 cases of acute nephritis; in 18 it was considerably reduced owing to a diminished reabsorption by the tubules. This alteration appears early in the disease and is one of the last to disappear in cases with a favourable outcome. J. T. L.

Antidiuretic effect of posterior pituitary extract in completely and partially hypophysectomised rats. G. Chen and E. M. K. Geiling

(*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 152—153).—In completely hypophysectomised rats, urine output is so low that any antidiuretic effect is impossible to observe. Rats after removal of the posterior pituitary only behave similarly to controls. V. J. W.

Effect of posterior pituitary extract on water uptake in frogs after hypophysectomy and infundibular lesions. G. Chen, F. K. Oldham, and E. M. K. Geiling (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 108—111).—After removal of anterior or posterior lobe of the pituitary, or extensive lesions at the base of the 3rd ventricle, frogs receiving pituitary injections take up less water than controls. V. J. W.

Destruction of pitocin by aminopeptidase in brewer's yeast and by hypertensinase extracts of kidney. H. Croxatto, R. Croxatto, and J. Alliende (*Rev. Soc. argent. Biol.*, 1942, **18**, 441—453).—Pitocin was incubated at 37° and neutral pH with aminopeptidase extracted from brewer's yeast or with hypertensinase extracted from renal tissue; cysteine or glutathione was added as activator; pitocin activity was rapidly destroyed. KCN, ascorbic acid, and cysteine did not act as activators. Addition of KIO_3 inhibited activation by cysteine and glutathione. Pepsin at pH 3 had no effect on pitocin. Renin, free from hypertensinase at pH 7, had no effect on the oxytocic activity of pitocin with or without cysteine. It is suggested that the polypeptide constituting pitocin has a terminal NH_2 function. J. T. L.

Response of human pregnant uterus to pitocin tannate in oil. E. W. Page (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 195—197).—Dose of pitocin tannate in oil is 3—4 times that of pitocin for an equal uterine response. The latent period is twice, and duration of action 3—4 times, as long. V. J. W.

Chemistry and pharmacology of melanophore hormone of pituitary gland. G. Chen and E. M. K. Geiling (*J. Pharm. Exp. Ther.*, 1943, **78**, 222—237).—The hormone shows max. potentiation (A., 1942, III, 599) after boiling for 3 min. at pH 11 or for 2 hr. at pH 9. In 0·1N-NaOH it is destroyed slowly at 25° and rapidly at increased temp. or alkalinity. Potentiated hormone gives a more prolonged response than unpotentiated, and the straight lines relating log dose to magnitude of response make different angles with the horizontal. For both there is a straight line relation between log dose and log total duration of response (expansion + contraction), but these lines too have a different slope. V. J. W.

XII.—REPRODUCTION.

Influence of inbreeding and other factors on litter size in Chester white swine. H. O. Hetzer, W. V. Lambert, and J. H. Zeller (*U.S. Dept. Agric.*, 1940, *Circ.* 570, 10 pp.).—Inbreeding and yearly differences in feeding and management affected litter size at 28 and 70 days of age. Litter size was max. for dams 3½—5½ years old. A. W. M.

Copper and acceleration of early cleavage of *Arbacia* eggs. A. J. Finkel, W. C. Allee, and H. R. Garner (*J. Cell. Comp. Physiol.*, 1942, **20**, 179—187).—Cleavage was accelerated by presence of $CuCl_2$ in concn. of 10^{-13}—10^{-7}M. Dried eggs contain 5 μg. of Cu per g., about 8 times that present in the dried solids of sea-water. V. J. W.

Hyaluronidase in fertilisation of mammalian ova. E. Fekete and F. Duran-Reynals (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 119—121).—Extracts of rattlesnake venom, leeches, or mouse testis (all rich in hyaluronidase) have a powerful dispersing action *in vitro* on the follicle cells surounding the ovum of the mouse after its removal from the oviduct. V. J. W.

Relation between ovarian function and avidin content in oviduct of hen. R. M. Fraps, R. Hertz, and W. H. Sebrell (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 140—142).—Assays (Hertz, A., 1943, III, 754) show that avidin is present only in the albumin-secreting part of the oviduct. It is absent in the isthmus and uterus, and is not found at all in non-laying hens. The duct below the egg contains more than the part above. V. J. W.

Effects of advancing age on structure of ovaries of female rats.—See A., 1943, III, 708.

Induction of avidin formation in avian oviduct by stilbœstrol plus progesterone. R. Hertz, R. M. Fraps, and W. H. Sebrell (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 142—144).—Daily injections of 0·5—1 mg. of stilbœstrol with 0·2—0·4 mg. of progesterone caused avidin production in all of 26 immature and 6 non-laying hens. Stilbœstrol alone was effective in 3 of 61 immature and 4 of 29 non-laying hens. Progesterone alone and controls gave all negative results. V. J. W.

Observations on living eggs of mammals. W. J. Hamilton (*Proc. Roy. Soc. Med.*, 1942, **35**, 643—644).—The vitellus of the unfertilised egg completely fills the cavity formed by the zona pellucida, a homogeneous, transparent capsule. After fertilisation the vitellus shrinks, and in the perivitelline space so formed the vitellus and polar bodies are free to move. The appearance of the living vitellus is described. At fertilisation the head, middle, and tail of the sperm enter the ovum but soon the tail is no longer visible in the vitellus, and at the first division 2 blastomeres are produced; these do not divide synchronously, so that there is a 3- and then a 4-cell stage. Asynchronous division continues. In most mammals the egg at the morula stage reaches the uterus on the 4th day, where it soon absorbs fluid and becomes a blastocyst. W. J. G.

Partial ovariectomy in bitches. N. Aronas and R. Sammartino (*Rev. Soc. argent. Biol.*, 1942, **18**, 257—260).—Removal of one ovary and most of the other was followed by atrophy of the remaining fragment in one animal and hypertrophy in 4 others. This hypertrophy did not attain the size of a normal ovary; it was due to increase in size of pre-existing follicles and not to increase of ovarian tissue. J. T. L.

Pleural effusion associated with ovarian fibroma (Meigs' syndrome). F. I. Harris and M. A. Meyer (*Surgery*, 1941, **9**, 87—93).—A case is reported. There was no recurrence of pleural fluid following surgical removal of the fibroma. P. C. W.

Endocrine system of snakes. J. R. do Valle and P. R. de Souza (*Rev. Brasil. Biol.*, 1943, **2**, 81—88).—In *Dryophylax* and *Tomodon* structures like the corpora lutea of mammalians occur in pregnant animals, their no. being about the same as that of the embryos in the oviducts (8—24). Data and wts. of the hypophysis, gonads, thyroid, thymus, and adrenals are given. I. C.

Mechanism of glandular proliferation in endometrium of otter (*Myocastor-Myopotamus-coypu*). J. B. Molina-Ahumada and O. Orías (*Rev. Soc. argent. Biol.*, 1942, **18**, 321—325).—In the otter both glandular proliferation in the endometrium and expansion of the uterine cavity occur at the expense of compact cellular nests proliferating towards one side of an already constituted vesicular gland, and derived from its own epithelium, or similarly derived from the epithelium lining the uterine cavity. Progressively they become hollow, to form new vesicular glands grouped near the mother gland. J. T. L.

Motility of human uterus. R. A. Pecorone (*Rev. Soc. argent. Biol.*, 1942, **18**, 472—480).—Uterine motility of women was examined by introducing a rubber balloon in the uterine cavity and registering variations in pressure. In all women with a normal uterus and a regular cycle a high tonus was found during the first half of the menstrual cycle with contractions of small amplitude and a rhythm of 3—5 per min. Pituitary extract (10 units) produced a weak response in 7 of 8 cases. In the second half of the cycle a low tonus was found with contractions of greater amplitude lasting ½—2 min. with intervals of 2—3 min. The response to pituitary extract was more marked. In cases of uterine hypoplasia and fibroma uterine motility was decreased. J. T. L.

Termination of early pregnancy by artificial fever. J. A. Cameron (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 76).—Raising of body temp. of rabbits to 109° F. by immersion in a bath at 72—80 hr. after mating caused such matings to be sterile. V. J. W.

Synthetic œstrogens of diphenylethane series.—See A., 1943, II, 324.

Rôle of liver in metabolism of œstrogens. E. Fels and F. F. de Eandi (*Rev. Soc. argent. Biol.*, 1942, **18**, 595—601).—Castrated rats were injected with 0·25 and 0·5 μg. of œstradiol benzoate daily. The vaginal cycle was followed for prolonged periods and then ½—⅔ of the liver was removed. % of œstrus days increased from 21·1 to 40·4 with the larger and from 2·5 to 33·0 with the smaller dose. This is attributed to a decrease in the inactivation of injected œstrogen due to the partial hepatectomy. J. T. L.

Excretion of exogenous and endogenous œstrogens in bile of dogs and man. A. Cantarow, A. E. Rakoff, K. E. Paschkis, L. P. Hansen, and A. A. Walkling (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 256—257).—Human bile at the end of pregnancy and post partum contains very much more œstrogen than does the blood. In dogs, administration of gonadotropic hormones caused appearance of œstrogens in the bile from a fistula. Introduction of α-œstradiol into the dog's jejunum or spleen pulp caused excretion of œstrogen in bile and not in urine. V. J. W.

Excretion of œstrogen in bile. A. Cantarow, A. E. Rakoff, K. E. Paschkis, L. P. Hansen, and A. A. Walkling (*Endocrinol.*, 1943, **32**, 368—369).—Contrary to Heller and Heller (A., 1943, III, 563) both exogenous and endogenous œstrogens are excreted in the bile of normal dogs and of the human female. G. P.

Quantitative study of urinary excretion of hypophyseal gonadotropin, œstrogen, and neutral 17-ketosteroids of normal men.—See A., 1943, III, 746.

Comparative effects of œstrogen, testosterone, and progesterone on benign mammary tumours of the rat.—See A., 1943, III, 749.

New series of synthetic œstrogenic substances. E. W. Blanchard, A. H. Stuart, and R. C. Tallman (*Endocrinol.*, 1943, **32**, 307—309).—New series of œstrogens derived from αγ-di-(*p*-hydroxyphenyl)-propane, having the basic formula *p*-OH·C_6H_4·CHR·CHR′·CHR″·C_6H_4·OH-*p*, have been examined. βδ-Di-(*p*-hydroxyphenyl)-γ-ethylhexane, an isomeride of compound

no. 118 (118B; cf. A., 1943, III, 30), produced œstrus in rats in a single dose of 0·8 μg. It is 2·5 times as active as œstrone. G. P.

Dietary fatty livers in mice and sensitivity to exogenous œstrogen. C. M. Szego and R. H. Barnes (*Endocrinol.*, 1943, **32**, 367—368).—The sensitivity of ovariectomised mice with fatty livers, produced by a high-fat low-protein diet, to administered œstrone was the same up to the 4th week of the experiment as that of the ovariectomised animals kept on stock diet. After the 4th week the mice with fatty livers showed decreased sensitivity, which appeared to be due to the poorer nutritional state of these mice rather than to the fatty livers. G. P.

Urinary steroids from breast cancer patients. B. R. Hill and B. B. Longwell (*Endocrinol.*, 1943, **32**, 319—326).—Androsterone, 3-α-hydroxyæticholan-17-one, impure pregnanediol, cholesterol, and a hydrocarbon of low m.p. were isolated from the urine of post-menopausal women having cancer of the breast or metastatic growths of the same origin. Comparison of the results with findings of other workers does not bear out the contention that these steroids have a relationship to cancer of the breast. G. P.

Sex hormone treatment of vulvovaginitis and dystrophic cervicitis. P. Gaifami (*Schweiz. med. Wschr.*, 1942, **72**, 1207—1209).—Excellent results with follicle hormone treatment were obtained in cases of infantile and senile vulvovaginitis and dystrophic cervicitis. A. S.

Overt and masked manifestations of folliculoid hormones. E. Clarke and H. Selye (*J. Pharm. Exp. Ther.*, 1943, **78**, 187—196).—25 steroids were given to immature spayed rats. Their effects on vaginal œstrus, mammary stimulation, uterine enlargement, and absence of castration cells in the pituitary are all correlated, the descending order of potency being œstrogenic, androgenic, luteoid, corticoid, and anæsthetic steroids. V. J. W.

[Results of resection of] superior hypogastric plexus in gynæcology. E. Henriksen (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 1—14).—Resection of the superior hypogastric plexus relieves the pain in many lesions of the pelvis and gynæcological conditions. Temporary menstrual disturbances may be produced but there is no interference with libido, parturition, or motor control of bladder and rectum. P. C. W.

Hormonal requirements for pregnancy and mammary development in hypophysectomised rats. W. R. Lyons, M. E. Simpson, and H. M. Evans (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 134—136).—Combined lactogenic hormone and œstrone, in doses previously found able to induce mammary development (Cutuly, A., 1942, III, 309, 384), brought about successful implantation in such rats but only half the implantations developed normally to mid-pregnancy when the animals were killed. Neither hormone alone was effective. V. J. W.

Initiation and maintenance of lactation in dairy heifers by hormone administration. R. P. Reece (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 145—146).—Two non-pregnant heifers were brought to full milk production by injections of diethylstilbœstrol, increasing to 20 mg. twice weekly, together with stimulation by a suckling calf. V. J. W.

Vitamin-*E* in lactogenesis. E. Bottiroli (*Rev. Soc. argent. Biol.*, 1942, **18**, 461—468).—Pregnant rats on a diet of table scraps, bread, and milk were given 10 mg. daily of tocopherol for the last 8—14 days of pregnancy. The wt. of the offspring at birth was greater than that of suitable controls. The administration of tocopherol was continued during the period of lactation. The rate of increase in wt. was greater than in controls nursed by mothers not given tocopherol. The first œstrus post-partum occurred in normal rats within 48 hr. of birth, in tocopherol-fed rats 3½—5½ days after birth. J. T. L.

Milk yields and milking rates of the individual quarters of the dairy-cow udder. C. A. Matthews, W. W. Swett, and R. R. Graves (*U.S. Dept. Agric. Tech. Bull.*, 1941, No. 827, 32 pp.).—In 94 cows the average relative milk yield in terms of % of total yield of entire udder was 29·2 for left rear, 20·2 for left front, 21·6 for right front, and 29·0% for right rear quarter. 21·3% of the left and 28·7% of the right front quarters gave >25% of total yield. 26·6% of the left and 25·5% of the right rear quarters gave >25% of total yield. Milk yields of opposite quarters were frequently not alike. A. A. M.

Secretion of radioactive sodium in human milk. W. T. Pommerenke and P. F. Hahn (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 223—224).—Radioactive Na, given by mouth, appears in the milk in 20 min., reaches a max. in 2 hr., and is still present at 96 hr. V. J. W.

Effect on œstrus of drugs administered daily in therapeutic doses throughout life-cycle of rats. Sequence of œstrus cycle with reference to age. L. L. Boughton and O. O. Stoland (*J. Amer. Pharm. Assoc.*, 1943, **32**, 187—191).—Prolonged medication (dosage therapeutically equiv. to that in man) with pyramidone, antipyrine, aspirin, Na phenobarbital, Na alurate, allonal, or caffeine has no effect on the œstrous cycle of rats. The sequence of 4-day cycles is regular up to 50 weeks of age, but subsequently becomes increasingly irregular. The proportion of rats failing to show heat by the smear method was 0, 7, 21, and 44% when examined at ages below 25, 25—60, 50—75, and above 75 weeks, respectively; the corresponding proportion of cycles of 4-day duration was 84, 70, 44, and 29%. F. O. H.

Increase in gonadotrophins after ligation of ovaries. J. de Larrechea Muñoz and A. J. Coll (*Rev. Soc. argent. Biol.*, 1942, **18**, 495—501).—The ovaries were tied off in rats; after 3 months those having showed prolonged œstrus were killed and the anterior pituitary lobes used to inject hyoophysectomised rats of 100 g. wt. (½ lobe per rat daily in two doses for 14 days). These animals showed a greater increase in wt. of the genital tract than hypophysectomised controls which had received the same amount of anterior lobe of normal rats. The wt. of the ovaries was 29±6 and 15±1 g. respectively; that of the uterus 144±45 and 60±4 g. Microscopically the ovaries, uterus, and vagina in the first group showed marked activity; the genital tract of the second group was quiescent. It is deduced that there was greater gonadotrophin activity in the anterior lobe of rats with ovaries tied off. J. T. L.

Progonadotropic and aspecific effects of serum of horse immunised with extracts of sheep pituitary glands. H. N. Marvin and R. K. Meyer (*Endocrinol.*, 1943, **32**, 271—278).—The serum of a mare pony, injected with increasing doses of gonadotropic hormone or sheep pituitary, 34—95 days after the beginning of the injections augmented, and later inhibited, the action of the same hormone when tested in immature female rats. The serum inhibited at all times during immunisation the action of the gonadotropic hormone of rat, ox, and human pituitaries, of human pregnancy urine, and of the serum of pregnant mares. It did not inhibit or augment the effect of the gonadotropic hormone of horse, hog, or chicken pituitaries. G. P.

Seasonal variations of gonadotropic action of hypophysis of *Bufo arenarum*. A. Novelli (*Rev. Soc. argent. Biol.*, 1942, **18**, 238—243).—The gonadotropic action of equal wts. of the anterior hypophysis of *Bufo* is greater in females than in males. A greater action was found during July and September in both sexes. The lowest activity is in August for both sexes, and also in October for females and December for males. I. C.

Biological characteristics of equine gonadotropic hormone. C. F. Fluhmann (*West. J. Surg. Obstet. Gynec.*, 1940, **48**, 63—72).—A review with preliminary report of the results of treatment in 15 cases of amenorrhœa or sterility. Clinical results were not encouraging. P. C. W.

Duality of pituitary gonadotropins. Effects of follicle-stimulating and interstitial cell-stimulating hormone mixture on hypophysectomised rats. H. Fraenkel-Conrat, C. H. Li, M. E. Simpson, and H. M. Evans (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 723—726).—Injection of mixed purified hormones from the sheep into such rats was follicle-stimulating in females and interstitial cell-stimulating in males, the latter effect being shown by testis and prostate growth. V. J. W.

Purification of equine gonadotropin and its effect on appearance of antigonadotropic substances in human sera. J. H. Leathem and A. R. Abarbanel (*J. Clin. Endocrinol.*, 1943, **3**, 206—211).—Female patients with amenorrhœa were injected with 2000—4000 i.u. of equine gonadotropin during the 1st 9—12 days of 1—4 months. 2 samples of gonadotropin were used, one being 2½ times as pure as the other on the basis of their N content (0·0016 mg. and 0·004 mg. N per 20 i.u.). 6 of 7 patients given the less pure sample developed antigonadotropin in the blood generally 9—10 weeks after the 1st injection, which persisted for 3 months after stopping treatment. With the purer sample only one of 12 women developed antigonadotropin in the blood. No antigonadotropin was found in the blood of 38 amenorrhœic women before any treatment was instituted. P. C. W.

Pituitary changes following *X*-irradiation of adult rat's testis. C. A. Joël (*Schweiz. med. Wschr.*, 1942, **72**, 795—796).—The single radiation doses were 60—2400 r. Histological changes to the type of "castration hypophysis" were produced with doses of 1050 r. and more. A. S.

Effects of thyrotropic hormone on pregnant rat. C. E. Tobin (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 592—595).—Pregnant rats which received "Antuitrin-*T*" from 10th to 16th day of pregnancy showed high % of dead embryos, thyroid stimulation, and luteinised follicles. Thyroxine had no such effects. V. J. W.

Alteration of crystalline androsterone and dehydro*iso*androsterone by alcohol as a vehicle. W. F. Starkey, R. C. Grauer, and E. Saier (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 227—230).—6-day-old solutions of these androgens in alcohol are more potent when applied to the chick's comb than oily or fresh alcoholic solutions. If they are evaporated and re-dissolved in oil their potency is less than that of fresh oily solutions. V. J. W.

Inactivation of endogenous androgens by liver in rabbits. B. Krichesky, J. A. Benjamin, and C. Slater (*Endocrinol.*, 1943, **32**, 345—350).—The testes of mature male rabbits were sutured to the jejunum. After the establishment of vascular anastomosis with the mesenteric circulation the spermatic artery and vein were

severed. Prostatic tissue transplanted into the anterior chamber of the eyes became atrophic after the interruption of the normal circulation of the testes; however, a later vascular anastomosis between the testes and abdominal wall stimulated the growth of the prostatic tissue in the eye and restored its normal histological structure. Microscopical examination showed the persistence of interstitial cells in the transplanted testes, although the seminiferous tubules were atrophic and there was no spermatogenesis. G. P.

Estimation of comb size on live fowl. D. G. Jones and W. F. Lamoreux (*Endocrinol.*, 1943, **32**, 356—360).—Comparisons of different linear measurements of combs of White Leghorn cockerels show that the product of the length (L) and height (H) of comb gives a higher coeff. of correlation with comb wt. than does measurement of L or H alone, or $L + H$, or $\sqrt{(L \times H)}$. The use of $L \times H$ is recommended for the measurement of comb size when the wt. is not available. G. P.

XIII.—DIGESTIVE SYSTEM.

Mechanism of swallowing. V. E. Negus (*Proc. Roy. Soc. Med.*, 1942, **36**, 85—92). W. J. G.

Acute ulceration of œsophagus with associated intranuclear inclusion bodies. J. Pearce and A. Dagradi (*Arch. Path.*, 1943, **35**, 889—899).—4 cases of œsophageal ulceration showing intranuclear inclusion bodies resembling those seen in viral infections are described. No similar lesions were found in review of the earlier autopsy material, representing 4800 necropsies and 38 cases of œsophageal ulcers. (8 photomicrographs). C. J. C. B.

Medical treatment of gastro-intestinal ulcers and complications. E. Meulengracht (*Schweiz. med. Wschr.*, 1942, **72**, 1174—1176).—A review. A. S.

Prolonged action of histamine [in beeswax on gastric secretion]. C. F. Code and R. L. Varco (*Amer. J. Physiol.*, 1942, **137**, 225—233).—The vol., acidity, and duration of secretion in gastric pouches of dogs following histamine injection in a beeswax mixture were used as quant. measures of intensity and period of action of the histamine. In response to 15—60 mg. in beeswax the pouches secreted gastric juice for 24 hr. or more. Vol. was 680—1570 c.c., and HCl concn. 0·49—0·54%. Similar doses of histamine in saline produced $\frac{1}{8}$—$\frac{1}{16}$ the secretion, the effect lasting some 4 hr. Beeswax alone is inert. M. W. G.

Comparative effects of gastroenterostomy and pedicle jejunal graft on pH of gastric mucosa. W. D. Andrus, J. W. Lord, jun., and P. Stefko (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 99—100).—In 5 out of 6 dogs, gastrojejunostomy caused no change in the fall of pH normally produced by histamine. When the 6 cm. of jejunum containing the stoma was grafted into the stomach wall, the cut ends of the jejunum being anastomosed, histamine caused a rise of pH in all 6. V. J. W.

Comparative effects of pedicle grafts from different levels of intestinal tract on pH of gastric mucosa. J. W. Lord, jun., W. D. Andrus, and P. Stefko (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 100).—Grafts from jejunum (see above) are the most effective and from duodenum raher less so. Grafts from ileum and colon have no action. V. J. W.

Cytogenesis of exo- and endocrine pancreas in chick embryo. M. F. Villamil (*Rev. Soc. argent. Biol.*, 1942, **18**, 416—424).—The pancreatic tissue of chick embryos was stained by a method selective for the islet cells (Heidenhain Azan). On the 6th day of incubation pancreatic cells were seen in the distal end of the pancreatic area, forming a solid mass of cords. The lumen of the ducts may originate by degeneration of the inner cells in the cords. On the 8th day acinar cells differentiate by appearance of zymogen granules and nucleoli. At the same time dark and light islet cells were also formed from the primitive pancreatic cells. Light cells developed in small clumps scattered throughout the whole pancreatic area; soon they were isolated by a basal membrane and mitosis occurred in the differentiated cells; on the 12th day many cells degenerated, others showed the appearance of B granules. Dark islet cells developed only in the distal end of the pancreas; A granules appeared on the 8th day and D granules on the 14th. A possible correlation between the appearance of B granules and glycogen in the liver at the same stage (12th day) is suggested. J. T. L.

Motility of small intestine in sprue. F. J. Ingelfinger and R. E. Moss (*J. clin. Invest.*, 1943, **22**, 345—351).—The L waves in the gut in 2 cases of sprue were only intermittently present and the S waves were of small amplitude. Treatment with vitamin-B complex produced little change. Injections of acetyl-β-methylcholine stimulated intestinal motility but prostigmine was without effect. In 1 patient, posterior-pituitary solution, adrenal-cortical extract, and deoxycorticosterone produced no changes. In sprue the nervous apparatus of the small intestine may fail to liberate active acetylcholine. C. J. C. B.

Effect of various fruit juices on movement of the intestinal villi. G. Ludány and J. Kovács (*Magyar Orv. Arch.*, 1940, **41**, 465—469).—The juices of pears, plums, peaches, oranges, and grapes increased movement of the villi, but had no effect on the local blood vessels or on muscle tonus. Even when diluted to 1 : 100, raw or boiled tomato juice caused increased activity of the villi, and hyperæmia. Owing to contained histamine-like substances low concns. of fermenting grape-juice increase activity of villi, contract capillary vessels, and increase tonus of muscles. These effects are due to the CO_2 content. A. A. M.

Magnesium and absorption of sugar from the intestine. G. Ludány and J. Sütö-Nagy (*Magyar Orv. Arch.*, 1940, **41**, 461—464).—Intravenous injection of Mg gluconate at the rate of 5 mg. of Mg per kg. decreases absorption of glucose from the intestine by 15·4—48%, but does not influence that of xylose. Serum-inorg. P may be increased up to 100%. Na gluconate shows no such effect. Mg may withdraw P from the tissues. This lack of tissue-P reduces glucose absorption, but xylose absorption, which is not connected with phosphorylation, is unaffected. A. A. M.

Metabolic studies in patients with gastro-intestinal cancer. Fat metabolism, a method of study. P. E. Rekers, J. C. Abels, and C. P. Rhoads (*J. clin. Invest.*, 1943, **22**, 243—248).—Van Slyke's gasometric method for blood-lipins was adapted to determine fæcal fat and used to measure the absorption of fat from the gastro-intestinal tract in 2 normal individuals, 1 patient with gastric carcinoma, 1 patient who had undergone total gastrectomy, 1 patient with generalised atrophic gastritis, and 2 patients with hepatic cirrhosis. An abnormal absorption of fat was demonstrated only in the gastrectomised patient and in the patient with atrophic gastritis. C. J. C. B.

Salt-free diets in treatment of acute diarrhœa. H. Salomon (*Schweiz. med. Wschr.*, 1942, **72**, 1176—1177). A. S.

Ileostomy for chronic ulcerative colitis (end results and complications in 185 cases). J. A. Bargen, W. W. Lindahl, F. S. Ashburn, and J. de J. Pemberton (*Ann. int. Med.*, 1943, **18**, 43—56).—55 patients lived less than 6 months after the operation. The mortality rate of patients who were operated during an acute exacerbation was 3 times as great as amongst those without acute symptoms or those operated because of complications or intractability of the disease. Only 79 of the total no. of patients derived real benefit from ileostomy. 17 patients underwent further operations. 51 out of the 130 patients had severe and frequent recurrences. Prolapse of a part of the ileum occurred in 27 patients, abscesses and fistulæ in 19, intestinal obstruction in 13, chronic infectious arthritis in 16, severe stricture of rectum, colon, or at the ileac stoma in 10, polyposis of the colon in 13, perirectal infection in 9, urinary complications in 16, carcinoma in 6, cutaneous lesions in 5, hæmorrhage in 9 patients. A partial or total colectomy was performed in 30 patients, ileocolostomy in 20. A. S.

XIV.—LIVER AND BILE.

Distribution of acid-soluble phosphorus in the livers of fed and fasting rats. S. Rapoport, E. Leva, and G. M. Guest (*J. Biol. Chem.*, 1943, **149**, 57—63; cf. A., 1942, III, 818).—Inorg. P increases in the livers of rats fasted for 24 hr., whilst easily hydrolysable P and glycerophosphate decrease. Total acid-sol. P falls slowly at first, and more rapidly after 2—4 days. R. L. E.

Distribution of acid-soluble phosphorus in livers of fasted rats fed on glucose, casein, olive oil, or a mixed diet. S. Rapoport, E. Leva, and G. M. Guest (*J. Biol. Chem.*, 1943, **149**, 65—69; cf. preceding abstract).—Glucose fed to fasted rats restored to normal levels the inorg., easily hydrolysable, and glycerophosphate-P in the liver. Casein, olive oil, and a mixed diet were ineffective. The total acid-sol. P in the livers remained at fasting level in all groups. R. L. E.

Liver-glycogen and -lipins in fasted and glucose-fed rats. C. R. Treadwell, H. C. Tidwell, and B. G. Grafa, jun. (*J. Biol. Chem.*, 1943, **149**, 209—215).—Livers of rats receiving a diet high in fat and low in protein and lipotropic factors contain more lipins and glycogen (which is independent of the amount of fat in the liver) than those of animals on a diet high in fat and protein. The animals with fatty livers exhibit an increased rate of glycogenolysis during fasting and a decreased glycogenesis following a standard dose of glucose. Fasting for 36 hr. produces no change in the total liver-lipins. H. G. R.

Glycogen content of the liver of B_1-avitaminotic rats.—See A., 1943, III, 664.

Effect of simultaneous mineral and choline deficiencies on liver-fat. P. Handler (*J. Biol. Chem.*, 1943, **149**, 291—293).—Young rats on a low-protein, high-fat diet deficient in choline and minerals grow slowly for 2 weeks when the livers are moderately fatty, then decline in wt. with liver-fat returning to normal. Choline-deficient animals given adequate amounts of minerals, but with food consumption restricted to that of the mineral-deficient animals, grow slowly and develop markedly fatty livers, indicating that choline deficiency

produces fatty livers only when all other dietary factors are present in sufficient concn. to permit at least slow growth. H. G. R.

Action of bromo-substituted fatty acids on liver-fat.—See A., 1943, III, 670.

Identity of a carbonyl compound isolated from ox liver. A. L. Lehninger (*J. Biol. Chem.*, 1943, **149**, 43—45).—The 2 : 4-dinitrophenylosazone, $C_{29}H_{20}O_{12}N_8$, isolated from ox liver by Cook and Harrison (A., 1936, 1286) was further purified (decomp. 255—257°) and found to be identical with glucose-2 : 4-dinitrophenylosazone. R. L. E.

Action of antitoxic liver extracts on hepatic glutathione content in intoxication experiments. G. G. Villela (*Anais Assoc. Quím. Brasil*, 1943, **2**, 37—41).—Intoxication of camondongas by CCl_4, neoarsenobenzene, neoarsolan, and oxyarsolan lowers the total liver-glutathione. The use of antitoxic liver extracts protects the animal and gives a normal glutathione content. F. R. G.

Treatment of pernicious anæmia with experimental proteolysed liver preparation.—See A., 1943, III, 623.

Dosage of liver extract in treatment of cord lesions associated with pernicious anæmia.—See A., 1943, III, 636.

Allergy to injectable liver extracts; clinical and immunological observations.—See A., 1943, III, 623.

Senile changes in liver of mouse and cat, with special reference to similarity of nuclear alterations.—See A., 1943, III, 620.

Electrophoretic analyses of serum-proteins in diseases of liver.—See A., 1943, III, 627.

Jaundice following administration of human blood products.—See A., 1943, III, 623.

Vitamin-*A* concentration in rat liver during recovery from carbon tetrachloride cirrhosis. Vitamin-*A* content and toxicity of bear and seal liver.—See A., 1943, III, 663.

Portal-systemic collateral veins in guinea-pig with schistosomal cirrhosis of the liver. C. Krakower, W. A. Hoffman, and J. H. Axtmayer (*Arch. Path.*, 1943, **36**, 39—50).—The portal-systemic collateral veins which develop in the guinea-pig experimentally infected with *Schistosoma mansoni* are described. These anastomoses serve as convenient pathways through which the parasites, their pigment and ova, can escape from the portal venous system. C. J. C. B.

Hepatic vascular occlusion following lethal doses of salmine sulphate. W. B. Shelley and R. Tarail (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 215—216).—After lethal doses of salmine sulphate, perfusion through the livers of rats and guinea-pigs is slowed in proportion to the dose given. The effect is more marked in the rat, in which agglutination occurs, than in the guinea-pig, in which only plasma-protein is pptd. V. J. W.

Hepatogenous osteodystrophy. G. Mayor (*Schweiz. med. Wschr.*, 1942, **72**, 1042—1043).—Experimental liver damage was produced in rats and dogs, using tetrachloroethane, atophanyl, or blocking of the portal vein by an injection of elastic fibres into the splenic vein. Rarefaction and secondary repair processes were seen in the bones. Blood-phosphatase was increased 3—4 times. A. S.

Choleretic effect of chloroacetylcholine. J. K. Finnegan and G. A. Emerson (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 95—97).—Injection of 20 mg. per kg. of chloroacetylcholine causes a 350% increase in flow of bile from the dog's liver after a latent period of about 1 hr. The cystic duct was clamped throughout. V. J. W.

Influence of ingested bile on increase in blood-phosphatase produced by biliary obstruction. A. P. Cinelli (*Rev. Soc. argent. Biol.*, 1942, **18**, 53—57).—In 6 dogs the common bile duct was ligated; three received by stomach tube 50—80 c.c. of bile daily. Blood-phosphatase rose in all the animals in a similar manner. J. T. L.

XV.—KIDNEY AND URINE.

Aglomerular kidney in two *Lofobranchia*. M. S. H. Di Fiore (*Rev. Soc. argent. Biol.*, 1942, **18**, 590—594).—The 7 species of *Lofobranchia* found in Argentina belong to 5 genera of Syngnathidæ; no Salenostonmidæ have been found. The kidneys of 2 species, *Hippocampus punctulatus* and *Leptotonus blaenvillanus*, were studied by section. Secreting and excreting tubules are described, but no glomeruli were observed. J. T. L.

Permeability of the tubular epithelium of the kidney.—See A., 1943, III, 657.

Action of steroid hormones on mouse kidney. P. Feyel (*Compt. rend.*, 1942, **214**, 718—720).—An increase in both fresh and dry wt. of the kidney occurs following injection of testosterone propionate in males. Œstradiol benzoate augments this wt. increase, but causes none when injected alone. Testosterone propionate produces a greater increase in wt. in females than in males, and œstradiol benzoate alone an increase equal to that produced by both combined. Cholesterol, progesterone, and deoxycorticosterone acetate do not affect the kidney wt. P. G. M.

Tubular resorption of chloride in hypertensive and normal individuals. E. B. Farnsworth and M. H. Barker (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 74—75).—10 patients with essential hypertension and no renal disease were compared with 12 controls, by determination of urine : plasma ratios of inulin and Cl′. Less Cl′ was absorbed by the tubules in the patients than in the controls. V. J. W.

Pituitrin concentration test of renal function.—See A., 1943, III, 647.

Toxæmias of pregnancy and inulin–diodrast clearance tests. D. H. Kariher and R. H. George (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 245—247).—Eclampsia is the only toxæmia in which there is sometimes a decrease in inulin or diodrast clearance. Filtration fraction is normal in all forms of toxæmia. V. J. W.

Effect of repeated pregnancies on rabbits with renal hypertension.—See A., 1943, III, 631.

Action of deoxycorticosterone on renal chloride clearance. C. Piantoni and O. Orías (*Rev. Soc. argent. Biol.*, 1942, **18**, 326—332).—Renal plasma-Cl′ clearance was determined in rabbits. Intramuscular injection of 5 mg. of deoxycorticosterone decreased Cl′ clearance in 60 min. from 5·06±0·41 c.c. to 3·24±0·52 c.c. The increase in plasma clearance produced by injection of isotonic K_2HPO_4 was annulled by deoxycorticosterone. Deoxycorticosterone diminished total glomerular filtration by 38%, which may explain the decreased Cl′ elimination; tubular reabsorption remained unchanged. J. T. L.

Reabsorption of glucose by tubules in renal diabetes. M. R. Castex (*Rev. Soc. argent. Biol.*, 1942, **18**, 351—357).—In a case of renal diabetes glomerular filtration was determined by inulin clearance. The patient was studied when a normal blood-sugar was obtained and after ingestion of 60 and 120 g. of glucose. Glucose reabsorbed was always less than the amount filtered by the glomeruli. When sugar was given the amount reabsorbed increased up to a max. of 200 mg. per min.; the ratio of glucose altered to glucose reabsorbed increased with the blood-sugar concn. J. T. L.

Changes in lipin content of serum and of liver following bacterial renal ablation or ureteral ligation. A. W. Winkler, S. H. Durlacher, H. E. Hoff, and E. B. Man (*J. Exp. Med.*, 1943, **77**, 473—486).—Bilateral nephrectomy or ureteral ligation in the dog or rhesus monkey produces a marked progressive increase in total serum-fatty acids, -free and -esterified cholesterol, -phospholipin, and free serum-fat. These increases are not inhibited by administration of glucose. A marked increase in phospholipin, and a smaller rise in cholesterol content of the liver, accompany the increase in serum-lipins. No such changes were observed following unilateral nephrectomy or fasting. A. S.

Total and fractional blood-lipin levels in nephrotic syndrome. E. M. Thomas (*Amer. J. Dis. Child.*, 1943, **65**, 770—775).—The case described was followed over 9 months. The total lipin was 6·6 g.-% and the cholesterol 2·0 g.-%. There were considerable fluctuations in all vals. The periods of elevation of lipin content paralleled periods of clinical exacerbation (increasing œdema) and lower vals. for lipins were obtained during the spontaneous remission. C. J. C. B.

Rôle of sodium chloride in production of nephrosclerosis by steroids. H. Sélye and H. Stone (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 190—193).—Administration of 2% NaCl solution to chicks in place of drinking water always produced death from nephritis and œdema, thus resembling administration of deoxycorticosterone acetate (A., 1943, III, 379), and the toxicity of the latter is greatly increased if drinking water is replaced by 0·2% NaCl. The only other toxic steroid among 14 examined was progesterone. KCl administration did not modify the results. V. J. W.

Cardiovascular effects of renin.—See A., 1943, III, 631.

Isolation of volatile carbonyl compounds from normal urine. G. Matthiessen and H. Thoene (*Biochem. Z.*, 1940, **306**, 161—166).—That approx. 90% of the volatile carbonyl compounds in normal human urine consist of acetaldehyde is confirmed; 2·1 g. of acetaldehyde were isolated as dimedon derivative from 2600 l. of urine. The use of dimedon and 2 : 4-dinitrophenylhydrazine and subsequent extraction with org. solvents for the fractionation of these carbonyl compounds (probably 10—12 in no.) are described. F. O. H.

Isolation of (−)-phenyl-lactic acid and phenylpyruvic acid from the urine of patients with imbecillitas phenylpyruvica. E. A. Zeller (*Helv. Chim. Acta*, 1943, **26**, 1614—1618).—The urine is immediately acidified with HCl to Congo-red, stabilised with alcoholic thymol, and without undue delay extracted with ether. The extracts are shaken with dil. Na_2CO_3, which is immediately acidified and extracted with ether. The ethereal solution is shaken with HCl and water and dried. The oily residue, after removal of solvent, is treated with a little ether, which generally leaves a small quantity of hippuric acid, m.p. 192·5—193°. The non-cryst. residue is distilled from a mol. flask. The ethereal solution of the distillate is gradually treated

with benzene, which causes the separation of (—)-phenyl-lactic acid, m.p. 125°, $[\alpha]_D^{18}$ −22·1°±2° in acetone, followed by phenylpyruvic acid, identified by comparison with a specimen obtained from phenyloxalacetic ester or α-acetamidocinnamic acid. It cannot be separated quantitatively from its pure solutions and is best isolated as the phenylhydrazone, m.p. 169° or up to 173° after sublimation in a mol. flask. M.p. are corr. (block). H. W.

Antigenic substance in urine in syphilis.—See A., 1943, III, 693.

Pituitary hormones and urine-nitrogen.—See A., 1943, III, 646.

Determination of uroporphyrin in pathological urines. C. Rimington (*Biochem. J.*, 1943, **37**, 443—447).—An improved prep. of uroporphyrins I and III is based on the observation that, after adsorption of coproporphyrin and uroporphyrins I and III on kieselguhr from 1% HCl, they are eluted by developing the chromatogram with acetate buffer at pH 5·25. The total porphyrin content is determined in a 0·1N-NaOH eluate of the adsorbate by the use of a fluorescence comparator. Coproporphyrin is determined by the acetic acid–ether extraction method and fluorimetric analysis. Uroporphyrin is determined by difference. Data are given on urine from a case of acute idiopathic porphyria, during an attack. P. G. M.

Determination of demerol (hydrochloride of ethyl 4-phenyl-1-methylpiperidine-4-carboxylate) in urine; its excretion in man.—See A., 1943, III, 676.

Determination of vitamin-*C* in urine.—See A., 1943, III, 667.

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

Man-power: medical aspects in world army to-day. D. G. Cheyne (*Proc. Roy. Soc. Med.*, 1942, **35**, 427—430). W. J. G.

(A) **Factors which may influence senescence.** N. S. Davis, III. (B) **Pertinent problems of geriatric medicine.** E. J. Stieglitz (*Ann. int. Med.*, 1943, **18**, 81—88, 89—95).—Lectures. A. S.

Alterations in response to changing body temperature following artificial fever and chilling [in fowl]. W. C. Randall (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 240—242).—If a normal fowl is placed in an ice-box so that its temp. is reduced to 39° and then warmed, panting occurs before temp. has regained normal level. If its temp. is artificially raised to 43·1°, and it is then cooled in the ice-box, shivering begins at a lower temp. than in the normal fowl not previously warmed. V. J. W.

Epicellular and pericellular depositions of amyloid as starting point of amyloidosis. J. T. Peters (*Arch. Path.*, 1943, **35**, 832—835).—The deposition of amyloid on cells rather than deposition in the interstices of mesenchymal tissue may be the starting point of amyloidosis as it was an early sign in 10 of 12 cases. C. J. C. B.

Optical polarisation methods of investigating dentines. I. W. J. Schmidt (*Kolloid-Z.*, 1940, **93**, 234—242).—A review. C. R. H.

Magnetic susceptibility of beef tendon. K. S. Lion (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 194—195).—Dried tendon was suspended from a balance in a powerful magnetic field. Results indicated that tendon is negatively diamagnetic owing to the presence of traces of Fe. V. J. W.

Ointments. I. Penetration of ointment bases. E. A. Strakosch (*J. Pharm. Exp. Ther.*, 1943, **78**, 65—71).—The penetration of 15 ointment bases into the human skin was determined by application of the bases with added dye and subsequent biopsy. The pH of some of the bases is determined, and it is pointed out that alkaline bases should not be used on the human skin, the acidity of which is a defence against infection. P. C. W.

Importance of infra-red rays in relation to skin capillaries.—See A., 1943, III, 680.

Evaporation from human skin with sweat glands inactivated.—See A., 1943, III, 680.

Ascorbic acid, thiamin, riboflavin, and pantothenic acid in sweat.—See A., 1943, III, 664.

Composition of sweat, with special reference to the vitamins. O. Mickelsen and A. Keys (*J. Biol. Chem.*, 1943, **149**, 479—490).—Sweat was collected from normal young men. There were marked differences in composition between samples from different parts of the body, particularly in Cl′, lactate, urea, creatinine, and uric acid. Cl′ loss cannot be accurately estimated from samples collected from one part of the body only. There is little relationship between the composition of sweat and that of the blood plasma. The approx. concns. of the vitamins per 100 ml. of sweat are: ascorbic acid, 0·03 mg.; aneurin, 0·2 μg. or less; riboflavin, 0·5 μg. or less; nicotinic acid, 0·1 mg. The loss of these vitamins resulting from profuse sweating is negligible except perhaps in the case of nicotinic acid. E. C. W.

Correlation of habitats of amphibians with their ability to survive the loss of body-water. T. Thorson and A. Svihha (*Ecology*, 1943, **24**, 374—381).—Ten amphibian species exposed to the effect of evaporation showed that aquatic and terrestrial species both lost water with equal rapidity but that the latter could survive a greater loss of body-water than the former. L. G. G. W.

Sterols from various marine invertebrates.—See A., 1943, II, 331.

Humidity and cockroach respiration.—See A., 1943, III, 633.

Wing pigments of butterflies.—See A., 1943, II, 342.

XVII.—TUMOURS.

Experimental cancer production by implantation of metals. H. R. Schinz (*Schweiz. med. Wschr.*, 1942, **72**, 1070—1074).—0·1—0·15 g. of metallic As, Co, or Cr was implanted into the bones of 21 rabbits during 1934—1936. Malignant tumours were observed in 7 animals (4 pulmonary, 2 in the vicinity of the implantation). A. S.

Carcinogenic action of oil fuel. G. Miescher and F. Schwarz (*Schweiz. med. Wschr.*, 1942, **72**, 1081—1082).—Benzene extracts of oil fuel soot were applied to the skin of mice for 272 days without effect. A. S.

Experimental cancer production by photosensitisation. G. Miescher (*Schweiz. med. Wschr.*, 1942, **72**, 1082—1084).—A 5% anthracene solution was applied to the skin in mice thrice a week for 9 months; the animals were exposed to an ultra-violet lamp, after filtration of the short-wave ultra-violet light. Marked hyperkeratosis, and sometimes papilloma formation, but no neoplastic growth was observed. A. S.

Possible carcinogenicity of overcooked meats, heated cholesterol, aldehyde, and heated sesame oil. P. E. Steiner, R. Steele, and F. C. Koch (*Cancer Res.*, 1943, **3**, 100—107).—Numerous extracts from overbaked and overfried meat and animal fats were tested for carcinogenicity in mice by injection and by feeding. Only one sarcoma was induced and occurred in a mouse injected with the benzene-sol. fats from overfried mixed meats. Pure cholesterol heated to 200° and to 300° was not carcinogenic. Acraldehyde was not carcinogenic. Sesame oil which had been heated to 350° induced 3 sarcomas in 9 mice. F. L. W.

Diet and epithelial hyperplasia in forestomach of rats and mice. G. R. Sharpless (*Cancer Res.*, 1943, **3**, 108—112).—Deficiency of cystine, riboflavin, pyridoxine, or choline induces hyperplasia and ulceration of the forestomach epithelium in rats. Na taurocholate or pepsin and HCl increases the incidence of these lesions in the animals on poor diets. The action of the protective factors is interdependent, so that a deficiency of one may prevent effective action by the others. It is postulated that the mechanism of formation of the gastric lesions is the irritation of abnormally sensitive epithelium by hair, hard food particles, pepsin and HCl, or bile. F. L. W.

Effect of *p*-dimethylaminoazobenzene on the formation of blood-proteins. B. E. Kline (*Cancer Res.*, 1943, **3**, 117—119).—Plasma-albumin, -fibrinogen, and -total N were measured at intervals on rats receiving a diet containing *p*-dimethylaminoazobenzene. There were no changes in blood-proteins which could be associated with the carcinogenic process. Hæmoglobin was estimated at 6 months; it averaged 14·7 g. per 100 ml. in the control animals as compared with 11·5 and 11·4 g. per 100 ml. in animals receiving the dye for 6 months. When the diet contained *p*-aminobenzoic acid, cirrhosis was greatly reduced without changing the incidence of liver cancer. F. L. W.

Metabolism of normal and tumour tissue. XX. Comparison of metabolism of tumours of liver and skin with that of tissue of origin. F. Dickens and H. Weil-Malherbe (*Cancer Res.*, 1943, **3**, 73—87).—The metabolism of tumours of the liver and skin was studied in relation to that of their tissue of origin. Liver tumours (induced by butter-yellow or spontaneous hepatomas) of rats and skin tumours of human vulva were used. The respiration, glycolysis, and R.Q. of malignant liver tumours showed high anaërobic and moderately high aërobic glycolysis with R.Q. below unity. Precancerous states of the liver in the butter-yellow-fed rats showed a slight increase of aërobic glycolysis and slight anaërobic glycolysis. Benign mouse liver tumours gave the same results as adjacent normal liver tissue. Formation of urea from NH_3 and from alanine, formation of acetoacetic acid from octoic acid, oxidation of uric acid, and the synthesis of fermentable carbohydrate from pyruvic acid were studied in hepatic tumours and in non-tumorous liver tissue. These functions are lacking in butter-yellow-induced tumours but are retained in the benign mouse hepatomas. In carcinoma of the vulva aërobic and anaërobic glycolysis are high. In the intermediate leukoplakia there is only a slight increase of these reactions. F. L. W.

Testicular tumours in mice of several strains receiving triphenylethylene. W. U. Gardner (*Cancer Res.*, 1943, **3**, 92—99).—Interstitial cell testicular tumours appeared in 7 of 13 mice of the *JK* strain that had received weekly subcutaneous injections of 5 mg. of triphenylethylene for 250 days or more. 7 of 17 mice of the *A* strain similarly treated developed tumours. One of 14 *C3H* mice under the same treatment died with a testicular growth that had metastasised to lymph nodes, spleen, and lungs. Tumours of the

testes were not found in mice of the *C12I*, *N*, or *CBA* strains similarly treated. Hæmatopoietic foci occurred in the testicular tumours of all the *JK* mice and of 3 *A* mice. F. L. W.

Esterase (butyric) activity. II. Esterase content of livers of mice and its excretion in strains susceptible or insusceptible to mammary cancer. R. G. Chitre and V. R. Khanolkar (*Cancer Res.*, 1943, **3**, 88—91; cf. A., 1943, III, 182).—The esterase content of the liver and the excretion of this enzyme were studied in *C3H*, *A*, and *C57* mice. The livers of these strains were equally potent in activity. Excretion was higher in the insusceptible strain than in the susceptible strains. F. L. W.

Genetic analysis of induction of tumours by methylcholanthrene. Absence of sex influence when large dose of carcinogen is administered. L. C. Strong (*Arch. Path.*, 1943, **36**, 58—63).—In 1000 hybrid mice (485 females and 507 males) there was no sex difference in susceptibility to the induction of tumours by subcutaneous injection of 1 mg. of methylcholanthrene dissolved in sesamé oil. C. J. C. B.

Present status of carcinogens and hormones in cancer research. J. J. Morton (*Surg. Gynec. Obstet.*, 1941, **72**, 345—362).—A review (154 references). P. C. W.

Transplantable benzpyrene-induced skin carcinomata of mice. M. H. Salaman (*J. Path. Bact.*, 1943, **55**, 381).—(6 photomicrographs.) C. J. C. B.

Action of bacterial toxins on tumours. III. Properties of purified *Salmonella typhimurium* endotoxin. P. A. Zahl and S. H. Hutner (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 116—118; cf. A., 1943, III, 339).—Fractions of the toxin produced by acetone pptn. from conc. culture, or by extraction of this ppt. with warm phenol, or by various treatments of this extract with formamide were active in mice in respect of lethality, production of hæmorrhage in tumours, and production of protective antibodies. V. J. W.

Ionised air and experimental cancer production. G. Joyet (*Schweiz. med. Wschr.*, 1942, **72**, 1077—1078).—Rats and mice with benzpyrene tumours were kept for 6—8 months in an atm. with positive or negative ionisation. There was no effect on the development of the growths. A. S.

Colchicine treatment of experimental cancer in mice. J. L. Nicod and J. Regamey (*Schweiz. med. Wschr.*, 1942, **72**, 1074—1077).—143 mice with benzpyrene tumours or spontaneous breast neoplasm were subjected to the treatment of Vlès and Coulon; improvement was observed in 12—13% of all animals, after administration of colchicine in 23 and 28%. The survival time was the same as that of the untreated control. A. S.

Test of Prager polarographic diagnosis of cancer. D. Albers (*Biochem. Z.*, 1940, **306**, 236—244).—In tests on cases of carcinoma, the results were mainly positive (of 32, 7 were doubtful or negative). The specificity of the reaction was not increased by alcoholic pptn. The results of Waldschmidt-Leitz and Mayer (A., 1940, III, 317) could not be confirmed, but the view that the test is not dependent on thio or thiol groups is supported. F. O. H.

Gum tumours in pregnancy and gingivitis gravidarum. W. G. Cross (*Brit. Dent. J.*, 1943, **75**, 85—89).—Gingivitis of pregnancy is regarded as probably due to a combination of factors, the most important of which are vitamin-*C* deficiency, hormonal alterations, and trauma. Of the various forms, the so-called "pregnancy gum tumours" (epulides gravidarum) are of special interest: two new cases are described. These tumours are usually single, often pedunculated, grow to a size of 1 cm. or more in diameter, and arise most commonly on the buccal aspect, in the maxilla, and in the lateral incisor-canine region. They appear about the 3rd month of pregnancy, are at their max. at the 7th or 8th month, and usually disappear rapidly after delivery. There may be an associated gingivitis, but local irritation is often absent. Treatment suggested is antenatal dental prophylaxis and the administration of large doses (100—300 mg. daily) of ascorbic acid. Removal of gum tumours of pregnancy is not indicated, on account of their prompt regression after parturition. A. H.

Orchidectomy in cancer of prostate. T. J. D. Lane (*Lancet*, 1943, **244**, 166—167).—Bilateral orchidectomy produced rapid relief of pain in 21 of 23 cases of cancer of the prostate. C. A. K.

Present status of treatment of gynæcological cancer. G. Kamperman (*Surg. Gynec. Obstet.*, 1941, **72**, 384—390).—Statistical analysis of 845 cases treated during 1922—1935. P. C. W.

Neurogenic sarcoma. D. V. Trueblood (*Surg. Gynec. Obstet.*, 1941, **72**, 363—371).—Description and discussion of 5 cases. P. C. W.

Mediastinal sympathogonioma. S. Sailer (*Amer. J. Path.*, 1943, **19**, 101—110).—A case report. (9 photomicrographs.) C. J. C. B.

Malignant adenoma of parathyroid gland. E. M. Hall and L. Chaffin (*West. J. Surg. Obstet. Gynec.*, 1940, **48**, 685—688).—Clinical and autopsy report of a case dying with metastases in the lung. P. C. W.

Carcinoma erysipelatodes. M. R. Camiel and H. Bolker (*Surg. Gynec. Obstet.*, 1941, **72**, 634—641).—2 cases are described. P. C. W.

Carcinoma of lower intestinal tract. R. E. Bieren (*Surg. Gynec. Obstet.*, 1941, **72**, 611—615).—Analysis of 254 cases. P. C. W.

Teratoma testis. B. S. Barringer and D. Earl (*Surg. Gynec. Obstet.*, 1941, **72**, 591—600).—Analysis of 37 cases. P. C. W.

Endocrine tumours of ovary. S. H. Geist and F. Spielman (*J. Clin. Endocrinol.*, 1943, **3**, 281—297).—A review. P. C. W.

Tumour of carotid body and pancreas. I. I. Goodof and C. E. Lischer (*Arch. Path.*, 1943, **35**, 906—911).—A tumour of the carotid body associated with a histologically identical tumour in the pancreas is reported. C. J. C. B.

Papillary cystadenocarcinoma of pancreas. H. E. Kennard (*Surgery*, 1941, **9**, 65—79).—A case is reported and the literature reviewed. P. C. W.

Carcinoma of thyroid gland. J. C. McClintock, G. H. Klinck, and J. E. Conrad (*Surg. Gynec. Obstet.*, 1941, **72**, 150—156).—54 cases are analysed with special reference to classification. P. C. W.

Carcinoid tumour of gall bladder. M. D. Bosse (*Arch. Path.*, 1943, **35**, 898—899).—A case report. C. J. C. B.

Extramedullary plasma cell tumours as observed in various locations. C. A. Hellwig (*Arch. Path.*, 1943, **36**, 95—111).—A general review of 127 cases from the literature. C. J. C. B.

Hodgkin's disease. S. R. Bersack (*Amer. J. clin. Path.*, 1942, **13**, 253—259).—225 cases of microscopically verified Hodgkin's disease were reviewed and classified into Hodgkin's lympho-reticuloma, Hodgkin's granuloma, and Hodgkin's lymphoma. (6 photomicrographs.) C. J. C. B.

Cellular origin of bronchial adenoma. A. P. Stout (*Arch. Path.*, 1943, **35**, 803—807).—Cells with acidophilic granules (oncocytes, pyknocytes) were demonstrated among the mucous and serous glands of adult human bronchi and their ducts; they may be the stem cells for bronchial adenoma. (5 photomicrographs.) C. J. C. B.

Radiological treatment of bronchial and pulmonary carcinoma. H. R. Schinz (*Schweiz. med. Wschr.*, 1942, **72**, 1067—1070).—The average age of 79 patients suffering from bronchial and pulmonary carcinoma was 59·8 years. The right main bronchus was involved in 25 cases, the left bronchus in 16, the upper lobe bronchi in 24, the right lower lobe bronchus in 5 and the left in 6, the right middle lobe bronchus in 2 cases. Bronchoscopic diagnosis was established in 19 out of 21 cases. The average survival time, following radiation treatment, in all definitely established cases was 4·7 months. A. S.

Bronchial and pulmonary carcinoma. R. Staehelin (*Schweiz. med. Wschr.*, 1942, **72**, 1063—1067). A. S.

Occurrence, pathological anatomy, and ætiology of bronchial and pulmonary carcinoma. C. Wegelin (*Schweiz. med. Wschr.*, 1942, **72**, 1053—1063).—A review. A. S.

Clinical and experimental knowledge of breast conditions. F. E. Adair (*West. J. Surg. Obstet. Gynec.*, 1940, **48**, 645—661).—Review and discussion with an analysis of results of irradiation and operative procedures in 6444 cases of breast cancer. P. C. W.

Structure and histogenesis of tumours of aortic bodies in dogs. F. Bloom (*Arch. Path.*, 1943, **36**, 1—12).—2 similar tumours occurring spontaneously in the region at the base of the heart in dogs are reported. They resembled the aortic bodies and may have originated from these structures. (8 photomicrographs.) C. J. C. B.

Distribution of alkaline phosphatase in normal and neoplastic tissues of nervous system.—See A., 1943, III, 726.

Tumours of brain.—See A., 1943, III, 728.

Generalised pruritus due to carcinoma of stomach.—See A., 1943, III, 744.

Occurrence of sterically selective enzymes in the carcinomatous organism.—See A., 1943, III, 769.

XVIII.—ANIMAL NUTRITION.

Nutrition as conditioning factor in rheumatic state. A. F. Coburn and L. V. Moore (*Amer. J. Dis. Child.*, 1943, **65**, 744—756).—In 100 children, there was a close association between nutrition and rheumatic susceptibility. Highly susceptible subjects had generally poor diets. C. J. C. B.

"Free" breast feeding of infants. A. Eckstein and E. Eckstein-Schlossmann (*Schweiz. med. Wschr.*, 1942, **72**, 1177—1180).—The average duration of breast feeding in Turkey is 12 months. 10—12 feeds (1—2 during the night) are given during the 24 hr. The infants are fed whenever they show signs of hunger. Observations were made on (*a*) 18 infants with a birth wt. below 3000 g., (*b*) 44 children up to 3500 g., (*c*) 38 up to 4000 g., and (*d*) 25 children over 4000 g.

The body wt., as % of the wt. at birth, was 376·2 (*a*), 321·0 (*b*), 302·7 (*c*), 275·7 (*d*). Twice the wt. at birth was attained between the 3rd and 4th month (*a*), end of the 4th month (*b*), during the 5th month (*c*), and in the 6th month (*d*). Dentition of Turkish babies is delayed, compared with western European infants (observations on 860 children). A. S.

Nutritive adequacy of certain low-cost food mixtures. F. Hemphill, R. A. Koenig, and J. Winters (*J. Nutrition*, 1943, **25**, 285—293).—Two low-priced diets (evaporated milk–vegetables–fruit–cereals–fat) and two higher-priced diets (similar but including meat or fish and skimmed instead of evaporated milk) were similar in mineral and vitamin contents and produced similar effects on the growth of rats. A. G. P.

Digestibility of straw pulp. W. S. Ferguson (*J. Agric. Sci.*, 1943, **33**, 174—177).—In trials with sheep and bullocks, the average digestibilities of org. matter, fibre, and N-free extract of straw pulps were, respectively, 66·8, 74·1, and 62·7%, and the average starch equiv. val. 48·6 lb. per 100 lb. of dry matter. The effects of varying the time and temp. of the soaking treatment are compared. R. H. H.

Effect of boric acid on caramelisation of sugars [and on milk].—See A., 1943, II, 294.

Effect of sorbitol feeding on successive generations of rats. F. W. Ellis, C. J. Carr, E. J. Wiegand, and J. C. Krantz, jun. (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 260—261).—Sorbitol constituting 5% of food intake had no deleterious effect over 3 generations. V. J. W.

Dogs on low-fat diet. A. E. Hansen and H. F. Wiese (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 205—208).—Puppies reared from weaning on a diet containing 0·13% of fat showed a scaly desquamation of the skin and coarsening of hair. The I val. of the acetone-sol. fatty acids of their serum averaged 83·9 as against 118·7 in controls. V. J. W.

Effect of dietary ingredients on keeping quality of body-fat. R. H. Barnes, W. O. Lundberg, H. T. Hanson, and G. O. Burr (*J. Biol. Chem.*, 1943, **149**, 313—322).—Variations in the α-tocopherol content of an otherwise normal diet play an important part in the stabilisation of body-fat in the rat. The naturally occurring antioxidants cannot be synthesised by the animal, and the stability of body-fat is greatly reduced by prolonged administration of a diet free from vitamin-*E* and other fat-sol. antioxidants. P. G. M.

Digestibility of some animal and vegetable fats. R. Hoagland and G. D. Snider (*J. Nutrition*, 1943, **25**, 295—302).—The digestibility coeffs. (rats) of fats determined in diets containing 5 and 15% of the fats were, respectively, coconut oil 98·9, 96·5; soya-bean oil 98·5, 98·3; maize oil 97·5, 98·3; butter fat 88·3, 90·7; mutton tallow 74·6, 84·8; oleo stock 74·0, 86·7; cacao butter 63·3, 81·6%. No consistent relationship was apparent between the m.p. of the fats and their digestibility coeffs. A. G. P.

Influence of lecithin feeding on fat and vitamin-*A* absorption in man. D. Aldersberg and H. Sobotka (*J. Nutrition*, 1943, **25**, 255—263).—Active sprue in man is characterised by the failure of a test dose of fat or vitamin-*A* to increase the total lipin or -*A* contents of the serum. Addition of lecithin to the test dose enhances the elevation of serum-lipin or -*A*, probably by increasing absorption and, to some extent, by mobilising hepatic deposits. A. G. P.

Influence of dietary fat of varying unsaturation on component acids of cow-milk fats.—See A., 1943, III, 670.

Significance of tannic substances and theobromine in chocolate milk. W. S. Mueller (*J. Dairy Sci.*, 1942, **25**, 221—230).—0·27% of theobromine in the diet of rats had no significant effect on their growth rate. 2% of tannic acid caused a diminution in growth rate of 0·47±0·09 g./day. 16% of cocoa powder (**I**) containing 12·15% of tannic substances (**II**) and 1·8% of alkaloids (**III**) caused a decrease of 0·42±0·12 g./day, whilst 16% of (**I**) containing 2·67% of (**II**) and 2·43% of (**III**) caused a diminution of 0·20±0·10 g./day. 8% of a commercial cocoa extract caused an increase of 0·07±0·08 g./day. The (**II**) in (**I**) were less toxic than was pure tannic acid. None of the diets, all of which were supplemented with Fe, Cu, and Mn, depressed hæmoglobin levels. N. J. B.

Effect of chloride with high and low iodine supply on the thyroid gland of the rat. G. R. Sharpless and E. K. Anthony (*J. Nutrition*, 1943, **25**, 239—243).—The I content of thyroids of normal and I-deficient rats was decreased by feeding excess of Cl′. The wt. of the thyroids was unaffected. A. G. P.

Availability of the calcium of some New Zealand vegetables. J. Kelly (*J. Nutrition*, 1943, **25**, 303—308).—In trials with rats the availability of the Ca of Savoy cabbage, swede, parsnip, and silver beet greens was 93, 87, 88, and 46% respectively of that of milk. A. G. P.

Vitamins.

Mineral and vitamin requirements in relation to war-time dietary. (*Proc. Roy. Soc. Med.*, 1942, **35**, 615—624).—R. A. McCance and E. M. Widdowson: Present rations of milk and cheese, and the substitution of wheatmeal for white bread, have not altered the dietary Ca and Fe. Phytic acid in brown bread interferes with the absorption of these elements, and this action can be overcome by the addition of sufficient $CaCO_3$ to ppt. the phytic acid. L. J. Harris: The importance of a partial deficiency of vitamins is emphasised. In children saturation tests showed that the level of vitamin-*C* has fallen since the war, while owing to the addition of -*A* to margarine, deficiency of this vitamin has declined. Substitution of brown for white flour has remedied serious deficiency of the -*B* vitamins. R. A. M. Scott: Anæmia has probably increased during the war, most diets containing less Fe, and means of adding Fe to bread should be sought. W. J. G.

Losses of vitamins during cooking of dehydrated vegetables. Nutritive value [mineral constituents and vitamins] of dried fruits and vegetables.—See B., 1943, III, 251.

Attempts to produce vitamin-deficiency diseases by feeding compounds related structurally to vitamins. D. W. Woolley and A. G. C. White (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 106—108).—No deficiency symptoms were produced in mice by feeding with the S analogue of pantothenic acid, *N*-αγ-dihydroxybutyryl-ββ-dimethyltaurine, or with the similar analogue of nicotinic acid, pyridine-3-sulphonic acid. V. J. W.

Vitamin-*A* and total lipin of serum in pneumonia. H. W. Josephs (*Amer. J. Dis. Child.*, 1943, **65**, 712—727).—Serum-vitamin-*A*, -carotene, and -total lipin are reduced in pneumonia especially in cases of long duration; -*A* is the most rapidly reduced. During convalescence serum-lipins and -*A* of children over 2 years of age rise above normal. In younger children the lipins do not rise above normal unless -*A* supplement is given. In infants under 8 months of age no rise in lipin occurs. There is a correlation between lipin levels and the post-absorptive rise of -*A* (vitamin-*A* "tolerance" curve). The rise in carotene 4—5 days after the ingestion of a carotene supplement is begun is related to the lipin level during this period. C. J. C. B.

Effect of prolonged administration of carotene in vegetables on serum-carotene and vitamin-*A* levels in man. H. Hoch (*Biochem. J.*, 1943, **37**, 430—433).—Ingestion of 120,000 i.u. of carotene per week in the form of spinach and carrots raised the serum-carotenoid content (β-carotene) from 100—120 to 150—160 μg. per 100 c.c. The weekly intake of about 240,000 i.u. of carotene in the form of carrots raised the serum-carotene to 375—470 μg. per 100 c.c. by the 20th day, when pigmentation of the skin began. The max. vals. obtained were 383 and 557 μg. in two cases in which 1 lb. of carrots were fed per day for 25 and 32 days, but the vitamin-*A* levels remained at 143—155 i.u. per 100 c.c. throughout. P. G. M.

Effect of bone dysplasia (overgrowth) on cranial nerves in vitamin-*A*-deficient animals.—See A., 1943, III, 636.

Separation of vitamin-*A* from xanthophylls in the presence of egg yolk sterols. T. B. Mann (*Analyst*, 1943, **68**, 233—238).—Using the $SbCl_3$ method serious errors may arise in the determination of vitamin-*A* in the presence of xanthophylls (lutein, zeaxanthin) and egg yolk sterols even when a calc. deduction is made for the absorption at 620 mμ. due to xanthophylls. The colour with $SbCl_3$ due to xanthophylls both develops and fades more slowly than that due to -*A*. Xanthophylls are retained on a bone meal (free from grease) and sand absorption column when the dry solution in light petroleum (b.p. 40—60°) of the unsaponifiable matter of egg yolk is passed through. Sterols, carotenes, and -*A* are eluted by means of light petroleum containing 2% of $CHCl_3$ until no test is given by $SbCl_3$ for -*A*. The solvent is removed from the total eluate and the residue dissolved in $CHCl_3$ for the $SbCl_3$ test. The column is washed with acetone to remove xanthophylls and then with petroleum before re-use. A column of bone meal alone will allow β-carotene to be washed through with petroleum from a solution containing sterols, carotenes, and -*A*. Neo-β-carotene is retained on the column and eluted with acetone. S. B.

Vitamin-*A* value of Roquefort-type cheese.—See B., 1943, III, 249.

Shark-liver oil and the vitamin-*A* potency of milk.—See B., 1943, III, 252.

Micro-determination of vitamin-*A* by the Carr–Price reaction. H. Hoch (*Biochem. J.*, 1943, **37**, 425—429).—The photographic device described for the measurement of the Carr–Price reaction enables the determination to be carried out on samples containing 0·06—0·4 i.u. of vitamin-*A*. A record can be obtained from 2 sec. after the start of the reaction, and the lag in galvanometer readings, which is inherent in photoelectric methods, is avoided. Fluctuations in the light source do not affect the readings. Errors due to fading are studied in detail, but, without any correction, errors in the determination of -*A* in blood based on the max. observed colour do not exceed 5%. P. G. M.

Biological activity of vitamin-A_2. J. L. Jensen, E. M. Shantz, N. D. Embree, J. D. Cawley, and P. L. Harris (*J. Biol. Chem.*, 1943, **149**, 473—477).—Liver oil concentrates from pike (*Esox lucius*), prepared by extraction with ether and mol. distillation, contained

vitamin-A_2 but no -A_1. The $SbCl_3$ reaction products of -A_2 and anhydro-A_2 have a ratio of $E^{1\%}_{1cm.}$ (695 mμ.) to $E^{1\%}_{1cm.}$ (620 mμ.) of about 3·0, while this ratio for -A_1 is about 0·05. The -A_2 concentrate possessed considerable -A potency when tested biologically on rats, though at relatively high levels of feeding it was somewhat toxic. The -A stored in the livers of the rats used was entirely -A_2. E. C. W.

Possible new member of the vitamin-A_1 and -A_2 group.—See A., 1943, II, 261.

The "B"-vitamins.—See B., 1943, III, 252.

Vitamin-B complex in dogs: production of cirrhosis of liver. P. J. Fouts (*J. Nutrition*, 1943, **25**, 217—228).—Dogs receiving a low-protein diet supplemented with thiamin, riboflavin, pyridoxine, and nicotinic and pantothenic acids developed a deficiency condition characterised by loss of wt., moderate anæmia, dermal and peptic ulcers, fatty cirrhotic liver, and death. A high-protein diet prevented the condition but with a sub-optimal growth rate. Partial improvement resulted from supplementary feeding of large amounts of choline, liver extract, or a filtrate factor from rice-bran extract, but not from that of *p*-aminobenzoic acid, inositol, small amounts of choline, or eluate from clay adsorption of liver extract. Simultaneous feeding of large amounts of choline with liver extract eliminated deficiency symptoms except fibrosis of liver. A. G. P.

Nutritional therapy of infertility in male, with special reference to vitamin-B complex and -E.—See A., 1943, III, 651.

Vitamin requirements of *Colpoda duodenaria*. E. L. Tatum, L. Garnjobst, and C. V. Taylor (*J. Cell. Comp. Physiol.*, 1942, **20**, 211—224).—In the culture medium described by Taylor and van Wagtendonk (A., 1941, III, 799) yeast extract can be replaced by pyridoxine, thiamin, and either nicotinic acid or nicotinamide. V. J. W.

Vitamin-B complex of peeled wheat bread. R. R. Sealock and A. H. Livermore (*J. Nutrition*, 1943, **25**, 265—274).—Bread made from peeled wheat flour (98% extraction) contained thiamin 3·0, riboflavin 2·5, nicotinic acid 35, pantothenic acid 5·2, pyridoxine 3·1, and inositol 644 μg. per g. of fresh bread. Use of a high-vitamin yeast in making the bread increased the contents of thiamin and nicotinic acid to 4·6 and 44 μg. per g. respectively. The peeled wheat flour contained thiamin 5·8, nicotinic acid 72, pantothenic acid 9·6, and inositol 1100 μg. per g. The val. of the bread as a vitamin-B supplement for rats is demonstrated; its curative effect on greying hair was approx. proportional to its pantothenic acid content. A. G. P.

Thiamin in human dietaries of north western parts of India. B. Ahmad (*Indian J. Pharm.*, 1943, **5**, 83—84, 94).—A lecture. The vitamin-B_1 content of the different parts of Indian wheat grain, and the loss of -B_1 during various processes in the prep. of wheat for consumption, are discussed. The excretion of -B_1 by normal adults in urban districts exceeded 800 μg. daily. R. H. H.

Production of thiamin deficiency disease by feeding a pyridine analogue of thiamin. D. W. Woolley and A. G. C. White (*J. Biol. Chem.*, 1943, **149**, 285—289).—The appearance of characteristic symptoms of thiamin deficiency is produced in mice by feeding pyrithiamin (1-4′-amino-2′-methyl-5′-pyrimidylmethyl-2-methyl-3-β-hydroxyethylpyridinium bromide). The effect is cumulative and delayed and is curable by the administration of thiamin at 1/40th the level of the pyrithiamin. H. G. R.

Results of feeding rats a thiamin-low diet of a type consumed by human beings. G. M. Higgins, R. D. Williams, and H. L. Mason (*J. Nutrition*, 1943, **25**, 229—238).—Rats receiving typical human diets including bread made from white flour developed deficiency symptoms. Supplements of riboflavin and thiamin (but not riboflavin alone) in amounts equiv. to that in wholemeal bread partly or wholly corr. growth curves and eliminated hypochromic microcytic anæmia. A. G. P.

Thiamin deficiency and myocardial necroses.—See A., 1943, III, 631.

Heat-stability of thiamin. I. Effect of pH and buffer salts in aqueous solutions. II. Effect of meat-curing ingredients in aqueous solutions and in meat. B. W. Beadle, D. A. Greenwood, and H. R. Kraybill (*J. Biol. Chem.*, 1943, **149**, 339—347, 349—354).—I. Heating at 100° for 1 hr. at pH 5·4 destroys vitamin-B_1 as follows: in the presence of borate 100, acetate 10, phosphate 3, and in unbuffered solution 57%. In all cases destruction rises from 0 to 100% with increasing pH vals. within 2—3 pH units.

II. Cocarboxylase is somewhat more stable to heat under the same conditions than is -B_1. The effect of heating aq. solutions in the presence of NaCl, $NaNO_3$, $NaNO_2$, sucrose, and glucose is to produce destruction from 0 to 100%, according to temp., time of heating, pH, and the particular substance present. Less destruction occurs in lean pork muscle than in aq. solution, and meat-curing ingredients have less effect under the former conditions. P. G. M.

Thiamin losses in toasting bread.—See B., 1943, III, 246.

Biological assay of crystalline vitamin-B_1, aneurin hydrochloride, by the rat-growth method. E. A. G. Shrimpton (*Quart. J. Pharm.*, 1943, **16**, 86—101).—Results of an assay of cryst. vitamin-B_1, in relation to the international standard (acid clay adsorbate), are examined in detail (cf. Coward and Shrimpton, *Bull. Health Org. League of Nations*, 1940—41, **9**, *Appendix* I). The mean equiv. of 1 i.u. is 3·172 μg. with limits of 93·5—106·9 and 95·1—105·2% for degrees of probability of 0·99 and 0·95, respectively. The variations in the responses of individual rats and groups of rats and the probable sources of these variations are discussed; the view is advanced that more accurate assays could be obtained for the same no. of rats by, *e.g.*, a more suitable choice of experimental rat, duration of test, and basal diet. A linear dosage–response relationship holds between response, increase in wt. over the period of the test, and the logarithm of the dose. F. O. H.

Vitamin-B_1 content of National flour and bread. Thiochrome method for determination of vitamin-B_1. R. A. Peters, H. Chick, K. H. Coward, L. J. Harris, B. S. Platt, and T. F. Macrae (*Biochem. J.*, 1943, **37**, 433—439).—The azo- and thiochrome methods are equally reliable for the determination of vitamin-B_1 in National flour, and the accuracy of photoelectric and visual methods does not differ. Details of the thiochrome method, by two alternative techniques, based on Jansen's work (A., 1937, III, 77), are given. P. G. M.

Azo-colour reaction for determination of vitamin-B_1 in National flour. B. S. Platt and G. E. Glock (*Biochem. J.*, 1943, **37**, 439—443).—The method described depends on the formation of a dye by coupling vitamin-B_1 extracts with diazotised *p*-aminoacetophenone in alkaline solution. The vitamin is extracted from flour with 0·5N-HCl, and adsorbed from the extract without adjustment of pH by two successive adsorptions on 50 mg. of "Superfiltrol" (for extract from 10 g. of flour). The washed adsorbate is suspended in water, adjusted to pH 5, and 10 vols. of 60% alcohol are added. Freshly prepared alkaline diazo-solution is added (the vol. is such as to reduce the overall concn. of alcohol to 40%) and, after 20 min., toluene is added and mixing continued for at least 1 hr. The toluene layer is washed with 0·5N-HCl, dried over anhyd. Na_2SO_4, and compared with the standard in a Duboscq colorimeter. The accuracy compares favourably with that of the thiochrome method. P. G. M.

Determination of vitamin-B_1 in extracts and concentrates. Comparison of biological and chemical methods. R. A. Brown, E. Hartzler, G. Peacock, and A. D. Emmett (*Ind. Eng. Chem.* [*Anal.*], 1943, **15**, 494—495).—The choice of method is governed by the potency of the sample. For pharmaceutical preps., the modified Smith method is preferred to the U.S.P., rat growth, or pigeon wt. maintenance method because of the rapidity, but with low concns. rat growth or pigeon wt. maintenance is necessary. The vals. obtained by the modified Melnick–Field and thiochrome methods agree. The former is more reliable, but the latter more sensitive and preferable for materials of very low potency. J. D. R.

Riboflavin and thiamin in the rumen content of cattle. II. C. H. Hunt, E. W. Burroughs, R. M. Bethke, A. F. Schalk, and P. Gerlaugh (*J. Nutrition*, 1943, **25**, 207—216).—Riboflavin is synthesised in the rumen of the steer when receiving a maize–lucerne–protein supplement ration, but not when maize is omitted. The amount of riboflavin in the dried ingesta is correlated with the amount of dietary carbohydrate. No evidence of synthesis of thiamin was obtained. The thiamin content of the ingesta was less than that of the ration but the extent of the difference decreased with increase in dietary maize or carbohydrate. A. G. P.

Micro-biological assay of riboflavin. R. D. Greene and A. Black (*J. Amer. Pharm. Assoc.*, 1943, **32**, 217—220).—A modified Snell–Strong medium (A., 1939, III, 766) is developed in which the growth of *Lactobacillus casei* in presence of riboflavin is stimulated by addition of $(NH_4)_2SO_4$, additional Na acetate, and photolysed yeast. The method gives results in fairly close agreement with those obtained by rat-growth experiments. F. O. H.

Nicotinic acid content of common fruits and vegetables as prepared for human consumption. W. C. Russell, M. W. Taylor, and J. F. Beuk (*J. Nutrition*, 1943, **25**, 275—284).—Data for a no. of fresh and preserved fruits and vegetables are recorded. Losses of nicotinic acid during cooking varied from 8 to 22%. The cooking water contained 2—41% and the liquid in canned vegetables 30—40% of the total nicotinic acid present. A. G. P.

Biochemistry of *Torula utilis*. V. Nicotinic acid content of fodder yeast, spent waste, brewer's yeast, and press-yeast. Total synthesis of nicotinic acid by *Torula*.—See A., 1943, III, 685.

Chemical and biological assays of nicotinamide-like substance formed in heated mixtures of asparagine and glutamic acid. M. R. Bovarnick (*J. Biol. Chem.*, 1943, **149**, 301—302).—Certain amino-acids, particularly methionine, can be substituted for glutamic acid in the production of nicotinamide activity. Assay of the product biologically with *Lactobacillus arabinosus* and chemically by the CNBr–aniline method indicates that nicotinamide is the active substance formed. H. G. R.

Reactions of cozymases and their cleavage products [determination of nicotinic acid and its amide].—See A., 1943, III, 684.

Chick antianæmia vitamin. B. L. O'Dell and A. G. Hogan (*J. Biol. Chem.*, 1943, **149**, 323—337).—A reduced level of vitamin-B_c, which is non-sp., or the presence of sulphaguanidine, increases the incidence of anæmia in chicks, possibly owing to consequent decreased bacterial synthesis of the antianæmia vitamin (B_c) in the intestine. The sp. vitamin-B_c is labile to acid, 80% being destroyed by autoclaving at pH 1 for 2 hr. It is partly pptd. by salts of Pb, Hg, Ba, Zn, and Ag, and considerably inactivated by Pb and Hg. It is completely pptd. by phosphotungstic acid. It is adsorbed on active C at pH 5, and can be eluted by 5—10% aq. NH_3. The active principle is distinct from xanthopterin and the anti-pernicious anæmia factor of liver. An anæmia-producing diet has been evolved, and a technique of assay of the vitamin is described. P. G. M.

Effect of pyridoxine deficiency in the rat on catalase activity of its tissues. S. Lepkovsky and D. Parsons (*J. Biol. Chem.*, 1943, **149**, 281—284).—Pyridoxine deficiency in rats does not affect the catalase activity of the liver, kidney, or heart. H. G. R.

Influence of vitamin-B_6 and pantothenic acid on growth of sarcoma 180.—See A., 1943, III, 659.

Bound pyridoxine (vitamin-B_6) in biological materials. L. Siegel, D. Melnick, and B. L. Oser (*J. Biol. Chem.*, 1943, **149**, 361—367).—An improvement in the yeast growth method of determination of vitamin-B_6 is described. Autoclaving for 30 min. at 1 atm. pressure in 2N-H_2SO_4 completely liberates the bound vitamin. The majority of -B_6 occurs in nature in the bound state, exceptions being whole milk 14%, and hens' egg about 20%. Vals. are given for a no. of biological materials. P. G. M.

Nutrition of golden hamster. J. M. Cooperman, H. A. Waisman, and C. A. Elvehjem (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 250—254).—Hamsters on a synthetic diet, mainly casein and sucrose, require for growth and survival 1 μg. of biotin daily together with inositol and *p*-aminobenzoic acid. They do not require ascorbic or nicotinic acid. V. J. W.

Determination of *p*-aminobenzoic acid.—See A., 1943, III, 704.

Ascorbic acid synthesis *in vitro* by the vitellus. V. W. Nowinski (*Rev. Soc. argent. Biol.*, 1942, **18**, 397—403).—The yolk of uninCubated hen's eggs, free from vitamin-*C*, was incubated at 38° with minced rat liver in a PO_4''' buffer. Ascorbic acid, determined by the 2 : 6-dichlorophenol-indophenol method, increased after incubation. With boiled minced rat liver and fresh minced guinea-pig liver an increase in ascorbic acid was not obtained. Rat liver contains an enzymic mechanism which can synthesise ascorbic acid from an unknown substrate in egg-yolk. J. T. L.

Vitamin-*C* treatment of torpid skin ulcers. A. Tey, E. Criscuolo, and P. Marhuenda (*Schweiz. med. Wschr.*, 1942, **72**, 1242—1245).—15 patients with large cutaneous ulcerations which did not respond to treatment showed marked ascorbic acid deficits. The ulcers healed within a few days following vitamin-*C* saturation. A. S.

Effect of vitamin-*C* deficiency on metabolism of alcohol.—See A., 1943, III, 677.

Effect of sodium diphenylhydantoinate (dilantin sodium) on utilisation of ascorbic acid by guinea-pigs. A. D. Emmett, E. R. Hartzler, and R. A. Brown (*J. Pharm. Exp. Ther.*, 1943, **78**, 215—221).—Guinea-pigs on a min. daily intake of ascorbic acid received single large (50—100 mg. per kg.) doses of this substance, and others were given daily doses of 13—50 mg. per kg. followed by 5—25 mg. of ascorbic acid for 8—14 weeks. No effects on health or ascorbic acid utilisation were noted. V. J. W.

Oxidation of ascorbic acid by *o*-dinitrobenzene. Detection of dehydroascorbic acid. W. R. Fearon and E. Kawerau (*Biochem. J.*, 1943, **37**, 326—329).—A violet substance (an *o*-nitroxylic acid), stable for several hr., rapidly appears when saturated aq. *o*-dinitrobenzene and 20% aq. NaOH are added successively to dil. aq. ascorbic acid. The colour is not produced when dehydroascorbic acid, cysteine, glutathione, uric acid, creatinine, proteins, simple alcohols, aldehydes, ketones, common hydroxy- and keto-acids or amino-acids replace ascorbic acid. Reducing sugars (*e.g.*, fructose) give a positive response but only slowly. When the mixture is acidified the violet substance is reversibly converted into a yellow form which then yields, as end-product, *o*-nitronitrosobenzene. Aq. dehydroascorbic acid boiled for a few min. at pH 3·5—4·5 yields a green colour, stable for several hr., not obtained with ascorbic acid, cysteine, glutathione, monosaccharides, proteins, amino-acids, uric acid, or creatinine. The colour is intensified by $Al^{...}$, $Ca^{..}$, $Zn^{..}$ and $Pb^{..}$ and is changed to red by alkali, the red substance being rapidly bleached by air. At pH greater than 9, in absence of air, NaOH converts dehydroascorbic acid into a yellow-green substance which slowly becomes carmine. These changes are possibly due to conversion of dehydroascorbic acid into a furfuraldehyde derivative. W. McC.

Chemical behaviour of dehydro-*l*-ascorbic acid *in vitro* and *in vivo*. J. R. Penney and S. S. Zilva (*Biochem. J.*, 1943, **37**, 403—417).—The rate of conversion of dehydroascorbic acid into diketogulonic acid both in the presence and absence of O_2 is a min. at pH 4. The temp. coeff. k_{35}/k_{25} is 2·2. The reaction is probably not reversible in the body, since it can only be effected *in vitro* by treatment with HI etc., but the loss of ascorbic acid in this way is probably slow owing to the low concn. of dehydroascorbic acid at a given moment. Approx. 20% of either dehydroascorbic or diketogulonic acid injected is excreted in 24 hr. Oral administration of dehydroascorbic acid results in a large part of the acid remaining as such in the stomach for up to ½ hr., with ultimate conversion into diketogulonic acid in the small intestine. P. G. M.

Germinating seeds as source of vitamin-*C* in human nutrition. I. Ascorbic acid and dehydroascorbic acid contents of several varieties of seeds germinating under standard conditions for varying periods of time. J. W. H. Lugg and R. A. Weller (*Austral. J. Exp. Biol.*, 1943, **21**, 111—114).—Of wheat, haricot beans, navy beans, blue boiler beans, and green gram, only the last two were satisfactory as regards high viability and production of vitamin-*C* on germination. Their seedlings contained 0·35—0·38 mg. of total ascorbic acid per g. of tissue after germinating at 20—25° for 1—4 days at a light intensity of 3 ft.-candles during daylight (13 hr. per day). F. S.

Oxidising enzymes and vitamin-*C* in tomatoes.—See A., 1943, III, 703.

Correlation between vitamin-*C* content and refractive indices of musk melons. Comparison of tomato varieties for vitamin-*C* content.—See A., 1943, III, 700.

Ascorbic acid content of recently harvested cereals and legumes.—See B., 1943, III, 245.

Ascorbic acid content of garden-type peas preserved by the frozen-pack method.—See B., 1943, III, 251.

Green walnuts as source of vitamin-*C*.—See B., 1943, III, 251.

Formation of ascorbic acid from xylose by *B. prodigiosus*.—See A., 1943, III, 692.

Ascorbic acid, glutathione, and hydrogen peroxide as mechanisms for production of oxidised flavour in milk.—See B., 1943, III, 246.

Vitamin-*C* saturation test. L. J. Harris (*Lancet*, 1943, **244**, 515—517).—A fuller account of work already noted (A., 1943, III, 335). C. A. K.

[Determination of] ascorbic acid in dehydrated foods.—See B., 1943, III, 251.

Vitamins and hæmorrhagic states. H. Scarborough (*Proc. Roy. Soc. Med.*, 1942, **35**, 407—414).—Vitamin-*D* reduces the bleeding time in jaundice and other conditions, possibly by altering the amount of Ca bound to phospholipins. -*C*, which controls the hæmorrhagic manifestations of scurvy, is sometimes beneficial in thrombocytopenic purpura but does not increase capillary resistance. -*P*, which is not ascorbic acid, increases the resistance of capillary walls to applied pressure, and its deficiency in man results in petechial bleeding, low capillary resistance, and prolonged bleeding time. R. G. Macfarlane discusses -*K*. Methods for the determination of prothrombin are criticised. W. J. G.

Effect of oral and parenteral administration of vitamin-*E* on creatinuria and symptoms of dystrophic rabbits.—See A., 1943, III, 635.

Control of menopausal flushes by vitamin-*E*.—See A., 1943, III, 648.

Symptoms and neuro-muscular lesions in vitamin-*E* lack in adult rats.—See A., 1943, III, 634.

Effect of vitamin-*K* in newborn infants. N. Fiechter (*Schweiz. med. Wschr.*, 1942, **72**, 1252—1253).—Normal coagulation time in newborn infants was observed after injection of 20 mg. of 2-methyl-naphthaquinol phosphate into the mother 5—10 days ante partum. A. S.

Vitamin-*K* requirements of the new-born.—See A., 1943, III, 626.

Hæmorrhagic sweet clover disease. XI. Hypoprothrombinæmia in rat induced by salicylic acid.—See A., 1943, III, 626.

Vitamin-K_3, an antihæmorrhagic. D. M. Michlin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **37**, 191—192).—An extract of maize stigmas, injected intravenously, invariably lowered the coagulation time of dogs and rabbits irrespective of the level of the prothrombin. The effect lasted at least 1½ hr. The active principle, designated vitamin-K_3, is of unknown constitution. C. J. C. B.

Vitamin-*K* activity. K. Pakendorf, B. A. Kudrjaschov, and E. N. Lazareva (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 484).—Na 1 : 4-naphthaquinone-2-sulphonate has antihæmorrhagic activity almost equal to that of 2-methyl-1 : 4-naphthaquinone and Na 1 : 2-naphthaquinone-4-sulphonate also has considerable activity, possibly because, in the body, it may be converted into an equilibrium mixture of 2-hydroxy-1 : 4- and 4-hydroxy-1 : 2-naphthaquinone. Since these two substances and also 2-methyl-1 : 4-naphthaquinone are oxidised to phthalic acid, which, in large doses,

has antihæmorrhagic activity in rats, vitamin-*K* action is possibly due, in all cases, to an oxidation product. This is perhaps phthalic acid. W. McC.

See also Section XIX, Metabolism.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Basal metabolism of normal college women. J. McCreery, M. W. Lamb, and N. D. Bavousett (*J. Nutrition*, 1943, **25**, 245—254).—Among 124 subjects of ages 18—38 no significant differences were apparent in basal metabolic rates (average 0·95 kg.-cal. per kg. per hr.) between the different age groups. Differences recorded by other authors are attributed to variations in technique or in the interpretation of results. A. G. P.

Growth and development with special reference to domestic animals. LVIII. Resting energy metabolism and pulmonary ventilation in growing horses. S. Brody, H. H. Kibler, and E. A. Trowbridge (*Univ. Missouri Agric. Exp. Stat.*, 1943, *Res. Bull.* 368, 14 pp.).—Results of experiments with growing Percheron mares and geldings (body wt. 165·3—1764 lb.) and Shetland pony mares are used as basis for constructing graphs and drawing up tables showing the relation berween resting energy maintenance cost (standing and lying but not in post-absorptive state) and pulmonary ventilation rate, the no. of calories and the wt. of total digestible nutrients equiv. to the amount of O_2 consumed being shown. Crit. comparison is made with similar data on cattle. W. McC.

Metabolism in perfused dog's head during sodium pentobarbital depression and metrazol stimulation.—See A., 1943, III, 638.

Effect of thyroxine and dinitrophenol on sperm metabolism. H. A. Lardy and P. H. Phillips (*J. Biol. Chem.*, 1943, **149**, 177—182).—Max. stimulation of glycolysis and O_2 consumption of ejaculated bull spermatozoa occurs with a concn. of $1·3 \times 10^{-4}$M-dinitrophenol in the presence of glucose, lactate, and pyruvate. The inhibition of sperm motility by the phenol, which indicates interference with the energy-coupling mechanism, is greater in the absence of added metabolites, with higher concns. of the phenol, and after prolonged contact. Thyroxine ($1·72 \times 10^{-5}$M.) stimulates glycolysis but inhibits O_2 consumption; *o*-thyroxine has no effect on either. P. G. M.

Effect of freezing and dehydration on tissue metabolism [and structure]. I. Respiration of frozen and dehydrated guinea-pig liver. E. De Robertis and W. W. Nowinski (*Rev. Soc. argent. Biol.*, 1942, **18**, 333—345).—Tissue respiration was studied in slices of normal guinea-pig liver and in slices that had been frozen in liquid air and frozen and dried in the Altmann–Gersch apparatus. The CO_2 was 27·4% of normal in frozen tissue and 20·9% in the frozen–dried. The minced tissue in these conditions gave the following vals.: normal 28·5%; frozen 18·2%; frozen–dried 7·05%. Freezing produced pyknosis and retraction of the nucleus, vacuolisation of the cytoplasm, and disappearance of the chondrioma. Freezing and drying produced similar alterations. The nuclei and chondrioma are present in the minced fresh tissue; they disappear in the minced frozen tissue and in frozen–dried tissues the chondrioma disappears, but the nuclei remain. J. T. L.

Liver-glycogen and oxidative processes in intermediate metabolism when dietary proteins are replaced by amino-acids and their mixture. A. Bickel (*Biochem. Z.*, 1940, **306**, 245—263).—The digestive regulation of oxidative processes and liver-glycogen content is not only dependent on the amount and type of protein in the diet but is also affected by the substitution of protein by single and mixed amino-acids or protein hydrolysates. F. O. H.

Rôle of xanthurenic acid in tryptophan metabolism of pyridoxine-deficient rats. S. Lepkovsky, E. Roboz, and A. J. Haagen-Smit (*J. Biol. Chem.*, 1943, **149**, 195—201).—Tryptophan metabolism differs in the dog and the rat. In the former, fed on a pyridoxine-deficient diet, severe anæmia develops but little xanthurenic acid is excreted, whilst in the latter anæmia is not so marked and large amounts of xanthurenic acid are excreted. Pantothenic acid- or tryptophan-deficient rats excrete no xanthurenic acid. The acid was identified as its *methyl* ester, m.p. 260—261°. P. G. M.

Relation of transmethylation to anserine. J. R. Schenk, S. Simmonds, M. Cohn, C. M. Stevens, and V. du Vigneaud (*J. Biol. Chem.*, 1943, **149**, 355—359).—*N*-Methyl compounds synthesised in the rabbit derive their methyl groups from labile methyl compounds in the diet, as evidenced by the presence of D in muscle-anserine, in tissue-choline and -creatine, and in urinary creatinine, after ingestion of deuteromethionine. P. G. M.

Histidine and histamine metabolism in normal and pathological pregnancy.—See A., 1943, III, 650.

Production of radioactive plasma-protein from amino-acids containing radioactive sulphur.—See A., 1943, III, 626.

Gout. L. E. Barrick and J. R. Miller (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, **17**, 133—146).—A review. A. S.

Successful treatment of gout. E. C. Bartels (*Ann. int. Med.*, 1943, **18**, 21—28).—31 patients suffering from gout benefited from a low-fat, low-purine, high-carbohydrate diet, with decreasing doses of cinchophen. These patients had 47 minor attacks of gout, compared with 84 major attacks during a control period without treatment. The average blood-uric acid level fell from 8·3 to 6·3 mg.-%. Even patients with chronic gouty arthritis responded well. A. S.

The fat youngster. Treatment of 200 cases of alimentary obesity in patients under age 15. I. Bram (*Arch. Pediat.*, 1943, **60**, 239—249).—About 95% of cases of obesity in youngsters are of the alimentary type, due to overeating because of an unbridled appetite and parental indulgence. Treatment consists essentially of dietetic, thyroid, and psychotherapeutic measures. C. J. C. B.

Phosphorylysis and synthesis of glycogen in animal tissues. B. Shapiro and E. Wertheimer (*Biochem. J.*, 1943, **37**, 397—403).—The prep. of phosphorylase described by Cori *et al.* (A., 1939, III, 926) is modified by use of Al_2O_3 $C\beta$ instead of $C\gamma$. The ppt. is washed only once with aq. NH_3. Positive correlation exists between intensity of glycogen metabolism and phosphorylase and phosphoglucomutase activity. Phosphorylase does not appear in the muscles of young rats until 10 days old; in brain phosphorylase activity is practically max. at birth; the slow phosphorolysis is due to lack of active phosphoglucomutase. Complete destruction of the enzyme occurs by ultra-violet irradiation or by heating at 55° for 20 min. Glucose inhibition is reduced by adenylic acid. Phosphoglucomutase, but not phosphorylase, activity of liver is inactivated by P, CCl_4, or $CHCl_3$ poisoning. Muscle-phosphorylase differs from most animal phosphorylases, and resembles plant-phosphorylases, in forming starch, instead of glycogen, from glucose 1-phosphate. P. G. M.

Serum-phosphorus changes during absorption and metabolism of glucose, galactose, and xylose. A. H. Free and J. R. Leonards (*J. Biol. Chem.*, 1943, **149**, 203—208).—In man, oral or intravenous administration of 0·6 g. per kg. of glucose or galactose results in a decrease in serum- and urinary inorg. P. Analogous changes occur in dogs to which galactose or xylose has been administered. The P metabolism of these sugars is not influenced by intestinal absorption or renal tubular reabsorption. The rate of utilisation of xylose is less than that of glucose or galactose. P. G. M.

Structure of galactose phosphate present in liver during galactose assimilation. H. W. Kosterlitz (*Biochem. J.*, 1943, **37**, 318—321; cf. A., 1940, III, 150).—After removal of reducing hexose phosphates by alkaline hydrolysis, the mixture of phosphoric esters isolated from the livers of rabbits assimilating galactose contains galactose 1-phosphate 29·6 (as anhyd. Ba salt), glucose 1-phosphate 3·4 (as anhyd. Ba salt), acid-labile ester 2 (as Ba salt), and difficultly hydrolysable, non-reducing ester 65%. The Ba salts of the mixture of esters freed from reducing phosphates have $[\alpha]_{5461}$ +34·4°, the corresponding val. for the Ba salt of the difficultly hydrolysable ester being −3·4°. $[\alpha]_{5461}$ of natural anhyd. Ba galactose 1-phosphate, calc. from these vals., is +113°, the corresponding val. for the synthetic compound being +105·5°. The velocity coeff. of hydrolysis of natural galactose-1-phosphoric acid, calc. in a similar way, is $0·91 \times 10^{-3}$, the val. for the synthetic compound being $0·89 \times 10^{-3}$. The results indicate the identity of natural and synthetic galactose-1-phosphoric acid; it is probably phosphoryl-α-mono-*d*-galactopyranoside. W. McC.

Oral glucose tolerance tests in dogs with intestinal resections. M. G. Goldner and A. T. Haerem (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 186—188).—Blood-sugar was determined at intervals after ingestion of 1·5 g. of glucose per kg. After removal of the stomach the curve shows a high peak but returns quickly to fasting level. After removal of ileum only, the curve is normal. V. J. W.

New chemical and physiological tools for investigating the intermediary metabolism of carbohydrates.—See A., 1943, III, 684.

Relation of stilbœstrol to carbohydrate metabolism.—See A., 1943, III, 648.

Disturbance of carbohydrate metabolism in hyperthyroidism.—See A., 1943, III, 644.

Potassium and carbohydrate metabolism of leucocytes.—See A., 1943, III, 624.

Relationship between sugar absorption and phosphate metabolism.—See A., 1943, III, 654.

Quantitative relationships between blood- and urine-ketone levels in diabetic ketosis. H. E. Martin and A. N. Wick (*J. clin. Invest.*, 1943, **22**, 235—241).—20 diabetics in mild and severe ketosis showed a low urinary output of ketone bodies (less than 100 mg. per hr.) with blood-ketone levels under 20 mg.-%. This is attributed to excretion of acetone, which appears to be a non-threshold substance. A relationship was present between blood-ketone levels and urinary output as shown by increased urinary output per hr. with rising blood-ketone levels and there was a renal threshold for β-hydroxybutyric acid over 20 mg.-%. A lack of correlation between the blood-ketone level and the CO_2-combining power was demonstrated. C. J. C. B.

Coupled oxidation-reduction of alcohol and pyruvate *in vivo*. W. W. Westerfeld, E. Stotz, and R. L. Berg (*J. Biol. Chem.*, 1943, **149**, 237—243).—The increase in the rate of alcohol metabolism resulting from administration of pyruvate is due to an increase in the rate of oxidation of alcohol to acetaldehyde (the slowest reaction in alcohol metabolism) caused by a coupled oxidation-reduction reaction between pyruvate and alcohol. Administration of pyruvate during alcohol metabolism increases both lactate and acetaldehyde at the expense of pyruvate and alcohol. The rate of alcohol metabolism is also increased by administration of lactate, although the effect is smaller and delayed. H. G. R.

Effect of vitamin-*C* deficiency on metabolism of alcohol.—See A., 1943, III, 677.

Relationship of acetoin to metabolic acetylations. E. A. Doisy, jun., and W. W. Westerfeld (*J. Biol. Chem.*, 1943, **149**, 229—236).—*p*-Aminobenzoic acid is determined by the colorimetric method of Bratton and Marshall for sulphanilamide (A., 1939, III, 773) and the acetylated compound from the increase obtained on acid hydrolysis, a const. loss of 6% occurring during the latter process. Acetylation of *p*-aminobenzoic acid by rabbits is increased by administration of acetoin or $\beta\gamma$-butylene glycol, whilst Na acetate either has no effect or causes a decrease. Administration of glucose increases the acetylation, the max. effect occurring after several days and a return to normal levels after 2 weeks. H. G. R.

Acetoin not a product of metabolism of alcohol.—See A., 1943, III, 677.

Metabolism of glycollic and glyoxylic acids. R. H. Barnes and A. Lerner (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 216—219).—Administration to rats of glycollic acid or Na glycollate caused no increase in liver-glycogen and a decrease in urinary ketones. Administration of Na glyoxylate caused an increase in blood-ketones (cf. A., 1940, III, 96). V. J. W.

Influence of steroid hormones on metabolism of chlorides.—See A., 1943, III, 652.

Calcium metabolism in thyroid disease.—See A., 1943, III, 644.

Metabolism of zinc with the aid of its radioactive isotope. II. Distribution of administered radioactive zinc in tissues of mice and dogs. G. E. Sheline, I. L. Chaikoff, H. B. Jones, and M. L. Montgomery (*J. Biol. Chem.*, 1943, **149**, 139—151; cf. A., 1943, III, 580).—3 hr. after administration of radioactive Zn to dogs, 38% is found in the liver, diminishing to 3·5% after 170 hr. Whilst 17·5—21% of the ^{65}Zn that disappears is excreted in urine and fæces, only 0·5% appears in the bile. It disappears completely from the plasma of the dog 10 hr. after intravenous injection, but continues to increase in the erythrocytes throughout the 170-hr. period. Continuous deposition of ^{65}Zn also occurs in bone, the nervous system, skin, and skeletal muscle during the same period. Deposition in mouse thymus reaches a max. of 4% after 26 hr., but it decreases thereafter. The whole gastro-intestinal tract of the dog contains 13% of ^{65}Zn injected after 3 hr., falling to 8% at 24 hr., and 5% at 170 hr. There is a more rapid turnover of Zn in cardiac than in skeletal muscle. The distribution of administered ^{65}Zn in other tissues is also examined. P. G. M.

Detoxication. XIII. Biosynthesis of aminophenyl- and sulphonamidoaminophenyl-glucuronides in rabbit and their action on hæmoglobin *in vitro*. R. T. Williams (*Biochem. J.*, 1943, **37**, 329—333).—The urine of rabbits to which *o*-, *m*-, or *p*-aminophenol is administered by stomach tube yields 25·5, 22, and 8% respectively of *o*-, $[\alpha]_D$ −76·1° in 0·1N-HCl, *m*-, $[\alpha]_D$ −94° in HCl, or *p-aminophenyl-β-d-glucuronide*, m.p. 213°, $[\alpha]_D^{22}$ −82·7° in 0·1N-HCl. Similarly, after administration of 4-hydroxy-3-amino-, 6-hydroxy-3-amino-, or 3-hydroxy-4-amino-benzenesulphonamide, *4-sulphonamido*-2-, m.p. 150°, $[\alpha]_D^{20}$ −67·7° as Na salt in water, *2-sulphonamido*-4- $[\alpha]_D$ −76·9° as Na salt in water, and *3-sulphonamido*-6-*aminophenyl-glucuronide Ba* salt are obtained. Hæmoglobin is converted into methæmoglobin *in vitro* by *o*- and *p*-aminophenyl- and less powerfully by 4-sulphonamido-2- and 2-sulphonamido-4-aminophenyl-glucuronide. W. McC.

Metabolism of mononitroparaffins. III. Concentration of nitroethane, nitrite, and nitrate in the blood of rabbits during exposure by inhalation and oral administration. E. W. Scott (*J. Ind. Hyg.*, 1943, **25**, 20—25; cf. A., 1943, III, 761).—1·24—1·47% of nitroethane in air was administered by tracheal cannula to rabbits; the max. nitroethane in blood was 270 mg.-%, NO_3' 21 mg.-%. The concn. of nitroethane in blood varied with the concn. in air inhaled, but the NO_3' varied very little; blood-NO_2' was very low. The NO_2' formed is rapidly converted into NO_3' in the blood, but the latter is slowly excreted. E. M. K.

Fate of nicotine in body. III. Methylated and demethylated derivatives of nicotine.—See A., 1943, III, 678.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Medical use of sulphonamides. (*Med. Res. Counc., War Memo. No.* 10 1943, 46 pp.).—A review of the clinical indications for some of the sulphonamide drugs, containing methods for determining the concn. of sulphonamides in body fluids, and sterilisation of sulphanilamide powder. L. L. W.

Sulphanilamide activity against *E. coli* under anaërobic conditions. C. E. Clifton and I. E. Loewinger (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 225—227).—In cultures on Wood's synthetic medium (*J. Exp. Med.*, 1942, **75**, 369) with glucose, sulphanilamide inhibits respiration and growth under both aërobic and anaërobic conditions, and in both *p*-aminobenzoic acid has its anti-sulphonamide action. V. J. W.

Effects of azosulphonamides on lysozyme. C. A. Lawrence and H. Klingel (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 129—130).—Certain azosulphonamides abolish or lessen the action of lysozyme on *M. lysodeikticus*. These substances are extremely complex, and it is stated that their formulæ and antibacterial properties will be published elsewhere. V. J. W.

Mechanism of sulphonamide action. III. Action of substituted *p*-aminobenzoic acids. O. Wyss, M. Rubin, and F. B. Strandskov (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 155—158).—Various F-, Cl-, Br-, I-, NH_2-, and CO_2H-derivatives were compared with *p*-aminobenzoic acid. Some had sulphonamide activity (2- and 3-chloro-, 3-fluoro-, 2- and 3-amino-) and others were antisulphonamide (especially 2-fluoro-4-aminobenzoic acid) or inactive. None was chemotherapeutic against the pneumococcus. Results are tabulated. V. J. W.

[Treatment of] erysipelas in infancy. J. W. Bruce and T. S. Chalkley (*Amer. J. Dis. Child.*, 1943, **65**, 739—743).—In 18 infants with erysipelas treated with sulphanilamide, the mortality rate was not changed but the fall of temp. was more sudden than in 24 controls. Complications were relatively frequent but the period of stay in the hospital was reduced by 50%. The best dosage of sulphanilamide is 0·2 g. per kg. per day divided into 6 or 8 equal doses, the first dose being twice the following doses. This should be continued for 3—4 days after the temp. is normal, to prevent recurrence. C. J. C. B.

Treatment of toxic diphtheria. G. Neff (*Schweiz. med. Wschr.*, 1943, **72**, 1229—1230).—Mixed infections with streptococci and diphtheria bacilli were frequently found in cases of toxic diphtheria. Excellent results were obtained with early combined anti-toxic and sulphanilamide treatment. A. S.

Chemotherapy of acute hæmolytic streptococcal nephritis and of typhoid and paratyphoid. M. P. Marcel (*Schweiz. med. Wschr.*, 1942, **72**, 1032—1038).—Good results were obtained with sulphanilamide. A. S.

Chemotherapy in experimental eye lesions.—See A., 1943, III, 731.

Effects, other than anti-infectious, of sulphonamide compounds on eye.—See A., 1943, III, 729.

Sulphadiazine. K. J. Winters and F. R. Janney (*Amer. J. Dis. Child.*, 1943, **65**, 702—711).—Sulphadiazine given in doses of ¾—1 grain per lb. per 24 hr. to children produces blood level of 7—10 mg.-% which is adequate for usual infections. Sulphadiazine is effective against most of the common bacteria producing sp. infections, especially hæmolytic streptococci, pneumococci, *Staph. aureus hæmolyticus*, meningococci, and *H. influnzæ*. Sulphadiazine passes readily into the c.s.f., and c.s.f. vals. are ⅔ or more of the blood val. With high blood vals. or poor fluid intake, the common reactions are crystals or red blood cells in the urine, leucopenia, and neutropenia. Sulphadiazine spray for burns produces a satisfactory eschar and prevents secondary infection. C. J. C. B.

Action of promin and diaminodiphenyl sulphone on tubercle bacilli : antipromin action of *p*-aminobenzoic acid. W. Steenken, jun., and F. H. Heise (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 180—183).—Diaminodiphenyl sulphone has a much more powerful bacteriostatic action than promin against tubercle bacilli in culture. The effect of promin is inhibited by *p*-aminobenzoic acid. V. J. W.

Effect of *p*-aminobenzoic acid on chemotherapeutic activity of sulphonamides in lymphogranuloma venereum and in duck malaria. A. O. Seeler, O. Graessle, and E. D. Dusenbery (*J. Bact.*, 1943, **45**, 205—209).—*p*-Aminobenzoic acid inhibited the curative action of sulphamethyldiazine on *Plasmodium lophoræ* infections in Pekin ducklings, but had no effect on the action of sulphanilamide and sulphamethyldiazine on lymphogranuloma venereum in mice. F. S.

Influence of vitamins and coliform bacteria on sulphaguanidine tolerance by young chickens. K. H. Lewis, W. E. Ham, and W. I. Jensen (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 33—35).—Mortality rate among baby chicks receiving 10 g. of sulphaguanidine per kg. per day was more than doubled when a mixture of *p*-aminobenzoic acid, thiamin, and riboflabin, or a suspension of *E. coli*, was added to the diet. V. J. W.

Biotin deficiency in rats fed purified diets containing succinylsulphathiazole and *p*-aminobenzoic acid. F. W. Neumann, M. M. Krider, and H. G. Day (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 257—260).—Addition of *p*-aminobenzoic acid to diet does not prevent

symptoms of biotin deficiency in rats on a diet containing 1% of succinylsulphathiazole. V. J. W.

Chronic toxicity of sulphanilamides in growing rats as influenced by type of diet, addition of fæces to diet, and appetite. J. S. Harris and H. I. Kohn (*J. Pharm. Exp. Ther.*, 1943, **78**, 56—64).—Young rats fed on a commercial chow diet with added sulphanilamides did not show inhibition of growth when the blood concn. of sulphaguanidine was 3—4 or of sulphadiazine 8 mg.-%. Growth was inhibited 37—45% by sulphathiazole (6—8), sulphanilamide (17), or sulphadiazine (23 mg.-%). The inhibitions produced by sulphathiazole and sulphadiazine were due to decreased food intake. *p*-Aminobenzoic acid did not antagonise sulphathiazole. With a purified diet and casein as protein source, all the drugs were more toxic, 80—90% inhibition of growth being obtained with the blood levels above. On this diet, sulphadiazine was most toxic and sulphathiazole least on the basis of the dietary level, whilst on the basis of the concn. of drug in the blood sulphaguanidine was most toxic. The relative toxicities of the three drugs changed with the diet. Addition of 200 mg. of dried fæces of normal rats daily to the diet caused a striking increase in the rate of growth of rats inhibited by sulphanilamides. This effect was not due to a decrease in blood-drug concn. P. C. W.

Fatal agranulocytosis following sulphathiazole therapy. K. Kato, M. S. Sherman, and P. R. Cannon (*J. Pediat*, 1943, **22**, 432—438).—Report of infant with toxic dermatosis after 2·55 g. of drug. C. J. C. B.

Prevention of crystalluria during sulphadiazine therapy. D. R. Gilligan, S. Garb, and N. Plummer (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 248—250).—Solubility of sulphadiazine and its acetyl derivative is much greater in alkaline than in acid urine. Administration of 12 g. daily of $NaHCO_3$ was found suitable to maintain urinary pH at 6—7. V. J. W.

Surgical use of chemotherapy. C. Lenormant (*Schweiz. med. Wschr.*, 1942, **72**, 1189—1193).—A review. A. S.

Chemotherapy of malaria.—See A., 1943, II, 339.

Distribution of quinine in tissues of fowl. F. E. Kelsey, F. K. Oldham, and E. M. K. Geiling (*J. Pharm. Exp. Ther.*, 1943, **78**, 314—319).—Quinine was given by mouth or intravenously. Individual variations in both blood- and organ-concns. were large. All had disappeared from the body in 24 hr. Concn. was max. in liver, spleen, adrenals, pancreas, and leucocytes, and least in nervous system, skin, and blood. V. J. W.

Action on avian malaria of cinchona alkaloids from Cameroons and Belgian Congo. P. Baranger and P. E. Thomas (*Biochem. J.*, 1943, **37**, 342—344).—The effect on malaria in canaries of the total alkaloids of the bark of *Cinchona succirubra* and *C. ledgeriana* from Cameroons and Belgian Congo is equal to or greater than that of quinine. The effect is diminished by removing quinine from the total alkaloids, possibly because of synergism which exists between small amounts of quinine and other alkaloids. W. McC.

Use of pentamidine in treatment of late cases of sleeping sickness. F. W. Gilbert (*Trans. R. Soc. trop. Med. Hyg.*, 1943, **36**, 353—358).—In late cases of *T. gambiense* sleeping sickness, pentamidine reduces the cell count in the c.s.f.; in cases where the disease is not too far advanced there is marked clinical improvement. Advanced cases, verging on coma, derived no benefit; in 2 cases tryparsamide produced a rapid improvement clinically, after pentamidine had failed. Doses of at least 2 mg. per kg. should be given; the intravenous route is better than the intramuscular. C. J. C. B.

Therapeutic effects of disodium formaldehydesulphoxylate-diaminodiphenyl sulphone in experimental tuberculosis. W. H. Feldman, H. C. Hinshaw, and H. E. Moses (*Arch. Path.*, 1943, **36**, 64—73).—Beginning 46 days after subcutaneous inoculation with 0·0005 mg. of human tubercle bacilli (strain H37Rv), 14 guinea-pigs were treated with 350 mg. daily of Na_2 formaldehydesulphoxylate-diaminodiphenyl sulphone. The drug was administered orally in the food, which contained 0·66% by wt. The experiment was terminated 228 days after the animals had been infected. 71% of the untreated animals died, compared with 14% of the animals in the treated group. Markedly more tuberculosis was found in the controls than in the treated group, where the disease, when present, was less severe. (7 photomicrographs.) C. J. C. B.

Preparation and therapeutic properties of certain acridine derivatives.—See A., 1943, II, 339.

Value of tyrothricin (gramicidin) in a herd mastitis control programme. C. S. Bryan, R. E. Horwood, and C. F. Clark (*J. Dairy Sci.*, 1942, **25**, 713).—Treatment with 150 mg. of tyrothricin per quarter produced recovery in 93% of the selected cases. N. J. B.

Field and laboratory observations on mastitis. P. M. F. Shattock (*Proc. Soc. Agric. Bact.*, 1941, 43—44).—Bacteriological testing, using Edwards' method, was carried out on single quarter samples from two herds under observation, but the disease was not kept under control. Control was eventually obtained by very frequent testing coupled with the use of a disinfectant, but this would be too laborious to put into practice on a large scale. D. W. W.

Detection of mastitis in New Zealand dairy herds. I. Field outfit for bromothymol test. C. M. Hume. **II. Factors influencing the bromothymol test.** F. H. McDowall (*New Zealand J. Sci. Tech.*, 1941, **22, A**, 322—327, 328—337).—I. The outfit and its use are described.

II. Results of bromothymol tests are compared with direct pH determinations (quinhydrone). Vals. obtained by the indicator method are influenced by the quantity of foremilk taken, the time elapsing after drawing the milk, and the fat content of the milk. In successive portions of milk drawn from an individual quarter there is frequently a rapid diminution in pH and [Cl']. In many samples the pH is increased considerably by keeping for 2—5 hr. This increase is due to loss of CO_2 and is accelerated by shaking the sample. In high-fat samples the blue cream of a positive test becomes less easy to distinguish. The colour change of phenol-red is less affected by high fat contents. The importance of defining the colour standard in terms of pH is indicated. A. G. P.

Local treatment for ulcerative gingivitis. M. Glickman (*Brit. Dent. J.*, 1943, **75**, 61—64).—Local application of powdered soap and H_2O_2 daily for 10 days successfully cured 200 successive cases, without any relapses up to 8 months. P. C. W.

Gas gangrene: prevention, diagnosis, treatment (*Med. Res. Counc., War Memo. No.* 2 [*revised*], 1943, 28 pp.).—A review of the present knowledge of gas gangrene, and a scheme for combined clinical and bacteriological study of war wounds. L. L. W.

***In-vitro* effects of quinine, atebrin, and substituted acridine compounds on Gram-negative bacteria.** C. A. Lawrence (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 90—91).—Rivanol (2 : 5-diamino-7-ethoxyacridine) and certain derivatives were bacteriostatic in 50 mg.-% concn. against the colon–typhoid–dysentery group. Atebrin was rather less effective and quinine was inactive. V. J. W.

Germicidal action of aliphatic alcohols. F. W. Tanner and F. L. Wilson (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 138—140).—26 alcohols, from 1 to 11 C, were tested on 9 strains of bacteria. Potency increased from methyl to *n*-amyl, and then decreased to undecyl alcohol. With the same no. of C atoms, potency decreased in the order primary, *iso*, *sec.*, and *tert.* alcohols. V. J. W.

Effect of sodium salt of cinnamoylglycerol phosphatidic acid on lesions produced by tubercle phosphatide. B. Gerstl and R. Tennant (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 154).—This compound requires the same enzymes for its breakdown as does tubercle phosphatide but does not yield enzyme-inhibiting fatty acids. Its intraperitoneal injection into rabbits with tubercle phosphatide minimised or abolished the omental tuberculous nodules caused by the tubercle phosphatide alone. V. J. W.

Tertiary alkyl primary amines, CRR′R″·NH_2. III.—See A., 1943, II, 320.

Control of internal parasites with phenothiazine. L. K. Whitten (*New Zealand J. Agric.*, 1941, **63**, 189—190).—Suitable doses for administering to sheep, pigs, cattle, and horses of various ages are given. A. W. M.

***Veratrum* alkaloids. III. Differences in action of cevine and veratridine.** R. Mendez and G. Montes (*J. Pharm. Exp. Ther.*, 1943, **78**, 238—248; cf. A., 1942, III, 709).—Cevine and its veratrate, veratridine, cause reversible systolic standstill of isolated frog heart and improve its activity if it is failing. In mammals cevine has chiefly convulsant activity and veratrine and veratridine cause respiratory depression, vagal stimulation, and liberation of adrenaline. V. J. W.

Iontophoretic introduction of atropine and scopolamine into rabbit eye.—See A., 1943, III, 731.

Action of drugs on sea-star, *Asterias forbesii*. W. A. Hiestand (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 85—86).—Immersion of starfish in dil. atropine causes excitement. Caffeine causes excitement followed by rigor, which latter is abolished by picrotoxin. Picrotoxin alone causes motor excitement which is antagonised by caffeine. Concns. generally used were 0·02% and all effects were reversible. V. J. W.

Action of pervitin on female reproductive system. W. Neuweiler (*Schweiz. med. Wschr.*, 1942, **72**, 1217—1220).—Daily injections of 0·6—0·8 mg. of pervitin per 100 g. body wt. into rats diminished the rate of œstrous cycles or produced complete anœstrus. Permanent œstrus was observed in some animals. There were many persistent corpora lutea. Pervitin in doses of 0·75 mg. inhibits, in doses of 1·5—3 mg. excites, the motility of the isolated rabbit's gut. Adrenaline is 10 times more effective on the isolated guinea-pig's uterus than ephedrine or pervitin. A. S.

Effect of organic nitrates on coronary flow. M. Wrightington (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 184—185).—Erythrol tetranitrate, glycerol trinitrate, and mannitol hexanitrate increased coronary flow in the perfused rabbit heart by 20—60% when 1 ml. of a 40% solution was introduced into the perfusion fluid over 3 min. V. J. W.

Serial determination of cardiac output (ballistocardiogram) and electrocardiogram in normal men after intravenous administration of purified cardiac glucosides. L. W. Eichna, H. Taube, and A. C. DeGraff (*J. Pharm. Exp. Ther.*, 1943, **78**, 22—38).—Lanatoside-*C*, digoxin, and digitalin Nativelle were injected intravenously in single doses (1·5—2·5, 1·2—2·5, and 0·72—1·8 mg., respectively) in 29 normal subjects. The e.c.g. changes were produced more slowly and lasted longer after digitalin Nativelle than after the other two compounds, which acted quickly. Typical, fully developed circulatory changes were essentially the same with all three glucosides, consisting of a prompt moderate decrease in heart rate of vagal origin, a rapid small rise in arterial blood pressure, chiefly systolic, a slight increase in stroke vol., and a slight decrease in min. output. The circulatory changes appeared to be secondary to the changes in heart rate, and depend on the vagal action of the glucosides; the e.c.g. changes depend on their direct cardiac action. P. C. W.

Evaluation of laxative agents in constipated human subjects. Comparative laxative potency of fumarates, sodium tartrate, and magnesium acid citrate. H. Gold and W. Zahn (*J. Amer. Pharm. Assoc.*, 1943, **32**, 173—178).—A quant. comparison of laxative effect in human subjects shows that Na, Ca, and Mg fumarate, Na tartrate, and Mg H citrate have approx. the same efficacy. The fumarates, in doses of about 10 g., provide a substitute for tartrates with less kidney damage. F. O. H.

Hæmatic and organic reactions in standardised and graded histamine shock in dogs. W. C. Hueper and C. T. Ichniowski (*J. Pharm. Exp. Ther.*, 1943, **78**, 127—138).—By injections of histamine in oil the blood pressure of dogs was kept at 20—40 mm. Hg for several hr. Under these conditions increases in hæmoconcn. and plasma viscosity were slight but there were hæmorrhages in the myocardium. Early deaths appeared to be due to the cardiac condition and later ones to increased capillary permeability. V. J. W.

Use of histamine in Ménière's disease.—See A., 1943, III, 734.

Effect of cholesterol administration on anæsthesia. F. F. Foldes and H. K. Beecher (*J. Pharm. Exp. Ther.*, 1943, **78**, 276—281).—Results of Starkenstein and Weden (*Physiol. Abs.*, 1936, **21**, 1000) as to the potentiation of various anæsthetics by cholesterol are confirmed for Na pentobarbitone. V. J. W.

Trichloroethylene as general analgesic and anæsthetic. C. L. Hewer (*Proc. Roy. Soc. Med.*, 1942, **35**, 463—468).—Trichloroethylene resembles $CHCl_3$ but is less potent, less toxic, and more analgesic. Its advantages are absence of respiratory irritation and superficial oozing, non-inflammability, and cheapness, but relaxation is sometimes difficult to achieve and the respiratory rate may be raised. W. J. G.

Anæsthetic convulsions. E. A. Pask (*Proc. Roy. Soc. Med.*, 1942, **35**, 545—548).—In anæsthetic convulsions predisposing conditions are youth, pyrexia, low blood-Ca, and disturbed temp. control; the immediate stimuli include high alveolar CO_2, anoxia, heat, trauma, and respiratory obstruction. Barbiturates, nerve block, and possibly morphine are inhibiting factors. W. J. G.

Direct replacement of oxygen in hydantoins and barbiturates by sulphur.—See A., 1943, II, 339.

Electrocardiographic changes resulting from dilantin medication. J. F. Mallach, I. Finkelman, A. J. Arieff, and R. C. Roberts (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, **17**, 97—101).—The effect of daily administration of 0·3—0·6 g. of dilantin on the e.c.g. was studied in 27 epileptics. Definite changes were observed in 25 patients. 25 patients showed an increase of the *P–R* interval of 0·02—0·04 sec., 21 a lowered *T* voltage in one or more leads, 3 alterations of *P* in more than one lead, and in 1 marked alteration of the *QRST* complex. The changes were reversible on lowering the dose. A. S.

Results of feeding chloretone to bulls. E. C. Scheidenhelm, A. L. Bortree, C. F. Huffman, and C. F. Clark (*J. Dairy Sci.*, 1942, **25**, 690—691).—Feeding chloretone to sexually defective bulls increased their sex interest and reduced considerably the no. of services required to cause conception. The effect is probably due to the increase in plasma-ascorbic acid concn. caused by chloretone. N. J. B.

Poisoning by synergistic effect of phenobarbital and ethyl alcohol. W. W. Jetter and R. McLean (*Arch. Path.*, 1943, **36**, 112—122).—Synergism between ethyl alcohol and phenobarbital when administered in greater than anæsthetic doses was demonstrated in rats. When the max. sublethal dose of each drug was used, death occurred regularly. The max. sublethal dose of one drug + half that of the other caused death in a high % of animals. Severe narcosis with an occasional death resulted from a combination of half the max. sublethal dose of one with half that of the other. C. J. C. B.

Resorption of ethyl alcohol from stomach and intestine of rat. O. Dybing and E. W. Rasmussen (*Biochem. Z.*, 1940, **306**, 337—342).—Lower concns. (5%) of ethyl alcohol are more easily absorbed from the stomach of the rat than high concns. (40%). Absorption from the intestine is proportionate to the concn. of alcohol. P. G. M.

Method of studying analgesic action of drugs in animals. G. C. Knowlton and E. G. Gross (*J. Pharm. Exp. Ther.*, 1943, **78**, 93—99).—A method is described for measuring the pain threshold in dogs. The stimulus used is a repetitive condenser discharge applied by means of a multiple pin electrode to the shaved skin of the back. Appreciation of pain is indicated by opening or widening of the eyelids. Typical curves are given of the rise in pain threshold following the administration of common analgesic drugs (procaine, aspirin, alcohol, morphine). P. C. W.

Exfoliative dermatitis due to phenobarbitone. S. W. Barefoot and J. L. Callaway (*Ann. int. Med.*, 1943, **18**, 105—110).—Report of a case with recovery. A. S.

Sodium succinate as antidote for barbiturate poisoning and in control of duration of barbiturate anæsthesia. S. Soskin and M. Taubenhaus (*J. Pharm. Exp. Ther.*, 1943, **78**, 49—55).—Na succinate (intramuscular doses of 100 mg. per 100 g.) reduced the incidence of mortality in rats given fatal doses of nembutal. Smaller doses are effective if given intravenously after the barbiturate. Na succinate shortens the duration of nembutal and Na amytal anæsthesia in rats, the degree of shortening depending on the dose given (0·05—50 mg. per 100 g.). Glucose, Na lactate, and Na malate were ineffective. Na succinate was of benefit in a human case of barbiturate poisoning. P. C. W.

Identification of lead in bone tissue.—See A., 1943, III, 709.

Massive arsenotherapy of syphilis by continuous intravenous drip method. F. Prats, L. I. Varas, and E. Haraszti (*Arch. Dermat. Syphilol.*, 1942, **45**, 885—893).—The hydrochloride of arsenoxide (oxiarsolan) was employed in the massive dose treatment of 27 cases of syphilis by the continuous intravenous drip procedure. The average dose was 1·2 g. for men and 0·8 g. for women in the 5-day treatment period. The most satisfactory diluent was glucose solution sterilised by passage through a Berkefeld filter, 2 l. being used for the daily dose, delivered in 10 hr. Of 69 patients who were followed up for 7 months, 55 achieved and maintained completely negative, and 10 almost completely negative, serological reactions, and 4 were failures. C. J. C. B.

Encephalopathy from inhaling fumes from burning storage battery boxes. W. D. McNally (*J. Ind. Hyg.*, 1943, **25**, 29—30).—Details are given of a single case in which death occurred from the effects of absorption of Pb. E. M. K.

Absorption of lead tetraethyl with radioactive lead as indicator. R. A. Mortensen (*J. Ind. Hyg.*, 1942, **24**, 285—288).—Rats were exposed to the vapour with their bodies immersed in water to prevent absorption through the skin. The quantity of Pb absorbed was determined by comparing the radioactivity of the ashed carcase with that of a known quantity of radioactive Pb. The amount of Pb absorbed in a given time was nearly proportional to the concn. of the vapour, and it was calc. that 16—23% of the vapour reaching the alveoli entered the blood. The rate of absorption was unaffected by the presence of petrol. E. M. K.

Physiological properties of indium and its compounds. C. P. McCord, S. F. Meek, G. C. Harrold, and C. E. Heussner (*J. Ind. Hyg.*, 1942, **24**, 243—254).—Application of In chloride and sulphate to the shaved skin of rabbits had no harmful effects, nor had these compounds any depilatory action. Metallic In was also ineffective when applied in lump or powdered form to the human skin, and applied on the surface or subcutaneously to the rabbit. Subcutaneous injection of more than 2 mg. per kg. of $InCl_3$ was fatal to rabbits, and of more than 10 mg. per kg. was fatal to rats. The intravenous fatal dose was 0·64 mg. per kg. for rabbits. The symptoms produced were loss of appetite and wt., nose bleeding, and paresis of hind legs; the findings at autopsy were pleural effusion, pneumonia, with hæmorrhages in lungs, liver, kidneys, and ureters, hæmosiderosis of spleen, and hypoplasia of bone marrow. E. M. K.

Toxicology [and determination] of beryllium. F. Hyslop, E. D. Palmes, W. C. Alford, A. R. Monaco, and L. T. Fairhall (*U.S. Nat. Inst. of Health Bull. No.* 181, 1943, 56 pp.).—A no. of Be compounds were injected intraperitoneally into guinea-pigs at various concns.; Be compounds were administered orally to young rats and guinea-pigs, and guinea-pigs were exposed to the dust of Be compounds in high concns. over long periods; there was no evidence that Be is toxic. The fumes arising from the electrolysis of molten fluorides containing BeF_2 or Be oxyfluoride are toxic. Two methods (colorimetric and fluorescence) for the analysis of minute amounts of Be in animal tissues were developed. 1 : 4-Dihydroxyanthraquinone-2-sulphonic acid buffered at pH 7·0 with NH_4 acetate was found to give a red colour proportional to the amount of Be; the colour develops rapidly, reaches a max. in 5 min., and does not fade for several hr. The most satisfactory range for colorimetric comparison in a visual colorimeter is 1—10 μg. Be. 1 : 4-Dihydroxyanthraquinone produces a red to yellow fluorescence with Be in slightly alkaline solution; fluorescence occurs in acid or neutral solution due to the dye itself, but this disappears in alkaline solution, when the addition of Be produces strong fluorescence, proportional to the

amount in the range 0·05—10 μg. Test solutions are compared visually in ultra-violet light. C. G. W.

Treatment of gonorrhœal vulvovaginitis with silver picrate suppositories. F. R. Fitch (*Amer. J. Dis. Child.*, 1943, **65**, 728—729).—In 42% of 57 cases the condition responded promptly and in 30% more slowly. In 17% the treatment failed, and in 10% the results were inconclusive. C. J. C. B.

Oligodynamic action of silver. O. M. Repetto and F. Modern (*Rev. Soc. argent. Biol.*, 1942, **18**, 509—516).—Broth cultures of *E. coli* were used as indicators and known concns. of $AgNO_3$ were added to suspensions of fixed nos. of bacteria. A N./10^6 solution of Ag acting for 1 hr. inhibited growth up to 600 bacteria per c.c.; N./1000 was necessary for concns. of 3000 million per c.c. Normal horse serum and cryst. normal horse serum-albumin inhibited the oligodynamic action of Ag; this effect increased with the pH in the case of albumin. J. T. L.

Detoxication of substituted phenylstibonate in rat by administration of *p*-aminobenzoic acid. J. H. Sandground (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 188—189).—1 g. per kg. of *p*-aminobenzoic acid given daily for 3 days raised the survival % from 40 to 100 after 0·3 g. and from 0 to 90 after 0·38 g. per kg. of stibosan (Na *m*-chloro-*p*-acetamidophenylstibonate). V. J. W.

Bone-marrow in five-day treatment of syphilis. J. L. Schwind (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 128).—No changes are produced in absence of individual idiosyncracy. V. J. W.

Post-arsenical jaundice and dermatitis. T. Anwyl-Davies (*J. Roy. Naval Med. Serv.*, 1943, **29**, 153—171).—Over the period 1929—1941 treatment of 1946 cases in a civilian clinic with various brands of neoarsphenamine caused jaundice in 17—50% (average 29%) and dermatitis in 6·75%. Treatment with mapharside was given to 1147 patients after 1936 and caused jaundice in 12·73% and dermatitis in 1·22%. V. J. W.

Dihydroxypropyl bismuthate. L. M. Wheeler (*J. Pharm. Exp. Ther.*, 1943, **78**, 265—275).—This compound is prepared by esterification of $NaBiO_3$ and glycerin; the NaOH liberated is neutralised with citric acid and the compound is pptd. in alcohol. It is electronegative, forms neutral aq. solutions, is stable in body fluids, and is not pptd. by gastric juice. By mouth, doses containing 1·25 g. of Bi per kg. were harmless to rats; 1 g. of Bi per kg. was fatal to rabbits. Intramuscularly, the min. lethal dose for rats contained about 32 mg. of Bi. V. J. W.

Chronic selenium poisoning in dogs and its prevention by arsenic. M. Rhian and A. L. Moxon (*J. Pharm. Exp. Ther.*, 1943, **78**, 249—264).—10 p.p.m. of Na_2SeO_3 in the diet impaired growth and 20 p.p.m. was fatal, with degeneration in liver and spleen, extreme vasodilatation of visceral vessels, ascites, and reduced hæmoglobin. Addition to drinking-water of 5 p.p.m. of Na_3AsO_3 prevented all symptoms of Se poisoning when diet contained up to 13 p.p.m. of Se, and the dogs remained healthy. V. J. W.

Pharmacological properties of polyethylene glycols of high mol. wt. ("Carbowax" compounds). H. F. Smyth, jun., C. P. Carpenter, C. B. Shaffer, J. Seaton, and L. Fischer (*J. Ind. Hyg.*, 1942, **24**, 281—284).—Very large single doses of polyethylene glycols of average mol. wt. 1250 and 3600 (Carbowax 1500 and 4000) affected the liver and kidneys of rats. Rats appeared unaffected when given daily doses of either compound up to 22·9 g. per kg. per day in their drinking-water. Application of a 50% aq. solution to the rabbit's and to human skin showed these compounds to be no more irritant than white petrolatum, lanolin, or glycerol. E. M. K.

Leucotoxic action of benzene. D. R. Climenko and J. MacLeod (*J. Ind. Hyg.*, 1942, **24**, 289—291).—Exposure of rabbits for 2 hr. to 7500—12,000 p.p.m. of benzene caused narcosis, cyanosis, and clonic muscular twitching, with recovery in 2½ hr. Immediately after exposure there was temporary leucopenia, with an increase in neutrophils; a leucocytosis followed, but with no shift of the polynuclear count to the left. Na nucleinate evoked a normal marrow reaction. The O_2 consumption of rabbit neutrophils *in vitro* was unaffected by benzene-saturated Ringer's solution. E. M. K.

Toxicology of acrylonitrile (vinyl cyanide). II. Effects of daily inhalation. H. C. Dudley, T. R. Sweeney, and J. W. Miller. **III. Determination of thiocyanates in blood and urine.** A. H. Lawton, T. R. Sweeney, and H. C. Dudley (*J. Ind. Hyg.*, 1942, **24**, 255—258; 1943, **25**, 13—19; cf. A., 1942, III, 635).—II. Monkeys, dogs, cats, rabbits, guinea-pigs, and rats showed varying susceptibility when exposed daily for 4 hr. to low concn. of acrylonitrile, dogs being most affected. Toxic symptoms were irritation of eyes and nose, vomiting and loss of wt., and weakness of hind legs. Post-mortem examination revealed renal irritation in most animals, frequent sub-acute bronchopneumonia, liver damage in cats, and some hæmosiderosis of spleen in rats. Rats and rabbits showed a marked eosinophilia.

III. The red colour given by CNS′ with $Fe^{...}$ salts is removed by $Hg(NO_3)_2$, and the electrophotometer readings before and after the addition of this salt are used to determine the CNS′ present. Dogs exposed to 24, 40, and 60 p.p.m. of acrylonitrile in air for 4 hr. showed a significant increase in serum-CNS′ immediately following exposure, which persisted for 24 hr. and gradually returned to normal within a week. The CNS′ content of human serum was 0·54 mg.-% in non-smokers (average of 5), and 1·52 mg.-% in smokers (average of 6). Dogs' urine showed CNS′ within 4 hr. of exposure; excretion reached a max. in 24 hr. and ceased in 4—6 days. Urinary excretion in human subjects paralleled the serum-CNS′. E. M. K.

Acute experimental aniline intoxication. B. B. Clark, E. J. van Loon, and R. W. Morrissey (*J. Ind. Hyg.*, 1943, **25**, 1—12).—Aniline administered by stomach tube as a 2% solution in saline to unanæsthetised dogs caused methæmoglobinæmia which increased with the dose; the proportion of methæmoglobin decreased with time, until after 24 hr. there was less than 5%. Other changes, increase in total hæmoglobin, increased heart rate, and electrocardiographic changes, paralleled the methæmoglobinæmia. Large doses caused lethargy, muscular weakness or spasm, and coma. Intravenous injection, permitting a high concn. of aniline in the blood, produced transient nervous and circulatory stimulation, but larger doses caused circulatory depression and cardiac arhythmias. The relative rôles of the methæmoglobin anoxia and the direct actions of aniline are discussed. E. M. K.

Physiological effects of sulphamic acid and ammonium sulphamate. A. M. Ambrose (*J. Ind. Hyg.*, 1943, **25**, 26—28).—$NH_2{\cdot}SO_3H$ by intraperitoneal injection into rats was considerably more toxic than $NH_2{\cdot}SO_3NH_4$. 0·1 mg. per kg. was fatal; 0·8 mg. per kg. of the salt killed half the rats. Given orally the toxicity of both acid and salt was less. Continued oral ingestion of the acid in 2% concn. caused inhibition of growth in rats, but no pathological change was observed. $NH_2{\cdot}SO_3H$ after subcutaneous injection into rats, on the conjunctiva of rabbits, or after cutaneous application to man was irritant, while the salt was not. E. M. K.

Chronic nicotine poisoning in rats and in dogs. W. C. Hueper (*Arch. Path.*, 1943, **35**, 846—856).—Rats and dogs given subcutaneous injections of nicotine over 8—10 months showed degenerative lesions in the elastic and muscular coats of arteries and arterioles attributed to vasoconstrictive ischæmic anoxæmia. Female rats given injections of nicotine only and male rats given injections of nicotine + adrenaline, nicotine + deoxycorticosterone acetate, or nicotine + mecholyl chloride showed a higher mortality rate than male rats receiving nicotine only, particularly male rats on a diet with additions of cystine and ascorbic acid. Testicular degeneration sometimes occurred from vasoconstrictive anoxia. (5 photomicrographs.) C. J. C. B.

Ichthyometric comparison of cobra venom, morphine, and saponins. D. I. Macht (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 111—113).—Morphine and saponin are highly toxic to goldfish, but cobra venom and cobra neurotoxin are not. V. J. W.

Prophylactic and therapeutic detoxication. Guanidine, indole, and histamine. G. J. Martin, E. H. Rennebaum, and M. R. Thompson (*Ann. int. Med.*, 1943, **18**, 57—71).—Guanidine, indole, or histamine, each in doses of LD_{50}, were given by mouth or subcutaneously to mice in addition to a multitude of potential detoxicating compounds. Cystine, cysteine, methionine, glucuronic acid, glycine, ascorbic acid, and choline were the most effective detoxicating substances. A. S.

Variations in susceptibility to cinchophen as observed in animals with bile fistulæ. J. H. Annegers, F. E. Snapp, A. J. Atkinson, and A. C. Ivy (*J. Lab. clin. Med.*, 1943, **28**, 828—835).—7 dogs with biliary fistulæ with a separate duodenal fistula for the return of bile to the intestine were specially susceptible to the gastrointestinal irritation of cinchophen; they were given 100 mg. per kg. Resulting changes in cholic acid synthesis and secretion could be accounted for by the gastrointestinal irritation caused by the drug. On repeated exposure of the dogs to the drug the gastrointestinal tract became more tolerant and cholic acid synthesis and secretion were not disturbed. C. J. C. B.

Effect of high-fat diet on chronic toxicity of derris and rotenone. A. M. Ambrose, F. DeEds, and A. J. Cox, jun. (*J. Pharm. Exp. Ther.*, 1943, **78**, 90—92).—Rats were maintained on high-fat diets containing 0·03—0·06% of derris or 0·008% of rotenone for 140 days without effect on the increase in body wt. or on the histological appearance of the tissues. P. C. W.

Lactovaccine in control of mastitis. C. S. Bryan, R. E. Horwood, and C. F. Clark (*J. Dairy Sci.*, 1942, **25**, 713—714).—Injections of lactovaccine appeared to have some little val. in the treatment of chronic bovine mastitis, but none as a prophylactic. N. J. B.

Mastitis and herd practices in the College dairy herd. C. S. Bryan, R. E. Horwood, and C. F. Clark (*J. Dairy Sci.*, 1942, **25**, 714—715). N. J. B.

Dosing of powdered drugs to small animals. M. Sterne (*J. Lab. clin. Med.*, 1943, **28**, 1253—1254).—A special syringe is described. C. J. C. B.

Pharmacology of children. J. Kramár (*Schweiz. med. Wschr.*, 1942, **72**, 1182—1184). A. S.

Treatment of herpes zoster. K. Blum (*Schweiz. med. Wschr.*, 1942, **72**, 1223—1224).—Early treatment with sulphanilamide, vitamins-B_1 and -C, and NaCl-free diet is recommended. A. S.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Lung disease in coal miners. T. Bedford (*Fuel*, 1943, **22**, 129—133).—A review. H. C. M.

Is acute lobar pneumonia a complication of silicosis? D. C. Pierpont (*J. Ind. Hyg.*, 1942, **24**, 238—239).—A comparison of the mortality rate from acute lobar pneumonia among populations exposed to a risk of silicosis and those not so exposed shows that this disease is not a complication of silicosis. E. M. K.

Storage of radium dial instruments. C. R. Williams and R. D. Evans (*J. Ind. Hyg.*, 1942, **24**, 236—237).—Biological effects of γ-radiation from stored dials can be neglected, but a max. of 6×10^{-11} curie of Rn per l. was found under adverse conditions of storage. Preventive measures are indicated. E. M. K.

Effect of inhalation of hydrogen chloride. W. Machle, K. V. Kitzmiller, E. W. Scott, and J. F. Treon (*J. Ind. Hyg.*, 1942, **24**, 222—225).—Rabbits, guinea-pigs, and one monkey were exposed to concns. of HCl varying from 0·05 to 20·5 mg. per l. for periods of 5 min. to 120 hr. 1· mg. per l. caused 100% fatalities in 2—6 hr., 0·05 mg. per l. caused no fatalities during 120 hr. exposure, but this was the highest concn. that could be inhaled over such a period without fatalities. During exposure all concns. caused some irritation of eyes and mucous membranes. Most of the deaths were due to respiratory effects, but liver necrosis and hæmorrhage were frequent. Lobar pneumonia often followed exposure, even to low concn. E. M. K.

Atmospheric contamination from the casting of magnesium. C. R. Williams (*J. Ind. Hyg.*, 1942, **24**, 277—280).—An analysis of the processes employed and the resultant health hazards shows that the most significant contaminants are the fluorides, which are found in concn. of 9·4—180 mg. per 10 cu.m. near where the castings are shaken out. E. M. K

Death by asphyxiation in a grain elevator bin containing flax seed. H. A. Lillevik and W. F. Geddes (*Cereal Chem.*, 1943, **20**, 318—328).—The death of an elevator employee who entered a bin of flax seed was due to lack of O_2 (1·8%) and excess of CO_2 (11·1%) in the atm. above the flax. An excessively high respiration rate in flax was caused by several factors, viz., high H_2O content, high dockage and non-viable grain content, heavy infection with bacteria and saprophytic fungus, and lack of ventilation in the bin. N. L. K.

Determination of atmospheric contaminants. II. Methylcellosolve. H. B. Elkins, E. D. Storlazzi, and J. W. Hammond (*J. Ind. Hyg.*, 1942, **24**, 229—232).—A differential dichromate method of oxidation for determination of methylcellosolve vapour in the presence of ethyl or methyl alcohol is described. Acetone interferes, but can be removed by aëration. *iso*Propyl alcohol, ethylcellosolve, and probably other water-sol. solvents of low volatility interfere. E. M. K.

Maximum allowable concentrations. I. Carbon tetrachloride. H. B. Elkins (*J. Ind. Hyg.*, 1942, **24**, 233—235).—In 9 plants where complaints were made of headache and nausea the vapour concn. ranged from 20 to 85 p.p.m.; it is therefore concluded that the usual max. allowable concn. of 100 p.p.m. of CCl_4 is too high, and should be between 25 and 50 p.p.m. E. M. K.

Ventilation and atmospheric pollution. I. Defence ventilation and air-conditioning problems.—See B., 1943, III, 257.

Methods for detection of toxic gases in industry: hydrogen sulphide.—See B., 1943, III, 257.

Determination of cadmium and hydrogen sulphide [in gases], of cadmium in air, and of lead in air by means of dithizone.—See B., 1943, III, 257.

Experiments on carbon monoxide poisoning in tents and snow houses. L. Irving, P. F. Scholander, and G. A. Edwards (*J. Ind. Hyg.*, 1942, **24**, 213—217).—Burning a Primus stove in tents pitched in snow, or in a snow house with its entrance blocked by snow, produced CO, and the occupants' blood contained amounts up to 3·55 vol.-%. Lowering of atm. O_2 usually caused the stove and candles to fail before a dangerous quantity of CO had accumulated. E. M. K.

XXII.—RADIATIONS.

***Physarum* as radiation test object.** S. Warren and O. K. Scott (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 149—151).—The growing size of this slime mould is repelled by glass tubes containing Rn but only very slightly by similar Au tubes. X-Rays have very little effect. V. J. W.

Iodinated organic compounds as contrast media for radiographic diagnoses.—See A., 1943, II, 327.

Effect of X-rays on rat's testis.—See A., 1943, III, 651.

Action of X-rays on yeast and yeast constituents. H. von Euler, L. Ahlström, and B. Högberg (*Arkiv Kemi, Min., Geol.*, 1943, **16, A**, No. 5, 14 pp.).—Growth of brewer's yeast is decreased after exposure to X-rays, but irradiated resting cells become normal again if fresh cultures are taken not less than 24 hr. after irradiation. Respiration and fermentation of yeast cells are only slightly decreased after exposure to X-rays. The effect of X-rays on enzyme systems cannot be predicted because the activity of catalase in normal rat muscle and in rat Jensen sarcoma is increased after exposure to X-rays. The activity of the alkaline phosphatase in an aq. extract of sarcoma is also increased, whilst that of the acid phosphatase is unaffected. The activity of the nucleotidase in sarcoma is increased by 80—90% after treatment with X-rays. The amount of nucleic acid in brewer's yeast is decreased after exposure to X-rays. In presence of 0·0003% of colchicine there is a slight increase in growth of yeast cells, and under these conditions the effect of X-rays on the cells is not so marked. There is also increased fermentation after treatment with colchicine with and without subsequent exposure to X-rays. J. N. A.

Inactivation of fertilizin by radiations.—See A., 1943, III, 619.

Bactericidal effect of ultra-violet rays on micro-organisms on restaurant glassware.—See B., 1943, III, 257.

Polarographic investigation of relationship between effect of ultra-violet irradiation and concentration of protein solutions. H. W. Schmidt (*Biochem. Z.*, 1940, **306**, 167—176).—Polarographic examination of human serum and horse serum-albumin and -globulin shows that ultra-violet irradiation increases the no. of thiol groups in the protein to an extent dependent on the period and intensity of irradiation and the kind of protein. The raising of the "protein step" in the polarogram caused by the irradiation increases with decreasing concn. This greater effect of irradiation with more dil. solutions is due to the greater degree of absorption of the ultra-violet rays at the surface of the more conc. solutions. The effect is pronounced with the albumin and weak with the globulin. F. O. H.

Effect of infra-red heat on localised poliomyelitis and neuritis.—See A., 1943, III, 636.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Dissociation of amino-acids in dioxan–water mixtures. Effect of neutral salts.—See A., 1943, I, 278.

Thermo-electric investigation of diffusion through membranes. L. Asher [with N. Lickermann and M. Spirig] (*Biochem. Z.*, 1940, **306**, 96—107).—Experiments with $H^{\cdot}$, $K^{\cdot}$, $Na^{\cdot}$, $Mg^{\cdot\cdot}$, Cl', Br', I', PO_4''', water, glucose, urea, and alanine show that the diffusion of ions and compounds through collodion and Cellophane membranes is accompanied by production of heat. With electrolytes, the amount of heat diminishes with the dissociation const. Still less heat is produced during diffusion of non-electrolytes. W. McC.

Permeability [through sugar-beet membranes]. A. von Kúthy (*Biochem. Z.*, 1940, **306**, 137—142; cf. A., 1931, 1125).—Aq. inorg. salts (0·025—1·0M.) diminish the diffusion of sugar out of sugar beet slices. With other substances (Na salts of org. acids, alcohols, urethane, urea), diffusion of sugar is increased or diminished according to the concn. of the solution. Min. vals. are usually obtained for ionising substances at concn. of 0·15—0·25M. and for others at approx. 0·35M. The results are explained on the basis of the assumption that the membranes of plant cells consist of long protein micelles. W. McC.

Electrophoretic study of action of alkylbenzenesulphonate detergents on ovalbumin. H. P. Lundgren, D. W. Elam, and R. A. O'Connell (*J. Biol. Chem.*, 1943, **149**, 183—193).—Whilst both native and heat-denatured ovalbumin form complexes with alkylbenzenesulphonates on the alkaline side of the isoelectric point, the former combines with a max. of one third of its wt. of the detergent, leaving the excess free, and the latter combines completely in all ratios. This accords with the view that denaturation liberates more reactive groups and allows the protein to combine with the detergent in all proportions. There is no electrophoretic distinction between the complexes with either form of protein when the detergent is present to the extent of more than 30% of the wt. of protein. The union of the two components is such that the ionisable groups of each are additive in their effect on mobility, the vals. for which indicate that ionisable groups additional to those exposed in the heat-denatured proteins are exposed by the detergent. P. G. M.

Native and regenerated ox albumin. I. Preparation and physicochemical properties. F. W. Putnam, J. O. Erickson, E. Volkin, and H. Neurath. **II. Immunological properties.** D. S. Martin, J. O. Erickson, F. W. Putnam, and H. Neurath (*J. Gen. Physiol.*, 1943, **26**, 513—531, 533—539).—I. The prep. of whole ox albumin (N

15·2, carbohydrate 0·38%) from serum is described. The method involves pptn. of the globulins at a low temp. and pH 6·4 with 2·1M-$(NH_4)_2SO_4$ followed by pptn. of the albumin at room temp. and isoelectric point (approx. pH 4·7) with 2·6M-$(NH_4)_2SO_4$. The euglobulin is removed at pH 5·0 from the salt-free albumin solution, and the albumin is finally repptd. In diffusion, sedimentation, and viscosity, it appears to be homogeneous and very similar to horse serum-albumin, but it is only 95% homogeneous electrophoretically. The mol. shape is approx. a prolate ellipsoid with an axial ratio of 3·1, assuming 33% hydration. The average mol. wt. is 65,000. The albumin is readily denatured by urea or guanidine hydrochloride, and this causes profound changes in mol. shape. Regeneration of the albumin yields a protein that closely resembles the native albumin in carbohydrate content, mol. size and shape, and electrophoretic properties, but is more readily attacked by trypsin. In 8M-guanidine hydrochloride, a limiting yield of regenerated albumin equiv. to 95% of the original protein is attained. Crystalbumin, a carbohydrate-free fraction of the whole albumin, is more susceptible to denaturation than is the whole albumin.

II. The effects of regeneration of whole ox albumin on antigenic activity and serological specificity are determined by precipitin measurements on rabbit antisera to native whole albumin and to albumin regenerated from 8M-urea or -guanidine hydrochloride. The mean antibody response decreases in this order, but only the difference between native and guanidine hydrochloride-regenerated albumin is significant. All the antigens are immunologically equiv. with each other as well as with native ox crystalbumin, indicating that the differences in antigenic activity are probably not due to production of different types of antibodies and that neither denaturation and regeneration, nor purification, produces decisive changes in the structure of ox albumin. It is possible that the carbohydrate residue in these large protein mols., although a contributing factor in the degree of antigenicity, plays no important part in determination of serological specificity. The low antigenic activity of crystalbumin is considered to be due to absence of carbohydrate. It is also more susceptible to denaturation. J. N. A.

XXIV.—ENZYMES.

Enzyme chemistry of human sperm.—See A., 1943, III, 652.

Oxidising enzymes and vitamin-*C* in tomatoes.—See A., 1943, III, 703.

Penicillin *B*: preparation, purification, and mode of action. Notatin: antibacterial glucose aerodehydrogenase from *Penicillium notatum*, Westling.—See A., 1943, III, 686.

Dehydrogenation of pyruvic acid in nervous tissue. S. Huszák (*Biochem. Z.*, 1940, **306**, 91—95).—The anaërobic dehydrogenation of pyruvic acid by the enzymes of brain pulp from healthy dogs and cats and vitamin-B_1-deficient pigeons is scarcely or not at all affected by addition of succinate or of cozymase, diaphorase, adenylic acid, -B_1, or cocarboxylase, added separately or together. C_4-dicarboxylic acids possibly play an indirect part in the biological oxidation of pyruvate. Pyruvic acid dehydrogenase in brain pulp retains its activity for several hr. at 0° but is rapidly inactivated at room temp. The activity (max. at pH 7·8) is rapidly destroyed by alcohol or acetone. Progressive loss of activity, which is not reversed by succinate, Mg^{++}, or Mn^{++}, occurs on dialysis at 0° against distilled water. W. McC.

Vitamin–antivitamin. I. Reversible inhibition of dehydrogenases by removal of codehydrogenase. E. Adler, H. von Euler, and B. Skarzynski (*Arkiv Kemi, Min., Geol.*, 1943, **16, A**, No. 9, 11 pp.).—The activity of glucose dehydrogenase in Thunberg experiments is inhibited by pyridine-3-sulphonic acid. In a 3×10^{-5}M. solution of cozymase, $0·5 \times 10^{-2}$M-pyridine-3-sulphonic acid causes approx. 50% inhibition. This inhibition is due to removal of cozymase from the system probably owing to competition of the pyridine-3-sulphonic acid with nicotinamide which unites cozymase with the apodehydrogenase. The affinity of cozymase for apodehydrogenase is 2—3 times that of pyridine-3-sulphonic acid. The inhibition is not due to damage to the enzyme system or to interference with the substrate. Nicotinic, benzoic, and benzenesulphonic acids are almost as active as pyridine-3-sulphonic acid. Nicotinamide is also very active, whilst nicotinamide methiodide is inactive. Pyridine-3-sulphonamide is considerably less active than the sulphonic acid, but there is no loss of activity after formation of the methiodide. *p*-Aminobenzoic acid and sulphapyridine are almost as active as the other acids, whilst aneurin is inactive. The inhibition caused by the above acids is not entirely due to the carboxyl and sulphonic acid groups but depends also on the remainder of the mol., because acetic acid and H_2SO_4 have no inhibiting effect. J. N. A.

Assay of animal tissues for respiratory enzymes. II. Succinic dehydrogenase and cytochrome oxidase. W. C. Schneider and V. R. Potter (*J. Biol. Chem.*, 1943, **149**, 217—227; cf. A., 1942, III, 428).—Optimum activity of the succinic-oxidase system occurs at pH 7·5—7·7, at PO_4''' concn. of 0·0201—0·0469M. (a slight loss of activity occurring at 0·0067M.), at succinate concn. of 0·033—0·067M., and in presence of both Ca^{++} and Al^{+++}. Ascorbic acid is the most satisfactory substrate for cytochrome oxidase; with *p*-phenylenediamine, the rate of O_2 uptake falls off rapidly, quinol requires the addition of semicarbazide to give a linear rate of uptake of O_2 which is lower than with ascorbic acid, and cysteine is unable to reduce cytochrome *c* rapidly enough to keep the system saturated with reduced cytochrome *c*. The optimum ascorbic concn. is 0·0076—0·0228M. and the system requires more cytochrome *c* for saturation than does succinic-oxidase; further, the oxidase operates at a much slower rate at a cytochrome *c* concn. approx. equal to the physiological level in the intact liver cell than does succinic-oxidase, due to diffusion of the succinate into the cells, whilst ascorbate does not diffuse. The assay of cytochrome oxidase is thus limited by the completeness of disruption of the tissue cells, and a measure of the intact cells present is obtained from the ratio of the activities of the oxidase in absence and presence of excess of added cytochrome *c*. Autoxidation of ascorbic acid is measured from the Q_{O_2} val. at zero tissue concn. obtained by extrapolation. Al^{+++} is necessary for the cytochrome-oxidase system. The succinic- and cytochrome-oxidase activities of rat's heart, kidney, liver, brain, skeletal muscle, spleen, and lungs have been determined. H. G. R.

Spectrophotometric studies. XI. Direct micro-spectrophotometric determination of cytochrome *c*. O. Rosenthal and D. L. Drabkin (*J. Biol. Chem.*, 1943, **149**, 437—450).—Cytochrome *c* is isolated from extracts of animal tissues by treatment with $(NH_4)_2SO_4$ under conditions such that hæmoglobin is pptd. while cytochrome remains in solution, followed by pptn. of cytochrome from the filtrate with trichloroacetic acid. The pigment from 0·2—20 g. of fresh tissue is obtained in a vol. of 1·0—1·5 ml. and is then determined as ferrocytochrome in a spectrophotometer modified to permit the use of a micro-cell. The vals. obtained for rat liver and kidney cortex are three times those of previous workers. E. C. W.

Constitution of the prosthetic group of cytochrome *c*.—See A., 1943, II, 342.

Action of polyphenol oxidase in the animal body. T. Erdös (*Biochem. Z.*, 1940, **306**, 153—154).—For the mouse the min. lethal dose of pyrocatechol, subcutaneously injected, is 0·4 mg. per g. 1 unit of polyphenol oxidase, administered intravenously, diminishes this val. to 0·1 mg. and 20 units diminish it to 0·025 mg. W. McC.

Peroxidase. II. Presence of peroxidase in plant and animal products. W. Diemair and H. Häusser (*Z. anal. Chem.*, 1941, **122**, 173—182).—In the method previously described (*ibid.*, 12) the colour produced is directly related to the amount of Fe present. Peroxidase in vegetables is unaffected by low temp. (−12° to −15°). Ethylene, coal gas, acetaldehyde, and atm. O_2 restrict peroxidase activity. Peroxidase contents of numerous plant and animal products are determined. Vals. for dried vegetables varied considerably with growth conditions and with the nature of the drying process, and decreased rapidly during storage. A. G. P.

Activation by flavone derivatives of peroxidase oxidation of adrenaline. J. Lavollay and J. Neumann (*Compt. rend.*, 1941, **213**, 193—195).—The oxidation of adrenaline by H_2O_2 + peroxidase (from *Cucurbita pepo*, L.) at room temp. and p_H 7·7 is greatly accelerated by addition of traces of naturally occurring derivatives of phenylbenzo-γ-pyrone, the most active being those which most effectively inhibit the autoxidation of adrenaline (quercetin > luteolol > rhamnetol > quercetroside > rutoside; the last two are much less active than the others and than their aglucones). Hesperidin and naringenin do not accelerate the oxidation. The red oxidation product, adrenochrome, has no action on the intestine or seminal vesicles of the guinea-pig. KCN, H_2S, phenylhydrazine, NH_2OH, and (temporarily) ascorbic acid inhibit the oxidation but substances which inhibit the autoxidation of adrenaline (*e.g.*, glycine, proline, serum) do not. W. McC.

Nitrogen distribution and basic amino-acids in horseradish peroxidase and horse-liver catalase, determined by new micro-method. H. Theorell and Å. Åkeson (*Arkiv Kemi, Min., Geol.*, 1943, **16, A**, No. 8, 11 pp.).—A method of micro-electrodialysis and the apparatus are described. Only 20—30 mg. of protein are required, and the method quantitatively separates protein hydrolysates into amide-N, humin-N, dicarboxylic, neutral, and basic amino-acids. The error is ±5%. Each fraction is then analysed for its constituent N compounds. The distribution of N in horseradish peroxidase is: humin-N 1·1, amide-N 13·0, cathode-N 24·2, neutral N 45·1, and anode-N 16·2% of the total N. The enzyme contains histidine 0·71, arginine 6·91, and lysine 4·06%, and these amounts agree very closely with an enzyme mol. containing histidine 2, arginine 18, and lysine 12 mols. The reddish peroxidase (peroxidase-I or para-peroxidase) sometimes obtained during the prep. of horseradish peroxidase has practically the same composition as the peroxidase. It is considered to be a conversion product of the peroxidase with unaltered activity but different absorption spectrum. The distribution of N in horse-liver catalase is humin-N 1·3, amide-N 10·4, anode-N 15·4, neutral N 43·5, and cathode-N 29·5%. One mol. [illegible]

enzyme probably contains histidine 15, arginine 27, and lysine 32 mols. J. N. A.

Complex of peroxidase protein with hæmins. H. Theorell, S. Bergström, and Å. Åkeson (*Arkiv Kemi, Min., Geol.*, 1943, **16**, **A**, No. 13, 8 pp.).—Cryst. horseradish peroxidase protein was recombined with protohæmin; the resulting product had only 68% of the original peroxidase activity. Although the protein can be kept at 4° in aq. $NaHCO_3$ for several days, it is somewhat unstable. Other preps. when recombined with protohæmin gave a product with 100% of the original activity. Complexes with mesohæmin and deuterohæmin had enzymic activity 53 and 62% respectively of that of natural peroxidase. One mol. of each hæmin combines with 1 mol. of protein. Complexes with 6 other hæmins showed no enzymic activity, which is associated with 2 propionyl groups. P. G. M.

Hæmin–protein linking in hæmoglobin and horseradish peroxidase. H. Theorell (*Arkiv Kemi, Min., Geol.*, 1943, **16**, **A**, No. 14, 18 pp.).—The hæm–protein linking in horseradish peroxidase is discussed in detail. In any such complex in which Fe may be bound with ionic bonds, it is probably so bound either to glyoxaline (*e.g.*, hæmoglobin, cytochrome *c*) or to carboxyl (*e.g.*, horseradish peroxidase). The weak peroxidase effect of methæmoglobin, and the strong effect of the complex between sp. protein and hæmin, is probably due to the respective slow and rapid rates of formation of a H_2O_2 compound. The former yields no H_2O_2 compound analogous to the green type I of peroxidase, which is the physiologically active one. P. G. M.

Soya-bean lipoxidase. A. K. Balls, B. Axelrod, and M. W. Kies (*J. Biol. Chem.*, 1943, **149**, 491—504).—Methods are described for the colorimetric determination of soya-bean lipoxidase, based on the rate of bleaching of a carotene suspension in presence of fat, and for the prep. of the purified enzyme from an aq. extract of defatted soya bean. In crude preps. the enzyme is accompanied by an activating substance which increases the rate of oxidation of fats, carotene, etc. This substance is thermostable; the purified ash-free material consists largely of peptides. It appears to act on the fat rather than on the enzyme. Purothionin, a protamine of wheat flour, inhibits the action of lipoxidase, and its action is very closely the reverse of the activator action. Lipoxidase attacked only linoleic, linolenic, and arachidonic acids out of the many fatty acids examined. E. C. W.

Crystalline horse-liver catalase. K. Agner (*Arkiv Kemi, Min., Geol.*, 1943, **16**, **A**, No. 6, 21 pp.).—The prep. of cryst. catalase, with activity of 59—61 × 10^3, from horse liver is described. Purification, which does not involve adsorption on $Ca_3(PO_4)_2$, includes pptn. with ethyl alcohol, treatment with 0·1N-HCl, and crystallisation from aq. $(NH_4)_2SO_4$ and finally from water. The enzyme contains approx. 0·09% of Fe (70·75% of which is hæmin-Fe) and approx. 0·02% of Cu. The catalase contains 16·8% of N, and the distribution of N in monoamino-di- and -mono-carboxylic acids and basic amino-acids is determined by electrodialysis. Approx. 3·8% of histidine, 7·7% of arginine, and 7·7% of lysine are present in the enzyme. The isoelectric point, determined by electrophoresis, is pH 5·40. The normal brownish-red colour of solutions of catalase becomes more greenish in acid buffer solutions. The absorption bands are also changed, and the band in the red part of the spectrum is at 618 mμ. The changes in colour and absorption spectrum are not due solely to pH, and may be due partly to effect of pH on the biliverdin component. The effect is not so pronounced in PO_4''' as in acetate buffer at the same pH. J. N. A.

Magnetic and other properties of crystalline horse-liver catalase and derivatives. H. Theorell and K. Agner (*Arkiv Kemi, Min., Geol.*, 1943, **16**, **A**, No. 7, 14 pp.).—Catalase gives a val. of χ of 14,665 × 10^{-6} at 20°. Practically the same val. is obtained over the range of pH 4·0 to 9·0, and the result agrees with the theoretical val. for 5 odd electrons, and hence in horse-liver catalase all the Fe (including hæmin and non-hæmin Fe) is bound with ionic bonds. The above val. does not agree with that for ox-liver catalase. Cyano-catalase has χ 6830 × 10^{-6}, which agrees with the val. for 3 covalent hæmin $Fe^{'''}$ and one ionic Fe. Azide- and fluoro-catalase have approx. the same vals. as catalase, whilst H_2S-catalase has the val. 7290 × 10^{-6}. The val. for azide-catalase treated with BaO_2 in N_2 is 6600 × 10^{-6}, which agrees with the assumption of one ionic Fe and 3 covalent hæmin-$Fe^{'''}$, and not with the assumption that the $Fe^{'''}$ is reduced to $Fe^{''}$. The results obtained by other workers on the supposed inhibition of catalase under anaërobic conditions are considered to be unreliable. J. N. A.

Degradation of chlorophyll during tea fermentation. H. B. Sreerangachar (*Current Sci.*, 1943, **12**, 205—206).—Of the three possible routes of degradation of chlorophyll only oxidation is concerned during fermentation, as shown by the negative phase test. Chlorophyllase cannot be detected. The mechanism is as follows: tea tannin + O_2 → *o*-quinones (+ chlorophyll) → tea tannin + chlorophyll oxidation products. *p*-Benzoquinone can replace the tea tannin + oxidase system. The insol. infusion pigment cannot be a melanin, since tyrosinase is absent from tea leaf. P. G. M.

Activation of catalase in yeast cells by chloroform or toluene.—See A., 1943, III, 685.

Acetone–butanol fermentation. IV. Acetoacetic acid decarboxylase of *Cl. acetobutylicum* (By.).—See A., 1943, III, 689.

Zone behaviour of enzymes. Effect of dissociation constant and dilution of system choline-esterase–eserine. O. H. Straus and A. Goldstein [with F. L. Plachte] (*J. Gen. Physiol.*, 1943, **26**, 559—585).—The kinetics of the reversible combination of one enzyme centre with one mol. of a substrate or inhibitor are treated as a true bimol. and not as a pseudounimol. reaction. The general equations for such a reaction are given. The term " sp. concn." is used to denote the concn. of reacting substances in units equal to the dissociation const. This term makes the kinetic equations universally applicable to all reversible systems of the given type. Such a system exhibits three " zones " of behaviour. Each zone is characterised and exhibits significant differences in the function relating the concns. of the components of the system at equilibrium. The classical treatment of enzyme kinetics is a limiting case valid only for low sp. concns. of enzyme and is inapplicable in many systems where the dissociation const. is very small or the sp. enzyme concns. are large. In an enzyme system containing substrate or inhibitor, dilution before determination of rate of reaction is the most important operation. The changes in fractional activity or inhibition with dilution are a function of sp. enzyme concn., the dilution factor, and the fraction of the enzyme initially in the form of complex. Equations which permit the calculation of the state of the system at any concn. are given, and the errors introduced by neglecting the dilution effect are discussed. It is concluded from the theory of zone behaviour that (*a*) the result that a biological response is a linear function of the dose of drug does not necessarily mean that the reaction is irreversible, but only that, if reversible, the component with which the drug combines has a high sp. concn., and (*b*) if an enzyme has a high sp. concn., all reversible inhibitors are equally active in combining with it regardless of their relative activity in dil. systems provided only that their dissociation consts. are within certain broad limits. This type of analysis applied to bimol. reactions can be applied to systems of the type $E + nX \rightleftharpoons EX_n$ where n mols. of substrate or inhibitor combine with one enzyme centre. Experimental data from a serum choline-esterase–eserine system confirm the described dilution-effect equations. J. N. A.

Influencing of enzyme reactions by chemotherapeutic and pharmaceutical substances. II. Choline-esterase of the brain and of erythrocytes. E. A. Zeller and A. Bissegger (*Helv. Chim. Acta*, 1943, **26**, 1619—1630; cf. A., 1942, III, 935).—Serum-choline-esterase of man is greatly inhibited by percaine, *p*-dimethylacrylamidobenzenesulphonamide, and *iso*propylantipyrine; these compounds do not greatly restrict the choline-esterases of human brain or erythrocytes. Morphine has about the same effect on all three esterases whereas caffeine inhibits only serum-choline-esterase. The choline-esterase of brain, like that of erythrocytes, shows autorestriction due to excess of substrate. These observations, supported by records from the literature, establish the existence of two completely different types of choline-esterase. Those of brain and erythrocytes show identical behaviour in all cases and form the *e*-type, which is contrasted with the *s*-type of serum-choline-esterase. For each type a model of the union between enzyme and substrate has been developed. The consequences of the establishment of the multiple nature of choline-esterase for physiology, pathophysiology, pharmacology, and analysis of origin are discussed. H. W.

Acetylcholine and choline-esterase in protozoa, spongia, and coeleuterata. R. L. Mitropolitanskaja (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 717—718).—Paramecia, infusoria, and sponges contain neither acetylcholine nor choline-esterase but the esterase occurs in *Hydra fusca* and in the body and tentacles of *Actinia equina* whilst acetylcholine occurs in the body of *Actinia equina* and the active elements of *Aurelia aurita*. Infusoria, sponges, and hydræ contain choline. Acetylcholine and choline-esterase apparently do not occur in organisms having no nervous system. W. McC.

Changes in serum-choline-esterase during muscular contraction and sympathetic stimulation and following excitation of vagus in neck.—See A., 1943, III, 629.

Changes in choline-esterase activity of superior cervical ganglion after section of preganglionic fibres. Choline-esterase activity during nervous stimulation.—See A., 1943, III, 640.

Choline-esterase and diamine oxidase during pregnancy.—See A., 1943, III, 650.

Acetylcholine-esterase content of brain tumours.—See A., 1943, III, 659.

Species-specificity of thrombokinase.—See A., 1943, III, 625.

Distribution of dipeptidase in salamander gastrula.—See A., 1943, III, 619.

Oxidative deamination of diamines by histaminase. N. R. Stephenson (*J. Biol. Chem.*, 1943, **149**, 169—176).—The purification

of histaminase from pig kidney cortex is described. In the presence of a diamine, histaminase activates H from a terminal NH_2-group and transfers it to mol. O_2. H_2O is then added to the intermediate imino-compound, and the unstable additive compound decomposes to form 1 mol. of aldehyde and 1 mol. of NH_3, together with H_2O_2 which is decomposed by (?) accompanying catalase. P. G. M.

Histamine and proteolytic enzymes. Liberation of histamine by papain. M. Rocha e Silva and S. O. Andrade (*J. Biol. Chem.*, 1943, **149**, 9—17).—Papain–cysteine has two max. of proteolytic activity on some synthetic substrates, viz., at pH 5 and 6·8—7. Some substrates, but not others, are hydrolysed at pH 7·3—7·5. Papain liberates histamine from rabbit blood cells into the plasma. This activity is reduced by treatment of the enzyme with *iso*propanol, and is destroyed by NaOH. The power to split benzoyl-*l*-arginin-amide is similarly affected, but activity towards some other substriates is not. Histamine is probably present in the cell attached by a linkage of amide type to arginine or lysine. R. L. E.

Amorphous pepsin of higher activity than crystalline pepsin from commercial and crystalline pepsin. E. Borgstrom and F. C. Koch (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 131—132).—Pepsin equal in activity to that prepared by Herriott *et al.* (A., 1941, III, 706) was obtained by adsorption of enzyme on egg-white from conc. solutions of commercial or cryst. pepsin at pH 3, and subsequent washing out at pH 6·1. V. J. W.

Hurain, new plant protease from *Hura crepitans*. W. G. Jaffé (*J. Biol. Chem.*, 1943, **149**, 1—7).—Hurain has an isoelectric point of pH 4—5 and the characteristics of an albumin. It has max. proteolytic activity at pH 8 and is activated by $AgNO_3$, $HgCl_2$, I, and HNO_2. Its milk-clotting activity is low and it has no effect on living or dead *Ascaris*, but digests earthworms. It is toxic to mice and rabbits and agglutinates red blood cells. R. L. E.

Inactivation of trypsin by ultra-violet radiation. F. Verbrugge (*J. Biol. Chem.*, 1943, **149**, 405—412).—The quantum yields (mols. inactivated per quantum absorbed) are twice as great at 2399, 2483, and 2537 as at 2650 and 2804 A. The inactivation follows a simple exponential curve and the active centres in the mol. are assumed to be independent in their action. The quantum yields as measured by benzoylarginamide and casein agree and are independent of the method of determination, but with hæmoglobin the titration method is most reliable. The Anson colorimetric method (A., 1938, III, 953) is not applicable to irradiated enzymes. H. G. R.

Assay of tryptases by lysis of fibrinogen. J. H. Ferguson (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 243—245).—Solutions of a standard human fibrinogen (A., 1939, III, 959) are incubated for varying times with fixed concns. of standard commercial and unknown trypsins, at pH 7·7 and 25°. Preps. which require the same time of incubation to destroy clotting ability are assumed to have the same content of trypsin. V. J. W.

Differential stability of malt amylases : separation of α- and β-components. E. Kneen, R. M. Sandstedt, and C. M. Hollenbeck (*Cereal Chem.*, 1943, **20**, 399—423).—Concns. of $(NH_4)_2SO_4$ and of ethyl alcohol that gave max. pptn. of β-amylases of wheat and barley malt were 25—35 and 56—68; of wheat-malt α-amylase, 25—35 and 50—56; and of barley-malt α-amylase, 15—25 and 44—50%, respectively. The stability of amylase depended on pH, temp., and [$Ca^{\cdot\cdot}$] of the solution. Max. retention of α-amylase (90—100%) and complete inactivation of β-amylase were obtained, in presence of $Ca^{\cdot\cdot}$, at pH 6·0—7·0 and 70°; max. retention of β-amylase, in absence of $Ca^{\cdot\cdot}$, at pH 3·0 and 30°. Thermostability of barley-malt α-amylase was greater than that of β-amylase, but wheat-malt β-amylase was more stable than the α-amylase. N. L. K.

Action of *macerans* amylase on the fractions from starch.—See A., 1943, II, 321.

Serum-diastase and its relation to œstrogen metabolism in pregnancy and menstrual cycle.—See A., 1943, III, 650.

Purification of invertase. Properties of the resulting products. M. Adams and C. S. Hudson (*J. Amer. Chem. Soc.*, 1943, **65**, 1359—1368).—Invertase is purified by dialysis, ageing, pptn. of inert material at pH 3·7—3·9, adsorption on bentonite, and elution. Adsorption may be replaced by pptn. by acidic or basic reagents (best, picric acid) or $(NH_4)_2SO_4$. The effect of varying conditions is described. The process gives similar products from yeasts of widely varying enzyme contents. The product contains N 14·8%, P 0·03%, reducing material 6·9% (as glucose; 3·2% fermentable), and 0·96 invertase unit per mg. of N, and has time val. 0·140 min. It is coagulated by heat, pptd. by protein precipitants, is insol. in aq. $(NH_4)_2SO_4$ (50—70% saturated), is inactivated by denaturation, gives the biuret, tryptophan, Millon, ninhydrin, and Molisch, but not the Salkowski, test, is stable at 5° and relatively stable to dialysis even at room temp., gives a dry, slightly denatured product by acetone or freezing, is very sol. in water, and resists further purification by ultra-centrifuging or -filtration. Evaporation of aq. solutions in vac. gives a prep. containing 9·6 g. of solids and 940 invertase units per 100 ml. R. S. C.

Enzymes present in highly purified invertase preparations. Fructofuranosidases, galactosidases, glucosidases, and mannosidases. M. Adams, N. K. Richtmyer, and C. S. Hudson (*J. Amer. Chem. Soc.*, 1943, **65**, 1369—1380).—Invertase preps. (cf. preceding abstract) from 3 samples of brewers' and two of bakers' yeast have qualitatively similar properties. The β-*D*-fructofuranoside linking of sucrose, raffinose, and stachyose is hydrolysed by all the preps. (optimum pH 5·0—5·5). Inulin is similarly hydrolysed, but the optimum pH is 3·2—4·0 and the ratio of the activities of different preps. is not the same as for fructofuranosides, so that probably an inulase exists different from the β-*D*-fructofuranosidase. Hydrolysis of inulin yields 1·7% of glucose. The brewers' yeast preps. contain α-galactosidase, which hydrolyses melibiose (*k* const.), α-methyl-*D*-galactoside (*k* falls), α-phenyl-*D*-galactoside (*k* falls slightly), and β-methyl-*L*-arabinoside (slow reaction); two brewers' yeasts have similar relative potencies for these compounds; bakers' yeast preps. are ineffective. One equiv. of aldehydo-sugar is liberated from stachyose by invertase from bakers' yeast, but slightly over 1 equiv. by that from brewers' yeast; this and earlier evidence show that stachyose is 6-α-*D*-galactopyranosido-4-α-*D*-galactopyranosido-2-α-*D*-glucopyranosido-β-*D*-fructofuranoside and α-manninotriose is 6-α-*D*-galactopyranosido-4-α-*D*-galactopyranosido-α-*D*-glucopyranose. Brewers' yeast contains a small amount of β-*D*-glucosidase, slowly hydrolysing amygdalin and β-phenyl-*D*-glucoside, but not cellobiose or lactose. All preps. contain a β-*D*-mannosidase, slowly hydrolysing β-phenyl-*D*-mannoside. The preps. do not hydrolyse α-*D*-fructofuranosidases (*iso*sucrose), β-*D*-galactosides (lactose, phenyl-β-*D*-galactoside), α-*D*-glucosides (5 examples, also α- and β-dextrins), α-*D*-mannosides (α-methyl- and -phenyl-), melezitose, or α-methyl-*D*-manno-*D*-galaheptoside. R. S. C.

Fermentation of galactose and galactose 1-phosphate. H. W. Kosterlitz (*Biochem. J.*, 1943, **37**, 322—326).—In the fermentation of glucose and galactose 1-phosphates by yeast maceration juice, a period of induction is followed by excessive periods of rapid and slow fermentation. During the rapid period, 25—30% of the calc. amount of CO_2 is produced, the corresponding val. for glucose and galactose being 50%. Although the rates of fermentation of glucose and galactose differ greatly, those of the 1-phosphates are very similar. Possibly galactose 1-phosphate, produced by the action of a new enzyme, is transformed by another new enzyme, first into glucose 1-phosphate and then into Robison's ester. W. McC.

Intestinal phosphatase. G. Schmidt and S. J. Thannhauser (*J. Biol. Chem.*, 1943, **149**, 369—385).—The enzyme is purified by digestion of an alkaline suspension of the mucosa of calf intestine with trypsin, pptn. with $(NH_4)_2SO_4$, dialysis, and adsorption of impurities on $Al(OH)_3$. Contaminating trypsin is removed by adsorption on kaolin. The purified enzyme is associated with 20% of polysaccharide. It is inhibited by cysteine and CN′ but not by F′; $Mg^{\cdot\cdot}$ slightly activates but Zn salts, alanine, and bile salts are without effect. Phosphopyruvic, pyrophosphoric, and adenylpyrophosphoric acids are hydrolysed but phosphatides are not affected. The PO_4 radicals of yeast-nucleic acid are liberated as inorg. PO_4''', but thymonucleic acid is not split off under the same conditions. Casein and phosphovitellin are unaffected but the PO_4 radicals of phosphoproteins are liberated as inorg. PO_4''' after preliminary hydrolysis with crude trypsin. H. G. R.

Excretion of phosphatase in fæces. N. R. Lawrie (*Biochem. J.*, 1943, **37**, 311—312).—The average phosphatase content of dry human fæces is 23 × 10^3 units (range 1·9 × 10^3 to 103 × 10^3). A negative correlation probably exists between the val. and the dry matter content of the fæces. *In vitro*, the phosphatase is slightly activated by $Mg^{\cdot\cdot}$, uninfluenced by F′, and strongly inhibited by CN′. W. McC.

Effect of ultra-violet and *X*-rays on phosphatase. Protein nature of the enzyme. D. Albers (*Biochem. Z.*, 1940, **306**, 143—149; cf. A., 1941, III, 1063; Iwatsuru and Nanjo, A., 1939, III, 626).—In presence and absence of $Mg^{\cdot\cdot}$, phosphatase from kidney and bile is inactivated by ultra-violet and *X*-rays, the sensitivity of the enzyme to the rays decreasing with decrease in purity. Purified kidney phosphatase has light absorption max. at 200 and 260 mμ. The absorption curve resembles those of pure albumin and globulin solutions. W. McC.

Source and phosphatase activity of exoenzyme systems of maize and tomato roots.—See A., 1943, III, 700.

Serum-acid phosphatase in prostatic carcinoma.—See A., 1943, III, 659.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Fluoride inhibition of fermentation in live and dead brewers' yeast. J. Runnström and R. Marcuse (*Arkiv Kemi, Min., Geol.*, 1943, **16**, **A**, No. 16, 30 pp.).—The inhibition of fermentation by live yeast which occurs on addition of NaF followed by glucose is significantly greater than when these products are added in the reverse order.

No such difference occurs when press juice is used. $K^{\cdot}$ enhances fluoride inhibition, whilst Cl' or PO_4''' do not, in live yeast. By contrast, when dried yeast or press juice is used, PO_4''' enhances F' inhibition and $K^{\cdot}$ does not. F' sensitivity depends on the metabolic processes in the cell at the moment when the F' is introduced. P. G. M.

Utilisation of pentoses in biological synthesis of proteins. V. Propagation of *Torula utilis* in arabinose, rhamnose, and glycuronic acid. R. Lechner (*Biochem. Z.*, 1940, **306**, 218—223; cf. A., 1939, III, 790).—*T. utilis*, grown in aërated media, does not utilise *l*-rhamnose or glycuronic acid as source of C; *l*-arabinose is utilised to a small extent. Utilisation, especially of arabinose, is enhanced by growth-adaptation. The utilisation of pentoses by micro-organisms is discussed. F. O. H.

Vitamin-B_1 and -B_2 content of dried wood-sugar yeast.—See A., 1943, III, 664.

Actinomyces chromogen. A. Sartory (*Compt. rend.*, 1942, **214**, 723—724).—This fungus is a strict aërobe which produced a violet pigment, and was isolated from suspected tubercular sputum. The *pigment*, $C_{10}H_{12}O_3N$, is not typical of any known group of pigments, but is analogous to that isolated from *B. violaceus*. It has been obtained cryst. (needles), and yields a rose-coloured leuco-compound on reduction by NH_4SH. P. G. M.

Process of amino-acid formation from sugars in *Aspergillus niger*. R. A. Steinberg (*J. Agric. Res.*, 1942, **64**, 615—633).—The C utilisation factor (yield per g. of C supplied) for 120 compounds is determined. High vals. were given (in descending order) by *D*-glucose, *D*-mannose, *D*-fructose, *L*-sorbose, and *D*-xylose. Enolisation is not a factor in the utilisation of sugars. All pentoses having an *L*-3 and a *D*-4 C atom were assimilable by *A. niger* except epimerides of *D*-xylose and probably *L*-sorbose. Oxidation to α-keto-acid is a necessary preliminary to assimilation of hexoses. The aldehyde derivative of *l*-αβ-dihydroxyvaleric acid is probably the precursor in amino-acid formation, the primary amino-acids produced being proline, glutamic acid, and ornithine. Trace-element requirements of the fungus were not affected appreciably by the carbohydrate source except that notably high yields were obtained with *D*-xylose freed from Fe. A. G. P.

Reversions in morphology of nitrate-induced "mutants" of *Aspergilli* grown on amino-acids. R. A. Steinberg and C. Thom (*J. Agric. Res.*, 1942, **64**, 645—652).—A NO_2'-induced injury-mutant of *Aspergillus niger* reverted to the original morphological strain when grown on media containing lysine, cystine, β-phenyl-β-alanine, threonine, and valine or on those containing lysine with arginine, aspartic acid, histidine, tyrosine, or valine. A similar variant of *A. amstelodami* reverted only in media containing a mixture of lysine and threonine. The capacity of variants for utilisation of amino-acids varied with the extent of morphological change from the original. Max. morphological variation is associated with lowered capacity for assimilation of the fully plastic acids (aspartic and glutamic acids, proline) and increased capacity for utilisation of aplastic acids (cystine, histidine, lysine, norleucine, and tyrosine). In the almost sterile atypical variant there was poor utilisation of hydroxyproline. Suppression of enzyme action by NO_2' disturbed cell maturation as in abnormal cells produced in animals by carcinogenic substances. A. G. P.

Immunologically active polysaccharide produced by *Coccidioides immitis*, Rixford and Gilchrist. W. Z. Hassid, E. E. Baker, and R. M. McCready (*J. Biol. Chem.*, 1943, **149**, 303—311).—*Coccidioides immitis* (strain 46) was grown on a modified tuberculin medium for 2 months at 37°, merthiolate was added to 0·01% concn., and the mat of fungus was removed. The filtrate was then conc. by ultrafiltration through collodion membranes to approx. one fifth vol. and maintained there by adding water and then 1% H_2SO_4. It was then washed with water, conc. to 1% of the original vol., and pptd. with 5 vols. of alcohol. The ppt. was dissolved in a small vol. of water, the brown ppt. obtained on adding ⅔ vol. of alcohol was discarded, and alcohol was added to the filtrate to 43% concn. The resulting ppt. was washed with 60%, then abs. alcohol, and ether and dried in a vac. at 80°. The product had ash content 0·42, total N 3·23, amino-N 0·6, C 43·8 on ash-free basis, uronic acid 10·5%, and $[\alpha]_D$ +37·5°. Protein reactions were negative, no acetyl groups were present, and the aq. solution was acidic. Hydrolysis by N-H_2SO_4 yielded galacturonic acid, glucose, and an unidentified sugar. A N-containing compound other than glucosamine was present. Both the original polysaccharide and that regenerated from the acetyl derivative gave positive precipitin reactions, but only the former gave a positive skin reaction. P. G. M.

Penicillin. S. S. Rao and S. P. De (*Current Sci.*, 1943, **12**, 209).—By growing *Penicillium notatum* on semi-solid media the max. anti-*Staphylococcus aureus* activity is developed in 3 days. This activity, after 10 times dilution and filtering through a L3 candle, is 3—4 "Oxford" units, and it remains const. at room temp. for 3 weeks. Chrysogenin production at this stage is small. P. G. M.

Sclerotiose, polysaccharide metabolite of *Penicillium sclerotiorum*, van Beyma. V. J. Albericci, T. P. Curtin, and D. Reilly (*Biochem. J.*, 1943, **37**, 243—246).—The isolation of a polyglucose, *sclerotiose*, from the metabolic products of *P. sclerotiorum* is described. Higher yields of sclerotiose are obtained by growing the mycelium in neutral than in acid medium (cf. A., 1943, II, 321). P. G. M.

Antibacterial substances produced by moulds. Detection and estimation of antibacterial activity *in vitro*. N. Atkinson (*Austral. J. Exp. Biol.*, 1943, **21**, 127—131).—A no. of methods for qual. and quant. detection of antibacterial activity were tested with a variety of active mould metabolism solutions. Dilution of the fluid in agar was the most reliable method, allowing the titration of the fluid against a range of bacteria under identical conditions. F. S.

Fungal amylases as saccharifying agents in alcoholic fermentation of starchy materials.—See B., 1943, III, 242, 243.

Phycomyces test for vitamin-B_1 determination and its clinical use.—See A., 1943, III, 665.

Oxygen consumption of single cells of *Paramecium* as measured by capillary respirometer. B. Cunningham and P. L. Kirk (*J. Cell. Comp. Physiol.*, 1942, **20**, 119—134).—Details are given of a respirometer in which an aq. meniscus in a capillary tube is observed by microscope. It is found to be sensitive to a 5×10^{-5} cu. mm. change in vol. O_2 consumption of one cell averaged $3{\cdot}5 \times 10^{-6}$ cu. mm. per hr. V. J. W.

Survival and development *in vitro* of malarial parasite. W. Trager (*J. Exp. Med.*, 1943, **77**, 411—420).—Survival of *Plasmodium lophuræ* for 2 weeks at 40—41° was observed in a medium consisting of duck red cell extract in salt solution, glutathione, glucose or glycogen, serum, embryo extract, and Ca pantothenate (0·02 mg. per c.c.). Half the medium was replaced daily by fresh medium, fresh uninfected erythrocytes were added every 2nd day, and the prep. was gently agitated on a rocking machine. Increases in male gametocytes and, more rarely, in total no. of parasites were noted during the first few days. A. S.

Œstrone and growth of protozoa.—See A., 1943, III, 648.

Substitute for bacteriological agar. W. E. Baier and T. C. Manchester (*Food Ind.*, 1943, **15**, No. 7, 94—96).—Formulæ for solid media, in which Na NH_4 pectate is used as a substitute for agar, are given. E. B. H.

Spice oils and their components for controlling microbial surface growth. H. B. Blum and F. W. Fabian (*Fruit Prod. J.*, 1943, **22**, 326—329, 347).—The relative germicidal activities of over 30 spice oils towards *S. ellipsoideus*, *S. cerevisiæ*, *Mycoderma vini*, and *Acetobacter aceti* were studied. The results obtained were not consistent for all the tests and organisms, but mustard oil was most effective, followed by cinnamon, cassia, and clove oils. The activity is due to an active principle and not to surface tension effects. E. B. H.

Germicidal quaternary ammonium salts in dilute solution. A colorimetric assay method. M. E. Auerbach (*Ind. Eng. Chem. [Anal.]*, 1943, **15**, 492—493).—The method depends on the formation of an ethylene dichloride-sol. dye formed by interaction of a long-chain quaternary NH_4 salt and bromophenol-blue. The two reactants are mixed in water, the water-insol. dye is extracted with ethylene dichloride, and the colour measured in a colorimeter against a standard prepared from benzyldimethylcetylammonium chloride. J. D. R.

Amino-acid composition of tyrocidine. A. H. Gordon, A. J. P. Martin, and R. L. M. Synge (*Biochem. J.*, 1943, **37**, 313—318; cf. A., 1943, II, 179).—The chromatographic isolation from acid hydrolysate of tyrocidine hydrochloride of phenylalanine (chiefly *d*-), leucine, proline, valine, tyrosine, ornithine, and glutamic acid (all chiefly *l*-) is described and evidence is presented that tryptophan and aspartic acid are also present. For unexplained reasons, the proportions of the amino-acids found vary considerably, the tryptophan val. in particular fluctuating greatly. On the N content of tyrocidine 88—105% has now been identified. *NN'-Diacetyl-l-ornithine* has m.p. 156°, $[\alpha]_D^{15}$ +6·3° in alcohol. W. McC.

Determination of tyrothricin. K. P. Dimick (*J. Biol. Chem.*, 1943, **149**, 387—393).—Tyrothricin is determined from the rate of hæmolysis of a standard erythrocyte suspension measured by a photo-electric colorimeter. The method is accurate to within 5% and will determine 100 μg. of tyrothricin per ml. of culture. The degree of hæmolysis by mixtures of gramicidin and tyrocidine is const. irrespective of the mixture and variations in the composition of natural tyrothricin are not liable to affect the accuracy of the method. H. G. R.

Sulphonamide action as shown by fluorescence- and electron-microscopy. K. Gartner (*Zentr. Baht.*, 1943, I, **150**, 97—115).—The bactericidal action of the sulphonamides on organisms of the *coli*–typhoid group was demonstrated by fluorescence microscopy

after staining with acridine-orange, whereby living and dead organisms could be differentiated. *Bact. paratyphosum* was resistant and the dysentery bacilli were sensitive. The killing effect of the sulphonamides was demonstrated in resting saline suspensions in cultures and *in vivo*. By electron-microscopy the sulphonamides produced a characteristic pptn. of the bacterial cytoplasm similar to that produced by $HgCl_2$. (14 electron micrographs.) F. S.

Effects of various urinary antiseptics on strains of *E. coli*.—See A., 1943, III, 673.

Effects of sulphanilamide, sulphapyridine, sulphathiazole, and sulphanilylguanidine on colon-typhoid-dysentery group.—See A., 1943, III, 673.

Papillary variation in bacteria, and bacterial cytology. F. H. Stewart (*J. Hygiene*, 1943, **43**, 136—141).—A review. D. D.

Physico-chemical conditions of skin and bacterial growth. L. Arnold (*J. invest. Dermat.*, 1942, **5**, 207—223).—Endogenous bacteria on human skin are increased by exposure to alkalis, warm water, or warm humid air, and decreased by exposure to acid. The horny layer of skin behaves like a colloidal gel and an increase in water content increases the surface endogenous bacteria and allows for longer survival of exogenous bacteria. C. A. K.

Bacterial content of industrial lubricating and cooling oils. O. Ernst (*Zentr. Bakt.*, 1943, I, **150**, 154—160).—Cultures of oil samples yielded Gram-positive and Gram-negative rods, staphylococci, streptococci, and sarcinæ. Native oil contained mostly Gram-positive sporing rods, cocci, and Gram-negative rods in equal nos. In drill-cooling oil Gram-negative bacteria predominated including coliforms, *Achromobacterium*, and *B. pyocyaneus*. F. S.

Soil micro-organisms. V. Nutritional requirements of predominant bacterial flora. A. G. Lochhead and F. E. Chase (*Soil Sci.*, 1943, **55**, 185—195).—Soil micro-organisms are grouped according to their nutritional needs. Organisms capable of development on a simple basal medium consist largely of spore-forming rods and Gram-negative non-sporing rods. For 19% of the species isolated from soil aq. soil extracts contained an essential factor. The activity of the extract depended on growth factors other than thiamin, biotin, riboflavin, pyridoxine, pantothenic or nicotinic acid, or inositol. Filtrates from cultures of other soil bacteria in a simple basal medium contained the necessary growth substance for some but not for all the species which required soil extract. The latter probably contains more than one growth factor. A. G. P.

Growth effects of α-methyl homologues of pantothenic acid and β-alanine. M. A. Pollack (*J. Amer. Chem. Soc.*, 1943, **65**, 1335—1339).—α-Methylpantothenic acid (A., 1943, II, 321) is 0·001—0·0001 times as potent as pantothenic acid for cell- and acid-production by *Lactobacillus casei*, *Streptococcus lactis* R, or *Lactobacillus arabinosus* 17·5, and 0·002—0·0003 times as potent for Gebr. Mayer or Fleischmann's bakers' yeast. The relative potency of the lactone moiety for *L. casei* and the former yeast is 0·000007 and 0·00001, respectively. α-Methyl-β-alanine (*loc. cit.*) is 0·0006 times as potent as β-alanine towards Gebr. Mayer yeast. Adding small amounts of α-methylpantothenic acid or α-methyl-β-alanine slightly antagonises the effect of the unmethylated homologues, but the effect is overcome by increasing the amount of the latter. R. S. C.

Effect of purines on sensitivity of *Acetobacter suboxydans* assay for *p*-aminobenzoic acid. M. Landy and F. Streightoff (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 127—128).—When 50 μg. each of adenine, xanthine, and guanine, or 150 μg. of adenine, is added to 10 c.c. of culture medium, the threshold for *p*-aminobenzoic acid is reduced from 0·1 to 0·01 μg.-%. V. J. W.

Microbiological assay of riboflavin. Influence of inorganic constituents and unknown growth factors.—See A., 1943, III, 665.

Microbiological assay of *p*-aminobenzoic acid.—See A., 1943, III, 666.

Pressure and temperature relations of bacterial luminescence. D. E. Brown, F. H. Johnson, and D. A. Marsland (*J. Cell. Comp. Physiol.*, 1942, **20**, 151—168).—Any one bacterium has an optimum temp. for luminescence. Below this, luminescence increases with temp. due to excitation of luciferase by oxidation of luciferin. Above it, it decreases through thermal inactivation of the enzyme. Increased hydrostatic pressure reduces luminescence at temp. below the optimum but increases it at temp. above it. V. J. W.

Application of theory of absolute reaction rates to bacterial luminescence. H. Eyring and J. L. Magee (*J. Cell. Comp. Physiol.*, 1942, **20**, 169—177).—A mathematical analysis of the data of the preceding paper, with determinations of some of the consts. involved. V. J. W.

Antiluminescent activity of antibiotic substances. G. Rake, H. Jones, and C. M. McKee (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 136—138).—The ratios of antiluminescent to antibacterial min. doses, determined on *Photobacterium fischeri* and *Strep. pyogenes*, are tabulated. The ratios were low for most antiseptics, especially for *p*-toluquinone, and high for products of moulds and soil bacteria. V. J. W.

Bacterial oxidation of hydrocarbons in marine sediments. G. D. Novelli (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 133—134).—Addition of lubricating or paraffin oil to cultures increased greatly the O_2 uptake by bacteria of marine sediments. O_2 uptake was decreased by dilution. V. J. W.

Destruction of histamine by bacteria. E. Werle (*Biochem. Z.*, 1940, **306**, 264—268).—*B. coli* does not attack tryptamine or tyramine, whilst *Ps. pyocyanea* attacks histamine and tyramine but not tryptamine. Degradation of histamine by bacterial preps. is completely inhibited by 0·01M-HCN, -NH_2OH, -germanin, and -hydrazidocarboxymethylpyridinium chloride and by 0·001M-semicarbazide, -phenylhydrazine, and -putrescine. Unlike with tissue-histaminase, passage of aq. extracts of the bacteria through bacterial filters gives an inactive filtrate. F. O. H.

Production of acetylmethylcarbinol by the action of *Acetobacter suboxydans* on βγ-butylene glycol. E. I. Fulmer, L. A. Underkofler, and A. C. Bantz (*J. Amer. Chem. Soc.*, 1943, **65**, 1425—1427).—βγ-Butylene glycol, $[\alpha]_D^{25}$ +1·0°, prepared by *Aerobacter aerogenes*, is converted by *Acetobacter suboxydans* into acetylmethylcarbinol (90—94%). The residual glycol has $[\alpha]^{25}$ +10·15° (lit. 5·0°, 6·9°). The original glycol thus contained only the *meso*- and *d*-forms. R. S. C.

Relation between capsule formation, hæmopepsis, and virulence in *B. anthracis*. L. von Buza (*Zentr. Bakt.*, 1943, I, **150**, 150—154).—Digestion of blood by virulent strains of *B. anthracis* (*ibid.*, 1940, I, **146**, 18) is confirmed. The contrary finding of Bekker (*ibid.*, 1941, I, **147**, 451) is ascribed to contamination of cultures. F. S.

Tryptophanase–tryptophan reaction. VI. Carbohydrate–amino-acid relationships concerned in inhibition of indole production by glucose in cultures of *Escherichia coli*. J. Dawson and F. C. Happold (*Biochem. J.*, 1943, **37**, 389—392).—The increased polysaccharide storage brought about in cultures of *E. coli* by phenylalanine and tyrosine is almost entirely due to the *d*-component. Although mannose may be metabolised by the phosphorylation mechanism, the enzyme concerned in polysaccharide formation is unable to effect the transformation from mannose 1-phosphate. Tryptophan antagonises polysaccharide formation by *dl*-phenylalanine. The rôle of the latter in stabilising the enzyme system is obscure. P. G. M.

***Bacillus coli* pneumonia.** I. N. Dubin and G. P. Kerby (*Arch. Path.*, 1943, **35**, 808—818).—A case report. Intratracheal injections of live cultures of *B. coli* into rabbits produced interstitial mononuclear pneumonia and focal areas of necrosis. Similar but milder lesions were produced by using heat-killed cultures of *B. coli* and a lysate from the cultures. Thus a *B. coli* toxin is one of the ætiologic factors in the production of the lesions in rabbits. C. J. C. B.

Differentiation between *Brucella melitensis* and *Brucella abortus* by precipitation reaction. P. M. Otero and A. P. Lebrón (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 197—198).—Intravenous injection into rabbits of living organisms of these species and of *B. suis* produced in the serum precipitins which were sp. in the case of *melitensis*. Each of the other two gave precipitins which reacted with either, but not with *melitensis*. V. J. W.

***Clostridium œdematiens* group. I. "*H*" and "*O*" antigenic analysis.** A. W. Turner and C. E. Eales (*Austral. J. Exp. Biol.*, 1943, **21**, 79—88). F. S.

Bacteriological diagnosis of gas gangrene in man. H. A. Gins and U. Koeppen (*Zentr. Bakt.*, 1943, I, **150**, 124—136).—Pieces of tissue to be sent for bacteriological examination should be placed in 50% glycerin, which allows survival of anaerobes for at least 4 weeks and prevents contamination with *Proteus* and moulds. Methods of isolation are reviewed. F. S.

Use of chicken serum in species and type identification of *Neisseria*. J. J. Phair, D. G. Smith, and C. M. Root (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 72—73).—Sp. and potent agglutinating sera were obtained by intravenous injection of living meningo- and gono-cocci. Injections were weekly and rose from 2 to 6×10^9 organisms. Agglutination occurs in 3 min. at room temp. V. J. W.

Development of sulphathiazole-resistant gonococci *in vitro*. W. M. M. Kirby (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 175—176).—A resistant strain was developed by growing in 20% ascitic broth, containing at first 0·025 μg. of sulphathiazole per c.c., and doubling this concn. every 3 transfers. V. J. W.

Tularæmia; report of four cases with unusual contacts. J. H. Shaffer (*Ann. int. Med.*, 1943, **18**, 72—80).—None of the patients had contact with rabbits. 3 patients fell ill after contact with house cats, one following the bite of a wood-tick. A. S.

Effect of chlorination on *Pasteurella tularensis* in aqueous suspension.—See B., 1943, III, 260.

Gaseous metabolism of *Bacillus prodigiosus* on silica gel medium containing *d*-xylose. G. Berencsi (*Biochem. Z.*, 1940, **306**, 150—152; cf. A., 1938, III, 1056).—The increase in O_2 consumption, previously observed, also occurs when the agar of the medium (containing meat extract) is replaced by SiO_2 gel. Hence, the substance or substances that co-operate with *d*-xylose in causing the increase occurs in meat extract. W. McC.

Effect of stimulating dose of *Hæmophilus pertussis* vaccine on immunity to pertussis. A. C. Rambar, K. M. Howell, E. J. Denenholz, M. Janota, and R. Standard (*Amer. J. Dis. Child.*, 1943, **65**, 730—732).—A stimulating dose of phase I *H. pertussis* vaccine injected 2 years after an initial pertussis vaccination causes immunity to whooping cough (measured by the opsonocytophagic test) for 2½—3 years after the stimulating dose. In instances in which the immunity was already present at the time of the stimulating dose (2 c.c. of phase I *H. pertussis* vaccine), no further response was elicited on reinoculation. C. J. C. B.

Inception of pneumonia and its bearing on prevention. O. H. Robertson (*Ann. int. Med.*, 1943, **18**, 1—14).—Escape of infected exudate from the upper respiratory tract past the epiglottis plays a more important rôle in the causation of pulmonary infection than the inhalation of bacteria containing droplets, as shown in experimental pneumococcal infections in dogs. Spread of infection to other lobes occurs following the flow of infected exudate from the primary lesion by way of the bronchi. Necessary conditions for causation of infections are the implantation of organisms in the terminal air ways, obstruction to their elimination, and local irritation or injury, the last being more important than obstruction. A. S.

Immunological properties of heterophil antigen and somatic polysaccharide of pneumococcus. W. F. Goebel and M. H. Adams (*J. Exp. Med.*, 1943, **77**, 435—449).—The heterophil antigen obtained from the cellular debris of an autolysed culture of a variant of type I pneumococcus is antigenic in rabbits and gives rise to precipitins and sheep cell hæmolysins; this lipocarbohydrate (I polysaccharide) consists of acetylated aminosugar, a second hexose, phosphoric acid, and a high-mol. fatty acid. The *C* (somatic) carbohydrate is not antigenic. Antisera for this type I pneumococcus contain also bacterial agglutinins unrelated to the *C* and I precipitins and the heterophil antibody. A. S.

Complement fixation with dissimilar antigens in primary atypical pneumonia. L. Thomas, E. C. Curnen, G. S. Mirick, J. E. Ziegler, jun., and F. L. Horsfall, jun. (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 121—125).—These convalescent sera may react with a no. of apparently unrelated antigens. This difficulty can be minimised by heating the serum at 65° for 30 min. or by centrifuging. V. J. W.

Function of pantothenate in bacterial metabolism. G. M. Hills (*Biochem. J.*, 1943, **37**, 418—425).—Pyruvate is quantitatively the most important substrate influenced by pantothenate in washed suspensions of *Proteus morganii*. The substrates which most nearly approach pyruvate in giving increased O_2 uptake are lactate and certain C_4- and C_5-dicarboxylic acids, although this increase is partly at the expense of that promoted by pyruvate. Pantothenate does not affect the fermentation of glucose. P. G. M.

Two new *Salmonella* types with similar somatic antigens. W. B. Cherry, P. R. Edwards, and D. W. Bruner (*Proc. Exp. Biol. Med.*, 1943, **52**, 125—126).—Types of *S. florida* and *S. madelia* are described which have part of antigen I and all of antigens VI, XIV, and XXV. Phase 1 of *florida* was agglutinated by all agglutinins for antigen *d*, and phase 2 by all non-sp. agglutinins and by 7. Phase 1 of *madelia* was agglutinated by all agglutinins for antigen *y*, and phase 2 only by 7. V. J. W.

Sulphonamide-resistant *Shigella paradysenteriæ*, Flexner, and *Shigella sonnei*. M. L. Cooper and H. L. Keller (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 92—95).—A *paradysenteriæ* strain, resistant to 5 other sulphonamides, was not resistant to sulphapyrazine, and 2 strains of *sonnei*, resistant to 4 other sulphonamides, were also not resistant to sulphacetamide. V. J. W.

Method of producing open skin wounds, uniformly infected with staphylococci, suitable for local chemotherapy studies. W. G. Clark, A. Stavitsky, and H. M. Tsuchiya (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 168—172).—Circular wounds, 3—4 mm. in diameter, were made in the dorsal skin, inoculated uniformly with pure culture, and covered with a celluloid cup which had a removable top, the base being cemented to surrounding skin. Uniform lesions are caused, which can be treated as desired or examined by biopsy. V. J. W.

Discussion on control of diseases of cattle inimical to man: mastitis, streptococcal infection, brucellosis, and sterility. A. W. Stapleforth. V. D. Allison (*Proc. Roy. Soc. Med.*, 1942, **35**, 625—642). W. J. G.

Epidemiology of scarlet fever. F. F. Schwentker, J. H. Janney, and J. E. Gordon (*Amer. J. Hyg.*, 1943, **38**, 27—98).—A study of the epidemiology of scarlet fever and other streptococcal infections was carried out in 4 villages near Iasi, Roumania. During the period of 42 months' study one outbreak of scarlet fever occurred due to type 10 streptococci involving 34 cases and 3 deaths. Many thousands of throat swabs were examined from normal and ill persons. 13,520 strains of streptococci were grouped and typed. The seasonal and age incidences of streptococcal carrier rates were compared with the attack rate for scarlet fever, and the relationship between carrier rates and acute respiratory tract infections was studied. The % of different groups and types of streptococci were investigated for all conditions. From 45,295 Dick tests, information was collected as to reaction at different ages compared with incidence of scarlet fever, occurrence of pseudo-positive reactions, effect of illnesses other than scarlet fever on changes in reaction, the relation of streptococci to such changes, and the reaction of children compared with their parents. Preceding the outbreak of scarlet fever the type 10 streptococcal carrier rate rose; 66% of these carriers became ill, those Dick-positive with scarlet fever, those Dick-negative with tonsillitis-pharyngitis. Of those who remained well 44% were Dick-positive and 45% Dick-negative. The normal rate of change of the Dick test from positive to negative appeared to be unaffected by the epidemic. It is believed that those persons with antibacterial immunity to the streptococcus will remain well after contact with the organism but may become carriers, while those with no such immunity may contract tonsillitis-pharyngitis if they possess antitoxic immunity (Dick-negative) or scarlet fever if they have no antitoxic immunity (Dick-positive). The original article should be read by those interested in the epidemiology of streptococcal infections. B. C. H.

Verification test in serology of syphilis. R. L. Kahn (*J. Lab. clin. Med.*, 1943, **28**, 1175).—A general review. C. J. C. B.

Production of tetanus toxin on peptone-free media. J. H. Mueller, E. B. Schoenbach, J. J. Jezukawicz, and P. A. Miller (*J. clin. Invest.*, 1943, **22**, 315—318).—An acid hydrolysate of casein was employed to supply amino-acids in the medium. Various fractions of liver extract were incorporated to furnish the necessary growth accessories. The concn. of Fe must be controlled extremely carefully. As good toxin titres were obtained with the particular strain used on this medium repeatedly as were found on peptone-infusion media. C. J. C. B.

Acidity of cultures of tubercle bacillus and tuberculin activity. R. Schwartz and R. Velo de Ipola (*Rev. Soc. argent. Biol.*, 1942, **18**, 203—206).—The pH of the broth of human tubercle cultures was determined and correlated with the activity of the corresponding tuberculins. Ten strains were used and no relation with pH was established. The most active tuberculin was obtained from a 6 weeks culture. The pH of tuberculin had no influence on its biological activity (intradermal reaction of tuberculised guinea-pigs). J. T. L.

Xanthoproteic reaction in cultures of human type tubercle bacillus and in tuberculin. R. Schwartz and R. Velo de Ipola (*Rev. Soc. argent. Biol.*, 1942, **18**, 482—486).—Meat broths + peptone and 5% glycerol were inoculated with human tubercle bacilli. The xanthoproteic reaction was determined weekly in the inoculated broth, in tuberculin prepared from these cultures, and in control non-inoculated broth. Variations in the intensity of the reaction had no relation to the activity of the corresponding tuberculin in the 10 strains studied. J. T. L.

Cutaneous hydrophilia and sensitiveness to tuberculin. C. A. Urquijo (*Rev. Soc. argent. Biol.*, 1942, **18**, 33—38).—18 infants 12—21 months old, who had been injected with 0·02 mg. of BCG subcutaneously before the 3rd day of life, were tested for tuberculin sensitiveness (Mantoux's reaction). At the same time the reabsorption time of saline solution injected intradermally was measured. In 9 which gave a markedly positive tuberculin reaction, the saline reabsorption time was 84·4 min. ±9·77. In 9 with a min. or negative tuberculin test the saline reabsorption time was 47·7 min. ±7·52. Tuberculin must thus remain in the skin for a certain time to act. J. T. L.

Pseudoreaction to tuberculin. H. Vollmer and M. L. Ripps (*Amer. J. Dis. Child.*, 1943, **65**, 763—769).—Intracutaneous injection of 1·0 mg. or more of old tuberculin frequently causes pseudoreactions in children not infected with tuberculosis. Purified protein derivative causes more pseudoreactions than corresponding doses of old tuberculin. The % of pseudoreactions increases with the concn. of tuberculin and the age of the subject. Most pseudoreactions are caused by tuberculo-protein. Pseudoreactions appear and fade more rapidly and show less distinct induration than true reactions to tuberculin. The patch test causes less pseudoreactions than the Mantoux test with more than 0·1 mg. of old tuberculin. C. J. C. B.

Transplacental transmission of tubercular antibodies. C. A. Urquijo, A. R. Scott, and N. F. M. Pagniez (*Rev. Soc. argent. Biol.*, 1942, **18**, 24—28).—In 92 cases complement-fixation tests with tubercular antigen were carried out in the tubercular mother and umbilical cord blood. Positive results were obtained in mother and child in 54 cases; in 19 of these the antibodies were more conc.

in the fœtus than in the mother, although no anticomplement activity was found in 8 of these sera. J. T. L.

Vole acid-fast bacillus vaccination in experimental tuberculosis. D. Irwin and D. C. O'Connell (*Canad. Med. Assoc. J.*, 1943, **48**, 486—488).—All the guinea-pigs vaccinated with the acid-fast vole bacillus showed less tuberculous involvement than the controls. Of those animals in which experimental infection was not carried out until 18 weeks after the last dose of vaccine only 1 animal in 12 showed any tuberculous involvement. C. J. C. B.

Correlation of extent of tuberculosis with amount of polysaccharide in serum. F. B. Seibert, J. W. Nelson, and M. V. Seibert (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 219—222).—Serum-polysaccharide (total carbohydrate — glucose) is correlated with the severity of the tuberculous condition. V. J. W.

"Nervous distemper" in dogs: pathological and experimental study. E. W. Hurst, B. T. Cooke, and P. Melvin (*Austral. J. Exp. Biol.*, 1943, **21**, 115—126).—From the brains of dogs showing demyelination and suffering clinically from nervous distemper a virus identical in its behaviour with that of distemper was isolated. The demyelinating lesions represent damage to the white matter short of complete necrosis, caused by the virus which has an affinity for the white matter. F. S.

Purification of equine encephalomyelitis virus by ultra-centrifugation, and maintenance of its activity with cysteine. F. B. Bang and R. M. Herriott (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 177—180).—Presence of 0·1M-cysteine retards spontaneous inactivation. V. J. W.

Cultivation of West Nile virus in developing chick embryo. D. W. Watson (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 204—205).—Such cultivations are uniformly successful; greatest concn. of virus is in the embryo with very little in the allantoic fluid. V. J. W.

Susceptibility of hamsters to peripheral inoculation of Western, Eastern, and West Nile encephalitis viruses. D. W. Watson and J. E. Smadel (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 101—104).—The Syrian hamster is susceptible to subcutaneous or intraperitoneal inoculation with all these strains. V. J. W.

Placental transmission of immunity to St. Louis encephalitis virus inoculated intraperitoneally in mice. M. G. Smith (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 83—85).—Offspring of mice immunised subcutaneously have no increased resistance to intracerebral, but are more resistant than controls to intraperitoneal, inoculation. V. J. W.

Epidemiology of infantile spinal paralysis. G. Fanconi and H. Zellweger (*Schweiz. med. Wschr.*, 1942, **72**, 1025—1029).—The lecture is based on observations during the 1941 epidemic in Zurich. A. S.

Incubation periods of poliomyelitis in mice of different strains. M. G. Smith (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 86—88).—No significant differences were found among 8 out of 9 strains. The Rfi strain had a longer incubation period than the others. V. J. W.

Murine poliomyelitis virus in blood and spleens of mice shortly following inoculation. M. G. Smith (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 88—90).—Lansing virus could be found in blood and spleen 30 min. after intraperitoneal inoculation. It persisted for 7 and 12 hr, respectively. After intracerebral inoculation it could be found in the blood up to 2½ hr. and in the spleen up to 1½ hr. V. J. W.

Radio-biological research on the size and structure of the herpetic virus. P. Bonét-Maury (*Compt. rend.*, 1942, **214**, 263—266).—Two methods are described, based on the inactivation of various dilutions of the virus by Rn. The diameter of the particle, calc. from the active surface exposed to the influence of the radiation, is 260 mμ., or approx. that of the vaccinal virus. This supports the idea of a non-organised macromol. wholly susceptible to radiative action. N. M. B.

Origin of influenza epidemics. C. H. Andrewes (*Proc. Roy. Soc. Med.*, 1942, **36**, 1—10).—At least two influenza viruses are recognised: *A* and *B*. Influenza *A* is prevalent in Britain in the first quarter of alternate years, disappearing for the intervening 21 months. There is little correlation between antibody titre and immunity; potent antibodies diminish only slightly liability to infection. It is possible that there is a basic influenza virus robbed of almost all *A* antigen and other properties by which it can be recognised in the laboratory; it cannot multiply rapidly, but lives in the human or other host. In winter the basic virus would be able to pass through successive hosts with low *A* antibody and poor resistance, and the evolution by this means of increasing *A* antigen would render it capable of infecting an increasing proportion of the community. 7 grades of virus between the basic and the pandemic forms are possible for influenza *A*; 3 or 4 for influenza *B*. W. J. G.

Precipitation and concentration of influenza virus with alum. H. L. Bodily, M. Corey, and M. D. Eaton (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 165—168).—Virus was pptd. from chick allantoic fluid by addition of a min. amount of 10% solution of alum, pH being kept about 6·5 by $NaHCO_3$. After centrifuging, the ppt. was redissolved in 20% Na citrate. This solution was highly infective, and after inactivation with formaldehyde retained its antigenic potency. V. J. W.

Changes in influenza virus associated with adaptation to passage in chick embryos. F. M. Burnet and D. R. Bull (*Austral. J. Exp. Biol.*, 1943, **21**, 55—69).—Strains of influenza *A* virus isolated by amniotic inoculation showed the following changes after passage in chick embryos. There was less difference in hæmagglutinin titre between tests with guinea-pig and with fowl erythrocytes; the virus multiplied in the allantoic cavity; in amniotic infection the amount of amniotic fluid was reduced instead of increased; and hæmagglutinin tests were inhibited by human tears. It was concluded that the change was a discontinuous mutation. F. S.

Titration of antibody against influenza viruses by allantoic inoculation of developing chick embryo. F. M. Burnet and W. I. B. Beveridge (*Austral. J. Exp. Biol.*, 1943, **21**, 71—77).—Eggs are inoculated with virus–antibody mixtures and after 3 days' incubation the allantoic fluid is tested for its power to agglutinate fowl erythrocytes. The method is similar to that described by Hirst (*J. Immunol.*, 1942, **45**, 285). F. S.

Size of infective particle and hæmagglutinin of influenza virus as determined by centrifugal analysis. W. F. Friedewald and E. G. Pickels (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 261—262).—Chick allantoic fluid containing virus was centrifuged in a sucrose solution of concn. ranging from zero at the top of the column to 12% at the bottom. Samples, taken at different levels, were assayed on mice. From sedimentation rate it is calc. that the length of virus particles is at least 60 mμ. (cf. Pickels, A., 1943, I, 126). V. J. W.

Antigenic relationship of British swine influenza strains to standard human and swine influenza viruses. Use of chicken and ferret antisera in red cell agglutination. N. P. Hudson, M. M. Sigel, and F. S. Markham (*J. Exp. Med.*, 1943, **77**, 467—471).—The Cambridge and North Ireland strains are closely related to the type *A* (*PR8*, *WS*) strains but differ from the Shope virus. The type *B* (Lee) human strain has a distinctive antigenicity. Chicken developed sp. antibodies following single intraperitoneal injections of influenza virus; inhibition tests gave results comparable to those obtained with ferret antisera. Sp. inhibition of hæmo-agglutination by influenza virus was an effective method for the study of strain relationships. A. S.

Effect of pH on stability of vesicular stomatitis virus. B. Sigurdsson (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 254—255).—Infectivity was not affected in 24 hr. at 0° if pH was 5—9. At vals. below 5 it deteriorated rapidly. Specimens kept for 5 days showed deterioration when pH was less than 7. V. J. W.

Hæm-agglutination by viruses: range of susceptible cells with special reference to agglutination by vaccinia virus. E. Clark and F. P. O. Nagler (*Austral. J. Exp. Biol.*, 1943, **21**, 103—106).—The range of species giving erythrocytes agglutinated by influenza, Newcastle disease, and vaccinia virus is tabulated. Only fowl, guinea-pig, and human cells are of practical val. for work with these viruses. About 50% of fowls (6 months or over) give erythrocytes agglutinable with vaccinia virus; this is a genetic characteristic unrelated to age, sex, or breed. F. S.

Reaction of the African grivet monkey (*Cercopithecus aethiops centralis*) to yellow fever virus. T. P. Hughes (*Trans. R. Soc. trop. Med. Hyg.*, 1943, **36**, 339—346).—*C. aethiops centralis*, Neuman, can circulate yellow fever virus in high concn. following its administration either by injection or by the bite of infected mosquitoes. There is, however, a marked variation in susceptibility among individuals of this species. C. J. C. B.

Cleavage of protein of tobacco mosaic virus. E. Pfankuch (*Biochem. Z.*, 1940, **306**, 125—129).—Electrophoretic examination of material obtained from the virus by treatment with NaOH or pyridine shows that it is an electrochemically homogeneous protein fraction of low mol. wt. The same material is obtained from an *X*-ray mutant of the virus. The results indicate that the virus probably consists of a chain of mols. of the protein united by nucleic acid mols. In the mutant, the nucleic acid, but not the protein, is altered. W. McC.

Production of local skin reactivity by passive transfer of antiprotein sera. M. W. Chase (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 238—240).—Serum from guinea-pigs, immunised with horse serum or anti-ragweed serum, and injected intradermally into controls, caused the injected areas to react with an eruption to injections elsewhere of horse serum or ragweed pollen extract respectively (cf. A., 1942, III, 858). V. J. W.

Active immunisation of rats against *Nippostrongylus muris*. J. Y. C. Watt (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 67—72).—Filtered extracts gave an immunity similar to that known to be effected by ground-up worms. V. J. W.

Significance of histamine in anaphylaxis and allergy. C. A. Dragstedt (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, **17**, 102—107).—A review. A. S.

Allergy to injectable liver extracts; clinical and immunological observations.—See A., 1943, III, 623.

XXVI.—PLANT PHYSIOLOGY.

Changes in chemical composition of cultivated plants when grown in the mountains (beet, peas, *Nicotiana rustica*, barley).—See B., 1943, III, 233.

Mineral deficiency effects on *Datura alba*, Nees. S. Prasad (*Indian J. Pharm.*, 1943, **5**, 65—82).—Omission of N, P, or K from the nutrients supplied to the sand-cultured plants markedly affected growth, root elongation, amount of dry matter, shoot : root ratio, water content, and yield of alkaloid. Stunted growth and reduced branching, fruiting, and alkaloid formation were obtained by deficiency of the elements in the order N > K > P. R. H. H.

Diagnosis of mineral deficiency by plant analysis and plant injection.—See B., 1943, III, 231.

Relation of zinc to seed production. H. S. Reed (*J. Agric. Res.*, 1942, **64**, 635—644).—Peas, beans, and milo in Zn-free nutrients ceased to grow at stages prior to seed formation. The threshold [$Zn^{\cdot\cdot}$] for seed production was 0·02—0·10 p.p.m. Below this level pods but not seeds were formed. The no. of seeds produced and the total growth of the plant increased with rising [$Zn^{\cdot\cdot}$]. Viable seed was obtained from plants receiving Zn in amounts exceeding the threshold val. though still sub-optimal. A. G. P.

Effect of different forms of nitrogen on the nitrogen metabolism of radishes in pot culture. E. Mantel (*Bodenk. Pflanzenernähr.*, 1941, **24**, 342—356).—The plants received a basal manure which included $Ca(NO_3)_2$ and a top-dressing of various N fertilisers applied 2 weeks prior to the end of the experiment. Best yields were obtained with a top dressing of $NaNO_3$. In plants receiving $(NH_4)_2SO_4$ amino-acids accumulated in toxic proportions whereas in those receiving NO_3' there was an increase in NO_3' content of roots accompanied by accelerated reduction of NO_3' and destruction of sugar in leaves. $NaNO_3$ was more effective than $(NH_4)_2SO_4$ in increasing the protein content of the plants. Radish roots may contain up to 50% of the total N as NO_3'. A. G. P.

Transamination and protein synthesis in germinating oat seedlings. H. G. Albaum and P. P. Cohen (*J. Biol. Chem.*, 1943, **149**, 19—27).—The conversion of *l*(+)-glutamic and oxalacetic into α-ketoglutaric and *l*(−)-aspartic acids in homogenised oat embryos is three times as rapid as the reverse change. The optimum pH is 8·6. Transaminase activity and non-protein-N initially increase faster than total protein, and later at the same rate. Transamination is discussed in relation to protein synthesis. R. L. E.

Formation of fat in plant seeds. K. Schmalfuss (*Bodenk. Pflanzenernähr.*, 1941, **24**, 321—341).—During the ripening of soya-bean and flax seed the I val. of the fat gradually increases. The final val. reached is independent of the length of the ripening period but is determined by the environmental temp. during this period. A. G. P.

Rôle of invertase in synthesis of starch in plant cells. B. A. Rubin and E. V. Artzichovskaja (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 675—678).—Low concns. of $AgNO_3$ have no effect on the amylase and invertase of wheat seedlings. Ascorbic acid increases the synthetic activity of invertase and diminishes production of starch from sucrose and monosaccharides. Iodoacetate decreases the synthetic and increases the hydrolytic action of invertase, the production of starch from reducing sugars being greatly diminished or stopped. The results indicate that invertase plays an important part in the sucrose–starch system as well as in the monosaccharide–sucrose system. W. McC.

Carbohydrate complex in potatoes grown in Arctic regions. S. A. Kasparova and I. V. Glazunov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 625—627).—Potatoes grown in the Arctic contain less starch than those grown further south. The sol. carbohydrates consist mainly of monosaccharides, and the amount of starch varies inversely as the amount of monosaccharides and the total of sol. carbohydrates. The varying amounts of carbohydrates are due to the action of amylase and invertase. Potatoes which contain large amounts of starch have low amylase activity, and this relationship holds throughout the period of dormancy following harvesting. Variations in the ratio of sucrose to monosaccharides, as well as storage of sol. carbohydrates, are due to invertase activity. J. N. A.

Biochemical processes in resting potato tubers grown in the Arctic. S. A. Kasparova and I. V. Glazunov (*Compt. rend. Acad. Sci. U.R.S.S.* 1941, **31**, 679—682).—In potatoes grown at 67—69° N. latitude and stored for 220 days at 2° (R.H. 85·9%), monosaccharides predominate amongst water-sol. carbohydrates. The amylase, peroxidase, catalase, and maltose contents increase and the starch content decreases slightly during storage. The loss of wt. is chiefly due to evaporation of water, resulting, in part, from decrease in starch content. The total N content undergoes little change but the content of water-sol. N increases at the expense of other forms of N. W. McC.

Enzymes in ripening peas. O. T. Lutikova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 683—685).—During ripening, the proportion of protein-N increases in peas and decreases in the pods. In the pods, the proteases exhibit little or no synthetic activity but in peas this activity is great during the whole ripening period or during its later stages. They exhibit no hydrolytic activity in pods or peas. The ratio of the synthetic to the hydrolytic activity of invertase decreases in the pods and increases greatly in the peas, the increase being due to decrease in hydrolytic activity. In some varieties of peas, synthesis of carbohydrates is more pronounced than in others. W. McC.

Effect of depth of immersion on apparent photosynthesis in submerged vascular aquatics. B. S. Meyer, F. H. Bell, L. C. Thompson, and E. I. Clay (*Ecology*, 1943, **24**, 393—399).—In 5 vascular aquatics the rate of apparent assimilation decreases less rapidly with increased submergence than does light intensity as measured by a Weston "Photronic" cell. With 4 of the species the compensation point is less than 2% of sunlight intensity on sunny summer days. L. G. G. W.

Photoperiodic after-effect. B. S. Moschkov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 699—701).—Grafting experiments with two varieties of perilla illuminated first continuously, then intermittently, and, in some cases, subsequently kept in darkness with or without removal of some or all leaves, show that the effect is not due to the production, accumulation, and subsequent consumption of a "flowering hormone" but results from physiological changes which take place in the leaves when they are under optimal photoperiodic conditions. W. McC.

Effect of light intensity on photosynthetic efficiency of carnation varieties.—See B., 1943, III, 237.

Flash saturation and reaction periods in photosynthesis.—See A., 1943, I, 281.

Effect of synthetic growth substances on rooting of subtropical fruit plants. Growth substance in rooting certain *Prunus* species.—See B., 1943, III, 235.

Practicability of certain chemicals as a means of inducing fruit set in tomato.—See B., 1943, III, 234.

Physiology of host–parasite relations. IV. Some effects of tomato spotted wilt on growth. B. J. Grieve (*Austral. J. Exp. Biol.*, 1943, **21**, 89—101).—Bronzing symptoms in infected seedling tomato plants were associated with a decrease in dry wt., height, leaf area, leaf development, and in water content. Mottling symptoms had less effect on dry wt. and no effect on growth as height. The effect on dry wt. was caused in part by reduced efficiency of assimilating tissue and the effect on height was due to destruction of growth hormone. There was no relation between the rate of growth of the seedling plants and the incubation period for the virus. F. S.

Artificial germination of rice pollen. M. K. V. Subramanian (*Current Sci.*, 1943, **12**, 208—209).—Rice pollen is dusted over a glass slide resting on wet filter paper or cotton wool in a desiccator maintained at 28—29°. The humidity is 100%, and 50—60% germination is thus obtained. P. G. M.

XXVII.—PLANT CONSTITUENTS.

Determining magnesium in plants and soils. Adaptation of the 8-hydroxyquinolinate micro-method.—See A., 1943, III, 704.

Selenium distribution in milled seleniferous wheats.—See B., 1943, III, 244.

[Constituents of leaves of] *Piper marginatum*, Jacq. E. H. de Núñez and C. H. Johnson (*J. Amer. Pharm. Assoc.*, 1943, **32**, 234—236).—The dried leaves yielded 6·97% of volatile oil, d^{25} 1·0560, n^{20} 1·5475, $[\alpha]_D^{20}$ +0·52°, 0·28% of tannin, reducing sugars, a phytosterol, a fat, an unknown substance (? active constituent) resembling an alkaloid, and small amounts of unidentified, cryst. substances. F. O. H.

Oil of *Cerbera odollam*. F. A. Steldt and K. K. Chen (*J. Amer. Pharm. Assoc.*, 1943, **32**, 203—204).—The dried nuts yielded 62% of an oil, m.p. 29—30°, *d* 0·9031, n_{30} 1·4599, acid val. 73·75, sap. val. 194·75, I val. (Hanus) 75·9, consisting of glycerides of palmitic, stearic, oleic, and, to a smaller extent, lower fatty acids, *e.g.*, butyric. F. O. H.

Oils of cedarwood, sweet orange, *Illicium floridanum*, peppermint, vegetable drugs, and spices.—See B., 1943, III, 254.

Occurrence of squalene in plant and animal fats. K. Täufel and W. Heimann (*Biochem. Z.*, 1940, **306**, 123—124; cf. A., 1939, III,

536).—Squalene (identified as hexahydrochloride) occurs in fresh whale oil, crude cod-liver oil, and the oils of olive, wheat germ, soya bean, yeast, linseed, and pea-nut. W. McC.

Stability of carotene in acetone and petroleum ether extracts of green vegetables. I. Photochemical destruction of carotene in presence of chlorophyll. II. Stabilising effect of sodium cyanide. L. P. Pepkowitz (*J. Biol. Chem.*, 1943, **149**, 465—469, 469—471).—I. Carotene dissolved in acetone or light petroleum and exposed to light is gradually destroyed in presence of chlorophyll. The proportion destroyed is a function of time and of the amount of chlorophyll present. Both light and chlorophyll are necessary for the reaction to occur.

II. The addition of NaCN partly inhibits the photochemical destruction of carotene, and is also protective against the enzymic (non-photochemical) destruction of carotene which is responsible for the lower estimate of carotene content in raw than in cooked vegetables. E. C. W.

Vitamin-*A* content of some green vegetable leaves. Carotene content of Chinese fruits and vegetables.—See A., 1943, III, 663.

Ascorbic acid contents of Chungking fruits and vegetables.—See A., 1943, III, 667.

Splenic contracting substance in orange seeds.—See A., 1943, III, 675.

Egonol glucoside from fruits of "Taiwan-Egonoki."—See A., 1943, II, 295.

Alkaloids of the *Lycopodium* species.—See A., 1943, II, 344.

Starch content of western Canadian wheat.—See B., 1943, III, 244.

Limit dextrins and starch. IV. Dextrins from maize starch.—See A., 1943, III, 682.

Limit dextrins and starch. V. Fermentability of starch breakdown products.—See A., 1943, III, 684.

Gelatinisation mechanism of starch granules. Systematic identification of starches: Reichert classification.—See B., 1943, III, 241.

Pentosans of wheat flour.—See B., 1943, III, 245.

Amylase inhibitor from cereals.—See A., 1943, III, 683.

Sapogenins. Structure of lilagenin.—See A., 1943, II, 333.

Lignin and related compounds.—See A., 1943, II, 346.

Ultracentrifugal studies of the salt-soluble protein fraction of barley and malt.—See A., 1943, III, 681.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Preservation of cultures and sera by drying. A. G. Rayner (*J. Path. Bact.*, 1943, **55**, 373—375).—The culture (or serum) is placed on thin waterproof Cellophane before vac. freezing–drying. C. J. C. B.

Photomicrography of living specimens. K. D. Broome and B. A. Jarrett (*Phot. J.*, 1943, **83**, 352—353).—A special foot-operated shutter giving min. vibration. Suitable illumination and processing technique is described. J. W. G.

Nylon as buried suture. L. J. Aries (*Surgery*, 1941, **9**, 51—60).—Favourable report of the use of nylon in suturing muscle, gastro-intestinal tract, bladder, tendon, and nerve. Nylon has all the advantages of silk, is stronger, less irritating, and allows less invasion of its interstices. P. C. W.

Apparatus for measuring air flow during inspiration. R. C. Lee and L. Silverman (*Rev. Sci. Instr.*, 1943, **14**, 174—181).—The new instrument described offers no appreciable resistance to air flow. A Pt wire, 10 μ. in diameter, traverses a tube at right-angles to the air flow; one end is fixed and the other is fastened to a fine spring. The displacement due to air flow is recorded by a moving paper camera. N. M. B.

Air-conditioned experimental cabinet.—See A., 1943, I, 288.

Photoelectric apparatus and photoelectric measurements in limnological research. P. Ullyott and K. Incikaya (*Rev. Fac. Sci. Istanbul*, 1942, **7**, 57—82).—A robust, portable type of photometer, suitable for limnological work, is described. H. W.

Calculation of the error of biological assays. J. O. Irwin (*J. Hygiene*, 1943, **43**, 121—128).—Statistical. D. D.

Tissue-water. II. Macro-modification of distillation method of determination. A. T. Miller, jun. (*J. Biol. Chem.*, 1943, **149**, 153—155; cf. A., 1942, III, 437).—Tissue-water is measured by an indirect gravimetric method that obviates the necessity for calibration of the receiver. The accuracy of the method is $\pm$0·04% for 10-g. samples. P. G. M.

Relationship of extinction to wave-length in turbid sera and other suspensions. O. H. Gaebler (*J. Biol. Chem.*, 1943, **149**, 251—254).—The logarithm of the extinction is related to the negative logarithm of λ in a linear manner in turbid suspensions and in sera in which turbidity is due to physiological lipæmia. The application in the determination of a coloured substance in presence of turbidity is discussed. H. G. R.

Calibration of photo-electric colorimeter for determination of chlorophyll. Relation between spectra of standards and accuracy of analytical results. C. L. Comar, E. J. Benne, and E. K. Buteyn (*Ind. Eng. Chem.* [*Anal.*], 1943, **15**, 524—526).—The absorption spectra of 3 chlorophyll preps. and the analytical results obtained when these preps. are used as standards for the calibration of a photo-electric colorimeter are compared. Analytical vals. from 24 different plant sources show that deviations as high as 75% from true vals. may occur depending on the purity of the sample. A simple plant extract may be used for calibration when a portion can be analysed for chlorophyll by an established spectrophotometric method and published absorption coeffs., thus avoiding the uncertainties involved in the use of chlorophyll preps. as standards. J. D. R.

Determination of acid-soluble glycerophosphoric acid in liver. E. Leva and S. Rapoport (*J. Biol. Chem.*, 1943, **149**, 47—55).—After removal of nucleotides and inorg. PO_4''', α-glycerophosphoric acid is oxidised with HIO_4, and the phosphoglycollaldehyde formed is hydrolysed with H_2SO_4, the inorg. PO_4''' being determined (cf. Fleury and Paris, A., 1933, 696). Total α- and β-glycerophosphoric acid is similarly determined after equilibrium between the two forms has been obtained by heating with acid. Only the total glycerophosphate can be determined if much glycogen is present. Various rat tissues contain α- 5·8—14·8, β- 0—1·9, total up to 27·8 mg.-%, and rabbit tissues α- 4·1—8·3, β- 1·1—1·8, total up to 28·9 mg.-%. R. L. E.

Determination of cantharidin in beetles and native medicines. J. C. Bodenstein (*Analyst*, 1943, **68**, 238—241).—The sample is digested with conc. HCl, extracted with hot dil. HCl and the cantharidin, removed from this solution by $CHCl_3$–ether, is purified by washing with aq. $NaHCO_3$; the solvent is removed, and the residue heated with conc. HNO_3 and $NaNO_2$. After extraction with $CHCl_3$ and washing with aq. $NaHCO_3$ the cantharidin is dried and weighed. When recrystallised from ethyl alcohol the product may be used to characterise the original sample by its m.p. Other methods of extraction and purification are considered. S. B.

Accurate and sensitive clinical method of demonstrating blood in urine, fæces, and gastric juice. R. Eder and C. von Lippert (*Schweiz. med. Wschr.*, 1942, **72**, 1245—1249).—The blood-pigments are extracted by shaking with CCl_4 or trichloroethylene; after evaporation of the solvents the pigments are dissolved in a pyridine–N_2H_4 mixture and spectroscopically determined. A. S.

Determination of beryllium.—See A., 1943, III, 834.

Micro-determination of tin in biological material. J. Schwaibold, W. Borchers, and G. Nagel (*Biochem. Z.*, 1940, **306**, 113—122).—In a modification of Clark's procedure (A., 1937, I, 581), Sn (1—18 μg.) is determined (error $\pm$10%) by incinerating the material at 500—600° (melting of ash avoided), dissolving the ash in 1 : 1 H_2SO_4–HNO_3 mixture, separating Sn as $SnCl_4$ by adding 3 : 1 HCl–HBr mixture and distilling in an all-glass apparatus, adding "dithiol" solution, collecting the Sn dithiol compound in a Gooch crucible, and comparing the colour with that of standards in other crucibles. The standards are stable for an indefinite period. Ox liver, peas, and dried spinach contain 0·6, 6·7, and 0·7 mg. of Sn per kg., respectively, and Sn is also found in tinned foods. W. McC.

Mercurimetric determination of chlorides in blood.—See A., 1943, III, 627.

XXIX.—NEW BOOKS.

***Latrodectus mactans* and latrodectism.** R. R. L. Sampayo (Thesis for M.D., Buenos Aires, 1942, 227 pp.).—A complete study of the "black widow" spider and the effects of its poison. The systematics of the genus *Latrodectus* and a good description of its species are given, with special reference to the poison glands. The toxic effects of the poison are studied in many species, especially dog, guinea-pig, and rat. A sp. antitoxin was obtained by immunisation of horses and concn. and purification of the serum. The results of treatment with this serum and its neutralising action on the different effects of the poison are recorded. The symptoms occurring in man bitten by the spider are described. There are 923 references. A rural schoolmaster (J. W. Abalos) collected and remitted to the author thousands of specimens of *Latrodectus* and much valuable information obtained in the field. J. T. L.

INDEX OF AUTHORS' NAMES, A., III.

NOVEMBER, 1943.

LIST OF ABBREVIATIONS ETC. USED IN ABSTRACTS.

absolute	abs.	electrocardiogram	e.c.g.	parts per million	p.p.m.
alternating current	a.c.	electromotive force	e.m.f.	per cent.	%
ampere	amp.	electron-volt(s)	e.v.	potential difference	p.d.
Ångström unit	A.	equivalent	equiv.	precipitate	ppt.
anhydrous	anhyd.	feet, foot	ft.	precipitated	pptd.
approximat-e, -ly	approx.	for example	*e.g.*	precipitating	pptg.
aqueous	aq.	freezing point	f.p.	precipitation	pptn.
Assignor } in patent titles / Assignee } only	Assr. / Assee.	gallon(s)	gal.	preparation	prep.
		gram(s)	g.	qualitative	qual.
atmosphere, -es, -ic	atm.	horse power	h.p.	quantitative	quant.
atomic	at.	hour(s)	hr.	recrystallised	recryst.
atomic weight	at. wt.	hydrogen-ion concentration	$[H^+]$	refractive index	n
boiling point	b.p.	inch(es)	in.	relative humidity	R.H.
British thermal unit	B.Th.U.	inorganic	inorg.	respiratory quotient	R.Q.
calculated	calc.	insoluble	insol.	revolutions per minute	r.p.m.
Calorie (large)	kg.-cal.	kilogram(s)	kg.	Roentgen unit	r.
calorie (small)	g.-cal.	kilovolt(s)	kv.	saponification value	sap. val.
candle power	c.p.	kilowatt(s)	kw.	second(s) (time only)	sec.
centimetre	cm.	litre(s)	l.	†secondary	*sec.*
cerebrospinal fluid	c.s.f.	maximum	max.	soluble	sol.
coefficient	coeff.	melting point	m.p.	specific	sp.
concentrated	conc.	metre(s)	m.	specific gravity	sp. gr.
concentration	concn.	micron(s)	μ.	square centimetre(s)	sq. cm.
constant	const.	milliampere(s)	ma.	temperature(s)	temp.
corrected	corr.	milligram(s)	mg.	†tertiary	*tert.*
critical	crit.	millilitre(s)	ml.	vacuum	vac.
crystalline / crystallised (adjective only)	cryst.	millimetre(s)	mm.	value	val.
		millivolt(s)	mv.	vapour density	v.d.
cubic centimetre(s)	c.c.	minimum	min.	vapour pressure	v.p.
cubic metre(s)	cu.m.	minute(s)	min.	viscosity	η
current density	c.d.	molecul-e, -ar	mol.	volt(s)	v.
decimetre(s)	dm.	molecular weight	mol. wt.	volume	vol.
decompos-ing, -ition	decomp.	namely	viz.	watt(s)	w.
density	ρ, *d.*	normal	N.	wave-length	λ
dilute	dil.	number	no.	weight	wt.
direct current	d.c.	organic	org.		

† The abbreviations for secondary and tertiary are used only in connexion with organic compounds.

In addition, elements, groups, and easily recognised substances are denoted in the text by symbols and formulæ. The groups are as follows: methyl, Me; ethyl, Et; *n*-propyl, Pr^{α}; *iso*propyl, Pr^{β}; *n*-butyl, Bu^{α}; *iso*butyl, Bu^{β}; *tert.*-butyl, Bu^{γ}; phenyl, Ph; acetyl ($CH_3 \cdot CO$), Ac; benzoyl ($C_6H_5 \cdot CO$), Bz. (In Section A., III this applies only to inorganic compounds, excluding water, and to chloroform and carbon tetrachloride.) "Oleum" is allowed to describe fuming sulphuric acid and "room temp." for "the ordinary temperature." The symbol for 10 A. is mμ. (not $\mu\mu$.) and for the International *X*-ray unit it is X, not XU. The symbol for 10^{-6} g. is μg. (not γ).

The following symbols are used except in Section A., III: $>$, greater than; $\gg$, much greater than; $\not>$, not greater than (and $<$, $\ll$, $\not<$ conversely); $\propto$, (is) proportional to; $\sim$, of the order of, or approximately.

The principal Pharmacopœias are denoted by B.P., U.S.P., and D.A.B., followed in each case by the identifying numeral.

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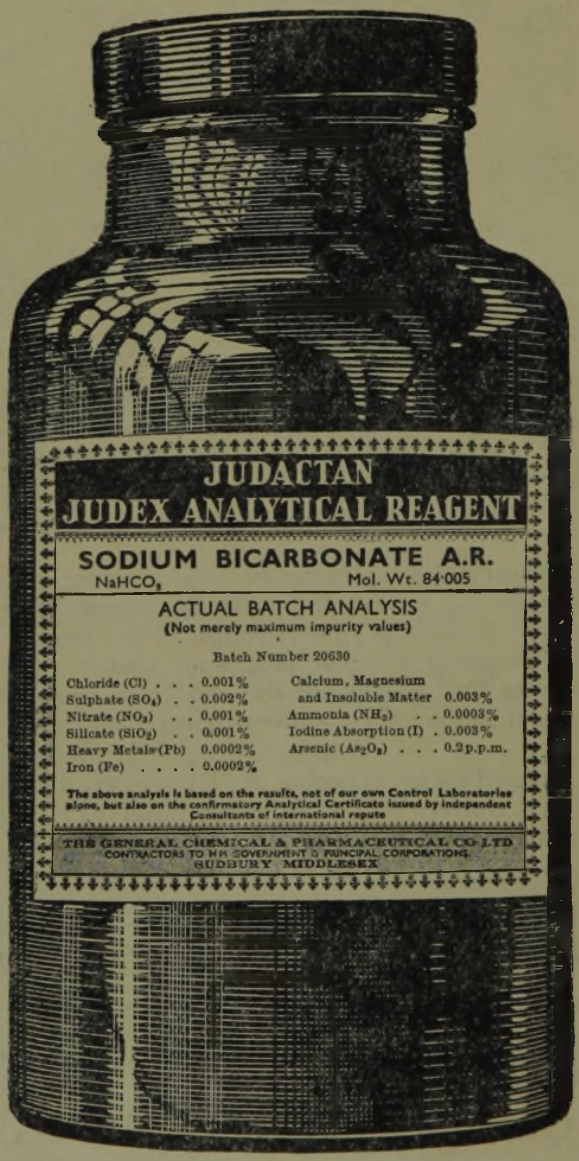

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