# BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

# A., III.—Physiology and Biochemistry (including Anatomy) 133 134

mer. J. Dik. Child. 1940, 59, 379-385).-Report

# (i) GENERAL ANATOMY AND MORPHOLOGY.

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Variations in formation of splanchnic nerves in man. L. F. EDWARDS and R. C. BAKER (Anat. Rec., 1940, 77, 335-342).-Types of variation in origin and average pattern of formation of the splanchnic nerves are reviewed from a study of 100 cadavers. The greater splanchnic arises most frequently from the 7th, 8th, and 9th thoracic ganglia, the lesser from the 10th and 11th, and the least from the 12th. Outpratif W. F. H.

Demonstration of nerve to levator glandulæ thyroideæ muscle. E. L. KEYES (Anat. Rec., 1940, 77, 293-295).-The nerve originated from the external branch of the right superior laryngeal nerve and terminated in the left of two symmetrically arranged muscles. Details of the relations and anastomoses of the nerve are given. W. F. H.

Relation of elastic tissue in root of aorta to aortic valve. S. L. WILENS (Arch. Path., 1940, 29, 200-211).-The elastic tissue of the media at the aortic root may project a variable distance proximal to the commissural attachments of the aortic valve cusps; there is varying amount of media in the aorta at the lateral attachments of the cusps. These variations are not related to the size of the aorta or heart or to age, sex, body length, or heart wt.

C. J. C. B.

Topography of hypophysis in elephant, manatee, and hyrax. G. B. WISLOCKI (Anat. Rec., 1940, 77, 427—445).—The hypophysis of the Indian elephant consists of a large anterior lobe, a small neural lobe, and a pars tuberalis which clasps the neural stalk. A pars intermedia is not demonstrable. The anterior lobe contains numerous colloid follicles, some of which are calcified. The nearly fullgrown manatee has well-developed anterior and posterior lobes but the pars tuberalis and intermedia are much reduced. Adult specimens of hyrax have a large anterior and posterior lobe, a well-differentiated pars tuberalis, and extensive pars intermedia.

W. F. H.

Comparative anatomy of mandibular and hyoid arches. I. Musculature. II. Comparative neurology. III. Columella and auditory ossicles. G. H. S. LIGHTOLLER (Trans. Zool. Soc. London, 1939, 24, 349—375, 383—402, 403—444).— I. An attempt to trace the phylogeny of the man-dibular and hyoid arches and their nerve-muscle units. The musculature of the mandibular and hyoid arches of Selachians is homologised with that of a typical branchial arch. The mammalian head musculature is divided into three layers : a superficial

(the platysma) homologous with the musculature of the mandibular branchial hood; a deep (the masticatory) homologous with the remainder of the mandibular branchial musculature; and an intermediate (the facial) homologous with the levator hyo-mandibulæ.

II. In the Selachii the XIth and XIIth cranial nerves are represented by the first six spinal nerves which possess dorsal, lateral, and ventral roots. The lateral and ventral roots supply the gill arch muscula-ture, caudal to that supplied by the VIIth cranial nerve, and the ventral longitudinal musculature of the floor of the mouth.

III. The mammalian Meckel's cartilage is a Meckelo-quadrate bar. Four elements are represented in the mammalian ear ossicles. Three of these are derived from the reptilian columella and are, therefore, of hyoid origin. The oto-columella becomes the stapes, its dorsal process becomes the incus, and the extra-columella the manubrium of the malleus. The quadrate, the only first arch ossicle derivative, forms the head of the malleus. J. D. B.

Evolution of mammalian palate. F. R. PAR-RINGTON and T. S. WESTOLL (Phil. Trans., 1940, B, 230, 305—355).—The parasphenoid-vomer homology is untenable on both embryological and palæonto-logical grounds. The data can be interpreted more easily to fit the original prevomer-vomer homology. The term prevomer is synonymous with vomer and should lapse. The mammalian ptergyoid and the "Echnida pterygoid " are homologous respectively with the pterygoid and the ecto-pterygoid of Therodonts and reptiles; neither has an homology with the lateral wing of the reptilian parasphenoid. The latter is probably reduced altogether in normal mammals. The mutual relations of the palate and lower jaw are considered with special reference to musculature and changes in proportion. J. D. B.

Medio-palatine bones. M. F. ASHLEY-MON-TAGU (Amer. J. phys. Anthrop., 1940, 27, 139-150).-These bones occur in the palatal vault between the maxillary palatine plates. An example occurring in the skull of a white, probably female, adolescent is described and all cases hitherto reported are discussed and figured. Their origin is probably due to supernumerary centres of ossification in the maxilla.

W. F. H.

Mandibular and maxillary hyperostoses. A. HRDLIČKA (Amer. J. phys. Anthrop., 1940, 27, 1-67). -Mandibular and maxillary non-pathological hyperostoses strengthen the alveolar processes and are produced ontogenetically by excessive chewing. In some cases there appears to be a hereditary tendency. On

the mandible they are limited to the lingual aspect between the mylohyoid ridge and the alveolar border. Maxillary growths may be either buccal or lingual or both and usually involve the free border of the alveoli. Different forms are described and pictured. Maxillary and mandibular growths may occur together but usually the mandibular exists alone. They have no definite correlation with age and there is no connexion with constitutional disease. They occur in other primates and, though more frequent in some human races than in others, a phylogenetic or racial significance cannot be attributed to them. W. F. H.

Paranasal sinuses from birth to late adolescence. I. Size of paranasal sinuses as observed in postero-anterior roentgenograms. M. M. MARESH (Amer. J. Dis. Child., 1940, 60, 55-78).—Tracings were made from the routine roentgenograms of the sinuses of 100 children who are being followed from birth to maturity. The youngest children had been followed up to 5 years of age and the oldest up to 17 years of age. Examinations have been continual, beginning during the first month of life in most cases. The growth of the sinuses in these children is discussed and illustrated; stress is laid on the variations in size and shape of the maxillary sinuses and the variations in time of development and in size of the frontal sinuses. C. J. C. B.

Abnormal canal in temporal bone. C. MAS-CARENHAS and S. USGÂOCAR (Fol. anat. Univ. Conimb., 1939, 14, 1-3).-An orifice on the posterior surface of the petrous part of the temporal near its upper border led into two narrow canals, one opening into the internal auditory meatus, the other ending blindly near the internal opening of the carotid canal. It is suggested that they represent the unobliterated pathways of veins which in the embryo open into the W. F. H. superior petrosal sinus.

Fenestræ parietales symmetricæ. T. J. HAL-BERTSMA (Arch. Dis. Child., 1940, 15, 115-120).-A family of 17 persons is described, 5 of whom showed fenestræ parietales symmetricæ; the grandmother showed depressions in the same situation in the parietal bones. No other congenital abnormalities were present. The older members of the family complained of vague headaches. In one of the grandchildren, the condition was observed from the age of one month, when the openings were already present as the transverse portion of a T-shaped cranial defect. The communicating fenestræ were not separated by a median bony division until the age of  $1\frac{3}{4}$  years. C. J. C. B.

Changes in structural components of human body from six [fœtal] months to maturity. H. A. WILMER (Proc. Soc. Exp. Biol. Med., 1940, 43, 545-547).-Components are divided into skin and fat, muscle, skeleton, viscera, and central nervous system, and relative quantities are tabulated. V. J. W.

Aberrant pancreatic nodule arising on neck of human gall bladder. E. T. THORSNESS (Anat. Rec., 1940, 77, 319-333).-It is suggested that such aberrant pancreatic tissue may cause pathological changes in the gall bladder. W. F. H.

Congenital occlusion of nasal choanæ. P. N. PASTORE and H. L. WILLIAMS (Proc. Staff Mayo Clin., 1939, 14, 625-627).-Review of 12 cases.

H. H. K.

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Closing mechanism of umbilical ring. Y. TAKAYAMA (Fukuoka acta med., 1939, 32, 115) H. H. K.

Progeria. E. C. MITCHELL and D. W. GOLTMAN (Amer. J. Dis. Child., 1940, 59, 379-385).—Report of a classic case with a review of the literature since 1929. C. J. C. B.

Supernumerary breast. T. DE CHOLNOKY (Arch. Surg., Chicago, 1939, 39, 926-941).-Report of 2 cases and review.

Postœsophageal left subclavian artery, ununited right oviduct, and absence of right kidney in same individual. H. B. FERRIS (Yale J. Biol. Med., 1940, 12, 305-308). F. S.

Appendix vermiformis duplex. D. E. ROBERTson (Canad. Med. Assoc. J., 1940, 43, 159-163).-A review of the literature. C. J. C. B.

History of anatomy in Japan during the Tokugawa period. Kawaguti's work. T. TSUSAKI (Keijo J. Med., 1939, 10, 66–98). F. JA.

# (ii) DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Course of blood through fœtal heart. W. F. WINDLE and R. F. BECKER (Anat. Rec., 1940, 77, 417-426).-In the cat and guinea-pig during the last third of gestation nearly all the blood entering the heart via the inferior vena cava passes into the left atrium. Most of the blood from the superior vena cava traverses the right atrium and right ventricle, from which it passes to the foetal lungs and lower parts of the body including the placenta. Mixing of the two caval streams in the right atrium was not demonstrable while the fœtal heart action was in W. F. H. good physiological condition.

Embryology and postnatal development of prostate gland in female rat. J. J. MAHONEY (Anat. Rec., 1940, 77, 375—395).—The double pri-mordium of the gland from solid cell cords derived from urethral epithelium and from a stromal condensation ventral to the urethra appears at the 20th day. In the new-born only one or two of the cords have grown into the stroma. Further postnatal growth consists of coiling and branching of the definitive duct to form the glandular mass, reduction of remaining prostatic cords, and formation of a lumen in the duct and its associated tubules. In 30 days the gland has reached its max. development; all the tubules have lumina and many are distended with secretion. After involution the gland resembles the prostate of the castrate male. The prostate of the female rat is regarded as homologous to a part of the ventral lobe of the male prostate. W. F. H.

Reproduction in dogfish. H. MELTEN (Phil. Trans., 1939, B, 230, 217-238).-The abdominal cavity of the adult female dogfish (Scyllorhynchus canicula) is abundantly ciliated, whilst such ciliation is absent in males and immature females. The dis-

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tribution of the cilia is such as to account for the migration of the ova over the considerable distance from ovary to tubal ostium. The process of migration is described and is shown to be independent of any muscular movement. The dogfish has no breeding season; it is always sexually active though slightly more so in the spring. The oviducal gland is shown to act as a receptaculum seminis where fertilisation takes place. Spermatozoa are found in the oviducal gland of all adult females and are confined to that region of the gland which secretes the shell substance. Probably something in the shell secretion nourishes the spermatozoa. J. D. B.

Complete unequal twin in teratomatous tumour of Belgian hare. G. C. KENT (Anat. Rec., 1940, 77, 193—196).—The occurrence of an anatomically complete normal fœtus encysted in the anterior abdominal wall of an adult female is reported. A second but amorphic fœtus was present in the same cyst. W. F. H.

Developmental behaviour of Amblystoma eggs subjected to atmospheres of low oxygen and high carbon dioxide. S. R. DETWILER and W. M. COPENHAVER (Amer. J. Anat., 1940, 66, 393-410).-Development of blastula and early gastrula stages was almost arrested in deoxygenated water containing an atm. of 0.05% O<sub>2</sub>. A high % of embryos removed after 5-7 days' exposure resumed development. After exposure for 8-12 days casualties were high. The majority of surviving embryos developed into normal animals, only a few exhibiting minor abnormalities such as slight microcephaly and minor eye defects. Development almost ceased in embryos exposed to an atm. of high  $CO_2$  (35-40%). When exposure terminated on the 5th day or earlier a considerable no. resumed development. Exposure to 35% CO<sub>2</sub> for more than 5 days was practically always fatal. The experiments indicate that gradual or extreme slowing of the developmental rate by these agents does not produce gross abnormalities.

#### W. F. H.

Localisation of thymonucleic acid during oögenesis and maturation in amphibia. J. BRACHET (Arch. Biol., 1940, 51, 151–165; cf. A., 1940, III, 649).—Using Bouin–Allen, Helly, or Flemming fixative, a Feulgen reaction was obtainable throughout the whole course of oögenesis in *Rana*, *Triton*, and *Triturus* material. This observation shows that thymonucleic acid is a const. constituent of the chromosomes and is in agreement with recent observations on invertebrate material. The nucleoli are in intimate relation with the chromosomes and it is suggested that pentosenucleic acid may originate in them. J. D. B.

Chemical aspects of embryonic development. S. RANZI (Chim. e l'Ind., 1940, 22, 217—223).— Growth and tissue differentiation as two distinct processes in embryonic development are discussed and exemplified by reference to published work on amphibians and sea-urchin. F. O. H.

Acceleration of metamorphosis of caterpillars of *Chrysiridia madagascariensis*, Cram. (Uraniidæ), by electric shocks. R. CATALA (Compt. rend., 1939, 208, 1349—1351).—The young caterpillars rapidly stop feeding on the freshly gathered flowers of *Omphalea* and weave cocoons which contain undersized larvæ. Electric shocks give rise to premature metamorphosis. J. L. D.

Effect of certain chemicals on hatching of mosquito eggs. C. M. GJULLIN, W. W. YATES, and H. H. STAGE (Science, 1939, 89, 539-540).— Infusions of vegetation contain substances which are essential for the hatching of eggs of *Aedes vexans*, Meig. *A. aldrichi*, Dyar, and *A. dorsalis*, Meig. Asparagine, glycine, alanine, cystine, leucine, and aspartic acid also stimulate hatching. W. F. F.

Specificity of teratogenetic action of colchicine on chick embryos. P. ANCEL and S. LALLEMAND (Compt. rend., 1940, 210, 710-712; cf. A., 1939, III, 643).—No substance chemically related to colchicine has been found to produce strophosomes when applied to 48-hr. chick embryos, but many have a non-sp. cœlosomic effect. J. L. D.

Results of colchicine injections [on embryos]. E. HIGBEE (Science, 1940, 92, 80).—0.02 ml. of 0.0001% colchicine was injected into 24-hr. chick embryos. 4 of 20 eggs hatched, 2 females and 2 males which are  $9\frac{1}{2}$  months old. Combs and wattles are approx. twice normal size. Two tail feathers of the roosters are greatly elongated, and the hen kept with a rooster lays one egg every 2 or three days. E. R. S.

Effects of low temperature on survival and mitotic figure of eggs of Ascaris equorum. H. W. BEAMS and R. L. KING (J. Cell. Comp. Physiol., 1940, 15, 409-410). V. J. W.

Somatic mutations of straw locus in Drosophila. C. H. WADDINGTON (Nature, 1940, 146, 335).—Pupæ of flies homozygous for straw-3 were irradiated with 25,000 r. In flies emerging 2 days after treatment, 7 isolated mutated hairs were found in 30 wings, giving a mutation rate of 0.5 per r. per  $10^9$  genes, which is approx. one tenth the rate recorded by Timoféev-Ressovski. Since normal hairs occur in single cells the mutations took place in the resting stage following the last mitosis which occurs during wing development. The action of the  $+^{\text{stw-3}}$  gene can be exerted as late in development as 2 days before emergence. E. R. S.

Recombinants between Drosophila species the  $F_1$  hybrids of which are sterile. H. J. MULLER and G. PONTECORVO (Nature, 1940, 146, 199—200).— The sterility of the  $F_1$  hybrids between D. melanogaster and simulans is circumvented by crossing triploid melanogaster females, carrying recessive mutant genes in all their major chromosomes, with heavily irradiated simulans males bearing the dominant normal alleles of these genes. The sterility and inviability effects are chromosomal. The chief morphological abnormality of the hybrids is due to interaction between a gene or genes in the X of simulans with an autosomal gene or genes of melanogaster, located at least in part in the second chromosome. Details are to be published later. E. R. S.

Equivalent effect of X-rays of different wavelength on chromosomes of *Tradescantia*. A. C. FABERGÉ (J. Genet., 1940, 40, 379–383).—An experiment in which the no. of chromosome fragments produced in *Tradescantia* pollen grain divisions by the same dose (1500 r.) at two different wave-lengths is described. The difference in the mean no. of chromosome bodies per cell so produced was less than the standard error. W. F. H.

Inheritance of yellow bill colour in ducks. J. M. RENDEL (J. Genet., 1940, 40, 439–440).—The evidence shows that yellow bill is inherited as an autosomal recessive. W. F. H.

# (iii) PHYSICAL ANTHROPOLOGY.

Skulls from north-western Siam. O. SCHLAGINHAUFEN (Amer. J. phys. Anthrop., 1940, 26, 367—387).—A description of five calvaria and a mandible from the Lawá tribe—the first physical anthropological material from this tribe available for scientific study. The findings are related to those recently established from Siam. W. F. H.

Western Negrillos. H. V. VALLOIS (Amer. J. phys. Anthrop., 1940, 26, 449—471).—Compared with eastern Negrillos the western have a relatively higher stature : an average of 149—155 cm. as against 143. The sitting height in % of stature is also higher and therefore the trunk is longer. The biacromial diameter is less pronounced. The facial index is meso- and lepto-prosopic. The nasal index is high but not of extreme hyperplatyrrhiny. Western and eastern Negrillos appear to be two more or less heterogeneous groups both fundamentally distinct from the type of Blacks proper. W. F. H.

Blood groups in Polynesia. H. L. SHAPIRO (Amer. J. phys. Anthrop., 1940, 26, 409—416).—It appears that when the first Polynesians left the Asiatic mainland they, like certain American Indian groups and Australian aborigines, lacked the *B* factor. It is assumed that they migrated before *B* became characteristic of southern Asia. W. F. H.

Blood groups in Australian aborigines. J. B. BIRDSELL and W. C. BOYD (Amer. J. phys. Anthrop., 1940, 27, 69—90).—New data for the A,B blood groups are presented for a series of 805 individuals and frequencies for the M,N blood types are given for a series of 730. The frequency of N is very high (50-90%). A,B results confirm and amplify the findings of others. W. F. H.

# (iv) CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Microscopic changes in islands of Langerhans produced by sympathetic and parasympathetic stimulation in cat. M. A. SERGEVEVA (Anat. Rec., 1940, 77, 297—317).—After stimulation of the splanchnics with the sympatho-adrenal system intact or in survival experiments following resection of the vagi the no. of  $\alpha$ -cells increased.  $\alpha$ -cells diminished in no. when the pancreas had been deprived of the influence of the sympatho-adrenal system for some time.  $\beta$ -cells increased in no. following stimulation of the cholinergic fibres of the splanchnic nerves.  $\alpha$ and  $\beta$ -cells were observed throughout the acinous tissue in small groups or singly. Some evidence indicating the possible transformation of acinous tissue into endocrine tissue and vice versa is presented. W. F. H.

Pituitary gland of Atlantic salmon. A. S. WOODMAN (J. Morph., 1939, 65, 411-435).—The pituitary passes through a series of morphological changes over a period of years before it reaches its definitive adult state. The buccal anlage is a solid mass of ectodermal cells and the nervous tissue grows into this from the floor of the infudibulum but the two portions do not adopt the adult form until 4-6 years. The complete development never occurs until some time after the salmon has entered salt water. Details of the histology are described. J. D. B.

Thyroid gland of Atlantic salmon. W. S. HOAR (J. Morph., 1939, 65, 257–295).—A description of the development, adult morphology, and histophysiology of the salmon's thyroid gland.

J. D. B.

Thyroid and parathyroid glands of deer. A. L. GRAFFLIN (J. Morph., 1939, 65, 297–321).—An account of the microscopic structure of the thyroid and parathyroid glands in *Ruanus duvancelli* with particular reference to fat, pigment, and autofluorescence. The most striking feature of the thyroid gland is the presence in the colloid of many follicles of masses exhibiting an intense blue fluorescence. The parathyroid parenchyma also shows a bluish-white fluorescence but of much lower intensity. J. D. B.

Histological study of fat distribution in guineapig livers of chemically known fat content. A. L. GRAFFLIN (Anat. Rec., 1940, 77, 473–485).— Hepatic cells heavily laden with fat are regularly present but they are few in no. and irregularly distributed. The majority of hepatic cells are devoid of fat. A few Kupffer cells contain fat in variable amount, but there is no relationship between their fat content and that of hepatic cells. Fat droplets are occasionally observed in the nuclei of hepatic cells and in the epithelial cells of the bile ducts. The relative amount of histologically demonstrable (sudanophile) fat is not an accurate index of the relative total lipin content as determined by chemical methods: W. F. H.

Intranuclear crystals in hepatic cells of the dog: pure breed and hybrid Dalmatian. H. L. WEATHERFORD and H. C. TRIMBLE (Anat. Rec., 1940, 77, 487—507).—The morphology of the hepatic cell nucleus of the Dalmatian is described. Intranuclear crystals within vacuoles were found in a small % of nuclei and the cytoplasm is apparently unaffected by their presence. The dimensions and incidence of crystals in the pure breed are given. Hybrids having a high daily uric acid output showed fewer nuclei with crystals than those having a low daily excretion. Evidence that the occurrence of crystals is related to uric acid excretion and not to that of allantoin is presented. W. F. H.

Blood vessels of adrenal gland of adult cat. H. S. BENNETT and L. KILHAM (Anat. Rec., 1940, 77, 447-471).—True arteriovenous anastomoses are found in the loose connective tissue of the adrenal. Subcapsular arteries frequently form recurrent loops in the cortex. Radial medullary arteries exhibit characteristic dilatation and tortuosity as they pass the cortico-medullary border. Medullary cells show true polarity—one pole is directed towards or bordering on a vein and the other lies close to an arterially supplied capillary. W. F. H.

Effects of fixation and other insults on uterine epithelial cells. G. W. BARTELMEZ (Anat. Rec., 1940, 77, 509—527).—Uterine epithelial cells in *Macacus* and *Homo* respond quickly to alterations in environment by changes in form or in the state of the stored secretion. Changes in form of epithelial borders to various fixatives at different phases of the reproductive cycle are described. When the cells are loaded with secretion, sections prepared by standard methods show certain artefacts and if fixation has been prompt these can be used to identify active cells. The dispersed Golgi net seen in sublimate-fixed material becomes conc. towards the interior of the cell, forming a deeply stained "paranucleus." W. F. H.

Chemical nature of spheroidal bodies in Gamna's area (splenogranulomatosis siderotica). G. DE GAETANI (Boll. Soc. ital. Biol. sperim., 1939, 14, 263—264).—The bodies (splenic tissue) consist of a protein substrate on which is deposited bilirubin or a derivative sol. in alkali. F. O. H.

Cartilaginous metaplasia in fibro-adenoma. G. BRITES (Fol. anat. Univ. Conimb., 1939, 14, 1— 17).—By means of differential staining transitional stages in the formation of cartilage nodules by proliferation of interstitial cells were demonstrated in a case of fibro-adenoma of the breast. Although possibly activated by the growth, the new formation lacked the characters of a neoplasm. The process is contrasted with cartilaginous hyperplasia in other parts of the body. W. F. H.

Heteropycnosis of sex chromosomes and its inheritance in terms of spiral structure. M. J. D. WHITE (J. Genet., 1940, 40, 67-82).-Negative heteropycnosis of the X-chromosome in early spermatogonial division was found in all species of Acrididæ studied. At metaphase the X has an uneven outline and chromatids have a diameter considerably less than that of autosomal chromatids. Failure to thicken of a negatively heteropycnotic chromosome does not prevent it from assuming a spiral structure. In Tettigonidæ positive heteropycnosis occurs only in prophase. All metaphase chromosomes are compact spirals with no space in the axis or between successive gyres. The extra thickness of positively heteropycnotic chromosomes is possibly due to their possessing a minor spiral in addition to a W. F. H. major one.

Anaphase movement in Allium cernuum. R. T. BRUMFIELD (Science, 1940, 91, 97–98).—Rate of chromosome movement was studied in A. cernuum. W. F. F.

Comparison of the sensitivity of mitotic and meiotic chromosomes of Vicia faba and its bearing on theories of crossing-over. A. MARSHAK (Proc. Nat. Acad. Sci., 1939, 25, 510-516).—The max. no. of chromosome abnormalities occurs about 24 hr. after X-ray irradiation, the most sensitive stage 3 Q\* (A., III.) in the meiotic cycle being pachytene. The relation to crossing-over is discussed. W. F. F.

Adaptable rotating unit for roller tube tissue cultures. L. H. OTT, R. TENNANT, and A. A. LIEBOW (Science, 1940, 91, 437–438). L. S. T.

Method of staining carious lesions in teeth. G. GOMORI (Proc. Soc. Exp. Biol. Med., 1940, 44, 250–253).—After hardening, the teeth are immersed in 0.25-0.5% AgNO<sub>3</sub> for 12—24 hr., washed, and placed in 5% NaH<sub>2</sub>PO<sub>2</sub> for 24 hr., washed again, and placed in 2% Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> for 12 hr. Carious areas are stained deep black, healthy dentine a superficial black. Healthy enamel is not stained. For sections the teeth may be decalcified in 5-10% sulphosalicylic acid and embedded in celloidin. V. J. W.

Methods for determination of absorption spectra of cell structures. T. CASPERSSON (J. Roy. Microscop. Soc., 1940, [iii], 60, 8—25).—This is a cytochemical method allowing the localisation and estimation of light-absorbing substances in different parts of the cell, by measuring the absorption spectrum of cell structures *in situ*. Full details are given of (1) a photo-electric method with electrometers as indicating instruments for use with objects down to 1  $\mu$ . diameter, (2) a photographic method for smaller objects, and (3) the use of an amplification circuit for very small absorptions. The lower limit of measurement is given by the resolving power of the microscope lens. E. E. H.

Old Gruebler hæmatoxylin and eosin compared with current American stains. T. M. MCMILLON (Stain Tech., 1940, 15, 119—120).—The current American stains are equal in reliability and staining quality to the famous old Gruebler stains. E. E. H.

American azures in preparation of satisfactory Giemsa stains for malaria parasites. M. A. ROE, R. D. LILLIE, and A. WILCOX (U.S. Publ. Health Repts., 1940, 55, 1272—1278).—A survey has been made of the various thiazine dyes in regard to their val. in staining malaria parasites when used in simple combinations with eosin. C. G. W.

Rapid thick film blood stain [for parasites]. L. MICHELSON and A. WILCOX (U.S. Publ. Health Repts., 1940, 55, 1221—1222).—A combined Wright-Giemsa rapid staining method for blood parasites, particularly malaria parasites, is described. This stain has the advantage of reducing thick film staining and washing time from 50 to 11 min. C. G. W.

# (v) BLOOD AND LYMPH.

Blood. R. ISAACS, C. C. STURGIS, F. H. BETHELL, and S. M. GOLDHAMER (Arch. intern. Med., 1940, 66, 173-225).—Review of recent literature. C. A. K.

Sternal marrow puncture in children. M. DIWANY (Arch. Dis. Childh., 1940, 15, 159-170).— The development of the sternum is described and the normal marrow picture in 15 children aged 1-5 years given. (4 photomicrographs.) C. J. C. B.

Properties of encephalopathic agent in primate bone marrow (Gordon agent). L. S. KING (J. Exp. Med., 1940, 71, 603-618).—The encephalopathic agent in monkey bone marrow is sol. in neutral as well as acid solutions, with min. solubility at  $p_{\rm H}$  4.2. It is inactivated by heating at 75° for 15 min. and is digested by pepsin. It it non-dialysable, slightly sedimented on contrifuging, and pptd. by half-saturation with  $(\rm NH_4)_2SO_4$ . No serological properties were demonstrated. A. C. F.

Restoration of overstained Wright films and new method of staining blood smears. M. MORRISON and A. A. SAMWICK (Amer. J. clin. Path., Tech. Suppl., 1940, 4, 92-93).—The mal-stained slides are flooded with additional Wright's stain for 30 sec. and then washed in distilled water.

C. J. C. B.

Spring clips for "all glass" blood counting chambers. F. H. WILSON (Amer. J. clin. Path., Tech. Suppl., 1940, 4, 93—95). C. J. C. B.

Permeability of human erythrocytes to potassium, sodium, and inorganic phosphate by the use of radioactive isotopes. A. J. EISENMAN, L. OTT, P. K. SMITH, and A. W. WINKLER (J. Biol. Chem., 1940, 135, 165-173).-By adding in vitro to defibrinated human blood NaCl containing <sup>24</sup>Na, KCl containing <sup>42</sup>K, and Na<sub>2</sub>HPO<sub>4</sub> containing <sup>32</sup>P and incubating for 4 hr. at 38° and, in the case of the  $PO_4^{\prime\prime\prime}$ , also at 7°, the permeability of the erythrocytes is determined. The cell membranes were impermeable to K. Slight entry of Na into the cells took place, but the small Na content prevented the demonstration of equilibrium. Entry of P into the cells took place at 38° but not at 7°, and evidence of continuous synthesis and breakdown of P compounds indicates that an enzymic process rather than a simple diffusion was involved. A. L.

Hæmolytic action of fluorides on certain nucleated erythrocytes. T. N. HAMDI and J. K. W. FERGUSON (Proc. Soc. Exp. Biol. Med., 1940, 44, 427-428).—NaF, AlF<sub>3</sub>, or ZnF<sub>2</sub> in concn. as low as 0.01M. caused swelling of red cells and hæmolysis in blood of certain fish, but not in blood of turtle or snake. V. J. W.

Normal hæmatological standards in monkey (Macacus sinicus). M. V. R. Rao and M. N. Rao (Indian J. Med. Res., 1940, 27, 1101–1108).—The results found were : total red cell count  $6.3 \times 10^6$ per cu. mm.; hæmoglobin 14·1 g.-%; red cell diameter 6·78  $\mu$ .; vol. of packed cells 43·7%; mean corpuscular vol. 70·54 cu.  $\mu$ .; mean corpuscular hæmoglobin 21·09  $\mu\mu$ g.; mean corpuscular hæmoglobin conen. 32·5%. H. B. C.

Action of lipase on red cell surface. R. BALLENTINE and A. K. PARPART (J. Cell. Comp. Physiol., 1940, 16, 49—54).—Washed ox and rabbit cells were exposed to pancreatic lipase and then to hæmolysing agents. Time of hæmolysis by water-sol. agents was markedly decreased. V. J. W.

Partial retention of hæmoglobin by chicken erythrocytes. F. R. HUNTER, L. D. STRINGER, and H. D. WEISS (J. Cell. Comp. Physiol., 1940, 16, 123— 129).—0.1 c.c. of 0.2M-NaH<sub>2</sub>PO<sub>4</sub> was added to 20 c.c. of water. Erythrocytes in this solution retained about 20% of their hæmoglobin, which is released if the solution is neutralised. V. J. W. <sup>db</sup>Effect on <sup>li</sup> early <sup>ab</sup> postnatal blood picture of depriving newborn of <sup>ab</sup> placental blood. Q. B. DEMARSH, W. F. WINDLE, and H. L. ALT (Proc. Soc. Exp. Biol. Med., 1940, 44, 662—664).—Uthilical cord blood at birth contained 15.7% of hæmoglobin and  $4.5 \times 10^6$  red cells per cu. mm. After 1 hr. these vals. had increased to 18.9% and  $5.57 \times 10^6$ after immediate clamping of the cord, and to 21.3%and  $5.93 \times 10^6$  after delayed clamping. By the 4th day hæmoglobin % had increased by 0.5 and 1.4%, respectively. V. J. W.

Effect of human gastric juice on reticulocytes of albino rats. C. P. SCHLICKE (Amer. J. digest. Dis. Nutr., 1940, 7, 277—280).—Normal, heated or neutralised gastric juice was administered to adult male rats by stomach intubation, without producing regular changes in the reticulocyte count. The reticulocyte response in rats is not a reliable method for detecting anti-anæmic substances. C. J. C. B.

Blood groups of communities in Calcutta. S. D. S. GREVAL and S. N. CHANDRA (Indian J. Med. Res., 1940, 27, 1109—1116).—The blood groups of 2472 people in Calcutta are given. H. B. C.

Incidence of blood groups in rheumatic heart disease. G. R. MAXTED (Arch. Dis. Child., 1940, 15, 181–183).—In 100 patients the distribution of the blood groups was normal. C. J. C. B.

Differentiation of sera of two species of doves and their hybrid. R. W. CUMLEY and M. R. IRWIN (Proc. Soc. Exp. Biol. Med., 1940, 44, 353-355).— Antisera were prepared from the rabbit for Pearlneck, Ringdove, and hybrid sera. These 3 sera were indistinguishable by direct pptn., but when antiserum to one species is absorbed by serum of the other this antiserum still reacts with its own serum and with serum of the hybrid. V. J. W.

Inheritance of blood factor P. P. DAHR (Z. Immunitätsforsch., 1939, 97, 168—188).—The P factor and probably its strength are inherited qualities. The factor can be demonstrated in the newborn child. G. W.

Fœtal polycythæmia. K. SCHWARTZER and E. LOESCHKE (Klin. Woch., 1940, **19**, 64).—Erythrocyteincreasing substances (hæmopoietins of Carnot) were found in the blood of the umbilical cord and of oneweek-old sucklings. Intraperitoneal injection of this blood into rabbits increases the no. of red cells in 1—2 days by nearly  $2 \times 10^6$  per cu. mm. M. K.:

Clinical investigations into anæmia in Assam. I—VII. K. P. HARE (Indian J. Med. Res., 1940, 27, 1041—1099).—I. Material and technique used are described.

II. Hæmoglobin content and standard of living were correlated. Hæmoglobin level of the blood of tea-estate Indians was low, and the commonly occurring severe microcytic anæmia may be an exacerbation of this.

III. Blood of 22 newly recruited tea-estate coolies, not previously living in Assam, was examined and the results are given.

IV. The incidence of anæmia in three tea estates

3 Q# (A., III.)

is given. The chances of anæmia increase with the length of the working day.

V. Data from 20 cases of marked anæmia in nonpregnant women.

VI. The incidence of anæmia in the last quarter of pregnancy in tea-estate coolies was high and varied on different estates; the incidence was higher in women delivered during the third quarter of the year. Anæmia was the principal cause of maternal mortality and increased the risk of premature still-birth.

VII. Clinical and hæmatological data obtained from 182 coolies found to be anæmic during the last quarter of pregnancy are given. Diet is the main cause of the permanent mild anæmia found in all coolies on tea estates. H. B. C.

Stored blood. II. Leucocytes. A. CROSBIE and H. SCARBOROUGH. III. Oxygen capacity. H. SCARBOROUGH and Y. C. THOMPSON (Edin. Med. J., 1940, 47, 553—566, 567—570).—II. The disappearance of leucocytes from 10 bloods during the first 10 days of storage at 2—5° was studied; the final concn. of citrate was 0.3 g.-%. After 24 hr. of storage 11% of the total leucocytes have disintegrated and 20% of the polymorphonuclears which remain are degenerate. After 48 hr. 30% of the total leucocytes are still present, but the % of degenerate polymorphs has risen to 40%. After 4—5 days, 50% of the total leucocytes remain, but 90% of the polymorphs remaining are degenerate; after the 10th day, 75% of the total leucocytes have disappeared and no undegenerate polymorphs are found.

III. Neither the hæmoglobin content nor the  $O_2$  capacity of blood is impaired to an important extent by storage for periods up to 30 days. H. H. K.

Lymphocytes in tissue culture. J. MEDAWAR (Brit. J. exp. Path., 1940, 21, 205-211).—In the majority of cultures of rabbit lymph collected through a cannula lymphocytes were found to persist unchanged for 24-48 hr. (3 photomicrographs.)

F. S.

Lymphocytes in chambers in rabbit's ear. R. H. EBERT, A. G. SANDERS, and H. W. FLOREY (Brit. J. exp. Path., 1940, 21, 212—218).—Such small lymphocytes were actively motile, often as active as polymorphs. The macrophages changed their shape and position relatively very slowly. Small lymphocytes did not change into other cells over periods of 24 hr. Several new types of chamber are described. (10 photomicrographs.) F. S.

Response of plasma volume to diuretics. D. B. CALVIN, G. DECHERD, and G. HERRMANN (Proc. Soc. Exp. Biol. Med., 1940, 44, 529–531).—Diuresis following digoxin or salyrgan treatment is accompanied by a fall of plasma vol. Diuresis from aminophylline causes a rise. V. J. W.

Plasma-protein shifts during diuresis. D. B. CALVIN, G. DECHERD, and G. HERRMANN (Proc. Soc. Exp. Biol. Med., 1940, 44, 578—579; see preceding abstract).—Fall in plasma vol. is accompanied by increase in albumin % of plasma, although after the diuresis total circulating protein is decreased. Increased plasma vol. after aminophylline is accompanied by a fall in % protein of plasma. In diuresis this, % protein rises although total blood-protein falls. V. J. W.

Effect of vitamin-K on hypoprothrombinæmia of experimental liver injury. K. M. BRINKHOUS and E. D. WARNER (ProcaSoc. Exp. Biol. Med., 1940, 44, 609-610).—The fall of blood-prothrombin produced by prolonged administration of CHCl<sub>3</sub> in dogs is not modified by the simultaneous daily administration of extract from 200 g. of lucerne.

V. J. W.

Use of sodium hexametaphosphate as anticoagulant. C. E. LARSON (Proc. Soc. Exp. Biol. Med., 1940, 44, 554—555).—0.1 g. per 100 c.c. of blood prevents clotting *in vitro* without modifying deproteinisation by the Folin–Wu method.

V. J. W. Effect of serum-proteins on polarographic curve. H. P. RUSCH, T. KLATT, V. W. MELOCHE, and A. J. DIRKSEN (Proc. Soc. Exp. Biol. Med., 1940, 44, 362—365).—In sera from 66 normal and pathological persons, the height of the polarographic curves was directly proportional to the level of serumalbumin. V. J. W.

Method of preparing dried serum-proteins for therapeutic use. W. K. HALL, D. E. FADER, and G. M. DECHERD (Proc. Soc. Exp. Biol. Med., 1940, 44, 390—392).—1 vol. of serum is added to 7 vols. of 95% alcohol with 3 vols. of ether at  $-20^{\circ}$ . Pptd. proteins are filtered off, washed with ether at  $-20^{\circ}$ , and dried. V. J. W.

Precipitation pattern of serum-proteins in phenylpyruvic oligophrenia. A. A. KONDRITZER (Proc. Soc. Exp. Biol. Med., 1940, 44, 404–407).—In 8 such patients a slight increase was found in serumglobulin by fractional pptn. with gradually increasing quantities of K phosphate at  $p_{\rm H}$  65–668. V. J. W.

Mean molecular weights of synthetic mixtures of bovine plasma-albumin and -globulin. H. L. TAYLOR and A. KEYS (Proc. Soc. Exp. Biol. Med., 1940, 44, 557—559).—Mean mol. wts. were determined by the Adair–Robinson method for globulin and albumin from ox plasma and for mixtures of the two. Vals. for the mixtures were always lower than the vals. calc. for the two separately, the difference being the greater the more globulin was present, indicating that in presence of albumin about 35% of globulin dissociates with formation of smaller mols. V. J. W.

Albumin-globulin ratio of serum. D. MEL-NICK, H. FIELD, and C. G. PARNALL (Arch. intern. Med., 1940, 66, 295—305).—Exposure of normal and hypoproteinæmic sera to the same environmental factors by dialysis against each other does not alter the ratio albumin/globulin. The inadequacy of colloid osmotic pressure measurements *in vitro* and of the determinations of albumin and globulin for predicting the true oncotic pressure *in vivo* are discussed. C. A. K.

Protein fractions and coagulatory power of placental blood of fœtal circulation. G. Roma-NIELLO (Boll. Soc. ital. Biol. sperim., 1940, 15, 367— 368).—Application of Howe's method of examining protein fractions indicates that the pseudoglobulins, albumin. and fibrinogen fractions in the placental

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blood are less, and the euglobulin fraction is greater, than those in the maternal blood; the fœtal val. of albumin/globulin is less than 1 for placental, and above 1 for maternal, blood. F.O. H.

Effect of leucotaxine on cellular permeability and on cleavage development. V. MENKIN (Proc. Soc. Exp. Biol. Med., 1940, 44, 588—593).—Leucotaxine from inflammatory exudates increases permeability of sea-urchin eggs to water, induces abnormal cleavages, and inactivates their spermatozoa.

ic it. V. J. W. Spontaneous disintegration of blood pigments, with special reference to methæmalbumin formation. N. H. FAIRLEY (Brit. J. exp. Path., 1940, 21, 231-242).—When 4 vols. of human plasma and 1 vol. of conc. solution of human oxyhæmoglobin are incubated at 37-40° neutral methæmoglobin is produced followed by alkaline methæmoglobin owing to a shift in  $p_{\rm H}$  of the plasma to 8.0 +. When oxalated whole blood is incubated there is no alkaline shift in the sedimented red cells and only neutral methæmoglobin is formed; in the plasma, alkaline methæmoglobin is formed. Methæmalbumin (cf. A., 1940, III, 389) appears within 48 hr. and increases progressively. It can be isolated in the albumin fraction and, on drying, a brown solid residue is formed containing methæmalbumin which is water-sol. and present in a stable and relatively pure form. The three stages in the katabolism of hæmoglobin during incubation with plasma are: (1) the production of neutral and alkaline methæmoglobin, (2) the splitting of methæmoglobin into globin and hæmatin (ferric), and (3) the coupling of hæmatin (ferric) to serumalbumin to form methæmalbumin. F. S.

**Crystalline hæmocyanin.** Physical and chemical constants. W. A. RAWLINSON (Austral. J. Exp. Biol., 1940, **18**, 131—140).—Cryst. hæmocyanin (Cu 0·148%) from the Australian crayfish (*Jasus lalandii*) has isoelectric point  $p_{\rm H}$  4·6,  $[\alpha]_{\rm e461}^{20}$ —42·5° at  $p_{\rm H}$  7·0, and O<sub>2</sub> capacity, determined by the evacuation method, 25 c.c. per 100 g. The prosthetic group reported by other workers is considered to be a basic Cu sulphide mixed with protein degradation products. In the ultra-violet, an absorption band occurs at 2780 A., due to the protein part of the mol.; a smaller band at 3350 A. is due to oxygenation of reduced pigment. No compound of hæmocyanin is formed with CO. D. M. N.

Determination of acetone and acetoacetic acid in blood by the bisulphite-binding method and its relation to pyruvic acid. D. KLEIN (J. Biol. Chem., 1940, 135, 143—151).—Acetone + acetoacetic acid is determined in sugar-free blood filtrates by the addition of excess of bisulphite and leaving at  $5^{\circ}$  for  $\frac{1}{2}$ —2 hr. The excess of bisulphite is removed with I, keeping the vol. added as small as possible. Pyruvic acid is determined with dinitrophenylhydrazine since it is included in the bisulphite-binding substances. E. M. W.

Serum-phosphatase, -calcium, and -phosphorus values in infancy. D. J. BARNES and B. MUNKS (Proc. Soc. Exp. Biol. Med., 1940, 44, 327— 331).—In a group of infants suspected of rickets, serum-phosphatase during the first 2, months of life was slightly higher than in a control group. Vals. of serum-Ca and -P are also given. V. J. W.

Serum-lipase. T. A. JOHNSON and H. L. BOCKUS (Arch. intern. Med., 1940, 66, 62—77).—Serumlipase determinations in 371 patients showed high vals. in cases of pancreatitis, in cases of widespread liver destruction, and in cases of intestinal obstruction, C. A. K.

Effect on blood-sugar of cardiazol alone and with insulin, adrenaline, or glucose. L. Ro-BUSCHI and G. SIMMONS (Boll. Soc. ital. Biol. sperim., 1940, 15, 418—419).—Intravenous injection of convulsant doses (20 mg. per kg.) of cardiazol into rabbits raises the blood-sugar, which attains a max. (5—60% above initial val.) after 30 min. and returns to normal vals. after 3—4 hr. Cardiazol hyperglycæmia is not significantly modified by prior or simultaneous administration of insulin and augments that due to adrenaline or glucose. F. O. H.

Plasma-lipins in coronary sclerosis and in normal states. F. A. WILLIUS (Proc. Staff Mayo Clin., 1939, 14, 751—752).—Vals. for cholesterol were increased in 61%, for cholesterol esters in 57%, lecithin in 56%, fatty acids in 54%, total lipins in 71% of 107 cases of coronary sclerosis. H. H. K.

Determination of thiocyanates in blood with use of permanent standards. A. RAVIN (J. Lab. clin., Med., 1940, 25, 1204—1205).—A determination can be made on 1 c.c. or even 0.25 c.c. of serum. C. J. C. B,

# (vi) VASCULAR SYSTEM.

Steady-state frequency of embryonic fish heart at different concentrations of cyanide. K. C. FISHER and R. ÖHNELL (J. Cell. Comp. Physiol., 1940, 16, 1—13).—When Fundulus embryos are placed in CN' solutions heart rate is decreased. Max. reduction, to 28% of normal, is caused by 0.001M-CN'. Allowing for this CN'-stable 28%, the decrease in rate varies inversely with CN' concn. V. J. W.

Comparison of effects of azide and cyanide on frequency of embryonic fish heart. C. W. J. ARMSTRONG and K. C. FISHER (J. Cell. Comp. Physiol., 1940, 16, 103—112).—Effect of CN' is independent of  $p_{\rm H}$ . Effect of NaN<sub>3</sub> is markedly increased by lowering of  $p_{\rm H}$  and is believed to be due to free HN<sub>3</sub>. As in the case of CN', the relation between HN<sub>3</sub> concn. and inhibition accords with the law of mass action, but the coeffs. differ markedly in the two cases.

V. J. W. Size and stroke of normal human heart during neosynephrin bradycardia. A. KEYS and A. VIOLANTE (Proc. Soc. Exp. Biol. Med., 1940, 44, 462—464; cf. A., 1940, III, 759).—During bradycardia the diastolic area, measured by shadow, increases by 5—20%. Increase is chiefly on the left, and is less during systole, stroke vol. being increased from 57.5 to 90.1 c.c. Minute vol. is generally increased by small doses (3—5 mg.) and decreased by large ones (10 mg.). V. J. W.

Hypersensitivity in isolated rabbit heart following intrapericardial sensitisation. B. C. SEEGAL and H. B. WILCOX, jun. (Arch. Path., 1940, 10, 416-423).—By utilising the method of Andrus and Wilcox (A., 1939, III, 746) for demonstrating hypersensitivity of the isolated rabbit heart, it was found that a positive result (indicated by a drop in the rate of flow of the perfusate through the coronary vessels) occurred chiefly in animals which had been sensitised intrapericardially. A positive result occurred in 14 of 15 rabbits sensitised intrapericardially, but only in 4 of 18 rabbits sensitised intraperitoneally and 3 of 13 rabbits sensitised intravenously. The antibody titre of the serum was always slight but the greatest concn. of precipitins occurred in the rabbits sensitised intravenously. C. J. C. B.

Cardiac activity of drugs studied by new preparation of isolated frog's heart. P. ZAMBONI (Boll. Soc. ital. Biol. sperim., 1940, 15, 398—401).— The diastolic expansion of the isolated frog's heart is equiv. to a pressure (15—20 mm. of water) insufficient to overcome the wt. of the recording stylus. The described method is one of surrounding the heart with a suitable fluid that flows through a narrow side-tube and communicates its movements to an air bubble which actuates a glass float connected to a recording device. Tracings given by adrenaline and acetylcholine are described and discussed.

Dual action of acetylcholine on isolated heart. I. SPADOLINI and G. DOMINI (Boll. Soc. ital. Biol. sperim., 1940, 15, 358—360).—Acetylcholine stimulates the isolated heart (guinea-pig) in concns. of  $1:5 \times 10^8$ — $10^{12}$  and depresses it in concns. of 1:5— $10 \times 10^7$ . F. O. H.

Independent versus interconnected time marking system employed in electrocardiographs. J. B. WOLFFE (Ann. int. Med., 1940, 13, 1160— 1166).—Reliable and accurate time marking in e.c.g. was obtained by using a system driven independently from the camera-driving system; a.c. of controlled frequency or intermittent d.c. impulses provided by a tuning fork should be used. A. S.

Coronary occlusion. II. Efficacy of papaverine hydrochloride in treatment of experimental cardiac infarction. A. LESLIE, M. G. MULINOS, and W. S. SCOTT, jun. (Proc. Soc. Exp. Biol. Med., 1940, 44, 625—628).—Daily injection of 5 mg. per kg. into cats did not alter the size of the infarct resulting from ligature of a coronary branch. V. J. W.

Cyanosis produced by anastomosis of pulmonary artery to left auricle. M. MENDLOWITZ and A. LESLIE (Proc. Soc. Exp. Biol. Med., 1940, 44, 501).—Details of the operation, which was carried out on 3 dogs, are described. V. J. W.

Effect of anoxia and high concentrations of oxygen on retinal vessels. P. L. CUSICK, O. O. BENSON, jun., and W. M. BOOTHBY (Proc. Staff Mayo Clin., 1940, 15, 500-502).—The diameter of retinal vessels was measured by a Morgan graticule and a prism displacement method. Anoxia was produced in the low-pressure chamber at pressures simulating altitudes of 18,000-21,000 ft. or by breathing a  $N_2-O_2$  mixture. Retinal vessels, especially the veins, were dilated in anoxia. Administration of high concess. of  $O_2$  produced vasoconstriction.

H. H. K. Behaviour of capillaries in muscle of empty and distended stomach. A. BINI (Boll. Soc. ital. Biol. sperim., 1940, 15, 378—379).—When the stomach is distended by feeding so that the superficial area is increased 3—4-fold, the capillaries extend in length by unfolding and actual stretching; their average diameters are decreased from 8  $\mu$ . to 5  $\mu$ . (dog) and from 5·3  $\mu$ . to 3·4  $\mu$ . (cat). F. O. H.

Sensitivity of sino-carotid chemoreceptors in sheep's foctus. L. DONATELLI (Boll. Soc. ital. Biol. sperim., 1940, 15, 347—349).—The foctus, towards the end of pregnancy, shows cardiac reflex and vasoregulatory responses to various drugs similar to those occurring in the adult sheep (cf. A., 1939, III, 309, 966). F. O. H.

Origin and clinical significance of impure first heart sound. H. KOIZUMI (Klin. Woch., 1940, 19, 85—86).—Three factors are concerned: accentuation of auricular sound, caused by an abnormally increased auricular action; accentuation of sound owing to strong ventricular contraction immediately after the opening of the aortic valves; changes in first heart sound, usually found in myocardial lesions. M. K.

Coronary circulation disturbances in aortic stenosis. P. MÜLLER (Klin. Woch., 1940, 19, 14— 15).—Heart muscle metabolism in aortic stenosis is undisturbed for a long time owing to dilatation of the coronary system. M. K.

Advances in study of auricular disorders. A. LUISADA (J. Lab. clin. Med., 1940, 25, 1146-1156).—A review. C. J. C. B.

Rheumatic heart disease in identical twins. C. B. PERRY (Arch. Dis. Childh., 1940, 15, 177–180). C. J. C. B.

Cardiac disease in rabbit. J. NYBOER (Proc. Soc. Exp. Biol. Med., 1940, 44, 435–439).—In a rabbit which later died of general myocardial necrosis, the e.c.g. showed a depressed RS-T segment with an inverted T wave. V. J. W.

Unresponsiveness of human skin to wheal formation. H. L. ALEXANDER, R. ELLIOTT, and E. KIRCHNER (J. invest. Dermat., 1940, 3, 207-221).—The drug to be tested was applied to the skin by an electrode and the resulting wheal outlined in ink 15 min. after its removal. At intervals varying from 11 to 72 hr. reapplications of the drug were made at the same site. Histamine, codeine, morphine, pilocarpine, and eserine were studied. Local skin unresponsiveness to wheal-forming drugs may be explained by the phenomenon that once the intermediary substance (H-substance) is released from the cells of the skin by such drugs, a period of some 48 hr. must elapse before the power of full whealing is restored. This lack of response is due to tissue factors and not to an inability of the capillaries to react. of to concern to concern to C. J. C. B. al

F. O. H.

Subcutaneous tissue pressure studies in urticaria and angioneurotic œdema. W.T. VAUGHAN and D. M. PIPES (J. Allergy, 1940, 11, 349—360).— Tissue tension is within normal range among allergics except where local reaction occurs, when the alterations run parallel to the visible physical changes. Persons with urticaria had normal tension in normal areas of skin. 2 patients with severe asthma at the time of testing, but without skin lesions, showed normal skin tensions. 3 patients with circumscribed œdema showed normal findings in normal areas of skin even though they were reacting acutely in the local area to ingestion of allergenic foods.

C. J. C. B.

Generalised cedema in chicks prevented by  $dI_{-\alpha}$ -tocopherol. H. R. BRD and T. G. CULTON (Proc. Soc. Exp. Biol. Med., 1940, 44, 543—547).— This substance in dosage of 7.5 µg. per g. per day prevents the fatal cedema commonly found in vitamin-K-deficient chicks (Day and Glavind, A., 1939, III, 292). V. J. W.

Prostigmine in peripheral circulatory disturbances. S. PERLOW (J. Amer. Med. Assoc., 1940, 114, 1991—1993; cf. A., 1939, III, 712).— Studies on 31 cases of spastic and obstructive peripheral vascular disease showed that prostigmine, by mouth or by injection, is an efficient vasodilator.

C. A. K. Reactions of peripheral circulation in man. F. GROSS, K. MATTHES, and H. GOPFERT (Klin. Woch., 1940, 19, 73-76).-A method of simultaneous registration of skin temp., blood vol., and blood colour of finger is described; it is based on the light-permeability of the finger in combination with 2 photocells (one for change of blood content, the other for change of colour). Skin temp. is registered with thermo-elements. Intravenous injection of adrenaline and sympatol produces decrease of skin temp. and blood vol. in finger; O<sub>2</sub> saturation in blood decreases. Veritol increases the skin circulation after an initial brief temp. decrease. Padutin increases skin temp. and decreases blood vol. (blood colour remains unchanged). Inhalation of amyl nitrite de-creases blood temp., vol., and colour; sometimes methæmoglobin is produced. M. K.

Oscillometry in arteriosclerosis. L. N. ATLAS (Arch. intern. Med., 1940, 66, 155—160).—The ratio of oscillometric readings in the lower part of leg/ reading in lower forearm is used as an index of the severity of arteriosclerosis in the lower limb.

C. A. K.

Reduction of arterial hypertension by subcutaneous implantation of kidney tissue. S. RODBARD, L. N. KATZ, and M. SOKOLOW (Proc. Soc. Exp. Biol. Med., 1940, 44, 360—362).—Implantation of 10—15 g. of kidney tissue causes a fall of 25—50 mm. Hg in blood pressure in hypertensive, but not in normal, dogs. V. J. W.

Blood volume in experimental hypertension following subtotal nephrectomy. Effect of posterior pituitary lobectomy. J. Q. GRIFFITH, jun., and D. J. INGLE (Proc. Soc. Exp. Biol. Med., 1940, 44, 538-540).—Experimental hypertension in the rat is not affected by presence or absence of posterior

pituitary, but when it was present 7 out of 8 rats had an increased blood vol. and when it was absent 4 out of 5 rats had a normal blood vol. V. J. W.

Body build and hypertension. S. C. ROBINSON and M. BRUCER (Arch. intern. Med., 1940, 66, 393— 417).—Studies of 3658 subjects showed a positive correlation between broad body build and both systolic and diastolic hypertension. The various groups are analysed in detail. C. A, K.

Activation of renin by blood. K. G. KOHL-STAEDT, I. H. PAGE, and O. M. HELMER (Amer. Heart J., 1940, 19, 92—99).—A method of perfusing the isolated dog's tail is described. Dialysed renin constricts the vessels of the dog's tail only in the presence of plasma, whole blood, erythrocytes, or plasma colloids, even if derived from nephrectomised and hypophysectomised dogs. Plasma derived from dogs with ischæmic hypertension has greater activating power. G. SCH.

#### (vii) RESPIRATION AND BLOOD GASES.

Effect of aminophylline, histaminase, and nicotinic acid on histamine-poisoned puppy bronchioles. A. J. GILBERT and F. GOLDMAN (Proc. Soc. Exp. Biol. Med., 1940, 44, 458—459).—Sections of living lung tissue were observed microscopically, and bronchial contraction was produced by histamine. Application of aminophylline 1 : 1000—1 : 2000 caused dilatation. Histaminase and 1 : 1400 Na nicotinate had no effect. V. J. W.

Oil aspiration pneumonia in adults. D. G. FREIMAN, H. ENGELBERG, and W. H. MERRIT (Arch. intern. Med., 1940, 66, 11—38).—Clinico-pathological studies in 47 adults show that administration of liquid paraffin orally, intranasally, or intratracheally is much the commonest cause of oil aspiration pneumonia, which is a chronic disease, largely symptomless, but liable to complication by secondary infection. C. A. K.

Pulmonary changes in cardiazol shock. A. JARISCH and H. THOMA (Klin. Woch., 1940, 19, 76— 78).—The lungs of rabbits, rats, and guinea-pigs after severe cardiazol convulsions showed œdema, vasodilation, and hæmorrhage. M. K.

Action of parasympathetic-mimetic drugs in asthma. H. H. MOLL (Quart. J. Med., 1940, 9, 229-240).-23 of 28 cases of asthma, including mild and infrequent cases, showed responses varying from wheeziness to a full attack 5-15 min. after 10-20mg. of acetyl-\beta-methylcholine subcutaneously. The attacks were relieved by atropine (differing from a natural attack), adrenaline, and ascorbic acid (500 mg. intravenously). 19 controls and 11 non-asthmatic chest cases gave no chest symptoms, although general parasympathetic responses, e.g., flushing, sweating, appeared after 11 min. In asthma there was no general parasympathetic excitability, and the fundamental change seems to be bronchial irritability due to lung damage. One case of cardiac asthma was positive and one was negative, and the test does not distinguish different types of asthma. R. K. Effect of breathing pure oxygen on human respiratory volume. N. W. SHOCK and M. H. SOLEY (Proc. Soc. Exp. Biol. Med., 1940, 44, 418-420).—Inhalation of pure O<sub>2</sub> caused an average increase of 13% in tidal air of 39 normal men.

V. J. W.

Influence of low tensions of oxygen on protoplasmic streaming of myxomycetes. J. A. KITCHING and M. H. FIRENNE (J. Cell. Comp. Physiol., 1940, 16, 131–133).—Protoplasmic streaming in *Physarum polycephalum* is stopped by O<sub>2</sub> tensions below 3 mm. Hg. V. J. W.

Influence of oxygenation on transport of carbon dioxide by blood of the marine fish *Tautoga* onitis. R. W. Root and L. IRVING (J. Cell. Comp. Physiol., 1940, **16**, 85—96).—The Haldane effect disappears in whole blood at  $CO_2$  tensions over 50 mm. Hg. In hæmolysed blood there is a fall in  $CO_2$ combining power, but the Haldane effect is marked at all  $CO_2$  tensions, and it is not modified by rise in  $CO_2$  tension or reduction in hæmoglobin. V. J. W.

Respiratory metabolism of the fresh-water oligochæte *Tubifex*. F. G. BRAZDA and J. C. RICE (J. Cell. Comp. Physiol., 1940, **16**, 97—102).—  $O_2$  uptake and R.Q. were determined for large and small worms at 25° and 30°. Uptake is greater per unit wt. in small worms, and at 30° is more than 50% greater than at 25°. In large worms this difference is about 30%. V. J. W.

# (viii) MUSCLE.

Prevention of nutritional muscular dystrophy in suckling vitamin-*E*-low rats with  $\alpha$ -tocopherol and related substances. H. M. EVANS and G. A. EMERSON (Proc. Soc. Exp. Biol. Med., 1940, 44, 636— 639).—This dystrophy can be prevented by giving the mother 10 mg. of  $\alpha$ -tocopherol on day of littering, or to the young 1 mg. daily from the 10th day. After the 18th day 3 mg. daily was ineffective. No effect was produced by any of several related compounds.

V. J. W.

Excitability of muscle after castration. G. BORGATTI (Boll. Soc. ital Biol. sperim., 1940, 15, 369-370).—This is unaffected. F. O. H.

# (ix) NERVOUS SYSTEM.

Fine nerves of ureter. A. PASQUALINO (Boll. Soc. ital. Biol. sperim., 1940, 15, 379–381).—Histological observations are discussed. F. O. H.

Mineral distribution in nerve cells and fibres. G. H. Scorr (Proc. Soc. Exp. Biol. Med., 1940, 44, 397—398).—When frog nerves are incinerated there is no visible residue in the tissue spaces surrounding the nerve fibres. When sympathetic ganglia are incinerated, a dense Ca and Mg ash is left in the spaces around the cells. V. J. W.

Intercostal nerve physiology. A. J. KAHN (Proc. Soc. Exp. Biol. Med., 1940, 44, 514-517).--Central end stimulation of any intercostal nerve in the dog, particularly the lower ones, causes fall of blood pressure (25 mm. Hg) and respiratory inhibition. Stimulation of sensory fibres from the diaphragm causes contraction of abdominal muscles. Respiration is to some extent controlled by afferent impulses in the intercostal nerves. V. J. W.

Axon branching after nerve regeneration. W. G. WATROUS (Proc. Soc. Exp. Biol. Med., 1940, 44, 541—542).—The peroneal and popliteal branches of the sciatic were cut in cats and dogs and allowed to regenerate. Stimulation of the posterior tibial at the heel then caused contraction of gastrocnemius, and stimulation of the superficial peroneal contraction of tibialis anticus, even after cutting the sciatic in the thigh. V. J. W.

Nature of oxidative phosphorylation in brain tissue. S. OCHOA (Nature, 1940, 146, 267).— Oxidative phosphorylation appears to be twofold in nature, one half being connected with the dehydrogenation of pyruvic acid as suggested previously (A., 1940, III, 636), and the other half with the transfer of H catalysed by dicarboxylic acids. L. S. T.

Availability of glucose for human brain oxidations. J. WORTIS and W. GOLDFARB (Proc. Soc. Exp. Biol. Med., 1940, 44, 382–385).—Intravenous administration of 4 g. of glucose aroused patients in hypoglycæmic coma and doubled  $O_2$  uptake by the brain, determined by gas analysis of arterial and internal jugular blood. V. J. W.

Functional properties of isolated spinal cord grafts in larval amphibians. P. WEISS (Proc. Soc. Exp. Biol. Med., 1940, 44, 350—352).—Fragments of cord, including several segments, of a larval salamander were implanted subcutaneously in an individual of equal age. The fragments established connexions with neighbouring skin and muscles, including those of a grafted limb. These muscles first show an incessant spontaneous twitching, which later becomes intermittent, and finally contract only in response to slight stimulation of the skin areas which the grafted fragment also supplies.

V. J. W.

Action potentials in nervous system of crayfish. Effects of drugs and salts on synaptic transmission. C. L. PROSSER (J. Cell. Comp. Physiol., 1940, **16**, 25–38).—Reflex responses from the last abdominal ganglion were recorded. Several afferent impulses are needed to obtain an efferent response, reaction time being 2–30 m-sec. Acetylcholine, 0.01%, with eserine, causes no response. Adrenaline and nicotine cause stimulation followed by paralysis. Lowering of K concn. increases activity and increased K diminishes it. V. J. W.

Electro-physiological relationship between cerebrum and cerebellum. V. CAPRARO and T. GUALTIEROTTI (Boll. Soc. ital. Biol. sperim., 1940, 15, 408—410).—Parallel changes in p.d. of cerebrum and cerebellum occur during stimulation of the motor zone by strychnine. F. O. H.

Thermo-coagulation in destruction of tissue in cerebral cortex of small animals. L. A. PEN-NINGTON (Proc. Soc. Exp. Biol. Med., 1940, 44, 420— 422).—Application to the outside of the skull of a heated cautery wire from 10—30 sec. causes destruction of underlying brain tissue to a depth varying with the duration of the application. V. J. W.

Epilepsy complicated by uncontrollable diabetes mellitus. A. T. Ross and W. W. DICKERSON Endocrinol., 1940, 27, 200–205).—Two cases are reported. Epileptic attacks had no relation to either hypoglycemia or ketosis. V. J. W.

Inhibition and enhancement of activity of pyramidal system produced by faradic stimulation of palæocerebellum. G. MORUZZI (Boll. Soc. ital. Biol. sperim., 1940, 15, 416—417).—The palæocerebellum (cat) exerts both an inhibitory and a stimulating effect on motor stimulation of pyramidal origin. F. O. H.

Cerebellar action potentials in response to stimulation of cerebral cortex. H. J. CURTIS (Proc. Soc. Exp. Biol. Med., 1940, 44, 664—668).—In the cat, unipolar stimulation of cortex causes electric responses from a no. of areas of the cerebellum, and there is no anatomical localisation there of cortical centres. V. J. W.

Effect of unilateral cervical sympathectomy on reactions of the skin. H. BIBERSTEIN (J. invest. Dermatol., 1940, 3, 201–206).—Section of the sympathetic nerve to one ear of the rabbit increased the allergic and the simple inflammatory reaction.

C. J. C. B.

Calcium fractions in infantile spasmophilia [in c.s.f.]. J. P. GARRAHAN and G. F. THOMAS (Amer. J. Dis. Child., 1940, 60, 249—255).—In infants with spasmophilia, c.s.f.-Ca shows no quant. changes. C. J. C. B.

Peripheral neuropathy and cirrhosis of liver. E. WAYBURN and C. R. GUERARD (Arch. intern. Med., 1940, 66, 161–172).–17% of 317 cases of cirrhosis of the liver showed peripheral neuropathy which was relieved by treatment with vitamin- $B_1$ .

C. A. K.

# (x) SENSE ORGANS.

Ascorbic acid in mustard gas burns of eye. I. MANN and B. D. PULLINGER (Brit. J. Ophthal., 1940, 24, 444-451).-The experiments of Livingston and Walker (*ibid.*, 67) were repeated under care-fully controlled conditions. Liquid  $\beta\beta'$ -dichloroethyl sulphide was applied to the cornea in small droplets from a specially designed applicator. An effort was made to measure the dose accurately and to control its application so that each eye received comparable treatment. Rabbits were used and the ascorbic acid (500 mg.) was injected immediately after neutralisation with NaOH or as the Glaxo prep. "Celin Forte." The intravenous injection of ascorbic acid neither prevented nor influenced the progress of mustard gas lesions of the lids, conjunctiva, or cornea. The degree of damage was directly proportional to the dose of mustard gas and was not influenced by the resistance of individual animals. The variability of Livingston and Walker's results, attributed by them to a natural resistance in some animals, is thought to be due to a difference in dosage. Even with small doses of mustard gas the corneal lesion was severe and persistent. M. C. B.

Present position of knowledge of intra-ocular fluid. S. DUKE-ELDER, J. C. QUILLIAM, and H. DAVSON (Brit. J. Ophthal., 1940, 24, 421-444).-The distribution of Na between plasma and aq. humour in the cat was determined; it varied from the theoretical ratio based on a Donnan equilibrium, but not more than it varies in other membrane systems, both in vivo and in vitro. The isolated cat's head was perfused with blood containing excess or deficiency of Na, K, or Cl. Initial and final concns. of ions were determined in the aqueous of the two eyes. The permeability between plasma and aqueous was comparable in the intact animal, the surviving perfused head, and the perfused head poisoned with CN'. The evidence is in favour of regarding the aqueous as an ultrafiltrate of plasma, but as a result of metabolic activity in the eye the concns. of certain constituents vary a little from the static Donnan W. T. A. equilibrium.

Biochemistry of lens. J. E. LEBENSOHN (Amer. J. Ophthal., 1940, 23, 784-790).—A résumé.

M. C. B.

Atopic cataracts. W. P. BEETHAM (Arch. Ophthal., 1940, 24, 21-37).-A description of 10 cases in which a type of allergy (atopy), manifested by hay fever, asthma, and eczema, was complicated by the presence of cataract. The lens lesions were of two types: (1) typical complicated cataract, similar to that seen in uveitis, dinitrophenol poisoning, retinitis pigmentosa, and retinal detachment; " neurodermatitis cataract," i.e., a dense, irregular (2)plaque of opacity in the anterior cortex occupying the pupillary area immediately beneath the capsule. This type occurred unilaterally in two cases, and in two cases microscopic examination showed cortical degeneration with normal capsules. Possible ætiological factors, infection, avitaminosis, endocrine gland deficiency, disturbance of autonomic nervous system, and allergy, are discussed. Heredity charts are given for 5 cases. M. C. B.

Pathogenesis of retinitis pigmentosa. E. C. Dax (Brit. Med. J., 1940, I, 473).—A criticism of two papers by Levy-Wolff (A., 1940, III, 398, 574). The blood-cholesterol was found to be raised in only 4 out of 11 instead of in 10% of cases. These 4 cases were examples of the Laurence-Moon-Biedl syndrome and the vals. of blood-cholesterol were not so high as in Levy-Wolff's cases. Hypothermia was never present as claimed by Levy-Wolff; on the contrary the temp. was raised in 2 cases. K. T.

Familial macular degeneration. L. L. TITCHE and J. P. BROWN (Eye, Ear, Throat, 1940, 19, 87— 88).—A description of the visual symptoms of 5 members of a family of which 15 members (within 4 generations) were affected. The symptoms included nystagmus, contraction of the visual field, and a large central scotoma and seemed to be due to a progressive degeneration of the macula. The first symptoms were noticed at about 5—6 months of age in all 5 cases. The condition is shown only by the males but can be transmitted by both sexes; it is claimed to be inherited as a dominant factor although there are several unaffected males in the pedigree given.

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Histologic studies of Eustachian tube of individuals with good hearing. L. POLVOGT and D. C. BABB (Laryngoscope, St. Louis, 1940, 50, 671-675).—A description of the microscopic structure of the normal Eustachian tube. (Illust.) K. T.

Pathologic changes in peripheral auditory mechanism due to avitaminoses (A, B complex, C, D, and E). W. P. COVELL (Laryngoscope, St. Louis, 1940, 50, 632-647).—The changes in suitable experimental animals produced by various vitamin deficiencies were found to be : (1) Middle ear : (a) -A deficiency-keratinisation and metaplasia of the epithelium leading to infection; thickening of the periosteal layer of the ossicles. (b) -B complex deficiency —high incidence of infection (50% for  $-B_6$  deficiency). (c) -C deficiency-hæmorrhage into submucosa; tendency to fibrosis of the bone marrow of the ossicles. (d) -D deficiency-poor bone development. (e) -E deficiency-fibrous and fatty degeneration of the muscles; tendency to inflammation of the submucosa. (2) Cochlea: (a) -A deficiency—degenerative changes in the stria vascularis; slight changes in the cells of Deiter, Claudius, and Hensen. (b) -B complex deficiency-slight degeneration of the hair cells of Corti's organ in  $-B_2$  deficiency; labyrinthitis in  $-B_6$  deficiency. (c) -C deficiency-degeneration of external sulcus cells; changes in the spiral ligament; rupture of Reissner's membrane. On the whole vitamin deficiencies have very little effect on the cochlea but all the changes described would probably cause some impairment of hearing. (3) Spiral ganglion : slight changes in all deficiencies which tended to disappear when the missing factor was supplied. (4) Cochlear nerve: All the deficiencies produced demyelination of the distal part of the nerve which was most pronounced in deficiency of the -B complex. (Illust.)

Vitamins and ear, nose, and throat. I. H. JONES (Laryngoscope, St. Louis, 1940, 50, 585-631). -A detailed review of the effect of deficiency of most of the known vitamins on the various tissues and structures of the ear etc. There is also a brief review of the literature on vitamins in general. K. T.

Vitamin-B and other measures in treatment of deafness. J. H. CHILDREY (Laryngoscope, St. Louis, 1940, 50, 648-657).-No improvement of various types of nerve deafness was noted after treatment with the various components of the vitamin-Bcomplex given either alone or in combination with K. T. one another.

Hearing loss due to endocrine disturbance. G. M. KOEPCKE (Eye, Ear, Throat, 1940, 18, 306-308).-A description of the fairly common condition of progressive loss of hearing associated with general inflammation of the Eustachian tube as well as thickening of the tympanic membrane. The general picture suggests that there may be some adrenal failure and treatment by desiccated whole adrenal gland given orally produced improvement. K. T.

Effects of lesions of medial vestibular nucleus. Anatomical and physiological study in Macacus rhesus monkeys. A. FERRARO, B. L. PACELLA, and S. E. BARRERA (J. Comp. Neurol., 1940, 73, 7-36).-3 Q\*\* (A., III.)

Experimental unilateral lesions of the medial vestibular nucleus in monkeys produced unilateral ocular. postural, and kinetic abnormalities as well as alterations in muscular tone and reflexes. Spontaneous nystagmus occurred in the acute post-operative stage, usually disappearing after 24 hr. but sometimes lasting up to 4 weeks. Induced nystagmus was normal when provoked by rotation towards the side of the lesion or by irrigation of the ear on this side but was diminished on rotation in the opposite direction or if the ear on the unaffected side was irrigated with cold water. Conjugate eye movements were not affected unless the 6th nerve nucleus was involved in the operation. Postural changes consisted of leaning, and sometimes falling, towards the side of the lesion associated with flexion of the ipsilateral limbs and extension of the contralateral ones. These changes showed little tendency to disappear during the first 4 weeks after the operation. Operated animals had great difficulty in walking, climbing, etc., always tending to deviate towards the side of the lesion; some compensation occurred during the first month. Very little loss of muscle tone or reflexes was observed but there appeared to be some diminution of reflexes and a slight relative hypotonia on the operated side. A detailed description of the anatomy of the nerve degenerations which follow the operation is given and the connexion between the anatomical and physiological results is discussed. K. T.

Functional point of view in rhinology. A. W. PROETZ (J. Amer. Med. Assoc., 1940, 115, 421-422).—A plea for a fuller knowledge of the physiology of the nose amongst rhinologists. K. T.

# (xi) DUCTLESS GLANDS, EXCLUDING GONADS.

Liver function in thyrotoxicosis. N. F. Mac-LAGAN and F. F. RUNDLE (Quart. J. Med., 1940, 9, 215—228).—The galactose-tolerance test was chosen because hepatic glycogenesis appears to be disturbed in thyrotoxicosis. Tolerance was impaired in 30, and low normal in the rest, of 41 cases of thyrotoxicosis, and there was correlation with clinical severity and basal metabolic rate. Tolerance became normal after thyroidectomy in most cases in a fortnight, but a few severe cases showed persistent impairment. Rest and I had no effect. 5 rabbits treated with thyroxine showed impairment of tolerance, and focal hepatic necrosis. One case dying in thyroid crisis had a very low tolerance, and had general liver atrophy with peripheral and focal necrosis. A galactose index (i.e., the sum of the four blood-galactose vals. in mg.-% at  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$ , and 2 hr, after 40 g. of oral galactose) below the normal average of 68 would seem to exclude thyrotoxicosis, and vals. approaching 400 indicate the need for careful management. In the case of thyroid crisis the index was 448. R. K.

End results in cretin. C. G. KERLEY (Arch. Pediat., 1940, 57, 432-436).-Two typical cases of congenital myxœdema treated with thyroid are presented, with detailed history and illustrations. Both children pass as physically and mentally normal in school contacts and social activities. C. J. C. B.

Carbohydrate tolerance in hypothyroidism and hyperthyroidism. T. CRAWFORD (Arch. Dis. Childh., 1940, 15, 184—198).—A review.

C. J. C. B.

Response of various breeds of rabbits to Hamilton and Schwartz test for parathyroid secretion. E. J. BAUMANN and D. B. SPRINSON (Proc. Soc. Exp. Biol. Med., 1940, 44, 407—408).— Different varieties of rabbits give different results in the Hamilton–Schwartz test for parathyroid hormone (J. Pharm. Exp. Ther., 1932, 46, 285). V. J. W.

Respiratory metabolism of pigeons after adrenalectomy and its increase by prolactin. O. RIDDLE and G. C. SMITH (Proc. Soc. Exp. Biol. Med., 1940, 44, 499—500).—Adrenalectomy causes only slight reduction (6%) in heat production of pigeons. Daily injection of 5 mg. of prolactin, which had been kept at 60° at  $p_{\rm H}$  8 for 5 hr., raised heat production by 7—56%. V. J. W.

Rôle of vitamin-C in Addison's disease. J. F. JENOVESE, A. E. OSTERBERG, and E. H. RYNEARSON (Proc. Soc. Exp. Biol. Med., 1940, 44, 335—339).— In 6 patients plasma-ascorbic acid was normal but urinary excretion was low even after administration of 0.5 g. V. J. W.

Effects of salts and adrenal cortical extracts on toxicity of drugs. W. G. CLARK and R. H. BARNES (Proc. Soc. Exp. Biol. Med., 1940, 44, 340— 344).—After 80 mg. per kg. of Na iodoacetate, or 20 mg. per kg. of  $HgCl_2$ , survival time of rats was increased by NaCl, decreased by KCl, and unaffected by cortin. After colchicine, survival time was prolonged by cortin but not affected by K<sup>\*</sup> or Na<sup>\*</sup>.

V. J. W.

Adrenal glands and pregnancy. R. ELERT (Klin. Woch., 1940, 19, 49-54).—A review.

M. K.

Effect of three synthetic steroid compounds on weight and work performance of adrenalectomised rats. D. J. INGLE (Proc. Soc. Exp. Biol. Med., 1940, 44, 450—452).—Presence of a OH instead of a keto-group on C<sub>(3)</sub> of the pregnene nucleus of deoxycorticosterone diminishes but does not destroy its efficiency. V. J. W.

Effect of two cortin-like compounds on bodyweight and work performance of adrenalectomised rats. D. J. INGLE (Endocrinol., 1940, 27, 297-304).—Deoxycorticosterone is the most effective compound known in life-maintaining capacity but 17-hydroxy-11-dehydrocorticosterone has a greater effect on work performance (cf. preceding abstract). V. J. W.

Effect of adrenalectomy on anterior pituitaries of fowls. E. H. HERRICK and J. C. FINERTY (Endocrinol., 1940, 27, 279—282).—Adrenalectomy is followed by decrease in size of testis and degeneration of basophil cells of pituitary, which contains 3 times as many degenerating cells as do controls. In castrates granular basophil cells are increased.

V. J. W.

Progestational action of deoxycorticosterone acetate in spayed adrenalectomised cats. J. H. LEATHEM and R. C. CRAFTS (Endocrinol., 1940, 27, 283—286).—After the ovaries and right-adrenal had been removed, each cat received 33  $\mu$ g. of œstradiol benzoate daily for 10 days. The left adrenal was then removed and 10—20 mg. of deoxycorticosterone acetate was given daily for 5—9 days. In each case a progestational endometrium was produced.

V. J. W.

Inability of deoxycorticosterone acetate to protect adrenalectomised rats against typhoid vaccine. L. N. ETTELSON (Endocrinol., 1940, 27, 340—342).—2—4 mg. failed to protect rats against the lethal effect of 0.5—0.8 c.c. of vaccine, though they were fully protected by 2 c.c. of adrenal cortical extract. V. J. W.

Relationship of lesions of the adrenal gland to diphtheritic toxæmia. E. HOLMES and H. LEH-MANN (Brit. J. exp. Path., 1940, 21, 196—204).— The livers of completely adrenalectomised rabbits form carbohydrate from lactate in a normal manner, and cause the disappearance of added lactate. They also phosphorylate glycogen, but form little glycogen from added glucose. Damage to the adrenal gland is therefore not the primary cause of the disturbances in diphtheritic toxæmia in which gluconeogenesis is diminished, lactate slowly removed, but glycogen is easily synthesised from added glucose. There was no alteration in the glucose-tolerance curve in adrenalectomised rabbits. F. S.

Effect of cortin and the sodium factor on adrenalectomised animals. F. A. HARTMAN, L. A. LEWIS, J. E. GABRIEL, H. J. SPOOR, and K. A. BROWNELL (Endocrinol., 1940, 27, 287—296).— Adrenalectomised cats receiving the author's cortin (A., 1940, III, 727) maintained normal health and appetite with a very low plasma-Na. Similar cats receiving the Na factor (A., 1939, III, 682) or deoxycorticosterone maintained a normal plasma-Na but lost appetite and became apathetic. Plasma-K could be kept low by administration of either cortin or Na factor. V. J. W.

Salt after adrenalectomy. I. Growth and survival of adrenalectomised rats given various levels of sodium chloride. II. Urinary excretion of radioactive sodium and potassium in adrenalectomised rats given various levels of salt. E. ANDERSON, M. JOSEPH, and V. HERRING (Proc. Soc. Exp. Biol. Med., 1940, 44, 477–481, 482–485).—Optimal intake of NaCl for the adult rat is 650–940 mg. Na wastage and K retention are thus prevented. Radioactive ions behave in the same way as the normal isotopes. V. J. W.

**Epinephrine hypersensitivity.** A. E. COHEN and M. L. WATERSTONE (J. Allergy, 1940, **11**, 393— 397).—2 cases are reported with acquired tissue hypersensitivity. No reagins could be demonstrated in the sera of either patient by passive transfer tests or by interfaced precipitative tests. C. J. C. B.

Diagnostic significance of cranial rœntgenograms in pituitary disease. M. A. GOLDZIEHER (Endocrinol., 1940, 27, 185—190).—Signs of cranial dysplasia were present in 480 out of 500 cases of pituitary disease and in 9% of controls. V. J. W. Spontaneous hypoglycæmia in Simmonds' disease. E. MOGENSEN (Endocrinol., 1940, 27, 194—199).—A case report. V. J. W.

Effect of cutting pituitary stalk on physiological temperature regulation. A. HEMINGWAY, T. RASMUSSEN, A. T. RASMUSSEN, and H. WIKOFF (Endocrinol., 1940, 27, 212—218).—After section of the pituitary stalk in dogs, all their temp.-regulating mechanisms functioned normally, but temp. was maintained at 0.5—2° above normal. V. J. W.

Pharmacology and anatomy of hypophysis of porpoise. E. M. K. GEILING, B. J. VOS, jun., and F. E. OLDHAM (Endocrinol., 1940, 27, 309—316).— In the porpoise there is no separate pars intermedia. The melanophore-dispersing hormone is in the anterior lobe. The oxytocic, pressor, and antidiuretic hormones are in the neural lobe. V. J. W.

Effects of hypophysial stalk resection on hypophysis and hypothalamus of man. A. T. RAS-MUSSEN and W. J. GARDNER (Endocrinol., 1940, 27, 219—226).—The stalk was divided by a cautery with the object of relieving hypertension. Death occurred 5 months later and histological appearances are described. The most important is a diminution by 85% of the cells of the supra-optic nuclei. V. J. W.

Anatomical relationships of hypophysial stem and median eminence. T. A. WEAVER, jun., and P. C. BUCY (Endocrinol., 1940, 27, 227–235).— The posterior part of the median eminence resembles the pars nervosa of the hypophysis and is part of it. The anterior part is part of the tuber cinereum. These conclusions are based on vital staining and histology of the monkey and cat brain. V. J. W.

Obesity in hypophysectomised dogs. J. MOSONYI (Klin. Woch., 1940, 19, 15—16).—After hypophysectomy dogs increased in wt. by 39-60%, and consumed double or treble the normal amount of food. Autopsy after 3-5 months revealed an increase in the no. of cells in the pancreatic islets of 40-120%. The decreased basal metabolism and the lipogenous action of insulin may be partly responsible for the obesity. M. K.

Sugar utilisation of hypophysectomised rabbits. P. O. GREELEY (Endocrinol., 1940, 27, 317— 321).—In the hypophysectomised rabbit glucose disappears from the blood at a rate of 0.7 g. per kg. per hr. The rate is not affected by removal of the liver or of liver and intestine. V. J. W.

Interrelation between vitamin-B complex and anterior pituitary gland. D. C. SUTTON and J. ASHWORTH (J. Lab. clin. Med., 1940, 25, 1188— 1192).—Four cases are described indicating that an anterior lobe extract will cause recovery of pellagra lesions when they have failed to respond to nicotinic acid, riboflavin, parenteral liver, and adequate diet.

C. J. C. B.

Comparison of interstitial cell-stimulating, ovary-stimulating, and inhibiting actions of pituitary glands of different species. E. WEST and H. L. FEVOLD (Proc. Soc. Exp. Biol. Med., 1940, 44, 446—449).—Pituitary extracts were assayed for interstitial cell-stimulating hormone by determining increase in wt. of seminal vesicles of immature rats following intra-peritoneal injection; for ovarystimulating hormone by determining increase in wt. of ovaries of immature rats following subcutaneous injection twice daily for 4 days; inhibiting hormone by determining amount needed on simultaneous intraperitoneal injection to reduce response to folliclestimulating hormone from 300% to 150%. Inhibitory hormone in all cases paralleled interstitial cell-stimulating hormone, and in these, sheep pituitary was richest, pig variable, and ox poorest. In folliclestimulating hormone, pig are richest, sheep next, and ox very poor. V. J. W.

Influence of pituitary, adrenal, and thyroid on gluconeogenesis in phloridzin diabetes. B. B. WELLS and A. CHAPMAN (Proc. Staff Mayo Clin., 1940, **15**, 503—505).—In hypophysectomised-phloridzinised rats the urinary excretion of glucose and N was half that found in adrenalectomised-phloridzinised rats. Treatment of hypophysectomised-phloridzinised rats with compound E or with corticosterone acetate markedly increased the rate of gluconeogenesis. Desoxycorticosterone had less effect. Hypophysectomised rats treated with compound E and thyrotrophic hormone had a rate of gluconeogenesis which approached that of normal phloridzinised rats.

H. H. K.

Quantitative studies of cell types in rat hypophysis following administration of antigonadotrophic serum. J. C. FINERTY, H. S. KUPPERMAN, and R. K. MEYER (Proc. Soc. Exp. Biol. Med., 1940, 44, 551—553).—10-day-old rats received 0.5 c.c. of antigonadotrophic rabbit serum daily for 10 days. Basophil cells of the hypophysis were increased to 31.9% and chromophobe cells were reduced to 50%. Acidophil cells were not affected. Counts returned to normal when treatment ceased. V. J. W.

Effect of volume used for injection on microassay of prolactin. R. W. BATES and O. RIDDLE (Proc. Soc. Exp. Biol. Med., 1940, 44, 505-509)... When injected intra-cutaneously over the pigeon's crop, the min. stimulating dose of prolactin was 4 times as large when given in a vol. of 0.05 ml. as when given in a vol. of 0.5 ml. V. J. W.

Influence of growth hormone of anterior pituitary on growth in long bones of rat. E. S. Ross and F. C. MCLEAN (Endocrinol., 1940, 27, 329— 339).—Daily injection of 0.2 c.c. of "phyone" per 100 g. caused resumption of epiphyseal growth in 6-month-old rats. V. J. W.

Relationship of anterior pituitary and adrenal cortex in metabolism of carbohydrate. J. A. RUSSELL (Amer. J. Physiol., 1940, 128, 552—561; cf. A., 1940, III, 121).—In adrenalectomised rats fed glucose, large amounts of adrenal cortical hormone increased liver-glycogen at the expense of oxidation but did not affect muscle-glycogen. When anterior pituitary extract was given in the presence of adrenal cortical hormone, the usual action of the extract on oxidation and muscle-glycogen was developed. In fasted rats pituitary extract maintains muscleglycogen levels in the absence of the adrenal cortex without affecting the liver-glycogen and blood-sugar levels, but cortical hormone increases liver-glycogen stores and maintains blood-sugar levels but does not affect muscle-glycogen stores directly. M. W. G.

Diabetes insipidus of over twenty years' standing improved following a subarachnoid hæmorrhage. S. A. LEWENBERG and N. G. SLOANE (Endocrinol., 1940, 27, 191—193).—A case of diabetes insipidus with hypertension improved after a subarachnoid hæmorrhage, which was presumably from an aneurysm compressing the hypothalamic region. V. J. W.

Developmental relationship between pars intermedia of pituitary and brain in tadpoles. W. ETKIN (Proc. Soc. Exp. Biol. Med., 1940, 44, 471— 473).—If pituitary is grafted into hypophysectomised tadpoles with adherent brain tissue, the pars intermedia generally grows normally and causes normal pigmentation. If it is grafted without brain tissue it hypertrophies and causes excessive pigmentation. V. J. W.

Deficiency disease in patient with diabetes mellitus. A. RUDY (Endocrinol., 1940, 27, 206— 211).—A case report of a patient who developed cutaneous and gastro-intestinal symptoms which were improved by addition of yeast to the diet.

V. J. W.

Relation between insulin dosage, duration and degree of hypoglycæmia, and production of brain damage. D. B. TYLER and E. ZISKIND (Proc. Soc. Exp. Biol. Med., 1940, 44, 622—624).—The larger is the dose of insulin given to cats the greater is the incidence of brain damage, but the longer time it takes for cortical symptoms (clonus and loss of consciousness) to appear. No brain damage results unless the animals are kept in the "medullary" stage for at least 100 min. V. J. W.

#### (xii) REPRODUCTION.

Resistance of human spermatozoa in vitro to sulphanilamide and sulphapyridine. L. B. SHET-TLES (Proc. Soc. Exp. Biol. Med., 1940, 44, 392– 395).—Survival and activity were not affected by concns. above those attainable in body-fluids by therapeutic doses. V. J. W.

[Histology of] experimental hyperplasia of interstitial tissue of testes. G. BOLOGNESI and G. BRUGI (Boll. Soc. ital. Biol. sperim., 1940, 15, 365-367).—The histology (Bielschovsky-Gros Ag stain) of the interstitial tissue 20-30 days after surgical interference with the epididymis and vas deferens is described and discussed. F. O. H.

Formation and destruction of male hormone by surviving organs. M. DANBY (Endocrinol., 1940, 27, 236—241).—Perfused bull's testes produce comb-growth-promoting substances, and the amount of these is greater if testosterone homologues are added to the perfusing fluid. Added gonadotrophic hormone has no effect and no œstrogens are produced. Testicle pulp does not possess these qualities of the intact organ. Perfused liver or kidney partly destroys male hormone, but liver or kidney pulp does not.

V. J. W.

Effect of testosterone propionate on skeletal development of a eunuch. I. RAPFOGEL (Endocrinol., 1940, 27, 179—184).—Injections totalling 30 mg. per week in a 90-lb. boy caused increased growth, development of sexual characters, and a rise towards normal in his short bones : long bones ratio.

V. J. W.

Modifying influence of light on chicks' comb response to androsterone. W. F. STARKEY, R. C. GRAUER and E. SAIER (Proc. Soc. Exp. Biol. Med., 1940, 44, 649—654).—Local application of androsterone in oil to the chick's comb is more effective if the chicks are kept in light. In the dark the curve relating comb wt. to dose tends to become horizontal at about 40 µg. daily. V. J. W.

Improvement in chick comb response to androsterone obtained with alcohol as vehicle. E. KLEMPNER, R. T. FRANK, and F. HOLLANDER (Proc. Soc. Exp. Biol. Med., 1940, 44, 633-636).— Application of 10-50  $\mu$ g. of androsterone to the chick comb caused a 93-206% greater response when dissolved in 0.02 c.c. of 95% alcohol than when dissolved in 0.05 c.c. of oil. V. J. W.

Relation between volume of vehicle and chick comb response to androsterone. E. KLEMPNER, F. HOLLANDER, and R. T. FRANK (Proc. Soc. Exp. Biol. Med., 1940, 44, 631-633).—Application of 10-50  $\mu$ g. of androsterone to the chick comb caused a 43-108% greater response when dissolved in 0.02 c.c. of oil than when dissolved in 0.05 c.c. V. J. W.

Testosterone propionate a bisexual hormone in American chameleon. G. K. NOBLE and B. GREENBERG (Proc. Soc. Exp. Biol. Med., 1940, 44, 460—462).—Implanted pellets, from which 1.5—3 mg. were absorbed, caused in female *Anolis* lizards cornification of cloaca, œstrous behaviour, and enlargement of ovaries, as well as male behaviour and enlarged Wolffian ducts. In males they cause cornification of cloaca, enlarged Wolffian ducts, but loss of wt. in testis. In both sexes they cause hypertrophy of the "sexual segment" of the kidney. V. J. W.

Effects of testosterone propionate on female roller canaries under complete song isolation. F. M. BALDWIN, H. S. GOLDIN, and M. METFESSEL (Proc. Soc. Exp. Biol. Med., 1940, 44, 373—375).— Hen canaries, kept in soundproof cages, and receiving 2.5 mg. daily of testosterone propionate, develop a male song after about 15 days. V. J. W.

Inhibitory action of testosterone propionate on human ovary. S. H. GEIST, J. A. GAINES, and U. J. SALMON (Proc. Soc. Exp. Biol. Med., 1940, 44, 319—321).—Two women received total doses of 925 and 1225 mg. respectively. The ovaries, examined by laparotomy on the 34th and 17th day of the cycle, showed no evidences of ovulation or of mature follicle. V. J. W.

Spectrophotometric study of Esting colorimeter and of colours developed with crystalline androsterone and urinary ketosteroids by Esting modification of Zimmermann reaction. H. B. FRIEDGOOD and H. L. WHIDDEN (Endocrinol., 1940, 27, 242—248).—The Esting method is unsatisfactory because changes in the quantity of androgen do not significantly affect the depth of colour produced. V. J. W.

Variables which affect colour development in modification of Zimmermann's reaction, and a spectrophotometric analysis of colours developed with ketosteroids. H. B. FRIEDGOOD and H. L. WHIDDEN (Endocrinol., 1940, 27, 249—257).— Data are tabulated as to the effect on colour of variations of temp., duration,  $p_{\rm H}$ , amount of ingredients, concn. of alcohol and *m*-dinitrobenzene, and light intensity. A standard method is described.

V. J. W. Colorimetric determination of crystalline and urinary ketosteroids. H. B. FRIEDGOOD and H. L. WHIDDEN (Endocrinol., 1940, 27, 258—267).— Androgen excretions by 23 women with virilism are tabulated (cf. A., 1939, III, 983). V. J. W.

 $p_{\rm H}$  of various fluids of genital tract of cow. H. A. LARDY, W. D. POUNDEN, and P. H. PHILLIPS (Proc. Soc. Exp. Biol. Med., 1940, 44, 517—519).— In anœstrus the cow's vagina is slightly acid, but becomes alkaline during œstrus through secretion from the uterine cervix of a fluid with  $p_{\rm H}$  7.6—8.9. Uterine fluid has  $p_{\rm H}$  6.8. V. J. W

Cyclic changes in exteriorised uterus. G. VAN WEGENEN and A. H. MORSE (Endocrinol., 1940, 27, 268—273).—The fundus of the uterus in monkeys is brought through an abdominal opening and the uterine cavity opened. During the latter half of the cycle the uterus becomes extruded and evaginated, so that the state of the endometrium can be observed at different periods of the cycle. The withdrawal of the uterus from the extruded position immediately precedes menstruation. V. J. W.

Electrometrography. A. K. MCINTYRE (Med. J. Austral., 1939, I, 793—796).—Electrodes were placed directly on the exposed uterus of the cat post partum, and connected with a string galvanometer. Simultaneous intra-uterine pressure records were also made. Each contraction was accompanied by considerable electrical variations. The electrogram consisted of rhythmic, diphasic waves occurring at the rate of one every 1—3 sec. These oscillations, 12—15 in no., continued throughout the contraction phase and disappeared during relaxation. They tended to conform to a const. pattern, which suggested a common origin or "pace-maker." F. S.

[Results in pregnant women] treated with wheat-germ oil capsules. E. K. HUGHES (Med. J. Austral., 1939, I, 799—800).—These, 8 in no., terminated their pregnancies successfully after previous history of abortion, miscarriage, or premature infants. F. S.

Hormonal distribution as controlled by tissue uptake [in breasts and genital tract]. R. KURZROK and L. WILSON (Endocrinol, 1940, 27, 166—168).—2 cases are reported of hypertrophy of the breasts in young girls combined with hypoplasia of the genital tract. V. J. W.

Effect of œstrogenic hormone on prostate of marsupial *Trichosurus vulpecula*. A. CARRODUS and A. BOLLIGER (Med. J. Austral., 1939, II, 633641).—Nine opossums were injected weekly with 8000—50,000 i.u. of œstroform (B.D.H.) until death occurred at 13—113 days after a total dosage of 120,000—450,000 units. In 5 dying at 39—113 days there was hydronephrosis and hydro-ureter. One opossum receiving 700 units weekly also showed these lesions at death at 122 days. The prostate in all was reduced in size and fibrotic and showed hyperplasia, metaplasia, and keratinisation of the epithelium. (8 photomicrographs.) F. S.

Influence of uterine and ovarian nerves on lactation. J. S. LABATE (Endocrinol., 1940, 27, 342-344).—Removal of the sympathetic supply to uterus, tubes, and ovaries caused no differences in the lactation of rabbits as compared with controls.

V. J. W.

Avian œstrogens and blood-calcium. H. W. MARLOW and D. RICHERT (Endocrinol., 1940, 27, 274—278).—Extracts of ovary and follicle containing 1·3—2 r.u. of œstrogenic substances caused no significant changes when injected into pullets.

V. J. W. Experimental and clinical trials of stilbœstrol. D. W. ATKINSON (Endocrinol., 1940, 27, 161—165). —A review. V. J. W.

Isolation of  $\alpha$ -æstradiol and æstrone from horse testes. D. BEALL (Biochem. J., 1940, 34, 1293—1298).— $\alpha$ -Æstradiol (0.21 mg. per kg.) and æstrone (0.36 mg. per kg.) have been isolated from the crude alcoholic extract of horse testes as the di- $\alpha$ naphthoate and 3 : 5-dinitrobenzoate, respectively. H. G. R.

Inhibition of cestrin-deprivation bleeding in rhesus monkey with testosterone derivatives variously administered. A. R. ABARBANEL (Proc. Soc. Exp. Biol. Med., 1940, 44, 452—454).—Bleeding was inhibited by 5 mg. daily of testosterone dipropionate, methyltestosterone, or ethinyltestosterone in oil given parenterally. It was also prevented by implantation of 24 mg. of methyltestosterone as pellets, or by daily oral administration of 10 mg.; 20 mg. of testosterone propionate with 100 mg. of bile salts daily was also effective. V. J. W.

Direct action of cestrone on mammary gland. W. R. LYONS and Y. SAKO (Proc. Soc. Exp. Biol. Med., 1940, 44, 398-401).--0·3--3 i.u. of cestrone, rubbed into the nipples of the mammary glands of young male rabbits 5 times weekly, caused marked growth of the glands, as compared with the glands of the opposite side which were treated with oil only. V. J. W.

Excretion of gonadotrophic and œstrogenic hormones in urine during normal menstrual cycle. E. VON HAAM and N. O. ROTHERMICH (Proc. Soc. Exp. Biol. Med., 1940, 44, 369—371).—In assays on 3 normal subjects there were 1—3 peaks of gonadotrophin excretion (determined by uterine wt. of immature mice), and 2 peaks of œstrogen excretion which may be close together and coincide with or precede the gonadotrophin excretion. V. J. W.

Absorption rates and biological effects of  $\alpha$ cestradiol and  $\alpha$ -cestradiol benzoate in women. R. I. WALTER, S. H. GEIST, and U. J. SALMON (Proc. Soc. Exp. Biol. Med., 1940, 44, 314—318).—Œstradiol was absorbed from 10—25-mg. pellets about 3 times as fast as the benzoate. In both cases no biological effects were produced after about 100 days, and the pellets, on removal, were found to be enclosed in a dense fibrous capsule. V. J. W.

Effect of anterior pituitary-like sex hormone and of castration on experimental tuberculosis. C. B. BRACK and L. A. GRAY (Endocrinol., 1940, 27, 322—328).—Daily injections of 75 r.u. of "antuitrin-S" for 36 days after infection caused no modification of the course of tuberculous infections in either normal or castrate female rabbits. V. J. W.

Action of cysteine or cyanide on gonadotrophic extracts. F. BISCHOFF (J. Biol. Chem., 1940, 134, 641-647; cf. A., 1937, III, 40; 1940, III, 642; Fraenkel-Conrat et al., ibid., 121).-Under conditions which inactivate insulin and lead to reduction of disulphides, prolan and the pituitary gonadotrophic hormone resist inactivation by cysteine and by NaCN. Partial inactivation is caused within 24 hr. by large excess of NaCN, both hormones being affected to the same extent. The pituitary hormone and prolan lose 90 and 65-85% respectively of their activity within 48 hr. when treated with large excess of cysteine hydrochloride. The results do not accord with the view that S·S groups are essential parts of the active group of gonadotrophic hormones or that the active group of the pituitary hormone but not that of prolan contains an S·S group. W. McC.

Effect of breeding conditions on the reproductive efficiency of albino rat. M. J. BABCOCK, R. BOGART, G. SPERLING, and S. A. ASDELL (J. Agric. Res., 1940, 60, 847-853; cf. Cole and Hart, A., 1939, III, 59).—The reproductive efficiency of female rats, as measured by factors such as no. and size of litters and no. and wt. of living young at birth and weaning, is less when the rats are bred at the earliest possible age than when they are bred at the normal age (100 days). When breeding is delayed until the age of 280 days, efficiency is greatly diminished and lactation is difficult. When the rats are not allowed to suckle their young and are rebred as soon as possible after parturition they produce many more young than do rats which suckle their young. W. McC.

Retention of corpus luteum after removal of gravid uterus. G. MICALE (Boll. Soc. ital. Biol. sperim., 1940, 15, 381—382).—Daily administration of ascorbic acid (50 mg.) or gonadotrophic hormone (50 r.u.) had no effect; folliculin (35  $\mu$ g.) or vitamin-*E* led to retention of corpora lutea, resembling those of pregnancy. F. O. H.

Urinary excretion of pregnanediol complex by males. I. Following oral administration. II. Following intramuscular administration of progesterone. E. C. HAMBLEN, W. K. CUYLER, and D. V. HIRST. III. Following intramuscular administration of deoxycorticosterone acetate. W. K. CUYLER, C. ASHLEY, and E. C. HAMBLEN (Endocrinol., 1940, 27, 169–171, 172–176, 177– 178).—If 10–30 mg. of Na pregnanediol glucuronide are given by mouth to adult males, 30–50% is usually excreted by the kidney in 3–5 days. Following

progesterone injections of 20-120 mg. 0-42.5% of pregnanediol complex was recovered from the urine. Injections totalling 25 and 50 mg. of deoxycorticosterone acetate caused excretions of 29 and 16 mg. respectively of the pregnanediol complex.

V. J. W. Assay of blood-progesterone during sexual cycle of *Macaca rhesus*. I. L. C. DE ALLENDE (Proc. Soc. Exp. Biol. Med., 1940, 44, 534-538).— Serum was injected into the uterus of immature rabbits, and the endometrial progestational reaction observed. In 2 out of 3 monkeys progesterone was max. on the 10th and 11th days of the cycle.

V. J. W. Diuretic effect of progesterone. H. SELVE and L. BASSETT (Proc. Soc. Exp. Biol. Med., 1940, 44, 502—504).—10 mg. daily of progesterone caused marked diuresis in female rats, particularly if previously hypophysectomised, where urinary output reached 25 c.c. daily. V. J. W.

Maintenance of pregnancy in castrate rats by progesterone. I. ROTHCHILD and R. K. MEYER (Proc. Soc. Exp. Biol. Med., 1940, 44, 402-404).— Rats castrated on the 4th day of pregnancy were maintained in pregnancy until the 21st day with daily doses of 1-2 rabbit units of progesterone. V. J. W.

Steroids<sup>31</sup> and sex hormones. LXIII and LXIV.—See A., 1940, II, 350.

Synthetic œstrogens related to triphenylethylene.—See A., 1940, II, 339.

α-Dihydrotheelin from human pregnancy urine.—See A., 1940, II, 344.

**Transfer of radioactive sodium across placenta** of cat. L. B. FLEXNER and H. A. POHL (Proc. Soc. Exp. Biol. Med., 1940, 44, 345—346).—<sup>24</sup>NaCl was injected into pregnant cats. Fœtal body fluids reached equilibrium with maternal plasma after 12— 18 hr. Rate of transfer per unit wt. of placenta is low during early pregnancy, reaching a max. at the 57th day, but rate per unit wt. of fœtus is high in early pregnancy and falls continuously until term. V. J. W.

Distribution of reducing systems in egg of Arbacia punctulata. R. BALLENTINE (J. Cell. Comp. Physiol., 1940, 16, 39–47).—Eggs are centrifuged and light and heavy halves are parted. The heavy halves contain 55% of the dehydrogenase activity of the eggs whilst they occupy only 45% of the vol. Cytolysis decreases the activity by 90%.

V. J. W.

## (xiii) DIGESTIVE SYSTEM.

Production of gastric and duodenal ulcers in the cat by intramuscular implantation of histamine. S. H. WALPOLE, R. L. VARCO, C. F. CODE, and O. H. WANGENSTEEN (Proc. Soc. Exp. Biol. Med., 1940, 44, 619—621).—Intramuscular injection of 20 mg. of histamine in beeswax daily caused in all cases copious secretion of acid juice and ulceration of stomach or duodenum or both in 3—25 days.

Fatalities in gastroscopy. R. SCHINDLER (Amer.] J. digest. Dis. Nutr., 1940, 7, 293—295).—60 gastroscopists reported their experience during 22,351 gastroscopies; one death was probably due to the use of the gastroscope. 8 perforations of the stomach, and one of the jejunum in a resected stomach, were observed but all the patients recovered.

C. J. C. B.

(A) Acetone bodies in blood and urine in acute pancreatic disturbance of rabbits. Disposing and forming of acetone bodies in rabbits (B) with ligated pancreatic duct, and (C) with acute pancreatic necrosis. A. SHIRAKURA (Jap. J. Gastroenterol., 1939, 11, 49—57, 58—63, 64—68). —After ligation of the pancreatic duct in the rabbit, total ketones in the blood were low and slightly higher in the urine at the beginning. The excretion of ketones over 24 hr. was diminished. When ethyl acetoacetate and Na butyrate were injected into such rabbits it was found that the power to deal with ketones was diminished. Findings were similar after production of pancreatic necrosis by injections of olive oil or pancreatin in the pancreatic duct.

F. S.

Techniques for preparation and care of pancreatic fistulas in dogs. V. B. Scott (J. Lab. clin., Med., 1940, 25, 1215-1221). C. J. C. B.

**Pancreaticogastrostomy.** E. C. PERSON and F. GLENN (Arch. Surg., Chicago, 1939, **39**, (4), 530—550; cf. A., 1939, III, 842).—When the pancreas is bisected and the distal cut end is transplanted into the stomach, the pancreas retains its functions and shows no sign of atrophy. There are no degenerative changes in the liver such as occur after complete exclusion of the external secretion of the pancreas by the usual operative methods in treating malignant lesions of the periampullary region and head of the pancreas. (6 photomicrographs.) F. S.

Value of banana and banana powder in treatment of infants and children having diarrhœa. I. J. WOLMAN and R. L. RODDY (Amer. J. dis. Child., 1940, 60, 333-340).—It was as effective as the older and more usual feeding methods. C. J. C. B.

Treatment of megacolon with acetyl- $\beta$ -methylcholine bromide. J. L. Law (Amer. J. dis. Child., 1940, 60, 262—282).—A successful method of management with acetyl- $\beta$ -methylcholine is presented in detail, with 15 illustrative cases. C. J. C. B.

## (xiv) LIVER AND BILE.

Structure of liver cells in experimental icterus. A. Itô (Fukuoka acta med., 1939, **32**, 117–119).

Fat metabolism after liver injury. Decreased fatty acid utilisation by male rats following the administration of carbon tetrachloride. I. C. WINTER (J. Biol. Chem., 1940, 135, 123–130).— Rats injected with  $CCl_4$  show a smaller fatty acid "loss" than normal rats and a decrease in sterol content not shown by the latter. The liver-lipins are not significantly changed. E. M. W.

Form in which acetone bodies are produced by the liver. L. A. CRANDALL, jun. (J. Biol. Chem., 1940, 135, 139—142).—The total ketones of the hepatic output and arterial blood of dogs fed with olive oil contain 35—93% and 51—94% of  $\beta$ -hydroxy-butyric acid, respectively. E. M. W.

Biochemical studies on  $\alpha$ -scymnolsulphonic acid. H. ASHIKARI (Arb. med. Univ. Okayama, 1940, 6, 336—342).— $\alpha$ -Scymnolsulphonic acid has a greater effect on bile secretion in rabbits and on hæmolysis *in vitro* than taurocholic acid. H. H. K.

Changes in cholesterol content of hepatic bile subjected to gall-bladder activity. C. RIEGEL, D. C. CALDER, and I. S. RAVDIN (Amer. J. Physiol., 1940, **129**, 271–277).—The normal gall-bladder wall of the dog neither secretes nor absorbs cholesterol. Any cholesterol recovered in excess of that introduced into the gall bladder possessing concentrating activity is either dissolved out of mucosa cells, or due to disintegration of these cells or to the passage of blood into the bile. When unligated accessory ducts are present, or when fluid is being secreted into the gall-bladder lumen, the amount of cholesterol recovered considerably exceeds that introduced. No relationship is found between concns. of cholesterol in blood and gall-bladder bile. M. W. G.

Bile of Conger myriaster and Pararulus asotus. K. TAKAHASHI and T. MORI (Arb. med. Univ. Okayama, 1940, 6, 358—360). H. H. K.

# (xv) KIDNEY AND URINE.

Relative kidney weights of male and female mice. F. L. WARREN (Nature, 1940, 146, 367).-Average relative kidney wt. for 16 male mice of  $C_3H$ strain (35—195 days) was 14.1 (11.7—16.7) mg. per g.; for 16 female mice (35-244 days) it was 12.6 (11.2-15.3) mg. per g. The difference (1.5 mg.) is significant (t = 3.1). Differences of the same order were found in mice of Dilute Brown and CBA strains; when the data for 24 males and 24 females are pooled the average relative kidney wts. were 15.2 mg. per g. (male) and 12.9 mg. per g. (female). No significant difference between relative liver wts. of the two sexes was observed. This sexual difference of kidney wt. may be related to the microscopical observation of Crabtree (A., 1940, III, 666), who found hypertrophy of the parietal layer of Bowman's capsule in 89% of adult male mice and 13% in adult females.

E. R. S.

Implications of modern theory of renal excretion. J. S. DUNN (Proc. Roy. Phil. Soc. Glasgow, 1940, 64, 68-82).—A review.

Diuretic action of sucrose and other solutions. H. F. HELMHOLZ and Y. L. BOLLMAN (Proc. Staff Mayo Clin., 1939, 14, 567—569).—Intravenous injection of 100 c.c. of a 20% solution of sucrose per kg. body wt. in 1 hr. into rabbits produced diuresis in which 130% of the vol. injected was excreted in the urine. Na<sub>2</sub>SO<sub>4</sub>, urea, glucose, and sorbitol in solutions of equiv. tonicity produced less diuresis. With the exception of sorbitol all were more toxic than sucrose and administration could not be repeated as often. H. H. K.

H. H. K.

Renal excretion of sucrose in normal man; comparison with inulin. K. STEINITZ (Amer. J. Physiol., 1940, **129**, 252—259; cf. A., 1940, III, 503). —The sucrose/inulin clearance ratio in normal man is not influenced by the occupation of the tubular resorptive mechanism with glucose. The simultaneous clearances of sucrose and inulin are identical. The average sucrose/inulin ratio (19 periods) is 0.99. M. W. G.

Photelometric determination of bilirubin in urine with diazobenzenesulphonic acid. W. H. GOODSON and C. SHEARD (Proc. Staff Mayo Clin., 1940, 15, 421—424).—A simple, rapid, and accurate procedure for the determination of urinary bilirubin has been developed for use with the Cenco-Sheard-Sanford photelometer. H. H. K.

Determination of minute amounts of lead in urine. J. E. KENCH (Biochem. J., 1940, 34, 1245— 1247).—A method is described for the determination of Pb in 50—100-c.c. samples of urine by a colorimetric method with dithizone. Recovery of added Pb agrees to within 3  $\mu$ g. of the amounts added. P. G. M.

Alkalis and urinary calculi. C. W. EISELE (J. Amer. Med. Assoc., 1940, 114, 2363-2366).-56 (11.1%) of 505 patients with kidney or ureteral stones had previously taken alkalis for long periods for peptic ulcer or other digestive disorders.

C. A. K.

# (xvi) OTHER ORGANS, TISSUES, AND BODY-FLUIDS.

Classification of cutaneous lipoidoses; description of new local lipoid dermatosis: imbitio lipoidica collageni degenerati cutis. E. URBACH and W. R. HILL (Arch. Dermat. Syphilol., 1940, 42, 68-85).-(6 photomicrographs.)

C. J. C. B. Solubility of fluorosed enamel and dentine. J. F. VOLKER (Proc. Soc. Exp. Biol. Med., 1940, 43, 643—645).—Large amounts of F' (0.125%) decrease solubility of enamel and dentine but moderate amounts have no effect. V. J. W.

Adipose tissue. H. G. WELLS (J. Amer. Med. Assoc., 1940, 114, 2177-2183, 2284-2289).--A review. C. A. K.

Nitrogenous constituents of cat's submaxillary saliva evoked by parasympathetic and sympathetic stimulation. S. A. KOMAROV and G. W. STAVRAKY (Canad. J. Res., 1940, **18**, **D**, 233—247). —Saliva excreted in response to stimulation of chorda tympani and that by administration of adrenaline contained different and characteristic glucoproteins. These proteins are probably secreted by mucous and serous cells respectively. The nonprotein-N of saliva secreted under both conditions consists mainly of urea. Stimulation of chorda tympani causes decreased permeability of the submaxillary gland to non-protein-N, the urea fraction being the least affected; adrenaline increases the permeability especially to urea. A. G. P.

Individuality of the solids-not-fat of milk. Recomputation of material from Illinois Agric. Exp. Sta. Bull., No. 325. F. JARL (Z. Tierzücht., 1939, 43, 350-357).-Computation of figures for the composition of 1998 milk samples from 5 breeds shows that both protein and lactose contents vary more among samples from different than in those from individual cows. After reduction is made for regression between fat and protein, and between fat and lactose, the protein and lactose contents are individually variable. Not only do individual differences in the abs. contents of protein and lactose exist, but there is also an individual variation among the regression coeffs. The individualities found for the contents of protein and lactose may, however, compensate each other so that a high protein content may be combined with a low lactose content, and conversely, thus giving a const. content of solids-not-fat. M. A. B.

**Temperature coefficients and acclimatisation.** K. MELLANBY (Nature, 1940, **146**, 165—166).— Theories based on the val. of the temp. coeff. of a biological reaction may be misleading. Measurements of the heart rate of the crested newt show that the val. at 0° depends on the temp. to which the animal was previously acclimatised. It is suggested that there may be no abs. rate for a biological process, and that all conditions previously experienced by the animal must be considered. E. R. S.

Influence of temperature on osmotic behaviour of crustacea and its bearing on problems of animal distribution. N. K. PANIKKAR (Nature, 1940, 146, 366-367).-The optimum osmotic pressure of homoiosmotic species falls with rise in temp. of medium. In diluted media the min. osmotic pressure of blood compatible with life is the lower the higher is the temp. It follows that in euryhaline species the range of tolerance to dilution of environment is greater at higher temp., and that a marine species with feeble powers of regulation can penetrate into brackish water more easily at higher than at lower temp. These facts appear to be highly significant for certain problems of animal distribution, e.g., Palæmoneter varians lives in brackish water in N. Europe, in fresh water in the Mediterranean, and to provide a physiological reason for adaptation to brackish and fresh water taking place more readily in warm seas than in cold. E. R. S.

Response of isolated white chromatophores of crustacea to change of illumination. F. G. W. KNOWLES (Nature, 1940, 146, 131—132).—Portions of carapace of *Leander servatus*, containing approx. 2 white chromatophores, were immersed in NaCl and NaCl + CaCl<sub>2</sub> solutions. The dimensions were measured after 3 intervals of 1 hr. In NaCl, contraction in darkness was not followed by expansion in light; in NaCl + CaCl<sub>2</sub> solutions the expansion followed in light, more markedly with eye-stalk hormone added. Most chromatophores failed to respond after 6 hr. It is concluded that white chromatophores are independent effectors, able to change shape without nervous or humoral control.

E. R. S. Factors influencing the survival of the fasting fresh-water Oligochæte, *Tubifex*, in the laboratory. J. C. RICE and F. G. BRAZDA (Ecology, 1940, 21, 413—416).—*Tubifex* is very sensitive to active CI in concess. above 0.6 p.p.m., and is a sensitive test object for studying toxicity of single ions. It is killed by  $PO_4^{\prime\prime\prime}(0.01M. \text{ at } p_H 8.4)$  and by  $0.0014M.NH_4^{\prime}$ , but the toxicity is diminished by other ions.

#### L. G. G. W.

Ribonucleic acids in both nucleus and cytoplasm; function of nucleolus. T. CASPERSSON and J. SCHULTZ (Proc. Nat. Acad. Sci., 1940, 26, 507—515).—Determination of the ultra-violet absorption spectra of different regions in the nucleus and cytoplasm of sea-urchin eggs, cytoplasm and nucleolus of the root tip periblem cell of spinach, and the cells of the salivary gland of *Drosophila melanogaster* shows that ribonucleic acid is present in the nucleus and cytoplasm. The nucleoli appear to be composed of ribonucleoproteins containing varying amounts of nucleic acid, and the activity of the nucleoli is closely associated with intense synthesis of cytoplasmic ribonucleic acids. J. N. A.

Distribution of ammonia in larvæ of Lucilia cuprina. F. G. LENNOX (Nature, 1940, 146, 268). —Data showing the distribution of  $NH_3$  in different parts of the larvæ are recorded, and used to elucidate the mechanism of  $NH_3$  formation and excretion in this organism. L. S. T.

Pigments from sea-urchins and syntheses of related compounds.—See A., 1940, II, 351.

#### (xvii) TUMOURS.

Chemical compounds as carcinogenic agents, second supplementary report: literature of 1938 and 1939. J. W. COOK and E. L. KENNAWAY (Amer. J. Cancer, 1940, 39, 381–428).—Part of a comprehensive review. F. L. W.

Latent carcinogenic action of 3: 4-benzpyrene; results of intermittent applications to skin of mice. S. BECK and P. R. PEACOCK (Brit. J. exp. Path., 1940, 21, 227—230).—Applications twice weekly for one month failed to induce tumours, but tumours were induced by three such series of applications separated by intervals of 1—3 months. The skin of mice remains fluorescent for 4 days after an application so that twice-weekly applications expose the skin to the continuous action of benzpyrene. F. S.

Hydrocarbon-cholesterol pellets in strain Dmice. M. J. SHEAR and F. W. ILFELD (Amer. J. Path., 1940, **16**, 287—293).—Cholesterol pellets containing concess. of carcinogenic hydrocarbons ranging from 0.001% to 5% were implanted subcutaneously in strain D mice. The experiment was terminated after 11 months. No tumours were obtained at the site of injection of cholesterol pellets containing 0.1% or less of 1:2:5:6-dibenzanthracene, and 1% or less of 3:4-benzpyrene, or 0.1 or 0.01% of 20-methylcholanthrene. Of the 10 mice that had received pellets containing 0.001% of this last hydrocarbon, hæmangiomas developed in 2 and a hæmangiomatous lesion in 1. C. J. C. B.

Production of tumours by 3:4-benzpyrene in rats fed diets containing different levels of vitamin-A. P. R. Howe, M. D. ELLIOTT, and

M. J. SHEAR (Amer. J. Path., 1940, 16, 295-300).--3: 4-Benzpyrene was implanted subcutaneously into 65 rats which were then fed vitamin-A-rich or -A-poor diets. Young rats, implanted subcutaneously with 5% benzpyrene-cholesterol pellets and fed a markedly -A-deficient diet, developed severe symptoms of -A deficiency and died during the latent period of tumour production. When enough carotene was added to the -A-deficient diet to permit the rats to survive the latent period, tumours developed both in young rats implanted subcutaneously with 5% benzpyrenecholesterol pellets and in adult rats implanted subcutaneously with cryst. benzpyrene. No indication of a significant difference in response to this carcinogen was observed as a result of variation in the -A content of the diet. C. J. C. B.

Development of skin tumours in mice painted with 3: 4-benzpyrene and creosote oil fractions. S. CABOT, N. SHEAR, M. J. SHEAR, and A. PERRAULT (Amer. J. Path., 1940, **16**, 301—312).—Albino market mice were painted with benzene solutions containing various fractions of cresote oil together with 0.2 and 0.05%, respectively, of 3: 4-benzpyrene. The 0.05%benzpyrene control solution began to produce skin tumours after most of the mice painted with the 0.2%benzpyrene control solution already bore tumours.

C. J. C. B.

Effect of fat on tumour formation. H. P. JACOBI and C. A. BAUMANN (Amer. J. Cancer, 1940, **39**, 338—342).—Diets containing 15% or more of fat accelerated tumour production in a large series of mice painted with benzpyrene, methylcholanthrene, or dibenzanthracene. Acceleration was observed with each of 5 different fats, with 3 different basal rations, and with 2 strains of mice. Local application of fats to the tumour-forming areas produced slight acceleration. F. L. W.

Genetic analysis of induction of tumours by methylcholanthrene. Origin of the NH strain of mice. L. C. STRONG (Amer. J. Cancer, 1940, 39, 347-349).—The NH strain of mice was developed for the purpose of producing the highest possible degree of biological variability without the inter-ference of spontaneous tumours. Female mice of the CBA strain were outcrossed to male mice of the N strain. Female mice of the  $F_3$  generation of this cross were outcrossed to males of the JK strain. The resulting hybrid mice are given the symbol NH. NH mice have been bred brother to sister for 12 generations and no spontaneous tumours have occurred. Subcutaneous injections of 1.0 mg. of methylcholanthrene into mice of the new strain gave rise to 4 different types of tumours : spindle-cell sarcoma, epithelioma or squamous carcinoma, rhabdomyosarcoma, and adenocarcinoma of the mammary glands. Inbreeding by selection and elimination of the mice showing these 4 types of response resulted in divergent substrains remaining true to type over several generations. F. L. W.

Carcinogenic properties of o-aminoazotoluene. H. C. VASSILIADIS (Amer. J. Cancer, 1940, **39**, 377– 378).—No liver tumours were obtained in 200 rats receiving 10 mg, of o-aminoazotoluene per day mixed with the diet. A second group of 200 rats received intraperitoneal injections of thorotrast in addition to the azo-compound, but no liver tumours were observed. Restricting the diet solely to rice to which was added 10 mg. per day of azo-compound gave 30 liver tumours in 100 rats at the end of 270 days. When the rice diet was supplemented with wheat flour no tumours were obtained after 20 months.

F. L. W.

Effect of carcinogenic hydrocarbons on elimination of Congo-red from circulation. C. HOCH-LIGETI (Amer. J. Cancer, 1940, 39, 365-376; cf. A., 1939, III, 846).—Prolonged subcutaneous injection of colloidal solutions of 1:2:5:6-dibenzanthracene, methylcholanthrene, and 3:4-benzpyrene produced marked fluctuations in the rate of disappearance of Congo-red from the circulation of rabbits. None of the animals showed a permanent decrease of the Congo-red index. Blood extracts from rabbits treated with carcinogenic hydrocarbons lacked the normal positive effect on the elimination of dye from the blood of normal rabbits. In some cases the effect was negative for many months. The Congo-red index of rabbits treated with 1:2-benzanthracene, phenanthrene, and anthracene remained almost unchanged, and blood extracts from these rabbits showed positive effects. F. L. W.

Breast cancer produced in male mice of C 57 (black) strain of Little. G. H. TWOMBLY (Proc. Soc. Exp. Biol. Med., 1940, 44, 617—618).—27 mice of this low-cancer incidence strain were nursed from birth by females of the high-cancer incidence *RIII* strain and were also implanted with a crystal (0.07— 0.18 mg.) of cestrone. 9 developed cancer.

V. J. W.

Increase in the incidence of lymphomatosis in male fowls by castration. D. MARINE and S. H. ROSEN (Amer. J. Cancer, 1940, **39**, 315—318).—16 instances of lymphomatosis were observed in 119 white Leghorn cockerels in which castration had been attempted. It is suggested that the development of lymphomatosis was closely associated with deficiency of male hormone since none of the affected birds showed comb growth and testis tissue was absent in 11. In the remaining 5, atrophic fragments of testis were found. 55 birds with rapid comb growth were killed and none of these showed active lymphomatosis. F. L. W.

Experimental studies on relation of pregnancy to leukæmia. J. H. BURCHENAL (Amer. J. Cancer, 1940, 39, 309—314).—Pregnant mice were injected intravenously with a cell suspension from the spleen of a leukæmic mouse. 18 of the female mice died of leukæmia; they had a total of 114 young. In no case was transmission of the disease from mother to offspring observed. F. L. W.

Ovarian hormones and female genital cancer. E. ALLEN (J. Amer. Med. Assoc., 1940, **114**, 2107).— A review. C. A. K.

Effect of hormones on cells grown in vitro. I. Effect of sex hormones on fibroblasts. II. Effect of hormones from the thyroid, pancreas, and adrenal gland. E. VON HAAM and L. CAPPEL (Amer. J. Cancer, 1940, 39, 350–353, 354–359).—I. The effect of pure cryst. sex hormones (œstrone, progesterone, and testosterone) on the growth of fibroblasts from mouse embryo heart was examined. (Estrone in dilution of  $10^{-7}$  gave a slightly higher mitotic index than the Tyrode controls and the surface area was markedly increased from the 2nd—4th day of culture. Higher concns. showed the reverse effect. Testosterone and progesterone inhibited growth.

II. Thyroxine slightly increased the growth of mouse fibroblasts in dilutions of  $10^{-7}$  and  $10^{-9}$ . Insulin in concess, of  $1\cdot0$  to  $0\cdot001$  unit per c.c. produced 1000% increase of the original explant within 7 days. Adrenaline and cortin both inhibited growth. Addition of cortin to tissue cultures prolonged the life and preserved the contours of the explant. F. L. W.

Properties of causative agent of chicken tumour. XIV. Relation between tumour nucleoprotein and active principle. A. CLAUDE and A. ROTHEN (J. Exp. Med., 1940, 71, 619-633).—The tumour-producing fraction separated by differential centrifugation from chicken tumour I shows a close similarity to nucleic acid in its behaviour with ultraviolet light. Inactivation by acid or alkali or by heat resulted in liberation of nucleic acid. Activity of the factor and the integrity of the tumour ribonucleoprotein run parallel. A. C. F.

Cultivation of agent of fowl leukosis in vitro. L. DOLJANSKI and M. PIKOVSKI (Nature, 1940, 146, 302-303).-Fowl bone-marrow and heart muscle were cultivated separately in leukotic fowl plasma freed from cells and diluted with Tyrode 1:2, according to Carrel's standard method. Inoculation of cultures after 2, 3, and 4 weeks produced leukosis in approx. half the young fowls inoculated. Further experiments using cell-free ultrafiltrates of heart and spleen of leukotic fowls gave positive results in all test animals after 4-5 weeks' cultivation. Control material always gave negative results. The experiments show that it is possible to cultivate leukotic agent in the presence of cultures of normal fibroblasts, and of bone marrow, and that cultivation does not require the presence of primitive blood cells.

E. R. S.

Architecture of colonies of pure strain of fibroblastic sarcomatous cells derived from dibenzanthracene mouse tumour. F. JACOBY (Nature, 1940, 146, 301-302).—Spindle-celled sarcoma tissue was grown on hen plasma coagulum in Carrel flasks and fed with heparin hen plasma or hen serum-chick embryo juice-Tyrode mixture, in which the embryo juice concn. is kept low. Growth takes place in ribbon-like strands or broad sheets; the strands frequently unite and form loops. The appearance is characteristic of the pure strain colony. It is suggested that characteristic architecture is related to the inability of the sarcomatous cells to liquefy the coagulum. E. R. S.

Relationship of body-weight to cancer incidence. A. TANNENBAUM (Arch. Path., 1940, 30, 509-517).—In both animals and man it appears that individuals of average wt. or less are not as likely to have cancer as those who are over-wt. C. J. C. B.

Spontaneous primary carcinoma of prostate in a monkey (Macaca mulatta). E. T. ENGLE and A. P. STOUT (Amer. J. Cancer, 1940, **39**, 334–337). A spontaneous primary carcinoma without metastases was found in the prostate of an old rhesus monkey. F. L. W.

Spontaneous tumours in two colonies of rats of Wistar Institute. H. L. RATCLIFFE (Amer. J. Path., 1940, 16, 237—254).—During a 5-year period, rats from 2 colonies of the Wistar Institute were submitted for examination whenever spontaneous tumours were suspected. Most of the neoplasms were found in surface tissues, the mammary gland being the important focus. The material has been analysed to show age distribution and type of tumours for the colony groups. (4 photomicrographs.) C. J. C. B.

Specific precipitin antiserum for carcinoma protein. L. S. MANN and W. H. WELKER (Amer. J. Cancer, 1940, **39**, 360—364).—Ground human gastric carcinoma tissue was adsorbed on  $Al_2O_3$  cream and injected into rabbits. In 1—6 months precipitins for blood-proteins had disappeared and the anti-serum for gastric carcinoma-proteins thus obtained gave positive reactions with autolysates of the original malignant tissue. 14 different normal human organs gave negative results. The sera of 57% of patients with carcinoma of the stomach gave positive reactions. F. L. W.

Fraction of human urine causing foctus resorption in rats and mice. J. O. ELY (Amer. J. Cancer, 1940, 39, 379—380).—A fraction pptd. by alcohol from the urine of patients with advanced cancer caused resorption in pregnant rats and mice. The substance was also found in the urine of a healthy adult male but in much smaller concn. F. L. W.

**Riboflavin determinations on normal liver and liver tumour.** H. KAHLER and E. F. DAVIS (Proc. Soc. Exp. Biol. Med., 1940, 44, 604—606).—Fluorescence of extracts is determined before and after riboflavin is destroyed at  $p_{\rm H}$  11. Normal and cirrhotic rat livers had a content of 30 µg. per g. Liver tumours, caused by prolonged feeding with 2-amino-5-azotoluene, and the residual liver tissue had a lower content although the muscle content was the same in all cases. V. J. W.

Routine micro-filming of tumour slides. C. A. HELLWIG (Amer. J. Clin. Path., Tech. Suppl., 1940, 4, 95—99).—A simple, inexpensive microphotographic device is described. C. J. C. B.

Direct and indirect effects of Roentgen radiation on the blood-forming organs of rats. C. L. Hsü and W. C. MA (Amer. J. Cancer, 1940, 39, 319-333).—The posterior surfaces of the right hind limbs of rats were irradiated with X-rays in doses of 1000, 2500, or 5000 r. The bone marrow of both femurs, the submaxillary lymph nodes, and the spleens were examined. Changes in these organs varied directly with the dosage. In the bone marrow both on the irradiated and on the non-irradiated side increase of fat cells, hyperplasia of erythrocytes, and hypoplasia of leucocytes were observed. In the lymph nodes, reduction in no. and size of the lymph nodules in the cortex, increase in no. and size of the sinusoids in the medulla, and increase in plasma cells occurred. Lymph follicles or cords were reduced in the white pulp of the spleen. There was an increase of the red pulp. F. L. W.

Experimental hibernation of metastatic growths. A. M. VAUGHN (J. Amer. Med. Assoc., 1940, 114, 2293—2298).—Experimental hibernation in 6 cases of hopeless metastatic carcinoma caused relief of pain in 2 cases but no other benefits were seen. C. A. K.

Cytologic studies of sarcomas of bone. R. D. FAIRCHILD (Proc. Staff Mayo Clin., 1939, 14, 651-656).—The macronucleolus is a characteristic of the cell in osteogenic sarcoma and in fibrosarcoma. The calculation of the nuclear-nucleolar ratio in osteogenic sarcoma is of definite val. as it is usually a smaller whole no. than that in reparative regenerative tissue. The calculation of the nuclear-nucleolar ratio in all other malignant tumours of bone and in fibrosarcomas is of only relative val. However, if a ratio of less than 20:1 is found, the tissue is probably malignant. The nucleoli of the giant cell in malignant giant-cell tumours is definitely enlarged as compared with the nucleoli in the giant cell of benign giant-cell tumours. The ratio of the nucleus to the nucleolus in malignant giant-cell tumours is a smaller no. than the ratio of nucleus to nucleolus in the benign giant-cell tumour. H. H. K.

Blood serum sedimentation test for carcinoma. K. Ko (Klin. Woch., 1940, **19**, 60–63).— Sérény's method of measuring the reaction of heatcoagulated blood serum to NaOH was applied in 150 patients. Sedimentation was accelerated in gastrie and duodenal ulcers after severe hæmorrhage, in carcinoma with cachexia, in grave pneumonias, in nephrosis and cardiac decompensation. In most of these cases a diminution in the albumin content and in the albumin–globulin ratio occurred. Repeated tests distinguished gastric ulcer and gastric carcinoma. M. K.

Experience with Pfeiffer crystallisation method for diagnosis of cancer. O. C. GRUNER (Canad. Med. Assoc. J., 1940, 43, 99—106).—The Pfeiffer test is described, and the results of a series of 208 cases presented. Of these 122 were proved cases of cancer, both treated and untreated; 35 other cases were clinically free of cancer; the remainder are not finally diagnosed. Taking the cases of the first 2 groups in which there is no doubt about the nature of the case, the readings were correct in 90.1% of cancer cases and 91.1% of the non-cancer cases.

C. J. C. B.

Occurrence and significance of congenital malignant neoplasms. H. G. WELLS (Arch. Path., 1940, 30, 535-601).—A crit. review. C. J. C. B.

Specific hypersusceptibility in infections and cancer. A. ZIRONI (Klin. Woch., 1939, 18, 1224– 1227).—A review. M. K.

Incidence of cancer in Pittsburgh and Alleghenny County, Pennsylvania, 1937. A. J. McDowELL (U.S. Publ. Health Repts., 1940, 55, 1419-1451).-319 cases per 100,000 of population are reported. It is probable that many cases are unreported, so that this incidence may be up to 34% below the true prevalence. The median age of cases reported was 59 for males and 57 for females. E. B. M. K.

Disabling morbidity and mortality from cancer among male employees of an oil-refining company with reference to age, site, and duration, 1933—1938. W. M. GAFAFER and R. SIT-GREAVES (U.S. Publ. Health Repts., 1940, 55, 1517).— Cancer of the digestive system was relatively more common among these employees than among the general population. Cases of cancer of the lung showed the longest survival. E. B.

#### (xviii) NUTRITION AND VITAMINS.

Value of lactose in infant feeding. G. MALYOTH and S. KIRIMILLDIS (Klin. Woch., 1939, 18, 1240— 1245, 1270—1274).—β-Lactose is useful clinically.

Pseudo-hypophysectomy: a condition resembling hypophysectomy produced by malnutrition. M. G. MULINOS and L. POMERANTZ (J. Nutrition, 1940, **19**, 493-504).—Effects of chronic inanition especially those on endocrine organs in rats resemble those of hypophysectomy. A. G. P.

Effect of wheat diet on painful complications and sequelæ in leprosy. R. G. COCHRANE, M. PAULRAJ, and M. D. SALMOND (Indian J. Med. Res., 1940, 27, 963—969).—Administration of a wholewheat diet helps patients complaining of severe pain. H. B. C.

Value as structural units of the bacterial protein produced from non-protein compounds in the rumen, based on the established physiological protein minimum. Bacterial action in the rumen and its importance for deficiency phenomena. V. W. KLEIN, H. SCHMID, E. STUDT, and R. MÜLLER (Z. Tierzucht., 1939, 43, 76-119).-Bacterial protein produced in the rumen of sheep from the non-protein-N of molasses is equal in feeding val. to a mixture of hay and cereal protein. The min. protein requirement for health was 410 g. per 1000 kg. body-wt. and the same val. was found even when the N was supplied as amides in the fodder or as plankton in the rumen. With less than 400 g. of digestible protein signs of ill-health, e.g., licking or wool-eating, appeared. These signs were always associated with the disappearance of the useful bacteria from the rumen. When the undesirable flora in the rumen were reduced signs of illness disappeared even without increase in the protein ration. In long-term experiments, animals receiving less than the min. protein limited their metabolism in such a way that the urinary output of N fell to the equiv. of the digestible protein. Under these conditions an unhealthy muscular atonicity appeared, but disappeared again when the desirable rumen bacteria reappeared. M. A. B.

Microbiological observations on digestive processes in ruminants, especially the conversion of nitrogen compounds. H. SCHMID (Z. Tierzucht., 1939, 43, 239-253).—Sheep were fed on a ration containing 88% of the N in sol. form, and the total and sol. N contents of the rumen juice determined 2, 7, 12, and 19 hr. after a meal. The total N content of the fodder was unchanged while it remained in the rumen, but the sol. N decreased to less than 5% after 1 hr., while bacterial nos. increased considerably. This was very marked when 60% of molasses-N was replaced by  $NH_4$  salts. That bacterial protein was digested was shown by the reappearance in the small intestine of over 60% of the N in sol. form. The lower total N content in the cæcum indicated absorption of some of this sol. N.

M. A. B.

Combustion of carbohydrates in man after ingestion of common foods. T. M. CARPENTER (J. Nutrition, 1940, 19, 423-435).-The increase in carbohydrate combustion in the post-absorptive condition (calc. from the total respiratory exchange and urinary N excretion) during 3 hr. after ingestion rises with the proportion of reducing and hydrolysable sugars in the food and is inversely related to the starch and fat contents. "Sweet" vegetables (parsnip, carrot, beetroot) caused the greatest, and nuts, macaroni, potatoes and bread the smallest, increases. The increase was greater when raw than when cooked carrots were eaten; the reverse was true of potatoes. Sucrose and dates caused a marked, sudden, but short-lived increase; that produced by glucose was slower but more persistent. With parsnips readily digestible carbohydrates were burned first; the more complex carbohydrates were liberated and became available later. With nuts the increase in carbohydrate combustion was small but continuous and was greater with cashew than with other nuts.

A. G. P.

Effects of simple dietary alterations on retention of positive and negative minerals by children. I. G. MACY, F. C. HUMMEL, H. A. HUN-SCHER, M. L. SHEPHERD, and H. J. SOUDERS (J. Nutrition, 1940, 19, 461-476).—By varying the proportion of banana, apple, and cereals in diets the total mineral content was maintained at approx. the same level but differences in the amounts of component positive and negative elements were introduced. Growth responses of children to these changes are examined. The intake of individual mineral elements or groups of elements is of greater significance in controlling growth than is the total mineral intake. A. G. P.

Retention of calcium and phosphorus by preschool children. H. B. PIERCE, R. G. DAGGS, A. B. MESERVEY, and W. J. SIMCOX [with D. H. HOWE and M. W. FOOTE] (J. Nutrition, 1940, **19**, 401–414).— Substitution of  $Ca_3(PO_4)_2$  for part of the milk-Ca in the diet of children of 4–6 years did not alter the retention of Ca and P. For max. retention of Ca a daily intake of more than 700 mg. was necessary.

A. G. P. Calcium, phosphorus, and lead retention. L. G. LEDERER and F. C. BING (J. Amer. Med. Assoc., 1940, 114, 2457—2461).—Experiments on young albino rats showed that the amount of Pb stored in the body is diminished by the addition of  $CaCO_3$  to the diet, but is unaffected by adding  $PO_4^{\prime\prime\prime}$ . Ca acts by preventing absorption of Pb from the intestinal tract. C. A. K.

Iron utilisation in dogs on milk diets. D. V. FROST, C. A. ELVEHJEM, and E. B. HART (J. Nutrition, 1940, 19, 311-320).—The Cu and Fe requirements of dogs are in the approx. ratio 1.5. For dogs showing a daily increase in wt. of 100 g., the requirement is slightly below 10 mg. of Fe daily. Fe is stored even when supplied in small amounts but becomes available for production of hæmoglobin only in presence of Cu. The % utilisation of Fe is dependent on various dietary factors and may approach 100% when only the theoretical amount is given. Co is probably necessary for max. hæmatopoiesis. A. G. P.

Wheat as a dietary source of iron. A. H. FREE and F. C. BING (J. Nutrition, 1940, 19, 449— 460).—Approx. 80% of the Fe in wheat exists in inorg. forms. The Fe of wheat is as available to anamic rats as is that in FeCl<sub>3</sub>. In both cases 50% of the total Fe ingested is retained. A. G. P.

Effectiveness of arsenic in preventing selenium poisoning. K. P. DUBOIS, A. L. MOXON, and O. E. OLSON (J. Nutrition, 1940, **19**, 477–482).—In preventing the toxic action of Se on rats  $Na_3AsO_3$ and  $Na_3AsO_4$  were equally effective. Se in seleniferous wheat,  $Na_2SeO_3$ , or selenocystine is equally satisfactorily counteracted by  $Na_3AsO_3$ . As was effective in treating rats fed Se for 20 days but not after 30 days. A. G. P.

Adequate vitamin dosage. P. W. BROWN (Proc. Staff Mayo Clin., 1940, 15, 215–217).—A review. "H. H. K.

Interrelationship between carotene and thyroid during growth of rats. L. DI BELLA (Boll. Soc. ital. Biol. sperim., 1940, 15, 402–403).—Administration of 1 µg. of carotene ( $\alpha + \beta + \gamma$ ; 80%  $\beta$ ) per g. per day to rats increases their rate of growth before or after thyroidectomy, the growth rate of normal, non-carotene-fed rats being greater than that of thyroidectomised, carotene-fed rats. F. O. H.

Vitamin-A requirement in man. W. VON DRIGALSKI (Klin. Woch., 1939, 18, 1269—1270; cf. A., 1940, III, 231).—The daily optimal vitamin-A requirement of a healthy adult is 5.9 µg. of  $\beta$ -carotene = 9800 i.u. of -A. The -A deficiency test (72 days on an -A-free diet) produced early slight hypovitaminosis, but the reserves accumulated in the liver lasted for several months. M. K.

Mobilisation of vitamin-A by alcohol. L. B. PETT (Science, 1940, 92, 63).—Unaccountably short times of recovery from vitamin-A deficiency follow the taking of alcohol by patients. This is explained by the work of Clausen *et al.* (A., 1940, III, 673).

É. R. S.

Serum-vitamin-A in fever. W. THIELE and J. SCHERFF (Klin. Woch., 1939, 18, 1275—1277).— Vitamin-A content of serum is decreased in fever; the carotene level remains unchanged. The formation of -A from carotene is apparently disturbed by damage to the reticulo-endothelial system. M. K.

Disturbance in vitamin- $B_1$  metabolism. S. MOLNAR and J. PETRANYI (Klin. Woch., 1939, 18, 1191—1193).—Vitamin- $B_1$  was eliminated quantitatively unchanged, after injection into a patient with trigeminal neuralgia; neuralgic symptoms persisted. Parallel injection of cortin decreased the excretion of  $-B_1$ , and the pain almost disappeared. M. K. Induced vitamin- $B_1$  deficiency in human subjects. R. D. WILLIAMS, H. L. MASON, and B. F. SMITH (Proc. Staff Mayo Clin., 1939, 14, 787-793). -4 young women were on a diet deficient in thiamin chloride for a period of 21 weeks. In the last 11 weeks the daily output of thiamin in the urine fell to an average val. of 14 µg. Anorexia, fatigue, loss of wt., absence of, or low, free gastric acid, constipation, and inconstant tenderness of the muscles of the calves were observed in all 4 cases. Abnormalities in the e.c.g. developed; the amplitude of all complexes decreased, especially in the T waves of apex leads. Recovery promptly followed parenteral administration of small doses of thiamin chloride (4 mg.) within 12 days. H.H.K.

Aneurin monophosphate. F. SCHLENK, R. B. VOWLES, and H. VON EULER (Arkiv Kemi, Min., Geol., 1940, 13, B, No. 20, 6 pp.).—The monophosphate, added alone or with cocarboxylase, does not inhibit the rate of fermentation of pyruvic acid. It increases the rate very slightly, the effect being probably non-sp. and due to products of hydrolysis since it is not proportional to the amount of monophosphate. Serum-phosphatase hydrolyses cocarboxylase but, if monophosphate is thus produced, the amount is small. The monophosphate is quantitatively hydrolysed by the phosphatase as rapidly as is cocarboxylase. The monophosphate, injected into vitamin-B-deficient rats, decreases the pyruvic acid content of the blood to the same extent as does aneurin. W. McC.

Fluorimetric determination of vitamin- $B_1$  in tissues. III. Pyrophosphoric ester (cocarboxylase). IV. Normal and  $B_1$ -avitaminotic animals. L. DE CARO and L. BUTTURINI (Boll. Soc. ital. Biol. sperim., 1940, 15, 404-406, 406-407). --III. Vitamin- $B_1$  and its pyrophosphate are determined by the application of the fluorescence method before and after hydrolysis with taka-diastase preps.

IV. Tabulated data for liver, muscle, and brain of rat and pigeon show that the content of esterified  $-B_1$  is always greater than that of free  $-B_1$ , both levels falling during avitaminosis- $B_1$ . F. O. H.

Chemical determination of vitamin- $B_1$  and cocarboxylase in organs. F. WIDENBAUER (Klin. Woch., 1939, 18, 1613—1614).—A modification of Jansen's thiochrome method was used and the total amount of aneurin in the organs of man, rats, and guinea-pigs determined. M. K.

Thiochrome method for estimation of aneurin ; survey of aneurin content of wheats. R. G. BOOTH (J.S.C.I., 1940, **59**, 181–182).—An improved thiochrome technique for the estimation of aneurin in foodstuffs is described. A survey of 46 commercial wheats (excluding *Triticum durum*) showed a range of 0.54-2.60 i.u. per g. with an average val. of 1.25. 27 English wheats ranged from 0.78-1.98 i.u. per g. (average 1.39), whilst for 5 samples of *durum* wheat the range was 1.65-3.33 (average 2.37).

Nicotinic acid potency of food materials and certain chemical compounds. H. A. WAISMAN, O. MICKELSEN, J. M. MCKIBBIN, and C. A. ELVEHJEM (J. Nutrition, 1940, **19**, 483–492).—Biological assay of nicotinic acid in foods is effected by means of blacktongue dogs maintained on the modified Goldberger diet. The nicotinic acid content of meats and meat products was 10—110, of yeast 30—100 mg. per 100 g, of dry matter, and of liver extracts 200—450 mg. per 100 g. Quinolinic acid was ineffective as a substitute for nicotinic acid when injected for blacktongue. Pyrazine-mono- and -2:3-dicarboxylic acids, and thiazole-5-carboxylic acid had little or no activity for this purpose. A. G. P.

The anti-grey hair vitamin : new factor in the vitamin-B complex. G. LUNDE and H. KRING-STAD (J. Nutrition, 1940, **19**, 321—332; cf. A., 1940, III, 234).—In addition to known factors in the vitamin-B complex, rats require 2 additional factors,  $-B_w$ , a growth factor probably the filtrate factor "W" of Elvehjem, and  $-B_x$  which prevents the greying of black hair.  $-B_w$  is sol. in phenol, acetaldehyde, and water but not in (acid) ether, and is destroyed by autoclaving for 8 hr. at 120°. Liver and yeast are excellent sources of  $-B_w$ .  $-B_x$  is also abundant in yeast and liver, is sol. in phenol, and (in liver) is destroyed by autoclaving for 3 hr. at 100°.  $-B_x$  is necessary for the normal development of the pelt of silver foxes.

A. G. P.

Factor II deficiency in dogs. P. J. FOUTS, O. M. HELMER, and S. LEPKOVSKY (J. Nutrition, 1940, 19, 393—400).—On a diet adequately supplemented with thiamin chloride, riboflavin, nicotinic acid, and vitamin- $B_6$  and deficient only in factors present in purified liver extract, dogs developed deficiency symptoms characterised by loss of appetite and wt., intermittent diarrhœa, moderate anæmia, and finally death. Short-haired but not long- or wire-haired dogs showed ulcerations of the skin. This condition may be due to lack of chick anti-dermatitis factor alone or together with other undetermined factors.

A. G. P.

160 days of vitamin-C free diet in man. H. RIETSCHEL and H. SCHICK (Klin. Woch., 1939, 18, 1285—1289).—No symptoms of vitamin-C deficiency were observed. The -C content of plasma decreased rapidly from 0.7 to 0.2 mg.-% and then slowly to 0 mg.-%, after 100 days. M. K.

Vitamin-C nutrition in pellagra. G. A. GOLD-SMITH, A. T. OGAARD, and D. F. GOWE (Amer. J. med. Sci., 1940, 200, 244—249).—The state of vitamin-C nutrition was studied in 18 patients with pellagra. An ascorbic acid deficiency was found in 8 of 14 patients on whom intravenous or oral tolerance tests were performed. Four additional pellagrins showed less than the normal amount of ascorbic acid in the blood during fasting. 3 persons who had recovered from pellagra and who later presented symptoms suggestive of a deficiency state were found to have a depletion of the -C stores of the body. C. J. C. B.

Vitamin-C content of germinated cereals. M. C. MUTHANNA and B. AHMAD (Current Sci., 1940, 9, 320-321).—The vitamin-C content of germinating cereals increases until the leaves appear, after which it decreases. The max. yield occurs in 72—96 hr. with wheat, bajra, and jowar; maize and rice germinate more slowly. J. L. D. **Prophylaxis of rickets.** H.<sup>31</sup> RIETSCHEL, H. HORSTER, and H. MISSLBECK (Dtsch. med. Wschr., 1940, **66**, 141—142).—Single oral administration of vitamin- $D_3$  (7—8 mg.) lowered the no. of children suffering from rickets from 35 to 3.5% (217 cases). - $D_3$  should be given prophylactically in October-November. A. S.

**Prophylaxis of rickets with vitamin-D\_2 and** - $D_3$ . H. J. HARTENSTEIN (Dtsch. med. Wschr., 1940, **66**, 143—144).—66% of 354 infants examined suffered from rickets. Rickets was observed after a single oral administration of 4.5 mg. of vitamin- $D_2$  in 62%; after the same dose of  $-D_3$  in 24% of the cases. 6 mg. of  $-D_3$  prevented the occurrence of rickets.

A. S.

Cure of nutritional muscular dystrophy in the rabbit by a-tocopherol: its effect on creatine metabolism. C. G. MACKENZIE and E. V. MCCOL-LUM (J. Nutrition, 1940, 19, 345-362; cf. A., 1939, III, 1075).—Nutritional muscular dystrophy in rabbits, resulting from deficiency in a fat-sol. factor, is cured by administration of a-tocopherol; prolonged treatment prevents recurrence of the disease. The antidystrophic requirement of  $\alpha$ -tocopherol for the rabbit does not exceed 1 mg. per kg. body-wt. daily. The antidystrophic factor present in the unsaponifiable portion of wheat-germ oil is confined to a fraction rich in vitamin-E and is destroyed by treatment with FeCl<sub>3</sub>. Deficiency of the factor results in a rapid increase in urinary creatine which is not due to loss of wt. or starvation. Administration of -E increases urinary creatine within 24-48 hr.

A. G. P. Nature of the by-product in the synthesis of vitamin- $K_1$ .—See A., 1940, II, 351.

Vitamin-P in purpura hæmorrhagica due to arsenic. D. R. GORRIE (Lancet, 1940, 238, 1005— 1007).—Vitamin-P was successfully used in a case of severe purpura hæmorrhagica occurring after 7 injections of neoarsphenamine. C. A. K.

Nutritional encephalomalacia and some factors accelerating its onset. T. G. NI (Chinese J. Physiol., 1940, 15, 181–188).—If chickens were given the diet previously described (cf. A., 1938, III, 411) with the addition of the lipin extracted from donkeyskin gelatin with alcohol, ether, or light petroleum, or of halibut-liver oil and carotene instead of codliver oil, the brain lesions were worse and symptoms appeared earlier. N. H.

## (xix) METABOLISM, GENERAL AND SPECIAL.

Seasonal metabolic and endocrine rhythms in domestic fowl. C. F. WINCHESTER (Missouri Agric. Exp. Sta Res. Bull., 1940, No. 315, 1—52).—There is a parallelism between fasting energy metabolism and egg production in the domestic fowl during the first productive year, between heart rate and metabolic rate, and a profound depression of egg production after thyroidectomy, which is restored by thyroxine injections. Egg production declines with excess thyroxine administration. Approx. 2 mg. of thyroxine per kg. was required to restore egg production to 60% of normal. A modified Regnault–Reiset metabolism apparatus, and an adaptation of an electric stethoscope to the measurement of heart rates of resting fowls in closed chambers, are described. There is a crit. review of the literature of photoperiodicity and thermoperiodicity (137 references). E. R. S.

Estimations of metabolism with Zeiss interferometer. W. KINDER (Klin. Woch., 1939, 18, 1623—1625). M. K.

Effect of electrolytes on respiration of pigeon breast muscle. A. KLEINZELLER (Biochem. J., 1940, 34, 1241—1244).—The optimum K concn. for respiration of pigeon breast muscle is 0.0385M. in the presence of 0.002M-PO<sub>4</sub><sup>'''</sup> and 0.0425M-NaCl, but it is only 0.0034M. in the presence of 0.02M-PO<sub>4</sub><sup>'''</sup>, 0.092M-NaCl, and 0.00085M-MgSO<sub>4</sub>. Mg and K are partially mutually replaceable, and the optimum concn. of Mg varies between 0.00085 and 0.01M. Mn effects only an initial increase in respiration in PO<sub>4</sub><sup>'''</sup> buffer in a concn. of 0.00075M., and therefore cannot replace Mg. P. G. M.

Fate of oxaloacetate in animal tissues. H. A. KREBS, L. V. EGGLESTON, A. KLEINZELLER, and D. H. SMYTH (Biochem. J., 1940, 34, 1234—1240).—Experimental results with pigeon breast muscle and liver, sheeps' heart, and guinea-pig kidney show that the net result of the metabolism of oxaloacetate is represented thus: 4 oxaloacetate  $\rightarrow$ /21 malate +  $\alpha$ -ketoglutarate + 3CO<sub>2</sub>. This supports the occurrence of the citric acid cycle, which also occurs in brain and testis, but does not quantitatively account for the metabolism of oxaloacetate in these latter tissues, in which other unknown reactions take place. P. G. M.

Utilisation of *l*-glucose by mammalian tissues and bacteria. H. RUDNEY (Science, 1940, 92, 112—113).—*l*-Glucose is neither oxidised nor fermented by slices of rat brain or sarcoma 39, nor does it affect oxidation or fermentation of *d*-glucose. 85% of the *l*-glucose administered intravenously to a rat was recovered unchanged in 24 hr. from the excreta. No growth of *B. coli communis (Escherichia)* or *Bact. aërogenes* on *l*-glucose and a synthetic salt or Dunham's peptone medium was found. Both grew on *d*-glucose. E. R. S.

Deamination of d- and l-glutamic acid by sliced and pulped sarcoma and kidney. B. SKARŻYNSKI and H. VON EULER (Arkiv Kemi, Min., Geol., 1940, **13**, **B**, No. 17, 8 pp.).—Sarcoma dehydrogenates d-glutamic acid approx. as rapidly as does kidney, the rates being the same with slices as with pulp. l-Glutamic acid is readily dehydrogenated by kidney slices and much more slowly by pulp. When kidney slices are replaced by sarcoma slices the rate of dehydrogenation is diminished by approx. 86%, but the diminution produced by pulping is less than in the case of kidney. W. McC.

Protein anabolism in organs and tissues of pregnant rats at different levels of protein consumption. L. J. Poo, W. LEW, D. D. DEE, and T. ADDIS (J. Nutrition, 1940, 19, 505-515).—The amount of newly formed protein in pregnant rats receiving low-protein rations was less than, and in those receiving high-protein rations was greater than, in non-pregnant females, the proportion increasing with rise in dietary protein up to a max. and subsequently declining. The concn. of protein in tissues and organs of pregnant was less than in non-pregnant rats at all levels of protein consumption, the principal effect of pregnancy being an increase in liver-protein. The relatively lower protein concn. in organs during pregnancy is not due to increased hormone activity. At the end of pregnancy the gross distribution of protein (organ- or tissue-protein per 100 g. of total protein) is not appreciably influenced by the dietary protein level. Of the total body-protein 8% appears in uterus and embryos, 80% in carcase and blood, and 12% in internal organs. A. G. P.

Maintenance of nitrogen equilibrium on aminoacids administered parenterally. S. S. ALT-SHULER, H. M. HENSEL, and M. SAHYUN (Amer. J. med. Sci., 1940, 200, 239—244).—A mixture of aminoacids containing all the essential amino-acids was prepared which could be administered to normal and postoperative patients subcutaneously or intravenously without untoward reactions. Both subcutaneous and intravenous methods of injection were efficient. The parenteral administration of aminoacids mixture could be substituted for protein in the diet to maintain the patient in N balance. In postoperative cases where food intake is not possible, the amino-acid mixture was almost completely utilised and helped to maintain N equilibrium.

C. J. C. B.

(A) Amino-acids required for the complete replacement of endogenous losses in the adult rat. (B) Interdependence among amino-acids in their utilisation in endogenous metabolism. E. W. BURROUGHS, H. S. BURROUGHS, and H. H. MITCHELL (J. Nutrition, 1940, 19, 363-384, 385-391).-(A) Lysine, leucine, histidine, arginine, and phenylalanine are all required for growth of rats but none is necessary for the replacement of endogenous N losses. Adult rats require both cystine and methionine for the maintenance of N equilibrium. The cystine requirement is met by dietary methionine but dietary cystine does not provide for the methionine requirement. In the endogenous metabolism tyrosine or tissue constituents derived from it are destroyed; phenylalanine is not destroyed. Such losses are replaced by either dietary tyrosine or dietary phenylalanine. N equilibrium can be maintained by a supply of threenine, isoleucine, tryptophan, valine, methionine, tyrosine, and norleucine.

(B) 30-50% of the N lost in endogenous catabolism can be replaced by a variety of incomplete dietary combinations of amino-acids, no sp. amino-acids being necessary. The remainder of the maintenance N requirement demands the simultaneous presence of certain combinations of essential amino-acids. Threonine and *iso*leucine singly or together limit the utilisation of other essential amino-acids. Endogenous N losses involve destruction in tissues of numerous N constituents of relatively simple structure.

A. G. P.

Biological demethylation of sarcosine to glycine. K. BLOCH and R. SCHOENHEIMER (J. Biol. Chem., 1940, 135, 99-103).—Following the inclusion

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of isotopic sarcosine or isotopic glycine in the diet of rats, the isotope concn. in the glycine of the proteins is found to be high and that of other amino-acids low. Sarcosine is demethylated directly and very rapidly by the rat to form glycine. E. M. W.

Citrulline to replace arginine in diet of the chick. A. A. KLOSE and H. J. ALMQUIST (J. Biol. Chem., 1940, **135**, 153—155).—Chicks on a lowarginine diet can use citrulline (1%), but not ornithine, creatine, or guanidine, to replace supplementary arginine. 2% of ornithine is detrimental to growth. E. M. W

Choline metabolism. IV. Relation of age, weight, and sex of young rats to occurrence of hæmorrhagic degeneration on low-choline diet. W. H. GRIFFITH (J. Nutrition, 1940, 19, 437-448; cf. A., 1940, III, 327).—On a low-choline diet containing 0.3% of cystine hæmorrhagic degeneration occurred in male rats (20-30 days old) within 10 days. The choline requirement of rats probably diminishes after 30 days of age. Effects of choline deficiency appeared more slowly and were less severe in female than in male rats of the same age and wt. Choline administration accelerated recovery from the acute stage of the degeneration. Following 7 days' feeding on a lowcholine diet the increase in kidney wt. in rats 20 days old and 24-30 g. in wt. was proportional to the severity of choline deficiency. A. G. P.

Cystine and methionine deficiency in mouldproteins. C. E. SKINNER and A. E. MULLER (J. Nutrition, 1940, **19**, 333–344).—Growth of rats receiving Aspergillus nidulans, A. oryzæ, Geotrichum lactis, Penicillium flavo-glaucum, P. roqueforti, and two other Penicillium species as sole source of protein was greatly improved by addition of cystine or methionine but not by that of alanine or an equiv. amount of mould to the diet. A. G. P.

Intermediary fat metabolism [in diabetes]. H. J. BANSE (Klin. Woch., 1939, **18**, 1180—1183).—Increased blood-cholesterol in diabetics was often connected with poor response to insulin. The val. was lowered by a carbohydrate-rich and fat-poor diet.

M. K. Effect of added carbohydrate on stabilised insulin-treated diabetics. M. FABRYKANT and H. J. WIENER (Amer. J. med. Sci., 1940, 199, 834— 840).—Examination of the urine at 24-hr. intervals during the 3 days following the glucose tolerance test appears to be more useful in determining carbohydrate tolerance than the simple test. In the cases reported, the usual tests would have indicated either more insulin or less carbohydrate, although further examinations as described showed that neither step was indicated as they appeared to retain a high % of the glucose given in the test. C. J. C. B.

Dextrose tolerance curves in nervous and mental patients. G. W. ROBINSON and P. SHELTON (J. Amer. Med. Assoc., 1940, 114, 2279—2284).— Records of 69 patients are presented. C. A. K.

**Pyruvic acid metabolism.** H. VON EULER and B. HögBERG (Arkiv Kemi, Min., Geol., 1940, **13**, **B**, No. 16, 5 pp.).—The pyruvic acid content of the blood of young rats into which Jensen sarcoma has been implanted is much greater than that of healthy rats. The effect of the sarcoma is greatly diminished by subsequent administration of large doses of aneurin. Injection of suspension of *B. coli* also increases the pyruvic acid content. In some persons suffering from cancer, slight or moderate increases in the pyruvic acid content of the blood are observed. W. McC.

**Turnover rate of nucleic acid.** L. HAHN and G. HEVESY (Nature, 1940, **145**, 549).—Labelled Na phosphate was administered to animals. Lower limits of rates of exchange of inorg. and org. P are low in liver, higher in thymus and muscle. No exchange was found *in vitro*. E. R. S.

Mineral metabolism with aid of induced radioactive isotopes. IV. Manganese. D. M. GREEN-BERG and W. W. CAMPBELL (Proc. Nat. Acad. Sci., 1940, 26, 448—452; cf. A., 1939, III, 1079).—<sup>54</sup>Mn prepared by bombardment of Fe with deuterons can be used for "tracer" studies on metabolism of Mn. On a normal control diet rats excrete more than 90% of the Mn within 75 hr. when administered either by stomach tube or by intraperitoneal injection. Most of the Mn is excreted in the fæces, and very little, if any, is present in urine. After oral administration liver, bone, muscle, and blood contain the largest amounts of Mn, whilst after injection Mn is present in skin, bone, liver, muscle, small intestine, and stomach, the skin and bone showing rather large amounts. J. N. A.

Comparison of metabolism of iodine and element 85 (eka-iodine). J. G. HAMILTON and M. H. SOLEY (Proc. Nat. Acad. Sci., 1940, 26, 483–489).— Element 85 (prepared by bombardment of Bi with  $32 \times 10^6$ -e.v.  $\alpha$ -particles) is accumulated in the thyroid gland and excreted in a manner similar to that of I. The uptake of radioactive I (prepared by bombardment of Te with  $16 \times 10^6$ -e.v. deuterons) and element 85 by thyroid glands of different animals is similar but less of the latter is accumulated. The rates of excretion are almost identical. The possibility of using element 85 as a therapeutic agent is discussed. J. N. A.

# (xx) PHARMACOLOGY AND TOXICOLOGY.

Determination of sulphonamides. K. G. KREBS and H. FRANKE (Klin. Woch., 1939, **18**, 1248– 1251).—A review of methods. M. K.

Absorption and excretion of sulphapyridine and of sodium sulphapyridine in man. H. D. RATISH, A. DAVIDSON, and J. G. M. BULLOWA (J. Pharm. Exp. Ther., 1940, **69**, 365—374).—With initial doses of 5 g. of sulphapyridine, followed by 1 g. 4-hourly, blood levels of 4—6 mg. per 100 c.c. were obtained after 12—24 hr. With Na sulphapyridine this level was obtained within 2½ hr. When the Na form is given relatively less of the acetyl form is found in the blood and urine, and the initial blood level is more readily maintained or increased. E. M. S.

Chemotherapy in pneumonia. H. C. HINSHAW (Proc. Staff Mayo Clin., 1939, 14, 769-772).—A review. H. H. K. Chemotherapy of preumonia. P. H. Long Proc. Staff Mayo Clin., 1940, 15, 173-175).—A lecture. H. H. K.

Evaluation of combined effects of sulphapyridine and barbiturates in treatment of pneumonia. W. L. M. KING (Proc. Staff Mayo Clin., 1940, 15, 21-25).—No untoward effects were observed in patients receiving sulphapyridine or sulphanilamide and barbiturates in ordinary sedative doses.

H. H. K.

Use of sulphanilamide in dermatology. R. P. HUGHES (Arch. Dermat. Syphilol., 1940, 42, 33–46). —A review. C. J. C. B.

Sulphonamides for gonorrhœa. R. C. L. BATCHELOR, R. LEES, and G. M. THOMSON (Brit. Med. J., 1940, I, 961—966).—In 810 males and 129 females sulphanilamide and sulphapyridine were equally potent, but the latter was less toxic and was associated with fewer gonococcal complications. Uleron was more toxic than either and albucid had a very feeble curative action. Drug resistance is readily acquired with subcurative doses of sulphonamide and a course of dosage (40 g. in 2 weeks) is suggested. Figures of cure rates are difficult to assess owing to a 50% default rate among the cases seen. C. A. K.

Relapse after sulphapyridine for gonorrhœa. S. M. LAIRD (Brit. Med. J., 1940, I, 967–969).—A late relapse rate of 3.7% occurred after treatment of 162 cases of gonorrhœa with sulphapyridine.

C. A. K.

Sulphanilamide in subacute bacterial endocarditis. J. HEYMAN (J. Amer. Med. Assoc., 1940, 114, 2373—2375).—A case of subacute bacterial endocarditis (blood culture showed *Strep. viridans*) was given small doses of sulphanilamide for 6 months and 1 year later was alive and well with a negative blood culture. C. A. K.

Combined fever and sulphanilamide therapy in subacute bacterial endocarditis. F. H. KRUSEN and R. L. BENNETT (Proc. Staff Mayo Clin., 1940, 15, 328—331).—Treatment produced a transient improvement in 5 cases, and permanent benefit in one

H. H. K.

Antiserum and sulphapyridine in meningococcal infections. C. R. AMIES (Lancet, 1940, 238, 999—1000).—Antiserum + sulphapyridine was more effective than the drug alone in septicæmia produced in mice by intraperitoneal injection of a highly virulent group-I strain of meningococcus suspended in mucin. C. A. K.

Sulphapyridine for cerebrospinal fever. J. H. JORDAN, J. H. BLAKELOCK, and W. R. JOHNSTON (Brit. Med. J., 1940, I, 1005—1008).—The efficiency of sulphapyridine in 160 cases of cerebrospinal fever was slightly enhanced by additional treatment with serum or antitoxin. C. A. K.

Sulphathiazole in bubonic plague. S. S. SOK-HEY and B. B. DIKSHIT (Lancet, 1940, 238, 1040— 1042; cf. A., 1940, III, 667).—Sulphathiazole was much superior to sulphapyridine and about equal to antiplague serum in protecting mice against experimental bubonic plague. If treatment was begun within 48—72 hr. of infection 80—90% of mice were cured. C. A. K.

Sulphamethylthiazole in staphylococcal infections. A. MACDONALD (Lancet, 1940, 238, 1157—1159).—Sulphamethylthiazole was slightly more effective than sulphapyridine in the treatment of mice infected with staphylococci by the intraperitoneal or intravenous routes, about 50% of animals surviving for 21 days after 15 days' treatment. Staphylococcal infections of the skin were not affected by either drug. C. A. K.

H. H. K.

Chemotherapy [with sulphonamides] of lymphogranuloma inguinale and other virus diseases. F. Bär (Z. Immunitätsforsch., 1940, 97, 344—363).—M. & B. 693, uleron, sepatacin, diseptal B and C are among the most effective in curing mice which were intracerebrally infected with lymphogranuloma inguinale. Subcutaneous injection is the most effective. The mode of action is discussed and a summary is given of those virus diseases in which sulphonamides have a curative effect. G. W.

Failure of sulphapyridine to protect against experimental (virus) poliomyelitis. E. C. Rose-Now (Proc. Staff Mayo Clin., 1939, 14, 490—495).— Poliomyelitis was produced in 8 monkeys by inoculation with the virus and treated with sulphapyridine. Dosage was roughly equiv. to the amount used in the treatment of pneumonia in man. Sulphapyridine did not prevent poliomyelitis but seemed to aggravate the disease. It did not prevent the growth of the associated streptococcus. H. H. K.

Effect of  $p_{\rm H}$  on bactericidal power of urine containing sulphanilamide. T. R. SIGKLER (Proc. Staff Mayo Clin., 1939, 14, 715—719).—Bactericidal activity of urine containing sulphanilamide increases when  $p_{\rm H}$  is changed from 6.2 to 7.7. There is also a great variation in the level at which sulphanilamide acts bactericidally on different strains of the same groups of organisms commonly found in urinary tract infections. H. H. K.

Bactericidal effect of sulphathiazole and sulphamethylthiazole on bacteria found in urinary infections. H. F. HELMHOLZ (Proc. Staff Mayo Clin., 1940, 15, 65—68).—Both drugs are bactericidal when given in the usual dosage by mouth. They differ from sulphanilamide and sulphapyridine in that they kill off strains of *Strep. facalis in vitro*. *Strep. facalis* and *Staph. aureus* are killed off by these drugs in lower concn. in the urine than are the Gramnegative bacilli. Of the Gram-negative bacilli the Pseudomonas aeruginosa is the most resistant. H. H. K.

Sulphathiazole and sulphamethylthiazole in treatment of infections, of the urinary tract. T. L. POOL and E. N. COOK (Proc. Staff Mayo Clin., 1940, 15, 113—116).—The urine of patients which was infected with *Staph. aureus* or *Strep. fæcalis* became sterile and remained so after the administration of the drugs. The concn. of the drug in the urine should exceed 150 mg.-%. Both drugs are less toxic than either sulphanilamide or sulphapyridine. H. H. K.

Local treatment with prontosil soluble. J. A. SMITH (Brit. Med. J., 1940, I, 1016—1017).—The successful use of prontosil soluble in empyema, ulcers, and abscesses is reported. C. A. K.

Sulphanilamide therapy and liver damage. W. H. CLEVELAND (Proc. Staff Mayo Clin., 1939, 14, 680-682).—A patient with severe post-operative cholangitis, marked liver damage, and jaundice was given sulphanilamide derivatives without any apparent aggravation of liver damage. H. H. K.

Agranulocytosis after small dose of sulphonamide. A. W. SPAIN (Brit. Med. J., 1940, I, 930).— A woman aged 26 developed fatal agranulocytosis after receiving 4.5 g. of sulphapyridine + 4.5 g. of sulphanilamide. C. A. K.

Leucopenia and mucosal lesions after sulphapyridine. H. M. MAYO and C. FINLAYSON (Lancet, 1940, 238, 1075-1077).—A case report.

C. A. K. Anæmia induced by sulphanilamide in presence of nicotinic acid. G. M. HIGGINS and T. E. MACHELLA (Proc. Staff Mayo Clin., 1939, 14, 692— 694).—Daily administration of nicotinic acid (50 mg. subcutaneously or by stomach tube) did not prevent the development of anæmia and cyanosis after sulphanilamide (1 g. per kg. for 10 days) in rats.

H. H. K.

Chemotherapy of experimental hæmolytic streptococcal infections with gold salts. M. H. DAWSON and G. L. HOBBY (J. Pharm. Exp. Ther., 1940, 69, 359—364).—Aurosodium thiomalate (2 mg.) protected mice infected with 1000 lethal doses of the culture. The salt was most effective when administered at the time of, or shortly after, infection. Its toxic dose is 10 times the therapeutic dose, and it is bacteriostatic to the organism *in vitro*. E. M. S.

Modification of agar cup method of determining fungistatic action of powders and ointments. A. E. MEYER (J. Amer. Pharm. Assoc., 1940, 29, 316—318).—An agar plate is infected with, *e.g.*, *Tricophyton rosaceum* and the ointment or powder is applied to a diametrical canal cut out of the agar gel. F. O. H.

Determination of bactericidal power of disinfectants. E. ADAMI (Boll. Soc. ital. Biol. sperim., 1940, 15, 332—334).—Small glass beads are dipped in an agar culture of the bacteria used for the test, dried over CaCl<sub>2</sub>, dipped in a solution of the disinfectant for a definite period, washed with sterile water, and finally immersed in sterile broth in which any surviving bacteria develop. F. O. H.

Potentiation of adrenaline by ascorbic acid. I. Effect on iris muscle. F. SCHUFFER (Boll. Soc. ital. Biol. sperim., 1940, 15, 382—384).—The mydriatic action of adrenaline (10 p.p.m.) on isolated eye (frog) or iris (ox) is increased by addition of ascorbic acid in concns. above 0.05% (max. effect at 0.1%). F. O. H.

Antagonism between quinine and adrenalinelike substances. M. A. MANOTNI and W. GRAUBNER (Boll. Soc. ital. Biol. sperim., 1940, **15**, 389—391).— The effect of adrenaline, sympathol, or *m*-sympathol on isolated blood vessels (rabbit's ear) is inhibited by simultaneous administration of quinine. The inhibition also occurs with isolated rabbit's heart (incompletely with adrenaline), the effect being evident at a concn. ratio of quinine : sympathol of 1 : 10.

F. O. H. Action of "lachnophyline" on perfused frog's heart. N. V. BODROVA (J. méd. Ukraine, 1939, 9, 843—845).—Lachnophyline, an active pure substance extracted from *Lachnophyllum gossypium*, inhibits or paralyses cardiac automatism. Adrenaline reestablishes the excitability. M. K.

New cardiac glycoside. C. H. WILLIAMS (Nature, 1940, 146, 303).—Asclepias curassavica (Queensland and N.S. Wales) contains cardiac glycosides. A 600-lb. steer was killed in 15 min. by an extract of 2 lb. of plant. The mixture contains  $CHCl_3$ - and water-sol. fractions; from the former a cryst. glycoside, m.p. 130°, was obtained. Legal and Baljet tests were positive. Frogs were killed in  $\frac{1}{2}$  hr. by very small doses; the ventricles were arrested in systole. E. R. S.

Micro-method for digitalis assay. G. H. PAFF (J. Pharm. Exp. Ther., 1940, 69, 311—315; cf. A., 1938, III, 1037).—A curve has been constructed in which the time of appearance of auriculo-ventricular block, in isolated embryonic chick hearts, is plotted against known dilutions of tincture of digitalis. From it, the strength of an unknown prep. is determined, after timing the appearance of block.

E. M. S.

Ethylene anæsthesia. D. GUTHRIE and K. W. WOODHOUSE (J. Amer. Med. Assoc., 1940, 114, 1846—1850).—The use of ethylene in 17,750 cases is described. C. A. K.

Artificial respiration during respiratory anæsthesia by barbiturates. L. DONATELLI and W. INGIULLA (Boll. Soc. ital. Biol. sperim., 1940, 15, 384—386).—Respiratory paralysis induced in rabbits by 5 barbiturates (the necessary, average doses of which varied from 49 to 142 mg. per kg.) was alleviated (and ultimate death prevented) by artificial respiration for periods varying from 3 to 30 min. with the different barbiturates. F. O. H.

Sodium pentobarbital and repeated anæsthesia in rabbits. V. E. KINSEV (J. Amer. Pharm. Assoc., 1940, 29, 292—298).—Repeated, daily, intraperitoneal injections of 44 mg. per kg. of Na pentobarbital (nembutal), dissolved in 0.9% NaCl in alcohol, into rabbits reduces the sleeping period from approx.  $3\frac{1}{2}$  to  $1\frac{1}{4}$  hf. <sup>3</sup> Frequent analythesia is possible if the appropriate frequency and amount of dosage are selected. The liver, heart, and kidney suffer only slight damage. The anæsthesia is not influenced by sex of the rabbit. F. O. H.

Convulsions after vinesthene. F. K. BOSTON (Brit. Med. J., 1940, I, 929).—Case record.

C. A. K. Pulmonary and urinary excretion of paraldehyde in normal dogs and in dogs with liver damage. H. LEVINE, A. J. GILBERT, and M. BODANSKY (J. Pharm. Exp. Ther., 1940, 69, 316— 323; cf. A., 1940, III, 154).—After doses of 1—2 ml. per kg., normal dogs excreted 11—28% by the lungs and 0·1—2·5% in the urine. Following liver damage by deep CHCl<sub>3</sub> anæsthesia, pulmonary excretion increased substantially (due to increased rate or prolonged time of excretion); urinary excretion increased comparatively slightly. E. M. S.

Action of the synthetic antispasmodics, "trasentin" and "trasentin-6H." J. D. P. GRAHAM and S. LAZARUS (J. Pharm. Exp. Ther., 1940, 69, 331—341).—The 50% lethal dose, in mice, of the diethylaminoethyl ester of diphenylacetic acid (trasentin) is 0.29 g. per kg.; that of the diethylaminoethyl ester of phenylcyclohexylacetic acid (trasentin-6H) is 0.24; that of atropine sulphate 0.325. Trasentin-6H has a selective action on the gastro-intestinal tract. In experimental animals it inhibits normal tone and relaxes spasm, caused either by eserine or by Ba (papaverine-like), in doses which have little effect on salivation, size of pupil, heart rate, or respiration. It is 5 times as potent as trasentin as an antispasmodic. E. M. S.

Marihuana. R. ADAMS (Science, 1940, 92, 115– 119).—A description of the plant, methods of prep. of the different hemp products, their effect on the human organism, and substances so far isolated.

E. R. S.

Effect of some narcotics on glucose uptake of dog's brain. I. CHANG and J. M. YU (Chinese J. Physiol., 1940, 15, 269—273).—Sugar was determined in blood from the femoral artery and superior longitudinal sinus. The arterio-venous sugar difference was reversibly decreased by ether, slightly by urethane and amytal, and not by barbital. The flow was not measured. N. H.

Effect of partial hepatectomy on action of certain barbiturates and a phenylurea derivative. C. H. SCHEIFLEY and G. M. HIGGINS (Amer. J. med. Sci., 1940, 200, 264—268).—The duration of anæsthesia in rats produced by ethyl-o-ethylphenylurea and pentobarbital-Na was markedly prolonged following partial hepatectomy. This procedure had no effect on the action of pentothal-Na. Unilateral nephrectomy did not prolong the action of either pentobarbital-Na or pentothal-Na. These data suggest that the liver is instrumental in protecting the animal against the action of ethyl-o-ethylphenylurea and pentobarbital-Na but does not protect against the action of pentothal-Na. C. J. C. B.

Effect of ephedrine on toxicity of local anæsthetics. J. D. P. GRAHAM and M. R. GURD (Quart. J<sup>I</sup> Pharm., 1940, **13**, 122–129).—With subcutaneous injection into mice, 0.2  $\mu$ g. of adrenaline increases the toxicity of procaine or cocaine, whilst 0.066  $\mu$ g. or less is without effect. The toxicity of small doses of cocaine (but not of procaine) is diminished by simultaneous doses of 10  $\mu$ g. per kg., and increased by those of 50  $\mu$ g. per kg., of ephedrine. The 50%-lethal dose of cocaine is 0.156 mg. and that of procaine 0.80 mg. per g. F. O. H.

Detection of cocaine hydrochloride in cerebrospinal fluid by spectroscopic analysis. L. A. STRAIT and R. B. AIRD (Physical Rev., 1938, [ii], 53, 213).—A process making c.s.f. sufficiently transparent to permit in it the detection of the spectrum of cocaine hydrochloride has been developed. The limiting concn. is 0.001 g. per 100 g. L. S. T.

Relief of somatic pain by local anæsthetisation. E. V. ALLEN and E. B. TUOHY (Proc. Staff Mayo Clin., 1940, 15, 58-60). H. H. K.

Benzedrine sulphate and avertin. J. BOYD (Brit. Med. J., 1940, I, 729-730).—Benzedrine sulphate, given intravenously to children after avertin anæsthesia, restored the superficial reflexes, shortened post-operative sleep, and produced vomiting in most cases. C. A. K.

Histaminase in hay fever. E. L. KEENEY (J. Amer. Med. Assoc., 1940, 114, 2448—2449).—Histaminase was ineffective in 15 cases of ragweed hay fever. C. A. K.

Potassium salts in pollinosis. S. S. RUBIN, A. L. AARONSON, M. A. KAPLAN, and S. M. FEINBERG (J. Amer. Med. Assoc., 1940, **114**, 2359–2360).—K salts had no effect in 153 cases of hay fever and seasonal asthma. C. A. K.

Iodobismitol with saligenin in treatment of neurosyphilis. G. V. KLUCHAR, C. W. BARNETT, and J. F. CARD (Arch. Dermat. Syphilol., 1940, 42, 46—52).—The therapeutic effect of iodobismitol with saligenin is rapid and is not increased by prolonged administration. It is enhanced by the addition of either neoarsphenamine or tryparsamide, particularly the latter. Iodobismitol with saligenin is of val. in the treatment of neurosyphilis but should not be used ordinarily as the only form of therapy.

C. J. C. B.

Tempering effect of sodium bismuth thioglycollate (thio-bismol) on therapeutic malaria. L. A. BRUNSTING and W. R. LOVE (Proc. Staff Mayo Clin., 1940, 15, 285—288).—0.1 g. of the drug injected intramuscularly tends to smooth the shock of malaria therapy, yet increases its non-sp. therapeutic effect by means of sharp paroxysms properly spaced and permits an increase in the total no. of paroxysms that may be given to an individual. H. H. K.

Pemphigoid eruption associated with hæmorrhagic nephritis following bismuth therapy. B. SHAFFER and L. H. COLLINS, jun. (Arch. Dermat. Syphilol., 1940, 42, 59-67).—A case is reported in which a generalised bullous eruption and hæmorrhagic nephritis followed Bi therapy. Various tests to demonstrate objectively sensitivity to Bi all gave negative results. C. J. C. B.

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Vaginal melanosis caused by bismuth therapy and carcinoma of the cervix. K. WIENER (Arch. Dermat. Syphilol., 1940, 42, 23–29).—The various types of melanosis caused by Bi medication are reviewed. In a syphilitic patient with an ulcerative cervical\_cancer Bi melanosis of the entire vagina occurred. C. J. C. B.

Effects of iron, manganese, and copper salts in lethal tetanus and botulinus intoxication of mice. H. O. HETTCHE and H. STRASSBURGER (Z. Immunitätsforsch., 1939, 97, 109—120).—Injection of Mn and Fe salts protects mice to a certain degree against the lethal effect of botulinus and tetanus toxin. A combination of Mn and Fe salts is tolerated better and is more effective than either alone. Fe ascorbate produces less side actions than  $FeSO_4$ . Cu salts are unsuitable because of their toxicity and local effects. G. W.

Effects of guaiacol and hexylresorcinol in presence of barium and calcium. W. J. V. OSTERHOUT (J. Gen. Physiol., 1940, 23, 749—751).— Guaiacol or hexylresorcinol was applied on the *Vitella* cell, at one spot dissolved in 0.01M-NaCl, at the other in 0.01M-CaCl<sub>2</sub> or -BaCl<sub>2</sub>. A similar change of potential in a negative direction was observed in all cases. D. M. N.

Relapsing early acute arsenical erythema. E. W. THOMAS and O. CANIZARES (Arch. Dermat. Syphilol., 1940, 42, 30–32).—Report of 2 cases.

Determination of salvarsan in cerebrospinal fluid in syphilis, especially after artificial fever treatment. H. HÜLLSTRUNG and K. H. SCHÖLZKE (Klin. Woch., 1939, 18, 1621–1623).—No salvarsan was found in c.s.f. of experimental rabbits and syphilitic patients after intravenous administration of the drug. M. K.

Change of toxicity of different arsenobenzene preparations by oxidation. Action on arterial and venous blood pressure of rabbits and on isolated frog's heart. K. KONDŌ (Folia pharm. Japon., 1940, 28, 49—50).—Medium doses produce a long-lasting fall of blood pressure and a slight rise of venous pressure. The action of the arsenobenzene prep. on arterial and venous pressures was increased after keeping for 48 hr. in the open air. Fresh and oxidised solution of arsenobenzene base damaged frog's heart, the oxidised solution being more toxic. H. H. K.

Toxicity, treponemicidal activity, and potential therapeutic utility of substituted phenylarsenoxides. I. Methods of assay. H. EAGLE (J. Pharm. Exp. Ther., 1940, 69, 342—354; cf. A., 1939, 111, 933, 934).—A description of methods used to assay the treponemicidal activity *in vitro* of a series of phenylarsenoxides, their therapeutic activity in syphilitic rabbits, and their toxicity in mice and rabbits. E. M. S.

Toxicity of sodium salt of 1:5-diphenylpyrazoline-3-carboxylic acid. F. H. SCHULTZ and R. M. HILL (J. Pharm. Exp. Ther., 1940, 69, 324-330; cf. A., 1940, III, 823).—Acute lethal dosage has been determined in the rat. Toxic effects, depression, and (with larger doses) convulsions were correlated with the fall in body temp. Repeated sublethal doses did not influence the rate of growth.

E. M. S.

Colloidal sulphur-polysulphide mixture. I. Toxicity. H. GREENGARD and J. R. WOOLLEY (J. Amer. Pharm. Assoc., 1940, 29, 289—292; cf. A., 1940, III, 24).—A concentrate  $(p_{\rm H} \ 10.1, \ 55\%)$  of a mineral water had a 50%-lethal dose of 5—10 mg. of colloidal S per kg. when intravenously injected into dogs, rats, and rabbits; the toxicity was less with intraperitoneal (55 mg. per kg. in guinea-pig) or oral (175 mg. per kg. in rabbit) administration. The toxicity (the symptoms of which are described) is due to conversion of S into H<sub>2</sub>S. Ingestion of 750 mg. daily has no effect in man. F. O. H.

Pharmacology of cineole and phellandrene. G. BROWNLEE (Quart. J. Pharm., 1940, 13, 130-137).--Cineole and phellandrene have 50%-lethal doses of 1.68 and 1.87 ml, per kg., respectively, when orally administered to rats. Neither terpene has pyretic or antipyretic activity. In the decerebrate cat, the respiratory centre is first stimulated and then rapidly depressed, blood pressure and pulse rate immediately falling. The bearing of the data on the dietary habits of the Koala bear is discussed. F. O. H.

Exfoliative dermatitis due to naphthalene. S. J. FANBURG (Arch. Dermat. Syphilol., 1940, 42, 53-58).—Report of an eruption resembling mycosis fungoides. C. J. C. B.

Pathological changes produced by subcutaneous injection of rattlesnake (*Crotalus*) venom into *Macaca mulatta* monkeys. H. K. FIDLER, R. D. GLASGOW, and E. B. CARMICHAEL (Amer. J. Path., 1940, **16**, 355—364).—The outstanding lesion is hæmorrhagic ædema at the site of injection which spreads extensively throughout the adjacent subcutaneous tissues. In 6 of 9 animals studied petechial hæmorrhages into the subendocardial tissues of the left ventricle occurred. In the region of the hæmorrhagic ædema necrotic changes were found in the walls of the small blood vessels and capillaries. The regional lymph nodes showed marked hyperplasia of the reticuloendothelial cells, most marked in the medullary portion. (4 photomicrographs.)

C. J. C. B.

Atropine and ergotoxine versus scorpion toxin. A. HASSAN and A. H. MOHAMMED (Lancet, 1940, 238, 1001—1002).—Atropine or ergotoxine may save rats given a lethal dose of scorpion toxin. Both together are more effective than one drug alone in rats and dogs. C. A. K.

Cheilitis and dermatitis from resorcinol and hexylresorcinol. H. J. TEMPLETON (Arch. Dermat. Syphilol., 1940, 42, 138–139).—The drugs were used in tooth paste and mouth wash. C. J. C. B.

Medical aspects of chemical warfare. L. GOLDMAN and G. E. CULLEN (J. Amer. Med. Assoc., 1940, 114, 2200-2204).—A review. C. A. K.

Vesicant chemical warfare agents. L. GOLD-MAN and G. E. CULLEN (Arch. Dermat. Syphilol., 1940, 42, 123-136).—A review. C. J. C. B.

C. J. C. B.

**Potentilla** paserina in essential dysmenprime rhea. A. R. BLISS, jun. (J. Amer. Pharm. Assoc., 1940, **29**, 299–301).—An extract of *P. anserina* (silver weed), having been shown to be non-toxic in animals, was administered in tablet form to 25 cases of dysmenorrhea of various degrees of severity; in 8 of the cases complete, and in 14 partial, relief was obtained. F. O. H.

Administration of drugs to rats. D. NELSON (Science, 1940, 92, 92).—The material to be administered is dissolved or suspended in sucrose solution and administered from a needleless tuberculin syringe by mouth, the rat lying on its back with head slightly raised, at the rate at which the rat laps. E. R. S.

# (xxi) PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Gas warfare. J. KENDALL (Edinb. Med. J., 1940, [iv], 47, 664-674).—A lecture.

Testing of gas masks. G. Rossi and G. SIMONELLI (Arch. Fisiol., 1940, 39, 469–486).

Radiation and "stuffiness." A. R. PEARSON (Nature, 1940, 146, 232).—Pearson and Norris (Brit. J. Radiol., 1933, 6, 480) found only a faint suggestion of an absorption band at  $4\cdot 1$ — $4\cdot 2$   $\mu$ . for human stratum corneum. The emission from a bright source was tolerated for considerably longer than an equal intensity from a dull source of radiation.

E. R. S.

Lung affections caused by mineral pigments. J. HAGEN (Arch. Gewerbepath. Gewerbehyg., 1939, 9, 621-633).—Examination of workers who had been engaged for 15-20 years in grinding and mixing mineral pigments showed moderate silicosis.

M. A. B. Clinical studies and animal experiments on lungs affected by aluminium dust. G. GORALEW-SKI (Arch. Gewerbepath. Gewerbehyg., 1939, 9, 676— 688).—Clinical symptoms in man are described. In rabbits exposed to Al or Cu dust for 1—2 hr. daily over a period of 20—40 days post-mortem examination showed an increase in connective tissue in the lungs similar to that produced by steel and porcelain dusts. M. A. B.

X-Ray studies of fine structure in dustaffected lungs. H. GÄRTNER (Arch. Gewerbepath. Gewerbehyg., 1939, 9, 634-659).—The literature is reviewed. Both the Jones HNO<sub>3</sub> and the Sundius  $H_2O_2$  methods of separating the dust from lung tissue gave good results. The latter method is more rapid. The dust must be examined before as well as after ashing in order to detect heat-sensitive minerals. By comparing the X-ray diagrams of pure minerals and of the dust from the lungs, the presence of harmful minerals may be detected. M. A. B.

Affections caused by light metals. F. UTZ (Arch. Gewerbepath. Gewerbehyg., 1939, 9, 607— 620).—Dural entering small wounds in the skin produces a condition of delayed healing and inflammation which may become chronic. In undamaged skin ache, rosacea, furunculosis, eczema, or diffuse dermatitis may be produced, also inflammation of the mucous membranes. A slight lymphocytosis in the blood is characteristic, but eosinophilia and monocytosis are found only in about 20% of cases. There are no changes in blood pressure and no effect on heart and circulation or on other organs. No serious nervous disturbance occurs but reflex action is often exaggerated. M. A. B.

Affections of the blood vessels in steel casting workers. G. MOSCHINSKI (Arch. Gewerbepath. Gewerbehyg., 1939, 9, 689—697).—The hands of workers using compressed-air hammers show a loss of colour and feeling together with a lowering of temp. as a result of the const. vibration. These effects, which can be produced experimentally by placing the hands in water at 15°, are due to a contraction of the arterioles of the fingers rather than to an affection of the capillaries. No obstructions in the blood vessels were observed. Absorption of nicotine into the system by smoking appeared to have no influence.

M. A. B. Vitamin-C treatment of chronic benzene poisoning in low-pressure workers. J. HAGEN (Arch. Gewerbepath. Gewerbehyg., 1939, 9, 698— 704).—In both animals and man benzene poisoning results in lowered excretion of ascorbic acid, lymphocytosis, and decrease of hæmoglobin and red corpuscles in the blood. Oral administration of 75—105 mg. of vitamin-C daily cured these conditions in 6—7 weeks. M. A. B.

Unusual changes in the sperm in chronic carbon monoxide poisoning. L. RIEDL (Arch. Gewerbepath. Gewerbehyg., 1939, 9, 673-675).--Cases are described in which CO poisoning caused disturbances of the male reproductive functions. Among other changes observed, the spermatozoa showed abnormal forms, which are illustrated. Intravenous injections of Coloxyd (solution of methyleneblue in glucose) continued over 6 weeks combined with a diet having no stimulating effect on the genitals removed the symptoms. M. A. B.

(xxii) RADIATIONS.

Hydræmia following short-wave irradiation. M. CAVAZZINI (Boll. Soc. ital. Biol. sperim., 1940, 15, 410-411).—Irradiation of rabbits by waves of  $\lambda$  6 m. increases hydræmia and produces leucopenia and erythropenia. F. O. H.

Effect of inflammatory factor on degree of sensitivity of neoplasm to X-irradiation. R. CAMERINI and L. GUARDABASSI (Boll. Soc. ital. Biol. sperim., 1940, 15, 411—413).—Clinical observations are discussed. F. O. H.

Increase in ultra-violet absorption of cytoplasm after therapeutic X- and  $\gamma$ -radiation. J. S. MITCHELE (Nature, 1940, 146, 272—273).— The effect was detected after small doses of radiation (248 and 388 r.), but the mean dosage rate is probably a very significant factor in its production. The absorbing material appearing after irradiation is not thymonucleic acid, but at 2537 A. its absorption corresponds with that of a 2% solution of nucleic acid. The magnitude of the observed effect is consistent with the possibility that increased absorption may be due to purine and pyrimidine derivatives. Positive pentose reactions in the cytoplasm were also observed. The absorbing material can be removed from fixed sections by acid hydrolysis and alcohol extraction. It is unlikely that the effect could be due to direct photochemical change produced in the cytoplasm proteins by the radiations. E. R. S.

Action of light in photodynamic phenomena. G. GUERRINI (BoH. Soc. ital. Biol. sperim., 1940, 15, 413—416).—The study of the irradiation of Saccharomyces' cerevisiæ in presence of eosin refutes the view that the action of a photodynamic substance is a function of the radiation absorbed by that substance. F. O. H.

# (xxiii) PHYSICAL AND COLLOIDAL CHEMISTRY.

Nature of the intermolecular forces operative in biological processes. L. PAULING and M. DELBRÜCK (Science, 1940, 92, 77—79).—Jordan's views (A., 1939, III, 1015) are criticised, and the author's own views discussed. L. S. T.

Determination of apparent isoelectric points of cell structures by staining at controlled reactions. N. D. LEVINE (Stain Tech., 1940, 15, 91-112).—If staining intensity is plotted against  $p_{\rm H}$ , a different curve is obtained for each dye, and for any one dye the curve varies with the buffer system used. " Isoelectric points " obtained by superimposing acid and basic dye curves vary for the same material with the dye used. At any  $p_{\rm H}$  the staining intensity varies directly with the dye concn. and inversely with the buffer concn. The staining intensity of a buffered protein at a given  $p_{\rm H}$  val. depends on the interaction of dye-protein, buffer-protein, and dye-buffer systems, and the "isoelectric points" also vary if the dye or buffer or their concns. are varied. No true isoelectric points have been obtained for tissue elements by staining at controlled  $p_{\rm H}$ . Е.Е.Н.

Electrochemical theory of uricolysis in alkaline media. E. BECCARI (Boll. Soc. ital. Biol. sperim., 1940, 15, 375-377).—An expression is derived for the electrochemical potential due to oxidation of uric acid and its degradation to allantoin. F. O. H.

Displacement of adsorbed oxygen by surfaceactive substances. V. ZAMBOTTI (Boll. Soc. ital. Biol. sperim., 1940, **15**, 403—404).—Salts of various bile acids displace  $O_2$  adsorbed on the surface of Hg in polarographic analysis to extents inversely proportional to their ability to lower the water-air interfacial tension. The bearing of the phenomenon on respiration at the surface of cells is discussed.

#### F. O. H.

Apparent molecular shape and mol. wt. of proteins from viscosity and diffusion measurements.—See A., 1940, I, 411.

[Heat of] denaturation of methæmoglobin by alkali.—See A., 1940, I, 419.

# (xxiv) ENZYMES.

Enzyme kinetics. I. MACARTHUR (Proc. Leeds Phil. Soc., Sci. Sect., 1940, 3, 609-614).—An attempt is made to deduce the asymmetric action of an enzyme on two separate isomerides from measurements on their mixture without direct reference to the optical rotations involved. This is possible under suitable conditions in the case of the hydrolysis of  $\beta$ -d-glucosides by emulsin, and the method is illustrated by the use of exponential analysis in investigating the optical specificity of emulsin on diastereoisomeric dl-alkyl- $\beta$ -d-glucosides. A. J. M.

Action of fluoride on cytochrome and cytochrome oxidase. H. BOREI (Arkiv Kemi, Min., Geol., 1940, **13**, **A**, No. 23, 13 pp.).—At  $p_{\rm H}$  6·2 and 38° the uptake of O<sub>2</sub> by cytochrome-*c* from horse heart + cytochrome oxidase complex from pig heart + *p*-phenylenediamine is not inhibited by NaF, which also does not affect the uptake when cytochrome-*c* is absent. Since the action of cytochrome-*a* and -*b* also is probably not affected by F', the results support the view of Runnström *et al.* that the point of attack by F' is a carrier intermediate between the cytochromes and the dehydrogenases (cf. A., 1940, III, 867). W. McC.

Succinic dehydrogenase in germinating seeds. M. DAMODARAN and R. RAMASWAMY (Current Sci., 1940, 9, 319—320).—Extracts (0.067N-PO<sub>4</sub><sup>'''</sup> buffer at  $p_{\rm H}$ 9) of seedlings of *Phaseolus mungo*, *P. radiatus*, *Dolichos biflorus*, *D. lablab*, *Cicer arietinum*, and *Vigna catjang* decolorise methylene-blue in presence of Na succinate at  $p_{\rm H}$ 7.8. Marked dehydrogenase activity occurs in 2- and 3-day seedlings but it rapidly diminishes thereafter. Thus asparagine may be formed from glutamic acid in germinating seeds (cf. A., 1938, III, 694). Water-melon and rice seedlings contain no succinic dehydrogenase. J. L. D.

Enzyme in parotid saliva capable of hydrolysing submaxillary mucin. G. CAVALLI (Boll. Soc. ital. Biol. sperim., 1940, **15**, 396—398).—The presence of the enzyme in saliva taken directly from Wharton's duct is indicated by changes in  $\eta$  and reducing power of the mixed salivas. F. O. H.

Anti-tryptic properties of heparin. M. K. HORWITT (Science, 1940, 92, 89—90).—Data showing the effect of heparin on the hydrolysis of casein by trypsin and chymotrypsin at 38° indicate a marked inhibition of trypsin, especially during the first hr. of digestion, but no apparent inhibition of chymotrypsin, by similar concess. of heparin. Preliminary experiments also indicate that in a given sample of plasma added trypsin and heparin are mutually antagonistic, and that clotting does not occur unless the amount of trypsin added is more than enough to neutralise the effect of heparin. L. S. T.

Buffer influence on taka-diastase. G. A. BALLOU and J. M. LUCK (J. Biol. Chem., 1940, 135, 111—118).—The saccharogenic activity of takadiastase is optimal at  $p_{\rm H}$  5·1 with formate, acetate, propionate, butyrate, valerate, phenylacetate, or succinate as buffer and at  $p_{\rm H}$  5·4 with phthalate and citrate (ionic strength maintained at 0·05). The relative activity varies with the buffer at  $p_{\rm H}$  less than the optimum but not at or above the optimum.

E. M. W.

Determination of cozymase by fermentation in apozymase system. F. SCHLENK and R. B.

VowLES (Arkiv Kemi, Min., Geol., 1940, 13, B, No. 19, 7 pp.).—Standard apozymase free from cozymase is obtained from bottom yeast by four-fold washing with tap water at 12°, pressing, passing through a sieve (mesh 0.5-1.0 mm.), spreading in a layer 1-3 mm. deep on blotting paper, drying at room temp. overnight, washing 3 times with  $PO_4^{\prime\prime\prime}$  buffer at  $p_{\rm H}$  6, spreading on glass, drying overnight, and grinding finely. The material contains adequate amounts of adenylic acid, cocarboxylase, Mg", Mn", and Zn". For the determination of 5—10  $\mu$ g. of cozymase in the Warburg apparatus, 200 mg. of the standard prep. suspended in 2 c.c. of water are used together with 50 mg. of glucose in 0.5 c.c. of water, 0.35 c.c. of 10%  $PO_4'''$  buffer ( $p_H$  6·3—6·5), and 0·3 c.c. of 5% Na hexose diphosphate. If the vol. of cozymase solution is large, the apozymase is added dry. The vessels are shaken not less than 100 times per min.

W. McC.

Oxidation of tea tannin by enzymes in fresh tea leaf. Y. OSIMA and K. HAYASI (Bull. Agric. Chem. Soc. Japan, 1940, 16, 109—114).—The prep. of the enzyme solution is described. It contains a peroxidase with optimum  $p_{\rm H}$  and temp. 4-4 and 50—55°, respectively, and an oxidase with corresponding vals. 8.0 and 50—65°. The activity of the peroxidase, but not that of the oxidase, decreases in presence of tannin. When the enzymes act on catechins in presence of air reddish brown solutions are obtained. The product of oxidation of *d*-catechin and of gallocatechin contains considerably less C and more O than the original material, whilst the no. of OH groups is decreased by the oxidation. J. N. A.

# (xxv) MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Nature of yeast. I. Structure and functions of the cell. J. S. WALLERSTEIN and A. L. SCHADE (Wallerstein Lab. Comm., 1940, 3, No. 9, 91—106).— A review. The subjects covered include the morphology and cytology of the cell, its nutrition and biochemistry, and its life cycle and reproduction, special attention being paid to the diploid and haploid condition. I. A. P.

Dissociation of yeast cultures into S and R forms. I. F. DE MELLO and J. DE SÀ VIEGAS (Proc. Indian Acad. Sci., 1940, **12**, **B**, 1—7).—A strain of *Candida*, Berkhout, from the intestines of white mice, cultivated in an agar-glucose medium, yielded S and R forms which retained the acquired characteristics when sub-cultured. W. McC.

Point of attack by fluoride in fermentation by yeast. J. RUNNSTRÖM, H. BOREI, and E. SPERBER (Arkiv Kemi, Min., Geol., 1940, 13, A, No. 22, 29 pp.; cf. A., 1938, III, 1050).—Experiments with baker's yeast, *Torula utilis*, and maceration juice in which  $O_2$  uptake, decolorisation of methylene-blue, and spectroscopic changes were observed show that, when glucose is substrate, respiration and fermentation are inhibited by F'. Since, under certain conditions, äerobic fermentation is stimulated by F', with or without inhibition of respiration, it follows that respiration is affected directly and not as a con-

sequence of disturbed fermentation. The stimulation results from inhibition of syntheses of higher carbohydrates so that the amount of substrate available for fermentation increases. F' inhibits respiration also when baker's yeast is used with acetaldehyde, methylglyoxal, alcohol, or pyruvic, acetic, or lactic acid as substrate, and, when Torula is used, it inhibits the uptake of  $O_2$  by succinic acid; this uptake begins after an induction period. Torula also oxidises fumaric acid, the R.Q. being approx. 2. Oxidation of glucose by Torula is not accelerated by fumaric acid. Where oxidation of a substrate is inhibited by F' it is inhibited also by cysteine. F' does not inhibit the oxidative decarboxylation of pyruvic acid by acetonetreated Bacterium Delbrückii or the reduction of methylene-blue by maceration juice or by living yeast in presence of various substrates. Methods of obtaining the juice, which contains lactic acid-dehydrogenase and a dehydrogenase which acts on glucose + hexose diphosphate (but no succinic acid-, alcohol-, or pyruvic acid-dehydrogenase), are described. F' accelerates oxidation of cytochrome and retards its reduction in the living yeast cell. The reduction is also retarded by cysteine which, however, does not affect decolorisation of methylene-blue even when lactic acid is added. In the juice cytochrome-c occurs in reduced form; it is oxidised by benzoquinone (but not by  $O_2$ ) and again reduced by lactic acid, the reduction being retarded by F'. Pyocyanine, but not methylene-blue, partly oxidises cytochrome-c. The presence of succinic acid-dehydrogenase in the juice is not essential for reduction of cytochrome. The results indicate that the carrier attacked by F' is intermediate between the cytochrome and dehydrogenase systems and probably contains heavy metal which yields a complex with F', the cytochrome system and the dehydrogenases not being directly affected.

W. McC.

Effect of carbon monoxide on fermentation. H. BOREI (Arkiv Kemi, Min., Geol., 1940, 13, B, No. 18, 3 pp.; cf. Warburg, A., 1926, 1277).—The extent of fermentation of glucose by baker's yeast in the dark at  $p_{\rm H}$  5 and 30° is the same in 100% CO as in 100% N<sub>2</sub>. When the CO is mixed with not more than 15% of O<sub>2</sub> the extent of fermentation is greatly increased, max. effect being attained with 1% of O<sub>2</sub>. W. McC.

Action of organic compounds on yield, sporulation, and starch formation of Aspergillus niger. R. A. STEINBERG (J. Agric. Res., 1940, 60, 765-773). -37 biological stains, 85 phenanthrene compounds, and 21 miscellaneous compounds including alkaloids, pharmaceutical preps., carcinogenic substances, and dyes of complex structure are tested. Under conditions of extreme toxicity, the yield, sporulation, and starch formation are all decreased, but under other conditions the three factors vary independently. In some cases growth is only slightly, whereas sporulation is greatly, diminished, whilst in others growth and reproduction are equally affected. Both types of response can be accompanied by increase or decrease in starch formation, but decrease in growth and spore formation are always associated. Starch formation is decreased by partial deficiency of N, and increased by partial deficiency of "trace" elements (Fe, Zn, Cu, Mn, and Mo), and in presence of certain phenanthrenecarboxylic acids, and the hydrochlorides of basic phenanthrene compounds. Malachite-green is the most toxic of all the substances and 1 mg. per l. will prevent germination. The position of substituents in the phenanthrene mol. has an effect on toxicity, a carbonyl group being considerably more toxic in 4 than in 1 position. 3- is more toxic than  $2-\omega$ -bromoacetylphenanthrene, 9- is somewhat less toxic than 2-aminophenanthrene, whilst 3- is more toxic than 1-, 2-, or 4-hydroxyphenanthrene.

J. N. A. Bactericidal filtrates from a mould culture. E. C. WHITE (Science, 1940, 92, 127).—Aspergillus flavus grows readily in liquid media to yield filtrates that are bactericidal for some Gram-negative and Gram-positive bacteria. Some other species of the flavus-oryzæ group show similar activity. The results obtained with any mould depend on the medium.

L. S. T.

Sclerotiorin, a chlorinated metabolic product of *Penicillium sclerotiorum*, Van Beyma. T. MACCURTIN and J. REILLY (Nature, 1940, 146, 335).— Extraction (light petroleum) of the dried mycelium of *P. sclerotiorum* gives a 2% yield of yellow *sclerotiorin*,  $C_{20}H_{20}O_5Cl$ , m.p. 206—207°, slightly sol. in cold, dil. Na<sub>2</sub>CO<sub>3</sub> and NaHCO<sub>3</sub>. It sublimes to microscopic needles in a high vac., and gives colour reactions with aq. and alcoholic alkali. It behaves as an indicator with NaOH or NH<sub>3</sub>, giving a red colour in alkaline and a yellow in acid solutions, and a turbidity at the neutral point. L. S. T.

Nutrition of fungi. IV. Factors influencing the growth of some thiamin-requiring fungi. L. H. LEONIAN and V. G. LILLY (Amer. J. Bot., 1940, 27, 18-26).—The beneficial effect of agar on the growth of *Phycomyces blakesleeanus* is due to water-sol. inorg. material (notably Zn and Fe) which it contains. Certain org. acids (notably succinic) increased the utilisation of unfavourable sources of N (NH4, arginine). Addition of small amounts of NH4NO3 to aspartic acid media produced better growth than did Effects of the ratio either N source alone. glucose : amino-acids in relation to thiamin concn. of the nutrient on the growth of the organism are examined. A. G. P.

Ciliary reversal of Paramecium. T. KAMADA (Proc. Imp. Acad. Tokyo, 1940, 16, 241–247; cf. A., 1938, III, 848).—Ciliary reversal caused by external application of K or probably other ions, by injection of substances which ppt. Ca, by closing and opening an electric circuit, and by electrical stimulation in presence of certain salts can be explained on the assumption that the cytoplasm contains an unstable anion which forms a stable Ca compound and liberation of the anion from this compound causes ciliary reversal. J. N. A.

Effect of number of colonies per plate on estimate of bacterial population in soil. N. JAMES and M. L. SUTHERLAND (Canad. J. Res., 1940, 18, C, 347-356).—Effects of the order of dilution on plate counts are examined. Increased accuracy results from a system of making estimates of counts at two dilutions. A. G. P. (A) Bacteriological studies on a new capsulated bacillus, *Bac. Krzemieniewski*. J. KLECZ-KOWSKA, A. G. NORMAN, and S. F. ŚNIESZKO. (B) Chemical nature and properties of the polysaccharide produced by *Bac. Krzemieniewski*, nov. sp. A. KLECZKOWSKI and P. WIERZCHOWSKI (Soil Sci., 1940, 49, 185—191, 193—195).—(A) The organism, isolated from arable soil, is described. Effects of various N and C sources on production of capsular material are examined. A non-capsulated strain was isolated from  $NO_3'$  media which agglutinated (rabbit) antisera at greater dilution than did capsulated forms.

(B) The capsular material is a polymannose composed of l-mannose units and is probably of high mol. wt. A. G. P.

Action of micro-organisms on fat. II. Uninoculated globules of triglycerides, fatty acids, and butter fat in an agar medium. C. H. CASTELL and E. H. GARRARD (Canad. J. Res., 1940, 18, C, 158-168).-Opaqueness in the fat globules surrounding lipolytic colonies in fat emulsion-agar is partly due to the rapid formation of fat crystals as well as to the production of fatty acids. At ordinary temp. fat crystals form in all butter-fat globules at rates which vary with the previous history of the fats, the temp. and the physical and chemical conditions of the agar medium. Crystals of fats suspended in agar differ in appearance from those suspended in butter fat. Fatty acids in fat globules tend to crystallise at the fat-agar interface; the pure fats do not. Dyes other than Nile-blue serve to differentiate between fats and fatty acids. A. G. P.

Radioactive carbon as indicator of carbon dioxide reduction. IV. Synthesis of acetic acid from carbon dioxide by *Clostridium acidi-urici*. H. A. BARKER, S. RUBEN, and J. V. BECK (Proc. Nat. Acad. Sci., 1940, **26**, 477–482).—*C. acidi-urici*, under anaërobic conditions in presence of Na urate, guanine, or hypoxanthine, converts radioactive  $CO_2$  into radioactive acetic acid. A considerable amount of radioactive material is present as a cell constituent. The methyl and carboxyl groups of the acetic acid both contain radioactive C, but more is present as methyl than as carboxyl. J. N. A.

Determination of the specifity of the agglutination test [in animal and human Bang infection]. E. VELLISTO (Z. Immunitätsforsch., 1940, 97, 380— 392).—By using one sp. and one unsp. antigen simultaneously both the normal and the sp. antibodies are determined. If the unsp. antigen gives a higher agglutination titre than the Bang antigen, Bang's infection can be ruled out. In those cases where the sp. titre does not reach the normal titre, heating the serum to 62—63° is effective in destroying the normal agglutining without great loss to the sp. antibodies. G. W.

Precipitation of the specific substance [of the capsule of anthrax] by immune sera. G. IVANOVICS (Z. Immunitätsforsch., 1940, 97, 443–459).—The antibodies are determined from the N content of the ppt. obtained with the anthrax polypeptide. The amount of ppt. obtained varies with different preps. of the sp. substance. The difference is not related to the degree of purity of the sp. sub-

stance but probably to differences in its colloidal structure. G. W.

Preparation of precipitating anti-anthrax sera from horses. I. KUJUMGIEFF (Z. Immunitätsforsch., 1940, 97, 436—443).—The most effective sera are obtained from animals that have been previously immunised against anthrax and by injecting small amounts at fairly long intervals. Dead or living bacteria may be used provided they are of capsulated strains. Preservation is best effected by addition of 5% of phenol. G. W.

Antagonism of B. coli to dysentery bacteria. R. MANER (Z. Hyg., 1939, 122, 249–254).—There is no evidence that metabolic products are responsible for the antagonism, which appears to be due to stronger growth of the B. coli, resulting in nutrient and  $O_2$  deficiency in the medium for the dysentery bacteria. M. A. B.

Susceptibility of chicks to diphtheria bacilli and toxin. M. FROBISHER, jun. (Science, 1940, 92, 88-89).—Week-old White Leghorn or Barred Plymouth Rock chicks were killed in 48 hr. by inoculation with strains of virulent organisms, but not when treated previously with 100 units of antitoxin, or inoculated with avirulent *C. diphtheriæ*. Chicks succumb to 0.5 guinea-pig-m.l.d. of toxin. The experiments indicate the val. of the chick in the study of the diphtheria group of organisms, and the possibility that virulence and potency tests of diphtheria toxin can be made satisfactorily in week-old chicks. E. R. S.

Combined (active-passive) prophylaxis and treatment of diphtheria and tetanus. G. RAMON (J. Amer. Med. Assoc., 1940, 114, 2366–2368).—A review. C. A. K.

Influence of iron, manganese, and copper salts on intoxication with diphtheria toxin. H. O. HETTCHE (Z. Immunitätsforsch., 1939, 97, 81—99).— Feeding with Fe, Mn, and Cu salts does not protect guinea-pigs against the lethal effect of subsequent injections of diphtheria toxin, although the metals are stored in the organism. Injection of these salts gives partial protection by prolonging the time of survival. This effect is probably due to mobilisation and "activation" of the stored Fe by Cu and Mn salts and to this "activated" Fe stimulating the protective capacity of the spleen. G. W.

Complement content of human serum. E. SCHUCHARDT (Z. Immunitätsforsch., 1940, 97, 1—14). —No appreciable changes in the complement content were found in the course of infectious diseases (e.g., diphtheria, meningitis epidemica, polyarthritis rheumatica, pneumonia). G. W.

Oxidase and peroxidase reaction in the diagnosis of meningococci. H. GÄRTNER (Z. Immunitätsforsch., 1940, 97, 429–435).—Differentiation between meningococci and similar strains by means of the oxidase and peroxidase reaction is not reliable. Strains are found which give the quick reaction supposed to be characteristic for *Micrococcus catarrhalis* or do not react at all, although they have the bacteriological and pathogenic properties of meningococci. G. W. Pure cultures of Spirillum. I. M. LEWIS (Science, 1940, 92, 106—107).—Contrary to the generally-accepted view, pure cultures of Spirillum can be isolated readily from raw cultures by the usual routine methods. L. S. T.

Effect of human serum on Schick reaction and blood antitoxin titre. L. H. BARENBERG, N. M. GREENSTEIN, and B. LEIGHTON (Amer. J. Dis. Child., 1940, 60, 36-54).-The Schick test was performed on 141 children and repeated several days after the serum injection. Subsequent retests at monthly intervals were carried out on patients in whom the reaction was reversed after serum injection. Intramuscular injection of 10-30 c.c. of human serum was given to every patient within 24 hr. after admission. In the next 24 hr. a central pallor developed in the area of the Schick reaction and within 48 hr. there was a clear demarcation between the central pallor and the peripheral inflammatory zone. In patients to whom serum was not given this phenomenon did not occur. This anomaly did not indicate that a subsequent reversal of the Schick reaction would take place. Injection of human serum brought about a reversal of the Schick reaction in 98 children (70%). In 43 children (29%), the Schick reaction remained persistently positive despite the serum injection. Titration studies were done on 55 children. Of 33 children in whose Schick reaction the serum brought about a reversal there was a rise in titre in 91% whilst of 22 whose Schick reaction was persistently positive there was only a slight rise in titre in 40%. C. J. C. B.

Tularemia endotoxin. T. V. Öz (Science, 1940, 92, 113).—Strains of bacteria were incubated at  $37^{\circ}$ for 45 days, after which all bacteria were dead. The product, completely sterile, was centrifuged and dried in vac. over H<sub>2</sub>SO<sub>4</sub>. White mice (20 g. in wt.) were killed by intravenous injection of 0.3 ml. of solution (15 mg. of dried toxin) instantly, and in 24 hr. by intraperitoneal injection. Guinea-pigs (250— 300 g. in wt.) died 24 hr. after intraperitoneal injection of 0.15 g., which caused a passing vasoconstriction at the site of injection. There was a marked flocculation reaction after repeated intravenous injections into rabbits, which showed the antigenic val. of the endotoxin. The endotoxin produced titratable flocculation and pptn. reactions with the sera of persons previously infected with tularemia, and did not contain hæmolysins. E. R. S.

Boerner-Lukens complement-fixation test. R. A. KILDUFFE and D. B. DAVIS (Amer. J. med. Sci., 1940, 200, 249—253).—The Boerner-Lukens modification of the complement-fixation test is sufficiently sensitive and delicate for general use in the serological study of syphilis. C. J. C. B.

Vanadium therapy in human protozoa diseases. J. PEREIRA (Z. Immunitätsforsch., 1939, 97, 77-81). —Injections of V tartrate are effective in curing syphilis and framboesia even in cases that are resistant to As and Bi therapy. Its toxicity being low, V can also be given to children. Cases of noma and atonic ulcer have been treated with good results. G. W.

Glycine—an essential factor for the growth of bacteriophage. E. L. ELLIS and J. SPIZIZEN (Science, 1940, 92, 91).—Bacteriophage multiplies in bacterial cells suspended in dil. aq. glycine; the increases are 8- to 10-fold in 3 hr. at 37°. Asparagine, glucose, glucose in  $PO_4^{\prime\prime\prime}$  buffer, arginine, nucleic acid, alanine, or diglycylglycine cannot replace glycine. The nucleic acid used permitted slow growth of the bacteria (*Esch. coli*), but not of the phage. The failure of phage growth in distilled water and pure solutions is ascribed to the necessity of sp. substrates for the growth of the phage. L. S. T.

Application of cutaneous test in relation to acute sporadic and epidemic poliomyelitis, 1939. E. C. Rosenow (Proc. Staff Mayo Clin., 1939, 14, 734-736).-0.03 c.c. of a 10% solution of the water-insol. (euglobulin) fraction of the serum of horses hyperimmunised with streptococci from poliomyelitis were injected intracutaneously. Incidence and degree of reaction were highly sp. among persons having poliomyelitis. They were next most sp. among contacts, less among controls within epidemic zones, and least among controls outside epidemic zones. Incidence and degree of reaction ranged from an average reaction of 11.9 sq. cm. and an incidence of 98% of reactions 5 sq. cm. or more during the first 2 weeks among 179 persons having poliomyelitis to an average of 2.2 sq. cm. and an incidence of 13% of reactions 5 sq. cm. or more among 160 adult controls outside of epidemic zones. The substance in the euglobulin fraction appears to be an antibody. It is thermolabile (63° for 30 min.) and is absorbed specifically by suspensions of poliomyelitic streptococci and partly by streptococci from arthritis, by infusorial earth, animal C, and filtration through Berkefeld and Seitz filters. It remains active for several years in the whole serum and does not deteriorate noticeably for 18 months in the 10% solution of euglobulin as used in the test, if kept at 10°. H. H. K.

Specific streptococcal antibody-antigen reactions of skin and serum of monkeys during experimental poliomyelitis. E. C. ROSENOW (Proc. Staff Mayo Clin., 1940, 15, 382-384).-0.03 c.c. of a 10% solution of the centrifuged water-insol. or euglobulin fraction of the serum of horses hyperimmunised with streptococci from cases of poliomyelitis and control euglobulins from the sera of horses immunised with streptococci from cases of encephalitis, arthritis, or ulcerative colitis, and the euglobulin from normal horse serum or normal horse serum diluted 1:10, injected intracutaneously into normal monkeys produced little or no reaction at the site of injection. When the poliomyelitis euglobulin and control euglobulins are similarly injected into monkeys during attacks of experimental poliomyelitis, little or no reaction occurs at the site of injection of the control euglobulins or normal horse serum, but at the site of injection of the poliomyelitis euglobulin a blanching œdematous reaction regularly develops in 10-30 min. H. H. K.

Inactivation of plant viruses by urea. F. C. BAWDEN and N. W. PIRIE (Biochem. J., 1940, 34, 1258—1277).—The denaturation of tobacco mosaic, potato "X," tomato bushy stunt, and tobacco necrosis viruses by urea is irreversible. The rate of inactivation depends on  $p_{\rm H}$  and is largely increased by

cooling at temp. below 20°. Inactivation by alkali is not affected by temp. but is considerably enhanced by addition of urea. The reduction in  $\eta$  of virus solutions by urea is probably caused by hydration of the particles and not by denaturation. Purified viruses are somewhat more slowly inactivated than impure preps. Inactivation of tobacco mosaic and potato "X," but not bushy stunt or tobacco necrosis, viruses is accompanied by separation of nucleic acid from protein. P. G. M.

Effects of alkali and simple organic substances on three plant viruses. F. C. BAWDEN and N. W. PIRIE (Biochem. J., 1940, 34, 1278-1292).-Bushy stunt virus is more susceptible to physical changes (freezing, drying, etc.) than either potato "X" or tobacco mosaic viruses, but it is more resistant to inactivation by org. agents. Mild alkali treatment  $(p_{\rm H} 9.3)$  may actually increase the infectivity of tobacco mosaic virus, treatment at  $p_{\rm H}$  11 abolishes infectivity but not serological activity, and still more conc. alkali causes complete inactivation. Na dodecyl sulphate destroys all the viruses with separation of nucleic acid from the protein. 0.416M-phenol de-stroys the infectivity of both tobacco mosaic and bushy stunt viruses. M-Na salicylate, but not 2.4Mpyridine or 1.3M-picoline, inactivates bushy stunt virus, and 2M-Na benzoate is required to inactivate tobacco mosaic virus, which also requires 0.4M-picoline to reduce either its infectivity or serological activity appreciably. 2.26M-urethane is required to inactivate potato virus "X." P. G. M.

Reactivity of chlorine-containing disinfectants, particularly azochloroamide, towards nitrogenous substrates. R. W. VIERTHALER and H. GEBAUER (Z. Hyg., 1939, **122**, 281–289).—Azochloroamide, NH<sub>2</sub>Cl, bleaching powder, eau de Javelle, and Dakin's solution in concns. containing 200 p.p.m. of active Cl were mixed with aspartic acid, cystine, peptone, albumin, milk, blood-serum, ascites, pleural fluid, sputum, urine, and fæces, and kept at  $37^{\circ}$  for 24 hr. Active Cl was determined after 1 and 24 hr. In most cases the three last-named disinfectants lost a large % of active Cl, even in the first hr., whereas azochloroamide and NH<sub>2</sub>Cl, especially the former, showed only small losses, indicating that they attack tissue substances to a much smaller extent and maintain their bactericidal action much longer than the other three. M. A. B.

Staining bacterial cilia. F. NERI (Boll. Soc. ital. Biol. sperim., 1940, **15**, 371–372).—The material is fixed with HgCl<sub>2</sub>-tannin–Fe<sup>III</sup> NH<sub>4</sub> sulphate–K alum and stained with crystal-violet–aq. aniline. F. O. H.

Allergy. II. Relations between experimental asthma bronchiale and weather conditions. R. PREUNER (Z. Hyg., 1939, 122, 320—351).—In experiments on guinea-pigs about 50% of the animals showed an increased susceptibility to experimental asthma in very cold and very hot weather. About 25% were uninfluenced by weather conditions while the other 25% reacted abnormally, *i.e.*, showed decreased susceptibility under extreme weather conditions. About two thirds were also affected by other meteorological disturbances. The degree of reaction was greatest in normal animals under cold conditions and in abnormal animals under hot conditions, and it also varied with the season, showing peaks in January and June, with a min. in September. M. A. B.

Allergenic flora in Argentine Republic. Parthenium hysterophorus, L. M. R. CASTEX, J. F. MOLFINO, and G. RUIZ MORENO (Bol. Acad. Nac. Med., 1940, 91—96).—The plant is found in nearly all the territory of the Republic. Pollination occurs in January (summer). The pollen is not as abundant as in Ambrosiæ but is also carried by winds. Three cases sensitive to Ambrosia rennifolia were tested for cutaneous sensitivity to Parthenium and found positive; one gave a systemic nasal reaction. Sensitisation by Parthenium could not have taken place so it is supposed that there is a similarity between the antigens of both species. Three subjects sensitive to divers Gramineæ and four to several other allergens did not react to the pollen of Parthenium. J. T. L.

Potassium chloride in allergic disorders. G. F. HARSH and P. B. DONOVAN (J. Amer. Med. Assoc., 1940, **114**, 1859—1863).—KCl was ineffective in the treatment of 40 cases of allergy. The serum-K and -Na were not significantly altered. C. A. K.

# (xxvi) PLANT PHYSIOLOGY.

Influence of various growth factors on growth of green plants. D. M. BONNER and J. BONNER (Amer. J. Bot., 1940, 27, 38–42).—In sand cultures of *Cosmos* and mustard, nicotinic acid and vitamin- $B_6$ and  $-B_1$  improved root growth when added to the nutrient solution. Adenine acted primarily on leaf size but also, like uric acid, favoured general vegetative growth. Estrone exerted a growth-promoting effect. Neither wheat nor tomato plants showed these effects, probably because they are able to synthesise a sufficiency of these growth factors. A. G. P.

Effect of X-rays and radium on regeneration of Bryophyllum calycinum. E. NAYLOR (Amer. J. Bot., 1940, 27, 15—17).—Regeneration from leaves of B. calycinum was restricted by X-rays to extents which increased with the period of exposure. No stimulatory action and no injury to leaves were observed under the conditions of the experiment. Ra produced similar effects. A. G. P.

Form of low-temperature injury in detached leaves. E. R. ROUX (New Phytol., 1940, 39, 271— 276).—Detached leaves of certain evergreen trees exposed to temp. above the f.p. of the cell sap develop a low-temp. browning, protection against which is given by exposing them to higher temp. before placing them in cold store. Susceptibility to low-temp. injury is not related to atm. conditions at the time of picking. L. G. W.

Comparison of diploid and triploid sugar beets. F. H. PETO and J. W. BOYES (Canad. J. Res., 1940, **18**, **C**, 273—281).—In both diploid and triploid beet the % of sugar and wt. of root were negatively correlated. The decline in % sugar per 100 g. increase in root wt. was significantly different for the two types (0.34% for diploids, 0.17% for triploids). Triploid beet showed the greater root wt., yield of sugar per beet, dry top wt., and area index of leaves and of stomata. A. G. P.

Formation of pyruvic acid in barley respiration. G. M. JAMES and W. O. JAMES (New Phytol., 1940, **39**, 266—270).—When barley roots are poisoned with acetaldehyde or certain aromatic sulphonic acids which inhibit carboxylase, pyruvic acid accumulates. It is suggested that under normal conditions pyruvic acid is formed in barley tissues but is continuously decarboxylated. L. G. G. W.

Oxidase systems in tissues of higher plants. J. G. Boswell and G. C. WHITING (New Phytol., 1940, **39**, 241–265).—A review. L. G. G. W.

Time course of photosynthesis and fluorescence observed simultaneously. E. D. MCALISTER and J. MYERS (Smithsonian Misc. Coll., 1940, 99, No. 6, 37 pp.).—Simultaneous measurements of the intensity of fluorescence and rate of assimilation of CO2 in Chlorella and wheat, both during and following the induction period, are recorded. Any change in conditions which produces a large increase in the rate of assimilation is accompanied by a momentary burst in the intensity of fluorescence. When the plant is moved from darkness into bright light, the burst of fluorescence can be analysed into three parts, whilst the rate of CO<sub>2</sub> assimilation varies inversely with the changes in fluorescence. At low O<sub>2</sub> pressures, the fluorescence and assimilation curves are almost exact mirror images. In wheat under normal atm. conditions two processes affect the rate of assimilation in the induction period; of these one varies directly and the other inversely with the fluorescence intensity. The first process is probably a photo-oxidation. With *Chlorella* the behaviour in the induction period depends largely on previous conditions of culture, particularly on the CO<sub>2</sub> content of the atm. More complicated effects occur in the fluorescence in wheat if the  $CO_2$  conc. exceeds normal. It is probable that in young wheat a vigorous reaction opposing photosynthesis is always effective during natural growing conditions. A. J. M.

Influence of magnesium deficiency, chlorophyll concentration, and heat-treatments on rate of photosynthesis of *Chlorella*. S. R. KEN-NEDY, jun. (Amer. J. Bot., 1940, **27**, 68—73).— Increase in the chlorophyll concn. of leaves resulting from an increase in Mg supply does not at first cause a rise in the rate of photosynthesis such as occurs when the concn. of chlorophyll is increased by other means. Mg deficiency causes diminution in the rate of the Blackman reaction. Heat-treatment of leaves (15 min. at  $45^{\circ}$ ) lowered the subsequent rate of photosynthesis in intermittent light at normal temp. This is ascribed to inactivation of part of the photosynthetic mechanism not involved in the Blackman reaction. Heating to  $40^{\circ}$  had little or no effect.

A. G. P.

Enzymes in fruits and vegetables. III. Effect of sunlight on the strength of ascorbic acid oxidase during sprouting and the relation between the activity of the enzyme and its concentration. H. NAITO and K. ISHIMARU (Bull. Inst. Phys. Chem. Res. Japan, 1940, **17**, 996—1000; cf. A., 1940, III, 692).—In sprouting experiments with spinach and bean malt ascorbic acid oxidase was more active when sprouting was carried out in darkness than in sunlight and developed more quickly in young buds, roots, and stems than in albumens. The activity of the enzyme was proportional to its conen. W. R. A.

Traumatic acid and thiamin as growth factors for algæ. J. VAN OVERBEEK (Proc. Nat. Acad. Sci., 1940, 26, 441-443).—Traumatic acid, when added to an inorg. medium containing minor elements except Cu, promotes reproduction in *Scenedesmus obliquus*, *S. bijugatus*, S. *brasiliensis*, and *Palmellococcus miniatus*. Thiamin is far less effective in the case of these algæ but it is very effective in promoting growth of *Sphaerella lacustris*, towards which traumatic acid is less active. J. N. A.

Effect of dusts containing indolylbutyric acid and cestrone on rooting of dormant cuttings of *Lonicera tartarica*. N. H. GRACE (Canad. J. Res., 1940, 18, C, 283—288).—Treatment of cuttings with  $\beta$ -indolylbutyric acid-talc increased the no. of cuttings rooted, the no. and length of roots per cutting, the mean root length, and the green wt. of leaf produced. (Estrone alone had no ill effects on cuttings but diminished the action of indolylbutyric acid in nearly all cases. In determining the relative effects of different concurs. of growth-substance, the no. and length of roots, and the wt. of green leaf produced afford a more sensitive test than does the no. of cuttings taking root. A. G. P.

Vegetative propagation of conifers. VI. Hormone solution and dust treatments of spruce cuttings propagated in greenhouse and outside frames. N. H. GRACE and J. L. FARRAR (Canad. J. Res., 1940, **18**, **C**, 401—414; cf. A., 1940, III, 365).— Rooting of cuttings was influenced by the season and conditions of propagation and other factors. Treatment with indolyl-butyric and -acetic acid had no beneficial effect, and was generally injurious. Talc (used as a carrier in preps. of root-inducing substances) tended to lessen injurious effects. A. G. P.

Interaction of higher plants and soil microorganisms. I. Microbial population of rhizosphere of seedlings of certain cultivated plants. M. I. TIMONIN (Canad. J. Res., 1940, **18**, **C**, 307—316). —The nos. of bacteria and actinomycetes in the rhizosphere of seedlings 3 days old were markedly greater than those in soil more distant from the roots. Differences in fungal population were less marked. These effects are attributed mainly to excretion of sol. substances from the seedling roots. A. G. P.

Influence of light and other environmental factors on mature-plant resistance of Hope wheat to stem rust. T. JOHNSON and M. NEWTON (Canad. J. Res., 1940, **18**, C, 357—371).—Reduction of light intensity or in length of day period tended to increase susceptibility to rust. High temp. (75— 80°) caused a partial breakdown in mature-plant resistance. A. G. P.

Watermark disease of willows. I. Hostparasite relationships. G. METCALFE (New Phytol., 1940, 39, 322—336).—The outermost annual ring is infected by bacteria towards the end of the growing season, and the bacteria spread by passive carriage in the vessels and then multiply rapidly during the following spring. The vessels become occluded and a brown stain results. Three bacteria in addition to *B. salicis*, Day, have been isolated from diseased wood and one of these (bacterium C) is able to utilise pectin and is probably the cause of cracks in diseased wood. L. G. G. W.

Available substrates in developing fruit and their behaviour in storage. B. K. KAR and H. K. BANERJI (Current Sci., 1940, 9, 321–322; cf. A., 1930, III, 1111).—The effects of temp. and 1% ethylene on the protein, starch, sugar, titratable acid, and alcohol-insol. residue content of *Pisidium guavæ* are recorded. J. L. D.

#### (xxvii) PLANT CONSTITUENTS.

Chemistry of plant cell wall. W. M. HARLOW (Paper Ind., 1940, 22, 150; cf. A., 1940, III, 83).-Residues obtained from summer wood of eastern white pine (Pinus strobus), ponderosa pine (P. ponderosa), and red spruce (Picea rubra) by treating sections only  $3-5 \mu$ . thick with 72% H<sub>2</sub>SO<sub>4</sub> or Schweitzer's reagent are structurally quite different from those obtained from sections having the more usual thickness of  $10-15 \mu$ . With the thicker sections the thickened summer wood secondary cells, having less room for internal expansion, rupture the " compound middle lamella " network and break up the structural continuity in this region, whilst in the spring wood, the secondary walls being much thinner, there is more room for internal swelling and structural continuity is usually preserved. The thinner sections, on the other hand, besides presenting differences in pattern, preserve the continuity even of the summer wood, in spite of their greater fragility. H. A. H.

Pectic acid.—See A., 1940, II, 323.

Hydrogenation of soft-wood lignin.—See A., 1940, II, 352.

Identification of vanillin and vanilloyl methyl ketone as ethanolysis products from spruce wood.—See A., 1940, II, 348.

Hydroxy-lactone from *d*-pimaric acid.—See A., 1940, II, 352.

Isolation of cannabinol, cannabidiol, and quebrachitol from red oil of Minnesota wild hemp.—See A., 1940, II, 353.

Active principles of Derris malaccensis and Tephrosia toxicaria.—See A., 1940, II, 356.

Sapogenins of the Chinese drug yang-chiao-ou. —See A., 1940, II, 330.

# (xxviii) APPARATUS AND ANALYTICAL METHODS.

Determination of tungsten in biological materials. J. C. AULL and F. W. KINARD (J. Biol. Chem., 1940, **135**, 119—121).—Org. material is destroyed by means of strong acids and the W content of the filtrate found by the addition of TiCl<sub>3</sub>, KCNS, and HCl, using the Evelyn photo-electric colorimeter. The average recovery is 99.9% (range 95—105.8%).

E. M. W.