BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

FEBRUARY, 1941.

I.-GENERAL ANATOMY AND MORPHOLOGY.

Man: a constitutional investigation. I. W. B. Tucker and W. A. Lessa (*Quart. Rev. Biol.*, 1940, 15, 265–289).—A review. J. D. B.

Origin of branches of axillary artery in Chinese. P. Ming-Tzu (Amer. J. phys. Anthrop., 1940, 27, 269—279).—The mode of origin of the named branches of the axillary artery in 140 cases, chiefly North Chinese males, is given. The various types are classified according to the arrangement of their branches. The proximal branches are usually const. and the distal ones rather variable. In most types the artery gives off 5 branches; 4 and 6 branches are frequent but 3 are rare. Racial similarity in the mode of origin of proximal and distal branches and racial dissimilarity of the middle branches, between Chinese, Japanese, and Americans, are noted.

W. F. H. Case of single coronary artery, quadricuspid pulmonary valve, and anomalous right subclavian artery. K. Maddox and J. Isbister (*Med. J. Austral.*, 1940, I, 50-54).—Death occurred from acute rheumatic carditis. F. S.

Capillary bed of central nervous system of Dermophis. E. H. Craigie (J. Morph., 1940, 67, 477—487).—This gymnophione possesses a capillary bed in its central nervous system similar to that of Caudata as it consists of slender independent loops extending inwards from the surface, unbranched and with no anastomoses. The author regards the continuous, spongy, three-dimensional network which is the form taken by the capillary bed in the Salientia and most other vertebrates as the less primitive type and considers that the Labyrinthodontia probably had a cerebral capillary bed resembling that of Dermophis. J. D. B.

Relative growth in snout of anteaters. E. C. R. Reeve (Proc. Zool. Soc. London, A, 1940, 110, 47-80).—A detailed statistical account of the relative growth of the snout in Myrmecophaga, Tamandua, and Cyclopes. J. D. B.

Structure of head of femur: new method of examination. P. Gerzanits (Magyar Orv. Arch., 1940, 41, 74—79).—Injection of coloured gelatin, egg-white, and latex into the head and into the shaft of the femur disclosed a convex arched barrier to the passage of the materials, at the junction of the head and the neck of the bone. The barrier, formed by structural factors, is probably the line of demarcation between blood circulation of the head and of the neck. A. G. P.

Is delay in development of centres of ossification pathognomic of thyroid deficiency? O. Gabinus (Acta paediatr. Stockh., 1939, 25, 59-68).—Retardation in the static functions, retarded dentition, and delayed appearance of centres of ossification in a 2-year-old boy are reported. Roentgen examination indicated defective development of the brain. No signs of hypothyroidism could be found. M. K.

Polyostotic fibrous dysplasia. T. Denstad (Acta Radiol. Stockh., 1940, 21, 143—150).—A case is described with characteristic thinning and upward displacement of the cortex, mainly localised to the diaphysis of the femur, tibia, and partly fibula, on one side. H. H. K.

Osteogenesis imperfecta tarda with platyspondylisis. G. Zander (Acta Radiol. Stockh., 1940, 21, 53-61).—A case is described with peculiar, low, and biconcave vertebral bodies within the entire spinal column. H. H. K.

Punctate epiphyseal dysplasia occurring in two members of same family. D. G. Maitland (Brit. J. Radiol., 1939. 12, 91-93). H. H. K. 65 Senile osteoporosis of spine. J. R. Black (Proc. Staff Mayo Clin., 1940, 15, 619—623).—A review and study of 208 cases. H. H. K.

Congenital anodontia with abnormities of the dermal system (ectodermal imperfection). R. Rinvik and A. Syrrist (Acta paediatr. Stockh., 1938—1939, 23, 548—574).—Ectodermal abnormalities are described in a boy, aged 5: anodontia, lack of sweat and sebaceous glands (proved by biopsies from skin of axilla and scalp), fœtal hair growth on face and head, saddle nose, and ozæna. Heredity is the most probable causative factor of this condition. M. K.

Familial short cesophagus. R. B. Myles (*Brit. J. Radiol.*, 1939, 12, 645-647).—Two cases in mother and daughter are reported. H. H. K.

Laryngocele. G. Blewett (Brit. J. Radiol., 1939, 12, 163-167). H. H. K.

II.-DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Development of sphincter of accessory pancreatic duct in man. E. V. Staudacher-Dalle Aste (*Boll. Soc. ital. Biol. sperim.*, 1940, 15, 523-524).—Histological observations in embryos 15-136 mm. in length are described. F. O. H.

Functional development of some mammalian neuromuscular mechanisms. D. H. Barrow (*Biol. Rev.*, 1941, **16**, 1---33).----A review. J. D. B.

Differentiation of bulbar motor nuclei and coincident development of associated root fibres in rabbit. D. L. Kimmel (J. comp. Neurol., 1940, 72, 83—148).—A detailed account of the development of the seven posterior cranial nerves based on 35 young and fœtal stages stained with the pyridine-Ag technique. The author concludes that there is a marked recapitulation in the development of the nervous system of its phylogenetic history. J. D. B.

Development of pharyngeal derivatives of opossum (*Didelphys virginiana*), with special reference to thymus. B. F. Kingsbury (*Amer. J. Anat.*, 1940, **67**, 393—435).—The derivatives are thyroid, parathyroids III and IV, thymus III and IV, and an ultimobranchial body. A thymus body is frequently developed from the ectodermal cervical sinus. The thyroid is typically mammalian in development but the isthmus is either poorly developed or absent. The ultimobranchial body fuses with the thyroid. Parathyroid III is const. in position and occurrence; parathyroid IV is small, inconst. in position, and frequently absent. Two cases of cystic parathyroid IV are recorded. Thymus III and IV are thoracic in position and their relations are determined by shiftings accompanying the "descent of the heart." Accessory thymi are derived from pharyngeal pouch III.

W. F. H.

Influence of zona pellucida in follicular atresia. E. C. Pliske (J. Morph., 1940, 67, 321-349).—Based on the study of the ground squirrel ovary. The course of atresia in follicles of all developmental stages is influenced by the zona pellucida and the manner in which the latter acts is correlated with the condition of the ovarian vascular system and period of the œstrous cycle. The fate of follicular epithelium, regardless of its degree of development, is complete degeneration. Intraovarian cleavage in mature follicles, at the most, is an expression of atresia. J. D. B.

Development of vertebral column in Lebistes reticulatus. H. K. Mookerjee, G. N. Mitra, and S. R. Mazumdar (J. Morph., 66 1940, 67, 241-270).-A detailed description of the development of the vertebral column in this viviparous Teleost. I. D. B.

Intersexual gonads of turtle embryos following injection of male sex hormone. P. L. Risley (*J. Morph.*, 1940, 67, 439-454).—Partial sex reversal from ovary to testis was found in female turtle embryos after treatment with 0.25 mg. of testosterone propionate during gastrulation stages. No effects of the hormones were noted on any of the secondary sex organs in embryos of either sex. The results suggest that sex hormones act indirectly in modifying the normal course of gonad development. J. D. B.

Growth and differentiation of kidney tissue of rabbit embryo in oriental grafts. A. J. Waterman (J. Morph., 1940, 67, 369-385).-Growth, self- and functional differentiation of both mesonephric and metanephric rudiments of rabbit embryos of various developmental stages and survival capacity following fragmentation, storage at low temp., and heterotransplantation (mouse) were studied. Kidney tissue was obtained from grafts as early as the medullary plate stage but not from younger stages. Mesonephric tissue was obtained in grafts up to the 10th day stage. Conditions intrinsic to the mesonephros evidently lead to its disappear-ance during normal development. Recognisable meta-nephros appeared first in grafts of 10-day embryos. The metanephros is self-differentiating and portions, as grafts, can develop into complete but minute kidneys. Indirect evidence suggests the possible attainment of a functional state in the metanephric grafts but no trace of storage of trypan-blue was found. I. D. B.

Application of tissue culture in vitro to embryology. H. B. Fell (J. Roy. Microscop. Soc., 1940, [iii], 60, 95-112).— Details of technique are given for the hanging-drop, watch-glass, and tube methods of culture, and the scope of applic-ation of each is discussed. A short outline is given of some of the contributions that tissue culture has made to embryology. It is emphasised that the method should be used to supplement and not to replace the standard morphological methods. E. E. H.

Regeneration in protozoa. W. Balamuth (Quart. Rev. Biol., 1940, 15, 290-337).—A review. J. D. B.

Effects of X-rays on regeneration of feathers in fowl. B. de Boer (J. Morph., 1940, 67, 299-319).—In pigmented breeds exposure to 2000-3000 r. resulted in the regeneration of white feathers in the treated area. The area remained unpigmented during subsequent regenerations. In all breeds longer exposures destroyed the follicles and no regeneration occurred in the treated area. Injection of desiccated thyroid increased the rate of regeneration in non-irradiated areas and in irradiated areas when the exposures were not sufficient to destroy the follicles. The results indicate that cells giving rise to the epidermal melanophores are localised in the follicle of the young bird. Neither these cells nor the cells of the follicle are replaced after destruction with X-rays.

J. D. B. **Production of giant spermatocytes by X-radiation**. P. H. Dederer (J. Morph., 1940, 67, 159-173).—Irradiation of pupz of Philosamia cynthia caused the formation of giant cells within the cysts of growing spermatocytes. The no. of affected cysts increased with the dosage. Some giant cells were mononucleate; others, dinucleate or multinucleate, were probably produced by the fusion of cells. There was no visible effect of irradiation on the chromosomes of the spermatocytes. In all favourable metaphase plates, the chromosomes were normal in no. and in appearance. J. D. B.

Physiochemical nature of the chromosomes and the gene. C. H. Waddington (Amer. Naturalist, 1939, 73, 300-314). J. D. B.

Recent studies of animal chromosomes. T. S. Painter (J. Roy. Microscop. Soc., 1940, [iii], 60, 161-175).- A review. J. D. B.

Structure and behaviour of chromosomes of sheep during mitosis and meiosis. I. A. Ahmed (*Proc. Roy. Soc. Edin.*, 1940, 60, 260-270).—Sheep chromosomes differ in size and shape; their diploid no. is 54. The sex chromosomes consist of a large X with a median centromere and a smaller Y with subterminal centromere. The no. of chiasmata in diakinesis and metaphase is slightly reduced, as compared with that at diplotene. Two kinds of XY bivalents (a symmetrical and an asymmetrical) are formed during meiosis; the former occurs twice as frequently as the latter. Tervalents and univalents were seen in a few primary spermatocytes, indicating that a small terminal region is represented 4 times in the chromosome complement of one individual sheep.

A. S. III.-PHYSICAL ANTHROPOLOGY.

Variations of teeth of Preuss' Colobus. F. Colyer (Proc. Roy. Soc. Med., 1940, 33, 757-768).-In Colobus badius, Preussi, the frequency of protrusion of the mandibular incisors and variation in the position of both mandibular and maxillary incisors are the prominent features. Normal "edge to edge " bite of the incisors was present in 22 out of 65 specimens examined. One specimen showed hypoplasia of the enamel covering the lower third of each maxillary first incisor. The molars showed the greatest amount of wear and tear, loss of tissue being most marked on the inner portions of maxillary teeth and on the outer portions of mandibular W. F. H. teeth.

Lower jaw. Gonial angle and bigonial breadth. A. Hrdlicka (Amer. J. phys. Anthrop., 1940, 27, 281-308).--Older records of bigonial breadth of the lower jaw are supplemented by those on a large series of specimens from the Eskimo American Indian, Mongol, Chinese, Polynesian, Negro, and miscellaneous American Whites. The measurements show appreciable differences, the broader jaws being found in the arctic and sub-arctic groups, the narrowest in southern groups including the Melanesian and the Negro. Bigonial breadth appears to be influenced by the development of the pterygoid muscles themselves proportionate to the amount and nature W. F. H. of mastication.

IV.-CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Structure of human heart valves. W. F. Harper (J. Anat., 1940, 75, 88-94).—An account of the histology of the mitral valve in a child aged 9 years. Attention is drawn to the structure of the sub-endothelial zone and it is suggested that some of its cells may have a function similar to that of the reticulo-endothelial cells elsewhere in the body. Further evidence is presented for the avascular nature of normal human heart valves and the formation of new blood vessels is recorded in an early case of rheumatic valvulitis in a child I. D. B. aged 8 years.

Histology of thyroid and parathyroid glands in Gorilla beringei. A. L. Grafflin (J. Morph., 1940, 67, 455-470).— The follicular epithelium is typically cuboidal and contains large amounts of fat and yellow ("wear and tear") pigment. The ordinary colloid is essentially non-fluorescent but masses of basophilic colloid exhibit an intense fluorescence which is predominantly blue. The parathyroid structure resembles J. D. B. closely that of man.

Cytology of mammary gland of bat, Myotis grisescens. K. R. Jeffers (Amer. J. Anat., 1940, 67, 1-19).—Cytoplasmic inclusions in mammary gland cells are believed to be meta-bolic products and they may be used as criteria of glandular activity. Chondriosomes, fat droplets, and pseudo-yolk spheres were identified in the secretory cells. Chondriosomes and fat droplets occurred during pregnancy, lactation, and involution and pseudo-yolk spheres appeared during preg-nancy and early involution. Secretion during lactation is mainly by discharge at the apex of the cell. It is suggested that the secretion of a single anterior pituitary hormone is sufficient to explain ovarian and mammary gland reactions during pregnancy, lactation, and involution. W. F. H.

Histological study of teat and gland cistern of bovine mammary gland. C. E. Venzke (J. Amer. Vet. Med. Assoc., 1940, 96, 170-175).—The teat of the pregnant and lactating cow shows a smooth muscle sphincter composed of large bundles of circular fibres separated by a little connective tissue; in the heifer the bundles are smaller and separated by considerable connective tissue. The teat cistern in heifers is lined with two layers of epithelial cells, superficial cylindrical epithelium and polygonal basal cells. In old cows the epithelium is often stratified and the basal cells may be cuboidal. Small tubuloalveolar glands are found in the wall of the teat cistern and E. G. W. in that of the main cistern of the udder.

Changes of argentophil tissue in senility. A. J. Smirnova-Zamkova (*Trans. Conf. Senility, Kiev*, 1938, 81-88).-Collagenous transformation of argentophil fibres was observed.

Effects of irradiation on proliferation and metabolic processes of normal and malignant tissues. IV. Effects of different dosage rates on proliferation of various tissues grown in vitro. A. Goldfelder (*Radiology*, 1940, **35**, 210-228).— The tissues studied were kidneys and spleens of 1-2-day-old rats, mouse sarcoma 180 of 8-10-day growing tumours in the animal body, and 8-day-old chick embryo hearts. Freshly excised tissue fragments of 2-5 mg. were placed in a thin layer of nutritive medium, irradiated, washed in Tyrode solution, placed in a freshly prepared medium, and incubated. The dosage rates employed were 234 and 936 r. per min. produced at 200 kv., 20 ma., 0.5 mm. Cu +1 mm. Al filter with a half-val. layer of 0.85 mm. of Cu, the tissue target distance being 25 and 12.5 cm., respectively, and 10,000 r. per min. produced by a contact therapy tube (cf. Braestrup, A., 1941, III, 46). The crit. doses preventing proliferation rose from 80,000 to 140,000 r. for rat kidneys and the three dosage rates, from 130,000 to 260,000 r. for chick embryo heart using the two higher dosage rates, from 50,000 to 90,000 for sarcoma 180 at the same rates, and lay at 60,000 r. for rat spleen at 936 r. per min., whilst the first growth-inhibiting effects were seen at 50,000–90,000, 90,000–100,000, 30,000–50,000, and 40,000 r., respectively, representing a drop of 15-25% of proliferating explants against the controls. In addition to the decrease in % of growing explants within the range of crit. dosage, a decrease in size of the new growth, a latent period of 48-72 hr., and liquefaction of the nutritive medium were also observed. E. M. J.

Recent developments of micro-manipulative technique and its application. R. Chambers (J. Roy. Microscop. Soc., 1940,[iii], **60**, 113—127).—A shortened and modified account of a chapter by M. J. Kopac in McClung's "Handbook of Microscopic Technique" (1937). Details are given of methods of making and using micro-needles, micro-pipettes, and microelectrodes. Examples are given of the application of the micrurgical technique to (1) protozoology and embryology (e.g., cutting cells, dissecting out nuclei), (2) cytology and histology (e.g., dissection of chromosomes, micro-operations on mesenteries), (3) tissue culture (e.g., chemotactic effect of substances on leucocytes grown in vitro), (4) cellular physiology (e.g., effect of electrolytes on protoplasm, digestibility of non-aq. fluids injected into cells, permeability of membranes), (5) isolation of bacteria, (6) study of endoenzymes.

E. E. H. Submicroscopic structure of cytoplasm. A. Frey-Wyssling (J. Roy. Microscop. Soc., 1940, [iii], 60, 128-139).—The author develops a hypothetical scheme of the submicroscopic structure of cytoplasm that is in keeping with its characteristic and contradictory properties of liquid flow, elasticity, varying viscosity, optical anisotropy, high water content, rigidity, constancy of shape, tensile strength, plasticity, stickiness, swelling and shrinking by imbibition and dehydration, and semi-permeability. The colloidal state and chemical nature of cytoplasm are discussed. E. F. H.

Plant tissue cultures. P. R. White (*Biol. Rev.*, 1941, 16, 34–48).—A review. J. D. B.

Staining reactions of mucoproteins. L. H. Hemplemann (Anat. Rec., 1940, 78, 197-206).—The physico-chemical principles involved in methods for differentiating epithelial and mesenchymal mucoproteins are discussed. The application of these methods to mixed tumours of the salivary glands is pointed out. W. F. H.

Metachromasia. O. Bank and H. G. B. de Jong (Protoplasma, 1939, 32, 489-516).—An analysis of the physicochemical basis of metachromatic staining reactions.

J. D. B.

Effect of cH of formaldehyde on subsequent staining. R. D. Lillie (J. tech. Methods and Bull. int. Assoc. Med. Museums, 1939, 19, 89–92).—Formalin buffered to $p_{\rm H}$ 7.5 preserves the staining reactions of tissues much better than unbuffered solutions of formaldehyde. J. D. B.

Staining of Negri bodies in formalin- and alcohol-fixed tissues. R. J. Parsons (J. tech. Methods and Bull. int. Assoc. Med. Museums, 1939, 19, 104–108).—Fixation is in 4% formaldehyde for 18 hr.—7 weeks, followed by 96% alcohol

for 18 hr.—3 weeks. From the alcohol sections are stained in acidulated ethyl-eosin for 2 min. Excess of stain is removed with 96% ethyl alcohol, and the sections are then stained for 2 min, in borax-methylene-blue, rinsed quickly in distilled water, and differentiated for 2—5 min. in 0.25% acetic acid. Sections should be pale bluish-pink. They are dehydrated rapidly and mounted in Canada balsam. J. D. B.

Histological technique for mouse pituitary gland. I. H. Perry and M. S. Lockhead (J. tech. Methods and Bull, int. Assoc. med. Museums, 1939, 19, 101–103).—The procedure is Zenker-formol fixation for 4 hr.; distilled water 4 hr.; iodised alcohol during dehydration; imbedding in nitrocellulose or celloidin; cutting sections at 4 μ .; mordanting in 3% K₂Cr₂O₇ before staining by Koneff's technique. Acidophils stain orange and deep red; basophils light blue with bluish-red nuclei; chromophobes grey with red nuclei.

J. D. B. **Thin serial sections of soft-tissue organs.** O. W. Schalm and C. M. Haring (*J. tech. Methods and Bull. int. Assoc. med. Museums*, 1939, **19**, 97–100).—An account of a method devised for obtaining serial sections of cow's udder, which would also be applicable to other large and soft tissues. J. D. B.

Preparation of serial sections of whole breast. H. Ingleby and C. Holly (*J. tech. Methods and Bull. Int. Assoc. med. Museums*, 1939, 19, 93-96).—Fixation, sectioning, staining, and storage are described. I. D. B.

Apparatus for mounting diatoms in realgar and other substances. O. D. Hanna and W. M. Grant (J. Roy. Microscop. Soc., 1940, [iii], 60, 152—160).—Full technical details are given of the equipment necessary. The essential parts are (1) vac. pump with suitable drive, e.g., Cenco Hyvac driven by $\frac{1}{4}$ -h.p. motor; (2) bell jar to hold specimens to be mounted, with suitable fittings for incorporation of electrodes and for air-tight base; (3) heater, within the bell-jar, in connexion with the electrodes, carrying the realgar that is to be evaporated. Any vac. higher than 0·1 mm. is satisfactory. The coverglasses to be coated are stuck to a larger piece of glass by rubber cement, and supported over the heater. The film deposited shows no trace of structure, and the coated coverslips are mounted in any ordinary mounting medium. E. E. H.

isoButyl methacrylate polymeride as mounting medium. R. A. Groat (*Science*, 1940, 92, 268).—The polymeride is unsuitable as a mounting medium for histological specimens (cf. A., 1940, III, 786). The main objection is that n (1·477) is too low. Clarite X, with n 1·567, is the best mounting medium for crit. work with animal tissues. L. S. T.

V.-BLOOD AND LYMPH.

Congenital aplastic anæmia type Benjamin. M. Esser (*Jahrb. Kinderheilk.*, 1940, **154**, 305–316).—A case of congenital anæmia is reported; it is characterised by defective regenerative erythropoetic activity and a series of malformations. Progressive increase of reticulum cells and reduced erythroblastic activity was observed. M. K.

Modern treatment of anæmia. R. Klima (Med. Welt, 1940, 14, 138—143).—The treatment of the various types of anæmia is discussed. A. S.

"Target cell " anæmia. Anerythroblastic type of Cooley's erythroblastic anæmia. W. Damshek (Amer. J. med. Sci., 1940, 200, 445—454).—In an Italian youth with hypochromic anæmia, splenomegaly, and hæmolytic icterus, unusual changes were discovered in the red blood cells and the bones. A third of the red cells presented the appearance of " targets" or " bull's eyes "; these cells were unusually resistant to hypotonic NaCl solutions. No nucleated red cells were present. Generalised osteoporotic changes with great thickening of the skull were present; in addition a bony tumour arising from a rib encroached on the right upper lung. C. J. C. B.

Anæmia and water retention. M. B. Strauss and H. J. Fox (Amer. J. med. Sci., 1940, 200, 454-462).—Water retention was induced in 26 patients with hæmoglobin vals. of 30-94%, by administration of Na salts. The magnitude of this water retention varied inversely with the hæmoglobin level, the more anæmic subjects showing the greatest retention. The phenomenon was not due to a concomitant lowering of the plasma-protein level or to an increase in the venous pressure. 3 patients with Addisonian pernicious anæmia in severe relapse did not, however, exhibit water retention during Na administration until after the institution of liver therapy. C. J. C. B.

Failure to control polycythæmia rubra vera with lipocaic and choline. G. Carpenter (*Amer. J. med. Sci.*, 1940, 200, 462—465).—Lipocaic and choline have no effect on the erythrocyte level in polycythæmia rubra vera over periods up to 1 month. C. J. C. B.

Nature and cause of hæmolysis produced by X-rays. T. P. Ting and R. E. Zirkle (J. Cell. Comp. Physiol., 1940, 16, 189— 195).—Red cells suspended in serum and irradiated with 33,000 r. begin to hæmolyse in 15—20 hr. Hæmolysis is preceded by swelling, and addition of 1 vol. of isotonic sucrose to 9 vols. of serum prevents swelling and delays hæmolysis for 36 hr. After irradiation the cell membrane is permeable to Na' and K'. V. J. W.

Kinetics of diffusion of salts into and out of X-irradiated erythrocytes. T. P. Ting and R. E. Zirkle (J. Cell. Comp. Physiol., 1940, 16, 197—206).—Irradiated human or ox red cells becone permeable to K' or Na' but not to Mg''. The permeability const. per hr., per sq. μ of surface, with concn. difference of 1 mol. per l., is $2\cdot 8 \times 10^{-17}$ mol. per hr. for K', and $2\cdot 2 \times 10^{-17}$ for Na' when the cells are suspended in isotonic MgCl₂. The changes agree well with equations derived from Fick's law, but less well when the cells are suspended in isotonic sucrose. V. J. W.

Blood-iron. B. S. Walker and R. Fitz (Ann. int. Med., 1940, 14, 263—276).—Blood-Fe determinations were made on 2608 samples, using a photo-electric colorimeter. The normal range was 31—55 mg. per 100 c.c. of blood, with a majority of findings near 47 mg. 64 patients had blood-Fe concns. below 31 mg., 75 patients had more than 55 mg.-%. 9 out of 12 patients with less than 20 mg.-% died in spite of active treatment. Blood-Fe is relatively high in untreated severe pernicious anæmia; it is low in hypochromic anæmia. 4 patients suffering from polycythæmia vera had blood-Fe concn. up to 86 mg.-%. A. S.

Absorption of iron under normal and pathological conditions. L. Heilmeyer and H. Koch (*Disch. Arch. klin. Med.*, 1939, 185, 89—101).—Serum-Fe was determined, using the method of Heilmeyer and Plötner, after ingestion of 1 g. of Fe. Serum-Fe increases in normal subjects by 150—250 μ g. per 100 c.c. within 4 hr.; it increases by 100 μ g.-% within 6 hr. if the subjects had received 1 g. of Fe every day for one week. After severe hæmorrhage with a low serum-Fe content serum-Fe concn. may increase by 350 μ g.-%. No Fe absorption was observed in patients with histamine-resistant gastric achylia; the absorption is low in patients suffering from essential hypochromic anæmia and in pernicious anæmia. In the latter cases the absorption of Fe^{II} compounds or of Fe from the rectum was not observed in normal subjects. A. S.

Pernicious anæmia : rôle of pepsin. S. Morrison (Annint. Med., 1940, **14**, 242—254).—Oral administration of depepsinised whole stomach or fundus mucosa, with and without addition of extrinsic factor, had no effect on the blood counts of patients suffering from pernicious anæmia. Feeding of depepsinised pyloric mucosa without addition of extrinsic factor was also ineffective; together with extrinsic factor, slight antipernicious anæmia activity was observed. A. S.

Spleen size in pernicious anæmia. E. Bigg (Ann. int. Med., 1940, 14, 277-280).—The spleen could be palpated in 6 out of 200 patients suffering from pernicious anæmia, one of them having cirrhosis of the liver. A. S.

Basophil granules in bone-marrow erythrocytes in lead poisoning. N. Henning and H. Keilhack (*Dtsch. med. Wschr.*, 1940, 66, 323—324).—Basophil granulation of red cells in bone marrow was observed in 10 patients suffering from Pb poisoning when the erythrocytes in the circulating blood were normal. A. S.

Determination of oxyhæmoglobin and methæmoglobin by photoelectric method. B. Szigeti (*Biochem. J.*, 1940, 34, 1460—1463).—A method for determination of oxyhæmoglobin in blood by a photo-electric colorimeter is described. It is accurate and rapid, a determination taking only 2—3 min. Met- can be determined if oxy-hæmoglobin and other pigments are absent, and the method can be used to detect presence of met- and sulph-hæmoglobin in whole blood. 0.04% is better than 0.4% aq. NH₃ as a diluent for blood, for with the latter there is fairly rapid conversion of oxy- into met-hæmoglobin, and of the latter into hæmatin. J. N. A.

Differential leucocyte count. R. G. S. MacGregor, W. Richards, and G. L. Loh (*J. Path. Bact.*, 1940, **51**, 337-368). —Differential leucocyte counts performed on slide films showed marked variations, particularly in the % vals. of polymorphonuclears and lymphocytes, in different areas of the same film. Three common methods of performing the differential count were shown to give, on the same film, variations which exceeded 20% in certain types of cells under certain circumstances. The type of differential slide film count whole film was the battlement edge count, with due consideration of both edges to diminish errors due to asymmetry of the film. In this method the count is made in a zigzag fashion utilising only the outer 1 mm, of the film on the edge.

C. J. C. B. **Phagocytosis in diabetics.** E. Kestermann and K. E. Vogt (Dtsch. Arch. klin. Med., 1940, **185**, 258—264).—The phagocytosis of B. coli by leucocytes and monocytes was studied at 37°. The onset of phagocytosis is delayed and its extent diminished in cases of severe diabetes mellitus. A. S.

Action of vitamin-C on chronic leukæmia. A. Vogt (Dtsch. med. Wschr., 1940, 66, 369—372).—Large doses of vitamin-C had no effect on chronic lymphatic or myeloid leukæmia. -C balance experiments showed that subjects suffering from leukæmia (particularly lymphatic) develop considerable -C deficits. A. S.

Leukæmia in animals. J. Dobberstein (Med. Welt, 1940, 14, 189—191).—Leukæmic conditions in animals correspond with the disease in man. Hodgkin's disease has not yet been observed in animals. Cattle and dogs have the highest incidence of leukæmia of domestic animals (0.15-0.3%). 5-15% of deaths in chickens is due to leukæmia. Leukoses in animals appear to be tumour-like diseases of the mesenchymatous tissue; there is no evidence of an infectious pathogenesis. A. S.

Acute lymphatic leukæmia in mono-ovular twins. H. Jelke (*Acta paediatr. Stockh.*, 1939, 27, 87—136).—Case report; discussion of ætiology. M. K.

Lymphatic leukæmia with normal bone marrow. G. Sack (Dtsch. Arch. klin. Med., 1939, 185, 192—196).—Sternal bonemarrow smears were normal in a patient suffering from lymphatic leukæmia. A. S.

Atypical leukæmia. C. Hirschberger (Jahrb. Kinderheilk., 1939, 153, 43—54).—Case report of a girl of 9 years with negative serological, bacteriological, and roentgenological findings. Leucopenia with relative lymphocytosis, moderate swelling of lymphatic glands, and slight enlargement of spleen was present. After 3 months acute lymphatic leukæmia developed with typical blood findings and palpable lymphatic glands. M. K.

Generalised herpes zoster associated with leukæmia. U. J. Wile and H. H. Holman (Arch. Dermat. Syphilol., 1940, 42, 587—592).—2 cases of generalised herpes zoster in association with lymphatic leukæmia are reported. 32 previously reported cases are reviewed. Generalised herpes zoster when complicating the leukæmic state occurs most frequently in middle-aged men afflicted with lymphatic leukæmia.

C. J. C. B. Lymphosarcomatosis and eosinophilia. H. W. Gerstenberg (*Dtsch. Arch. klin. Med.*, 1939, **185**, 62–72).—A patient suffering from generalised lymphosarcomatosis for 5 years showed an eosinophil count in blood of 6–24% with a normal no. of leucocytes. A. S.

Granules in cells of multiple myeloma. B. Steinmann (Dtsch. Arch. klin. Med., 1939, 185, 49-61).—Blood and bone-marrow smears of a patient suffering from multiple myeloma contained myeloma cells with azurophil rod-like granulæ, similar to the Auer granulæ in cases of acute myeloid leukæmia. The granules are protein crystals. A. S.

Blood counts in Hodgkin's disease. A. Gebauer (Dtsch. Arch. klin. Med., 1939, 185, 273—293).—Patients with Hodgkin's disease often develop slight secondary anæmia. Severe anæmia is rare, but there is thrombocytopenia. Occasionally, hyperchromic anæmia of the pernicious type was observed. Leucocytosis with increase in the neutrophil count and lymphocytopenia were the most frequent changes. Leucopenia was found in patients with preponderant localisation of the disease in spleen and liver; in those cases, lymphocytosis was observed. Increase in eosinophils was found in 14% of 114 patients. Monocytosis of over 8% is rare. Blood sedimentation rate is always increased. The diazo-reaction in urine is usually positive in the later stages of the disease. A. S.

Effect of diphtheria antitoxin on monocyte count. J. Cremer and W. Schmidt (*Disch. Arch. klin. Med.*, 1939, 185, 197-209).—The injection of diphtheria antitoxin increases the monocyte count in moderately and severely ill patients. Antitoxin injection does not influence the monocyte count in patients suffering from toxic diphtheria. The monocyte increase is a non-sp. reaction as it was also observed after injection of meningococcal serum and following blood transfusion. A. S.

Output of lymphocytes from thoracic duct in cats and rabbits. A. G. Sanders, H. W. Florey, and J. M. Barnes (Brit. J. exp. Path., 1940, 21, 254—263).—Methods are described for collecting lymph continuously for several hr. from the thoracic ducts of cats and rabbits. This lymph contains 5% of large lymphocytes and monocytes; the rest of the cells are small lymphocytes. The blood lymphocytes are replaced from 0.5 to 3.5 times daily in the cat, and 5 times daily in the rabbit. F. S.

Enzymes of lymphocytes and polymorphonuclear leucocytes. J. M. Barnes (*Brit. J. exp. Path.*, 1940, **21**, 264—275). —Both types of cells in rabbit and cat contain cathepsin and lysozyme. Nuclease and lipase are found in both types in the rabbit, but only in the lymphocytes of the cat. Erepsin is absent in all; trypsin is found only in cat lymphocytes. Amylase and adenosinase are found in both types of rabbit cells and adenosinase in greater amount than in other rabbit tissues. The polymorphonuclear leucocytes of the rabbit contain much lysozyme whereas those of the cat contain only small amounts. F. S.

Effects of removal of lymphoid tissue. A. G. Sanders and H. W. Florey (*Brit. J. exp. Path.*, 1940, 21, 275-287).—There was no local regeneration of lymph glands after complete operative removal in the rat and rabbit. New nodules of lymphoid tissue were formed in the liver in rats and in the lungs in rabbits. These compensatory nodules did not appear in splenectomised controls although similar nodules appear after splenectomy in *Bartonella*-infected rats. From this it is deduced that lymphocytes are concerned with protection against infection. F. S.

Cell content of blood of normal chickens with special reference to comparative differential leucocyte counts made with supravital and Wright's staining techniques. N. M. Twisselmann (Poultry Sci., 1939, 18, 151-159).—Considerable variation appeared in differential leucocyte counts for an individual when the supravital or Wright's method was used. Average vals. for different individuals showed much smaller variations. No correlation between blood picture and age was apparent. Supravital staining indicates larger proportions of polynuclear cells containing rods or granules, basophils, and monocytes but fewer lymphocytes than does Wright's technique. A. G. P.

Essential weakness of splenic reticulum. J. von Soós (*Deut. Z. ges. gerichtl. Med.*, 1939, **31**, 12—17).—Abnormal deficiency in Ag-staining reticulum fibres was found in the spleen of a man who two days after a drinking bout died from intra-abdominal hæmorrhage following rupture of the splenic capsule which had been distended by a subcapsular hæmatoma; there was no history of trauma. An anomaly of the reticulum is discussed as an ætiological factor. E. M. J.

Malignant form of Gaucher's disease. C. de Lange (Acta paediatr. Stockh., 1939, 27, 34—50).—2 cases in one family are reported. M. K.

Differential diagnosis of hepatolienal symptom-complex in Gaucher's disease. F. Goldmann and M. Stein-Freiberg (Jahrb. Kinderheilk., 1938—1939, 152, 224—234).—Report of a case, in which Gaucher's cells were found by puncture of bone marrow. M. K.

B 2 (A., III.)

Blood platelets in thyrotoxicosis. P. Woodruff (*Med. J. Austral.*, 1940, II, 190–197).—The mean platelet count per c.mm. blood in 20 cases of thyrotoxicosis was $281,000 \pm 113,000$ and in 14 normal persons $381,000 \pm 89,000$.

F. S. **Post-pubertal menorrhagia and its possible residuants thromboeytopenic purpura hæmorrhagica.** H. L. Goldburgh and B. A. Gouley (*Amer. J. med. Sci.*, 1940, 200, 499—505). —Some girls at the onset of puberty or soon afterwards develop menorrhagia associated with irregularities in the cycle; this may be the first indication of idiopathic thrombocytopenic purpura. C. J. C. B.

Rôle of bone marrow in bone regeneration. G. Levander (Acta Chir. Scand., 1940, 83, 545-560).—Bone marrow was grafted into the soft tissues of 12 rabbits. In 5 cases bone formation was obtained. The grafted bone-marrow cells die and the new bone arises from the mesenchymal tissue formed around the graft. It is suggested that the bone marrow stimulates bone formation through some substance which influences non-sp. mesenchymal tissue to form bone tissue. H. H. K.

Blood groups of anthropoids. J. B. S. Haldane (*Nature*, 1940, 146, 652).—Probability calculations for blood group distributions indicate that mating is not random among orangs, gorillas, or gibbons. It is important that data on blood groups of anthropoids should include the species or subspecies and place of capture. E. R. S.

Transitional forms of blood groups. L. Hirszfeld and Amzel (Schweiz. med. Wschr., 1940, 70, 801-803).—A review of the previously published results of the author's studies.

A. S. Effect of intraperitoneal blood transfusion. J. Clausen (Acta paediatr. Stockh., 1939, 27, 24—33).—Antibodies injected intraperitoneally into infants and rabbits are absorbed rapidly from the peritoneal cavity. Intraperitoneally injected red cells retain their biological properties while being absorbed into the blood stream. Blood injected intraperitoneally into infants increases hæmoglobin and red cells within a few days. M. K.

Use of whole blood as means of preventing peritonitis and adhesions. E. G. Joseph (Ann. Surg., 1940, 111, 618-621). —Injection of blood into the peritoneal cavity of dogs increases the immunity of the peritoneum from infection and reduces the formation of adhesions. D. S.

Prevention of peritoneal adhesions with heparin. E. P. Lehman and F. Boys (Ann. Surg., 1940, 111, 427-435).— The formation of adhesions following mechanical damage or bacterial contamination of the peritoneum in rabbits was prevented in 90% of experiments by intraperitoneal injection of 750 units of heparin in 25 c.c. of normal saline. The reformation, following separation, of previously produced adhesions in the dog is largely prevented by heparin. D. S.

Blood transfusion in childhood. H. Schaffa (Jahrb. Kinderheilk., 1939, 153, 177-208).—A review. M. K.

Treatment of hæmorrhage and use of blood substitutes. G. Constam (*Schweiz. med. Wschr.*, 1940, **70**, 855-857).—A detailed description is given of the arrangements made in the Swiss army for the treatment of acute traumatic hæmorrhage and the use of blood substitutes and blood transfusions.

A. S.

Preparation and experimental use of dried blocd plasma. S. B. Harper, H. E. Essex, and A. E. Osterberg (*Proc. Staff Mayo Clin.*, 1940, **15**, 689-694).—Dog's or human plasma is dried by distillation under reduced pressure at 45° . A 5-1. balloon flask is fitted with a distilling arm and a separating funnel. The tube of the separating funnel is extended and drawn to a capillary tip. By this means the plasma can be dropped at a const. rate into the large flask. Water is removed from about 400 c.c. of plasma in 1 hr. The dried plasma is readily sol. and free from untoward reactions when injected into dogs or men. H. H. K.

Economical desiccating process particularly suitable for preparation of concentrated plasma or serum for infravenous use: the adtevac process. J. M. Hill and D. C. Pfeiffer (Ann. int. Med., 1940, 14, 201-214).—A detailed description of a new process for desiccation of plasma, serum, and biological substances from the frozen state by means of vac. is given. Water vapour is adsorbed in SiO₂ gel. Satisfactory drying of

200 c.c. of plasma occurs within 6 hr. Residual moisture was below 1%. The SiO_2 gel desiccant can be used over long periods without losing adsorbing property. Conc. plasma was intravenously injected into 45 patients without untoward effects. A. S.

Small-scale filtration of citrated plasma. S. R. M. Bushby, G. A. H. Buttle, and L. E. H. Whitby (*Lancet*, 1940, 239, 131-133).—A limited amount of citrated plasma can be filtered through crude asbestos pads without clotting if filtration is rapid and the pad is frequently washed with citrate. Pure cryst. asbestos (Gooch fibre) does not cause clotting. Apparatus and technique are described. C. A. K.

Intravenous use of serum and plasma fresh and preserved. M. M. Strumia, J. A. Wagner, and J. F. Monaghan (Ann. Surg., 1940, 111, 623-628).—Intravenous injection of citrated blood plasma, fresh or preserved by refrigeration or lyophile process, without cross-matching is safe and does not cause the severe reactions which may occur with serum.

D. S.

Fate of extracorpuscular circulating hæmoglobin. N. H. Fairley (Brit. Med. J., 1940, II, 213-216).-14-25'4 g. of human hæmoglobin were injected intravenously in 3 patients, A positive Schumm reaction occurred within 4-10 hr. and lasted for 24 hr. Transient increase in bilirubin was seen, but no methæmalbumin, although 2 cases of incompatible blood transfusion (45 and 90 g. of hæmoglobin respectively) both contained the latter. Extracorpuscular circulating hæmoglobin may be absorbed by the reticulo-endothelial system, catabolised to produce methæmalbumin, or excreted by the kidney. The hæmoglobin is first split into globin and reduced hæmatin which is oxidised in man and combines with serum-albumin to form methæmalbumin. C. A. K.

Determination of prothrombin. H. W. Fullerton (Lancet, 1940, 239, 195–196).—A simplified method using a commercial prep. of Russell-viper venom as thrombokinase is described. C. A. K.

Metabolism of vitamin-K and rôle of liver in production of prothrombin in animals. J. W. Lord, W. DeW. Andrus, and R. A. Moore (Arch. Surg., Chicago, 1940, 41, 585–595).— In dogs with ligated common bile duct or with a cholecystonephrostomy, bile salts alone when fed by mouth in the absence of added vitamin-K did not prevent a fall in plasmaprothrombin. Partial loss of the stores of -K in the liver was reflected in a linear manner by a fall in plasma-prothrombin. The formation of plasma-prothrombin depends therefore on -K (extrinsic factor), bile salts (intrinsic factor), an absorptive mechanism, the intestinal epithelium, and the liver which stores -K and also elaborates the plasma-prothrombin. The crit. level of plasma-prothrombin, as manifested by hæmorrhagic tendencies, was 20% of the normal. F. S.

Clinical investigations of factors causing prothrombin deficiencies. W. DeW. Andrus and J. W. Lord (Arch. Surg., Chicago, 1940, 41, 596-606).—The findings in 4 cases of obstructive biliary lesions and one of non-tropical sprue confirmed the previous findings. Damage to the liver may depress the level of plasma-prothrombin and seriously interfere with the response to vitamin-K therapy. F. S.

Prothrombin content in relation to early and late feedings of newborn. L. Salomonsen and K. K. Nygaard (Acta paediatr. Stockh., 1939, 27, 209–218).—Extra feedings started within 2 hr. after delivery prevent the development of transitory hypothrombinæmia. Vitamin-K is formed in the intestine by bacterial production. M. K.

Chemistry of blood coagulation. IX. Thromboplastic protein from lungs. S. S. Cohen and E. Chargaff. X. Reaction between heparin and thromboplastic factor. E. Chargaff, M. Ziff, and S. S. Cohen (*J. Biol. Chem.*, 1940, 136, 243-256, 257-264).—IX. Thromboplastic protein is pptd. by 30%-saturation with $(NH_4)_2SO_4$ of a saline extract of lungs after pptn. by 10%-saturation. The protein component, after removal of the phosphatides, does not exhibit thromboplastic activity but can act as an antigen. There is no dissociation at $p_{\rm H}$ 5-1 and only a small amount at $p_{\rm H}$ 8-8.

at $p_{\rm H}$ 5-1 and only a small amount at $p_{\rm H}$ 8-8. X. The phospholipin constituent of the thromboplastic protein may be displaced by heparin, the heparin-protein complex exhibiting marked anticoagulant properties. No anticoagulant activity is observed in the compounds resulting from the action of heparin on kephalin-histone. H. G. R. Effect of oxalic acid intravenously on blood-coagulation time in three hæmophiliacs. R. C. Page, H. K. Russell, and R. L. Rosenthal (*Ann. int. Med.*, 1940, **14**, 78-86).—Oxalic acid was intravenously injected in doses up to 10 mg. per day in 3 cases of hæmophilia. The blood coagulation time diminished from up to 50 min. to 10 min. within 2-3 days, and increased again after discontinuing the treatment. No untoward effects were observed. A. S.

Value of pre-operative estimations of serum-protein in gastric surgery. J. Devine (*Med. J. Austral.*, 1940, II, 214-217).— There was little relation between serum-protein concn. and the protein in the diet within the usual variations of diet. F. S.

Serum-potassium in acute gastroenteritis. P. Robinson (Jahrb. Kinderheilk., 1939, 153, 157-165). —Average serum-K of 40 children with acute toxic gastroenteritis was 10.9 mg.-%, compared with 19 mg.-% in healthy infants. This loss is due to migration of K from serum into blood cells. The K level in serum indicates the degree of intracellular dehydration. M. K.

Protein and lipin metabolism in serum of eczema. A. Sartory, G. Hufschmitt, and J. Meyer (*Bull. Acad. méd. Paris*, 1938, **119**, 232—237).—Total serum-protein was not diminished in 4 eczematous subjects. Slight increase of globulinophil lipins, fatty acids, and globulinophil cholesterol was observed. M. K.

Photometric determination of serum-urea. A. Gigon and M. Noverraz (*Schweiz. med. Wschr.*, 1940, **70**, 464–465).— A colorimetric determination of urea in serum is described. The method is sp.; urea is pptd. as dixanthylurea and the determination is accurate in 0.1 c.c. of serum. A. S.

Calcium and potassium changes in blood and urine of dog during excitement and after bilateral vagal section. C. Pfeiffer, R. Dreisbach, H. G. Glass, C. C. Roby (Amer. J. Physiol., 1940, 129, 756—765).—Serum-Ca and -K are raised in dogs by excitement and by autonomic drugs (ephedrine, neosynephrin, or mecholyl). A generalised lowering of serumproteins by excitement occurs, indicating that a hæmodilution is taking place. The excitement rise is minimised by bilateral vagotomy. M. W. G.

Calcium, inorganic phosphorus, and magnesium contents of serum of young horses. C. T. Blunn, C. E. Howell, and R. W. Caldwell (J. Nutrition, 1940, 20, 1—6).—Serum-Ca and \cdot Mg in foals from birth to 23 months of age are similar to those in adult animals. Serum-inorg. P at birth exceeds that of the mare, increases to a max. val. at 10 weeks, and subsequently declines. A. G. P.

Ultramicroscopy of blood serum. I. Ultramicroscopic view of blood serum of normal animals. M. D. Kolomitzeva (Kolloid. Shurn., 1939, 5, 797—806).—In the serum of cattle and pigs four types of particles may be distinguished: (a) microscopic droplets of fat, (b) protein particles filling the field of view, (c) crystal-like flakes, probably of fatty acids or soaps, and (d) ultramicroscopic fat droplets. J. J. B.

Stabilisation of sols by blood serum.-See A., 1941, I, 41.

Takata reaction in heart diseases and nutritional disorders of sucklings. W. Hirsch (*Jahrb. Kinderheilk.*, 1938–1939, 152, 316–327).—Positive Takata reaction was found only in serious heart disease. Change from positive to negative reaction during treatment is a favourable sign. Simple dyspepsia shows a negative reaction; allimentary toxicosis and all diseases in which liver function is disturbed or colloidal state of blood serum is changed show a positive Takata reaction. The reaction was negative in dysentery of infants.

Antiscorpionic serum. E. Sergent (Bull. Acad. méd. Paris, 1938, 119, 254-257).—A lecture. M. K. Indivition

Inhibition of anaphylactic reaction by Congo-red. J. Gordon (J. Path. Bact., 1940, 51, 460-463).—Repeated injection of Congo-red over 3 successive days into guinea-pigs sensitised with rabbit serum before giving the second (shock) dose diminished the symptoms of and mortality from anaphylactic shock. With egg-albumin anaphylaxis, this effect is less marked. C. J. C. B.

Determination of blood and plasma viscosity. H. Schwalm (*Med. Welt*, 1940, **14**, 380–382).—The velocity of a small ball falling in a graduated tube at const. temp. is determined. Abs. viscosity $\eta = Z \times (S_k - S_l)K$, where Z represents

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velocity of the ball, S_k the sp. gr. of the ball, S_i the sp. gr. of the fluid examined, and K a const. The method has an experimental range of error of $\pm 0.1\%$. The viscosity of non-coagulable blood is $2\cdot4$ — $3\cdot6$, that of plasma 1.3, and of serum $1\cdot1$ — $1\cdot4$ centipoises. A. S.

Blood volume and bone marrow function in heart failure. A. Ott (Dtsch. Arch. klin. Med., 1939, 185, 176–185).—The ratio of sternal bone marrow red cells with nuclei to those without nuclei is $3\cdot1\%$ in normal subjects (range $6\cdot4-16\cdot2\%$). The average ratio in patients with cardiac insufficiency is 24%. The bone marrow smears resemble those in essential or high-altitude polycythemia. The circulating blood vol. and cell vol. are increased (Congo-red method). The polycythemia and the increase in blood vol. disappeared when the heart failure was compensated. A. S.

Osmotic regulation in fresh-water animals. L. C. Beadle and J. B. Cragg (*Nature*, 1940, 146, 588).—Fresh-water *Gammarus pulex* survived at least 8 days in distilled water, and *G. duebni* at least 4 days whilst its brackish variety died. All animals lost Cl initially, but those surviving maintained a lowered blood-Cl. Retention of salts is the predominant factor in the osmoregulatory mechanism, not active absorption. E. R. S.

VI.-VASCULAR SYSTEM.

Growth, growth energy, and ageing of chickens' heart. P. B. Medawar (*Proc. Roy. Soc.*, 1940, **B**, 129, 332—355; cf. A., 1938, III, 309).—Determinations of the growth energy, *i.e.*, the resistance to inhibition of growth by Heaton's inhibitor (preps. from extract of malt, probably containing aldehydes), of the embryonic chick heart at 6—18 days show that, during this period, the energy declines exponentially. The energy is proportional to, and consequently is a measure of, the sp. growth rate of the heart *in vivo*. Accordingly, the growth in mass of the heart can be described by a curve which is that of a Gompertz equation. During cultivation *in vitro*, the growth energy of tissues increases rapidly, initial embryonic age differences being smoothed out. The relationship between growth, growth energy, cell movement, and metabolism, a possible system of functional dependence among them, and the relevance of the Gompertz equation to problems of growth and senescence are considered. W. McC.

Method of perfusion of isolated toad's heart. K. Uraguchi (Japan. J. Med. Sci., IV, 1940, 12, Proc., 180-181),-Excitation and contraction of auricle and ventricle of isolated toad's heart were observed by means of simultaneous registration of electro- and mechano-grams. H. H. K.

Reactivation of isolated child's heart. N. J. Ossinowsky (Acta paediatr. Stochk., 1939, 27, 233-244).—Hearts of children isolated several hr. after death were perfused through the coronary arteries. Contractions were obtained in 50% of cases, 5-15 min. after beginning the perfusion. The max. interval between beginning of perfusion and the first heart contraction was 3 hr. 20 min. The heart contracted up to 5 hr. M. K.

Action of aldehyde and aldehyde acids on the frog's heart. E. Hesse (Z. ges. exp. Med., 1940, 107, 153–160).—Aldehydes and aldehyde acids (e.g., β -hydroxybutaldehyde) arrest the frog's heart in systole. Acetylglyoxylic acid and similar acetyl compounds do not show this action. A. S.

Action of drugs on chronaxie of toad's heart. M. Kan (Japan. J. Med. Sci., IV, 1940, 12, Proc., 167-170).—Atropine, nicotine, acetylcholine, adrenaline, and ergotoxine do not change the chronaxie of toad's heart. Na caffeine benzoate and reduced glutathione shorten chronaxie. Quinine or camphor prolongs chronaxie but no change occurs when both drugs act together. Prolongation of chronaxie after administration of cocaine, chloral hydrate, or quinine is antagonised by reduced glutathione. H. H. K.

Absolute force of [frog's] heart. K. Tanaka (Japan. J. Med. Sci., IV, 1940, 12, Proc., 174-175).—Abs. force of frog's heart is estimated by measuring the max pressure necessary to overcome an artificial resistance in the aorta. It is increased with warming and lessened with cooling the nutritive solution. It does not change with $p_{\rm H}$ 7.0—7.4 but is larger with $p_{\rm H}$ 7.6—8.0 or less with $p_{\rm H}$ 5.8—6.8. Electrical stimulation of the vago-sympathetic after treatment with atropine or stimulation of the sympathetic trunk increases the

abs. force but stimulation of the vagus decreases it. The abs. force is not influenced by perfusion of the central nervous system with strychnine or with picrotoxin, even during convulsions. Electrical stimulation of the upper cervical spinal cord increases and stimulation of the medulla oblongata decreases it. Adrenaline and caffeine increase abs. force with augmentation of frequency of beat; ouabaine, aconitine, cardiazol, veratrine, tannin, glucose, Ca, cholesterol sol, and fatty acid colloid increase it without change of frequency. Diminution of force occurs after acetylcholine, pilocarpine, strychnine, and quinine, with decrease of frequency of beat; and camphor, coramine, alcohol, and K without change of heart beat. H. H. K.

Cardiac metabolism and rigor in thyroidectomised rats. L. Stern and E. Wertheimer (*Nature*, 1940, 146, 521-522).— The intervals between heart removal and the onset of and max. cardiac rigor are given for normal and thyroidectomised rats treated by 10 methods of producing unconsciousness. Some differences in the hearts of normal and thyroidectomised rats are described. The sp. nature of the changes produced by thyroidectomy in cardiac rigor, glycogen storage, and total creatinine suggests that removal of the thyroids affects the special metabolism of heart muscle in a manner which is independent of the depression of general metabolism.

F. R. S.

Cardiac hypertrophy in rabbit : its production by arteriovenous anastomosis. A. N. Drury and K. J. R. Wightman (*Quart. J. Exp. Physiol.*, 1940, 30, 45-457).—Anastomosis of the right carotid artery and the jugular vein is produced by joining longitudinal slits and tying off the artery distally to the anastomosis. Certain adverse symptoms are avoided by tying the vein also distally to the anastomosis. Cardiac hypertrophy and dilatation occur after a short time. After 3 months the auricles are equally enlarged up to 4 times the normal size. Hypertrophy of the ventricles is not so great, the right ventricle being the more affected. The hypertrophy is confined to the muscle fibres and is roughly proportional to the size of the leak. Blood pressure in the right iliac vein and the right auricle is increased. Closure of the anastomosis causes an abrupt fall in the right auricular pressure, indicating that the input to the heart has been increased; the venous pressure in the veins leading to the superior vena cava falls and that in the veins leading to the inferior vena cava rises. T. S. G. J.

Cardiac hypertrophy in rabbit: refractory period of a hypertrophied ventricular muscle. A. N. Drury (Quart J. Exp. Physiol., 1940, 30, 59-64).—The "effective refractory period" of ventricular muscle which is hypertrophied and dilated, hypertrophied only, or has returned to normal after being hypertrophied and dilated, is within normal limits. T. S. G. J.

Correlation of pathology and symptoms of coronary artery disease. F. M. Smith (Ann. int. Med., 1940, 14, 65-71).—A lecture. A. S.

Surgical treatment of angina pectoris. G. Bourne, J. P. Ross, A. D. Wright, *et al.* (*Proc. Roy. Soc. Med.*, 1940, 33, 535—544).—Difficulties attend revascularisation, which is the most scientific surgical treatment. Relief of cardiac pain of every type is best achieved either by thyroidectomy or by alcohol injection. W. J. G.

Congenital complete heart block. H. Wissler (Jahrb. Kinderheilk., 1940, 155, 53-56).—Case report. M. K.

Stokes-Adams syndrome in infancy. B. Fassler (Jahrb. Kinderheilk., 1939, 153, 327-349).-Case report. M. K.

Pathology of auricular rhythm and of P-wave. E. Attinger (Schweiz. med. Wschr., 1940, 70, 782—786).—E.c.g. of patients with sino-auricular block and multifocal extrasystoles in the course of digitalis treatment, interference dissociation, and sinus arrhythmia are discussed. A. S.

Combined effects of heavy water and adrenaline on rate and action current of the excised auricles of turtle. T. C. Barnes (Amer. J. Physiol., 1940, 129, 664-671).—The extent of contraction, frequency, and action current of the heart of frog and turtle are reduced in heavy water in the order named. The action current often persisted after arrest of the mechanical beat. The partial independence of the extent of contraction, frequency, and action current is suggested. Rapid recovery from D_2O poisoning is produced by adrenaline. D_2O did not annul the action of adrenaline. M. W. G.

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Effect of decreased barometric pressure on electrocardiogram. O. O. Benson (J. aviat. Med., 1940, 11, 67–74).— In normal subjects a decrease to 226 mm. (30,000 ft.) with adequate O_2 produced no change. When air was breathed there was an increased rate beginning at 8000 ft. and up to 20,000 ft. (349 mm.), only a slight and inconst. depression of the T wave and decrease in amplitude of the QRS complex. F. S.

Delayed electrocardiographic changes in coronary occlusion. S. Strauss (*Amer. J. med. Sci.*, 1940, 200, 474-477).—Five cases are reported in which the diagnosis of coronary occlusion was clear clinically from the start, the e.c.g. showing changes only after several days. In one instance the changes were min. and not diagnostic without the history. C. J. C. B.

Significance of high positive T-wave. W. Breu and S. Zollner (*Dtsch. Arch. klin. Med.*, 1940, 185, 416–433).—264 of 9000 e.c.g. showed a high positive T wave. 60% of these patients suffered from anginal symptoms. 42% had a high positive T wave in leads I and II, 36% in lead II only. 12 of 71 patients suffering from hyperthyroidism (average basal metabolic rate +50) had an abnormally high T wave. A. S.

Electrocardiographic changes in diphtheria. W. Appel and H. Plügge (*Dtsch. Arch. klin. Med.*, 1939, **185**, 145—152).— Marked irregular arrhythmia (independent of respiration) is an early symptom of cardiac lesions in diphtheria. Severe e.c.g. signs of lesions of the intraventricular conducting system were observed without clinical symptoms (*e.g.*, arborisation and bundle branch block). A. S.

Intracardiac injection. E. von Novák (Deut. Z. Chir., 1938, 250, 310-324).-5 cases of stopped heart during anæsthesia and after respiration had failed were resuscitated and permanently cured by single or repeated injection of 1 mg. of adrenaline into the right heart combined with artificial respiration and injection of caffeine, lobeline, or coramine. A temporary success after intracardiac injection was observed in 80% of 120 similar cases, lasting from a few hr. to a few days. The injection should never be performed as long as the heart is still beating. E. M. J.

Lymphatic system of heart in heart disease at different periods of life. F. J. Primak (*Trans. Conf. Seniilty, Kiev*, 1938, 97—109).—The lymphatics were blocked in diseases complicated by acute myocarditis. Prolonged arrest of lymphatic circulation produces proliferation of the endothelium in lymphatic capillaries, followed by sclerosis and fibrosis. Myocardial sclerosis found in chronic cardiac diseases of old subjects is due to circulatory disturbances of the lymph. M. K.

Fatty degeneration of myocardium. C. F. Garvin (Arch. intern. Med., 1940, **66**, 603-606).—Severe idiopathic fatty degeneration of the myocardium was probably the cause of heart failure in a man aged 42. C. A. K.

Relationship between sodium and chloride in cardiac insufficiency. J. Pojer (*Schweiz. med. Wschr.*, 1940, 70, 763— 766).—Theratio Na: Cl in urine is 7.5—10.0 in normal subjects. This index is lowered to 2.0—5.0 in patients suffering from severe cardiac insufficiency without noticeable renal damage. The patients were maintained on a standard diet. A. S.

Cardiac and respiratory function at rest in patients with uncomplicated polycythæmia vera. M. D. Altschule, M. C. Volk, and H. Henstell (*Amer. J. med. Sci.*, 1940, 200, 478— 483).—Measurements of cardiac and respiratory function in patients with polycythæmia at rest are normal. The slowing of blood flow, and the symptoms associated with it, are not due to impaired cardiac function but to increased resistance to the flow of blood through the small capillaries owing to increased blood viscosity. C. J. C. B.

Carbon monoxide poisoning of heart. G. W. Parade and H. Franke (*Dtsch. Arch. klin. Med.*, 1939, **185**, 294—302).— Patients poisoned with CO developed ventricular extrasystoles and depression of the S-T segment. Exercise produced similar changes when the patients recovered, and the e.c.g. were normal at rest. A. S.

Calcified constrictive pericarditis. E. L. Eliason and R. B. Brown (Ann. Surg., 1940, 111, 446-452).-Report of an operated case. D. S.

Differential metal bellows manometer for measurement of blood flow. H. Lawson (Science, 1940, 92, 291-292).-The

apparatus is described. Its accuracy is the same as that of a Hg manometer in indicating pressure changes. E. R. S.

Ergometer test of arterial blood flow in lower extremities. R. Schneider (*Schweiz. med. Wschr.*, 1940, **20**, 830-833).— An ergometer is described which was used in the diagnosis of disturbances of the circulation in the lower extremities.

Mechanism and prevention of impairment of auscultatory sounds during determination of blood pressure of standing patients. M. R. Berry (*Proc. Staff Mayo Clin.*, 1940, 15, 699—702).—Impairment of sounds is referable to venous congestion distal to the cuff of the sphygmomanometer and can be prevented by emptying the veins. H. H. K.

Acetylcholine action on the pulmonary vascular bed of the dog and its modification by adrenaline and ergotoxine. P. Foggie (*Quart. J. Exp. Physiol.*, 1940, **30**, 13—19).—In the isolated lungs of the dog under negative pressure ventilation and perfused at const. vol. inflow with defibrinated blood, adrenaline, and in the nicotinised prep. ergotoxine, tend to suppress or reverse the rise in pulmonary arterial pressure produced by large doses of acetylcholine. T. S. G. J.

Experimental analysis of the action of adrenaline and histamine on different parts of the pulmonary vascular bed. I. de B. Daly, P. Foggie, and C. O. Hebb (Quart. J. Exp. Physiol., 1940, 30, 21-44). In isolated dog's lungs under negative pressure ventilation and perfused at const. vol. inflow with defibrinated blood, ergotoxine suppresses or reverses the increase in pulmonary arterial pressure and the augmentation in venous outflow produced by adrenaline. The blood vessels responsible for the adrenaline rise in pulmonary arterial pressure differ from those which cause the increase in venous outflow. Histamine in small doses tends to increase and in large doses to diminish the venous outflow. The presence of ether in the lungs and a low venous pressure favour a histamine diminution in outflow. By injection of drugs into the pulmonary vascular bed by way of the bronchial arteries, it is possible to confine the site of action of the drugs almost exclusively to the pulmonary veins in lungs perfused in the normal direction or to the pulmonary arteries in lungs perfused in the reverse direction. The use of this method showed that adrenaline in small doses constricts both pulmonary arteries and veins and in large doses probably constricts the pulmonary capillaries. T. S. G. J.

Direct measurements of blood pressure in auricular fibrillation. W. C. Buchbinder and H. Sugarman (*Arch. intern. Med.*, 1940, **66**, 625).—Blood pressure was measured by a direct method (needle in brachial artery) in cases of auricular fibrillation and other cardiac irregularities. Indirect recording is shown to be inaccurate. Systolic and pulse pressures vary directly and diastolic pressure inversely to the length of the preceding cycle. C. A. K.

Vascular diseases. G. W. Scupham, G. de Takáts, T. R. Van Dellen, and W. C. Beck (Arch. intern. Med., 1940, 66, 707-776).-Review of recent literature. C. A. K.

Chronic hypertension produced by carotid sinus and aortic depressor nerve section. S. J. Nowak (Ann. Surg., 1940, 111, 102-111).—Chronic hypertension is produced in dogs by division of the sino-aortic nerves. Blood-glucose, -protein, -fat, -Cl, and -Ca, -count, red cell vol., O_2 and CO_2 content, and capacity are normal. There is slight glycosuria and albuminuria. Denervation without excision of vessels of carotid bifurcation fails to produce lasting hypertension. D. S.

Myocardial arterioles in hypertension group 4. H. M. Odel (*Arch. intern. Med.*, 1940, **66**, 579-602).—The myocardial arterioles show structural changes of varying severity in cases of hypertension group 4 (malignant). Intimal, medial, and adventitial thickening were seen. C. A. K.

Heredity of arterial hypertension. G. Richard (Bull. Acad. méd. Paris, 1938, 119, 411-421).—A lecture. M. K.

Blood pressure determinations on patients with essential hypertension. D. Ayman and A. D. Goldshine (Amer. J. med. Sci., 1940, 200, 465-474).—The blood pressure of 34 patients with various degrees of essential hypertension was studied over a long period in the clinic and at home. The home systolic and diastolic blood pressure readings were lower than the clinic readings in all cases. In 30% of the cases the systolic home blood pressure readings were 40 mm.

or more lower than in the clinic, and in 24% the diastolic home readings were 20 mm. or more lower than the clinic readings. C. J. C. B.

Treatment of hypertension ; medical versus surgical. E. V. Allen and A. W. Adson (*Ann. int. Med.*, 1940, **14**, 288—307). —Good results in the treatment of hypertension were obtained with prolonged oral administration of KCNS; the CN' concn. in serum should range between 8 and 14 mg. per 100 c.c. Operation for essential hypertension gives good results if the blood pressure responds well to rest and sleep, ingestion of Na amytal, or the intravenous injection of pentothal-Na. Patients with congestive heart failure, auricular fibrillation, angina pectoris, renal insufficiency, or severe hypertensive encephalopathy should not be operated on. The operation consists of resection of the splanchnic nerves with a portion of the coeliac ganglion and of the upper lumbar sympathetic trunk including the first and second lumbar ganglia. There were no operative deaths in 300 cases. Clinical symptoms disappeared with the reduction of blood pressure. A. S.

Blood pressure and kidney. F. Volhard (*Disch. med. Wschr.*, 1940, **66**, 426–430).—The review discusses in detail the experimental evidence with regard to hypertension following obstruction of renal blood flow. A. S.

Hypertension following thrombosis of renal veins. C. B. Perry and A. L. Taylor (*J. Path. Bact.*, 1940, **51**, 369–374).— A boy aged 12 had fatal hypertension due to occlusion of the renal veins by thrombosis originating in the inferior vena cava. C. J. C. B.

Effects of renin on renal blood flow and glomerular filtration. A. C. Corcoran and I. H. Page (Amer. J. Physiol., 1940, 129, 698—702).—Slow intravenous infusion of renin, either highly purified, or prepared by methods other than those of Helmer and Page (A., 1939, III, 560), into unilaterally nephrectomised dogs with single explanted kidneys, or dogs in which both kidneys were subcutaneously explanted, resulted in decreased renal blood flow and increased inulin clearance; arterial pressure increased. The decrease of renal blood flow was proportional to the degree of constriction of glomerular efferent arterioles, but not to the increase in arterial pressure.

M. W. G.

Pressor principle in the urine of hyperpietics. E. I. Jones (*Proc. Roy. Soc. Med.*, 1940, **33**, 503-506).—An extract of the urine of a young male with hypertension, anæmia of a hyperchromic type, lowered sugar tolerance, and achlorhydria gave in the spinal cat a marked pressor response identical with that of pituitrin. The extract also inhibited diuresis in the rat and exhibited a melanophore-dispersing effect in frogs, and like pituitrin was destroyed by alkali but was unaffected by boiling. In 6 months this activity disappeared from the urine, the blood pressure became normal, and the sugar tolerance improved. W. J. G.

Hypertension and unilateral malignant nephrosclerosis. O. Saphir and J. Ballinger (Arch. intern. Med., 1940, 66, 541– 560).—3 cases of severe arterial hypertension secondary to unilateral renal vascular stenosis with consequent ischæmia of one kidney are reported. In 2 of these autopsy revealed unilateral malignant nephrosclerosis (in the unobstructed kidney). The findings are best explained by analogy with Goldblatt's experimental hypertension from renal ischæmia. C. A. K.

Crystalline bodies in tunica media of middle cerebral artery. L. E. Glynn (J. Path. Bact., 1940, **51**, 445—446).—The subject was a woman aged 61 who died of rupture of an aneurysm at the bifurcation of the left middle cerebral artery. Embedded in the tunica media of the left middle cerebral artery just distal to the aneurysm were 50 cryst. bodies, roughly spherical and presenting on section radial striation. They were probably Mg or Ca oxalate. (5 photomicrographs.) C. J. C. B.

Bone marrow vessels of toads. F. Ri (Japan. J. Med. Sci., IV, 1940, 12, Proc., 177—178).—Perfusion of tibio-fibular bone of toads in situ with Ringer's solution is described. Addition of adrenaline (1:50—1:10 million) or acetylcholine (1:50—1:5 million) to perfusion fluid causes constriction of bone vessels. The adrenaline effect is abolished by yohimbine. Pilocarpine (1:100,000—1:20,000) or papaverine (1:200,000) produces slight vasodilatation. Electrical stimulation of sciatic nerve or sympathic trunk causes vasoconstriction. Stimulation of anterior nerve roots of T 7—8 is ineffective. H. H. K. Neuro-motor mechanism of small blood vessels of the frog. G. P. Fulton and B. R. Lutz (*Science*, 1940, 92, 223-224). Capillary blood flow in the retrolingual membranes of the frog is regulated in a sphincter-like manner by modified smooth muscles. E. R. S.

Retrograde arterial embolism. S. Ciechanowski (Virchow's Arch., 1938, 302, 784—791).—A blow to the lower abdomen in a young man of 19 years resulted in rupture of the intima of the aortic bifurcation with thrombosis and subsequent embolism of the Sylvian, kidney, spleen, and tibial arteries. The ductus venosus, arteriosus, and the foramen ovale were obliterated and no cause of the embolism other than thrombosis of the lower aorta was found. Experiments on human dead bodies with cork particles gave results supporting the possibility of retrograde arterial embolism. J. A.

Closing mechanism of umbilical vessels in newborn. L. Jankovich (*Deut. Z. ges. gerichtl. Med.*, 1939, **31**, 174—181).— Valve-like formations are described in the intra- and extraabdominal portions as well as in the umbilicus itself of the umbilical vessels in the newborn. They consist of thickened rings of muscle tissue in the arteries and semilunar or spiral valves in the vein; 9 and 8 respectively were found on an average, but 48 and 28 as a max. Their effect was seen in the newborn dying soon after birth by the impenetrability of the umbilical portion of the arteries to injected water in either direction, thus constituting an additional test for live births. E. M. J.

Surgical management of patent ductus arteriosus. R. E. Gross (Ann. Surg., 1939, 110, 321-350).—Four cases of successful ligature of patent ductus arteriosus are described. Criteria for selection of cases for operation are discussed. Og content of samples of blood taken at operation from aorta, ductus, and pulmonary artery, before and after ligature of ductus, shows in one case that peripheral flow was 5.81. per min., whilst 18.81. per min. passed through ductus. Following ligature cardiac output fell from 24.6 to 5.081. per min.

D. S.

Early recognition of shock and its differentiation from hæmorrhage. V. H. Moon (Ann. Surg., 1939, 110, 260-271). --Hæmoconcentration is the earliest sign of shock and distinguishes the shock state from that due to hæmorrhage. The degree of concn. is the best index of the severity of the shock. D. S.

Shock, its cause and treatment. J. C. Meakins (Canad. Med. Assoc. J., 1940, 43, 201-205).—A lecture. C. J. C. B.

Pathology of shock in man. H. A. Davis (Arch. Surg., Chicago, 1940, 41, 123-146).—A description of the visceral effects in 10 cases of cerebral trauma, 31 of other trauma, 5 after burns, and 4 after surgical procedures. The significance of anoxemia of the central nervous system in all forms of shock is emphasised in relation to the pathological changes. (5 photomicrographs.) F. S.

Physiology and pathology of human capillaries. O. Müller (Schweiz. med. Wschr., 1940, **70**, 777–782, 901–906).— Capillary physiology and pathology in eye, brain, kidney, and liver, the rôle of the capillaries in localised necrosis in various parts of the body, and their reaction to various external stimuli are discussed. A. S.

Capillary fragility. G. H. Bell, S. Lazarus, and H. N. Munro (*Lancet*, 1940, 239, 155—157).—Fragility of the capillaries of the skin of the antecubital fossa was examined by Göthlin's method (venous obstruction at 50 mm. Hg for 15 min.) in 346 healthy British students, using a 300-w. lamp at 2 ft. for illumination. Petechial counts under 8 were seen in 89·3% of cases. Higher counts were reduced to less than 8 by 2 weeks' administration of vitamin-C. Increased fragility occurs during menstruation. C. A. K.

Capillary resistance in artificially induced fever. P. L. Rossman (Ann. int. Med., 1940, 14, 281-287).—Fever was artificially induced in 12 patients, using a Kettering hypertherm, and capillary resistance was determined in the skin of the forearm with the suction test. Capillary resistance is quickly lowered and returns rapidly to normal when the body temp. falls to normal levels. There is occasionally an increase in capillary resistance after the period of hyperthermia.

Purpura. G. Sack (*Dtsch. Arch. klin. Med.*, 1939, 185, 186—191).—Purpura was observed in a patient on exposure to cold; the thrombocyte count was normal. The condition responded well to pyrazolone derivatives. A. S.

Capillary permeability factor in tissue extracts from normal rabbits. R. H. Rigdon (*Arch. Surg., Chicago*, 1940, 41, 96—100; cf. A., 1940, 111, 101).—By macerating skin, muscle, or testicle of normal rabbits in saline, a substance was obtained which produces, on intradermal injection in normal rabbits, a local increase in capillary permeability, as manifested by the localisation and concn. of trypan-blue. F. S.

Capillary permeability in areas of inflammation produced by xylene. R. H. Rigdon (Arch. Surg., Chicago, 1940, 41, 101—109).—Capillaries in the skin of rabbits showed an increase in permeability for 3 hr. after local application of xylene as indicated by the localisation of trypan-blue, Indian ink, antitoxins, and vaccinia virus in such areas. Intravenous trypan-blue localised and conc. in an area of skin injected with horse serum as much as 24 hr. previously, whereas after 4% NaCl this effect was noted up to 60 min. only. F. S.

Stellulæ palmares et plantares scarlatinæ. E. Freudenberg (Jahrb. Kinderheilk., 1940, 154, 280-285).—"Stellulæ palmares et plantares" (Pfaundler) are regarded as a vasomotor phenomenon produced by central toxic effects and irritations, especially of allergic origin. They appear in scarlet fever before or together with the exanthema and are evident for a longer time; they reappear with the secondary rash. They are epidemiologically important in cases of missing or dubious exanthema. M. K.

VII.-RESPIRATION AND BLOOD GASES.

Structure of the bronchiolar wall relative to its function. S. Engel (Jahrb. Kinderheilk., 1939, 153, 263-274).—The lumen of bronchioles without cartilage in their walls is supported by the tone of the smooth muscles surrounding the wall. This muscular function is important in bronchitis and bronchiolitis. M. K.

Hyperplasia of left and total agenesia of right lungs. K. Wasmuht (Frankf. Z. Path., 1938, 52, 519-528).-2 cases are reported. H. H. K.

Lung agenesia. O. Saxl (Jahrb. Kinderheilk., 1939, 154, 180-193).—Report of a case of lung agenesia and 2 cases of lung hypoplasia. M. K.

Leiomyosarcoma of lung. R. Neumann (Frankf. Z. Path., 1938, 52, 576—589). H. H. K.

Alveolar-cell pneumonia in psittacosis. H. Güthert (Virchow's Arch., 1938, 302, 707—716).—In this case groups of lung vesicles were found filled with ædema only, and other groups of vesicles filled with alveolar cells which contain fat red blood cells and coal particles; in the parts which border on normal lung tissue there were prominences of alveolar cells several layers deep, parts of which were shed into the vesicles. The absence of necrosis, the scarcity of fibrin and leucoytes, and the abundance of the alveolar cells are characteristic of psittacosis. J. A.

Physics of normal lung percussion. G. Landes (*Dtsch. Arch. klin. Med.*, 1939, 185, 116–133).—The duration of contact during finger-finger percussion is $2\cdot 5\mu$ -sec.; vibrations of less than 100 waves per min. (= 100 Hz) are inhibited. There are 2 types of vibrations : one elicited from the chest wall, the other from the hollow space in the lungs. In normal subjects, the chest wall vibration is 12 Hz, that of the hollow space 70–80 Hz, that of the pulmonary tissue 170–250 Hz; and 100 Hz in the hollow space. A. S.

Objective auscultation of lungs. G. Landes (*Dtsch. Arch. klin. Med.*, 1939, **185**, 210–244).—The various auscultatory phenomena of the lungs under normal and pathological conditions are analysed in detail by means of a crystal microphone, octave sieve, and cathode-ray tube-amplifier arrangement. Normal inspiration has a frequency of 100–1600 Hz, that of expiration up to 600 Hz. The amplitude during inspiration is 100–300 Hz. The frequency in pure bronchial breathing is 800–6000 Hz, with a max. amplitude of 2000–

4000 Hz; there is little difference between inspiration and expiration. Amphoric breathing has a frequency of 200-1000 Hz, with its main amplitude at 450 Hz. A. S.

High-explosive blast and lungs. D. M. Dean, A. R. Thomas, and R. S. Allison (*Lancet*, 1940, **239**, 224—226).—Physical examination and X-ray studies in 27 patients exposed to highexplosive blast showed that fullness of the lower part of the chest and diminished movements of the diaphragm frequently occur in the absence of chest symptoms. C. A. K.

Experimental blast injuries to lungs. S. Zuckerman (*Lancet*, 1940, **239**, 219—224).—Various animals were exposed to the blast from explosion of charges of 70 lb. of high explosive and explosion of H_2 and O_2 in balloons. Nearly all animals were killed at 13—18 ft. distance but none were killed above 18 ft, and none hurt more than 50 ft. away. In animals with no external signs of injury there may be extensive hamorrhages in both lungs with blood in the respiratory passages. The lesions were detectable radiologically. Thick layers of rubber round the body prevented the damage which is attributed to the pressure and not the suction component of blast.

C A. K.

Clinic and pathological anatomy of poison gas injuries. (A) A. Eckert-Möbius. (B) J. Wätjen. (c) J. Dörffel (Med. Welt, 1940, 14, 313-315, 341-343, 369-372).—A series of lectures. A. S.

Late effects of phosgene and treatment of pulmonary cedema [use of calcium]. E. Rothlin (Schweiz. med. Wschr., 1940, 70, 641—647).—The lethal dose of phosgene in rats was 100 mg. per cu.m. acting for 20 min. Acute pulmonary cedema was produced by exposure to sublethal doses. Late effects were mainly emphysema and infiltration of the pulmonary tissue, and of the bronchi sometimes with abscess formation, neutrophil leucocytosis, and eosinophilia. These changes were completely prevented by subcutaneous injections of Ca Sandoz (0.1 c.c. of a 10% solution per 100 g. body-wt.); the injections were still effective 24 hr, after exposure to the gas. A. S.

Blood-carbon monoxide content. A. Gigon and M. Noverraz (Schweiz. med. Wschr., 1940, 70, 836-837).—A detailed description of the determination of the blood-CO-hæmoglobin concn. is given. The normal vals. are 0.3-1.0% of the total hæmoglobin concn. Vals. over 1.0% were found in some pathological conditions. Particularly large amounts of CO-hæmoglobin (up to 6.23%) were found in patients with diabetes mellitus. A. S.

Effect of high altitude on pertussis. H. G. Clamann and H. Becker-Freyseng (Disch. med. Wschr., 1940, 66, 61-65).--Children suffering from pertussis were taken up in aeroplanes to 3500 m. for 1 hr. or subjected to equiv. pressures in a low barometric pressure chamber. There was no effect on the course of the disease. A. S.

Venesection and lung capacity. E. M. Glaser and J. Mc-Michael (*Lancet*, 1940, 239, 230-231).—In normal subjects withdrawal of 380 c.c. of blood by venesection increases the vital capacity by 153 c.c. (average) and the total capacity of the lungs by 181 c.c. The lung vessels probably act as an important blood reservoir. C. A. K.

Asphyxiation of marine fish with and without CO_2 and its effect on gas content of swim-bladder. V. Safford (J. Cell. Comp. Physiol., 1940, 16, 165—173).—CO₂ tension causing asphyxia varies for different fish from 40 to 280 mm. Hg. In absence of CO_2 the swim-bladder O_2 is gradually removed to the circulation. In presence of CO_2 in the water O_2 is only absorbed from the bladder until CO_2 tension in the bladder reaches the asphyxial tension for the fish. V. J. W.

Oxygen-carbon dioxide mixer, type K.L.V. Apparatus for oxygen therapy. A. Lichtenstein and E. Mannheimer (Acta paediatr. Stockh., 1939, 27, 168—176).—The apparatus is airconditioned; water vapour is removed by means of SiO₂ gel. The necessary amount of CO_2 (1—2%) is exhaled by the patient himself or can be absorbed by introduction of a CO_2 absorbing substance. The quantity of O_2 and also of CO_2 can be regulated. An alarm device indicates obstruction in the circulation or lack of O_2 . M. K.

Emergency oxygen unit for use in parachute escape or in case of failure of regular oxygen supply at high altitude. W. M. Boothby, O. O. Benson, and W. R. Lovelace (*J. avial.* Med., 1940, **11**, 59-66).—A small, compact, individual emergency O₂ unit is described. F. S.

Discussion on the indications for oxygen therapy and methods of administration. (Proc. Roy. Soc. Med., 1940, 33, 477-482).-B. A. McSwiney : The O_2 in the alveolar air may be raised to 33% with a flow of 41. per min. by means of nasal catheter or nasal tubes; the latter are more comfortable. The B.L.B. mask is superior; any desired O_2 concn. between that of air and pure O_2 may be administered with this mask; it can be worn for long periods, leaves the mouth free, and is simple to operate. O_2 tents are suitable only where facilities for maintaining a proper service exist. R. V. Christie : The principles underlying O_2 therapy are enumerated together with indications for its clinical use. J. McMichael : The B.L.B. mask is of great service in the treatment of bronchopneumonia; practical hints are given. J. E. H. Roberts : There are two types of patients in whom anoxamia but not cyanosis is present : those who have lost blood and those who fail to respond to blood transfusion. Both might need O_2 . O_2 is also important in post-operative dyspnœa, in thoracoplasty operations, and in stricture of the trachea. W. J. G.

Action of carbonic anhydrase on mineral metabolism in different conditions. F. Schmitt and H. Frigge (Disch. Arch. klin. Med., 1939, 185, 245—257).—Intramuscular injection of a carbonic anhydrase prep. (acapnon) into patients suffering from diseases of the kidney, circulation, or lungs produces alkalæmia. The Cl content of the red cells diminishes and there is, occasionally, an increase of the plasma-Cl. The alkalæmia in renal disease is the less marked the higher is the vals. of non-protein-N. A. S.

VIII.-MUSCLE.

Action of eserine-like compounds on frog's nerve-muscle preparations. I. Conditions in which a single shock evokes preparations. 1. Conditions in which a single Shock evokes augmented muscular response. II. Blocking of neuro-muscular conduction. S. L. Cowan (*Proc. Roy. Soc.*, 1940, B, 129, 356—391, 392—411; cf. A., 1938, III, 886).—I. One shock, or two shocks separated by 3—10 μ -sec., applied to the nerve induces approx. const. response during 3 hr. in frog's nerve-sartorius muscle prep. immersed in glucose-HCO₃-Ringer's solution. The main response is followed by a solution. solution. The main response is followed by a small aftertension which is abolished by atropine in concns. too low to affect the main response and by curarine in concns. which diminish this response. Eserine and related compounds usually do not affect the main response to one or two shocks of preps. (" warm " preps.) from frogs kept at $14-18^\circ$ for some days before use but increase the after-tension following two shocks and cause after-tension to develop following a single shock. When frogs kept at $0-5^{\circ}$ for 40 hr. before use are the source of the preps. ("cold" preps.), these com-pounds increase the response to one and two shocks, the response being followed by irregular twitchings lasting 1 sec. Atropine and curarine abolish the twitchings. No change in the response of "warm" preps. is produced by treatment with Ringer's solution of half the usual Ca" content or with Ringer's solution containing low concns. of tetraethylammonium iodide, Na citrate, guanidine carbonate, or methyl-guanidine hydrochloride but if these preps. are treated with guandine hydrochorde but it these preps. are treated with eserine-like compounds, their responses resemble those of "cold" preps. treated with such compounds. Responses evoked by one shock or two shocks separated by an interval of 3—10 μ -sec., applied to the pelvic end of the sartorius muscle after nerve stimulation is rendered ineffective with curarine, are not affected by eserine-like compounds or, if the shocks are of short duration, by Na citrate etc. When the shocks are of long duration, these substances in concns. equal to those used above increase the response. Great or small Ca" deficiency has little effect on the response of muscle to stimulation but moderate deficiency changes the response of nerve to repeated stimulation in such a way as to produce similarity to the response of untreated nerve to stimulation in such a way as to produce similarity to the response of untreated nerve to stimulation of lower frequency. When Ca" deficiency is severe, there is no response during the first 1—3 sec. to 150 shocks per sec., tension then increasing to less than 25% of the normal max. and subsequently decreasing slowly. Marked improvement results from adding Ca" but high concn. of prostigmine produces little improvement produces little improvement.

II. In nerve-muscle preps. from frogs soaked in Ringer's solution and kept at 14-18° for some days before use,

the min. interval at which two shocks applied to the nerve can elicit a summated muscular response is 20% longer than the abs. refractory period of the nerve. The interval is prolonged by adding eserine or eserine-like compounds, which also delay slightly the time at which an extra interpolated shock begins to diminish response to the final shock. Curarine and atropine reverse the prolongation of the min. interval. When preps, treated with Ringer's solution of half the usual Ca" content are used, the response is not diminished by interpolating an extra shock even if an eserine-like compound is also employed. Prostigmine has little effect on the recovery of excitability in the nerve at the site of stimulation but prolongs the slower peripheral recovery; curarine reverses this prolongation. During block of neuromuscular transmission produced by rapidly repeated nerve stimulation, the response to direct stimulation of muscle in Ringer-soaked preps. is diminished. When transmission is blocked with curarine, direct stimulation. does not diminish muscular response to direct stimulation. W. McC.

Potassium exchange of perfused frog muscle during asphyxia. W. O. Fenn, R. H. Koenemann, and E. T. Sheridan (J. Cell. Comp. Physiol., 1940, 16, 255-264).—Frog's hind legs were perfused with gum-saline containing 10% of ox red cells, and equilibrated with N₂. Asphyxia for 1 hr. caused no extra loss of K, increase in lactic acid production, or change in $p_{\rm H}$ of perfusate. V. J. W.

Origin of fibrillary twitchings. C. H. Shelden and H. W. Woltman (*Proc. Staff Mayo Clin.*, 1940, **15**, 646-648).— The origin of fibrillary twitchings was studied in a case of amyotrophic lateral sclerosis with generalised fibrillary twitchings of both lower extremities. Spinal anæsthesia was induced by administration of 70 mg. of procaine hydrochloride in 2 c.c. of c.s.f. Complete motor and sensory paralysis was obtained above the level of the umbilicus. Biopsy of the left gastrocnemius muscle showed that the fibrillary twitching continued unchanged. A few days later peripheral block of the left common peroneal nerve was done by means of mety-caine. Complete foot drop and complete peroneal anæsthesia resulted, but the diffuse fibrillary twitchings of the involved peroneal muscles did not change visibly. It is concluded that the origin of fibrillary twitchings is mainly peripheral and not entirely central. H. H. K.

Work done by muscles in running. H. Elftman (Amer. J. Physiol., 1940, 129, 672—684).—The resultant moments of force of the muscles acting about the joints of the limbs, and the rates at which they do work, were determined for a running step. The energy requirements considered represent the min. for the execution of this particular running step by the muscles present. The limb muscles did work at the rate of 2.61 h.p. and at least 2.89 h.p. if all the muscles in the body were included and no energy was lost through friction. The work was divided thus: against wind resistance, 0.15 h.p.; fluctuations in total energy of the body, 1.37 h.p.; distribution of energy between the parts of the body, 1.09 h.p. If only one-joint muscles were present, additional work at the rate of 1.36 h.p. would be necessary. The val. of 2.95 h.p. calc. by Fenn (*ibid.*, 1930, 92, 583; 93, 433) from the changes in potential and kinetic energy is confirmed. M. W. G.

Myasthenia gravis and tumours of thymic region. A, Blalock, M. F. Mason, H. J. Morgan, and S. S. Riven (Ann. Surg., 1939, 110, 544-559).-53 cases of myasthenia gravis associated with abnormalities of the thymus, recorded in the literature, are reviewed. One case, treated by excision of thymic tumour with good results, is described. D. S.

Traumatic myositis ossificans. S. Kleinberg (Ann. Surg., 1939, 110, 144—148).—Report of a case following fractured elbow. D. S.

IX.-NERVOUS SYSTEM.

Histology of the human olfactory bulb. R. Dinolt (Virchow's Arch., 1938, 302, 700-706).—The olfactory bulbs of 16 patients free from any nasal disease were examined in serial sections. Brunner's bulbus body was constantly found. Most of the cases showed chronic degenerative changes of the mitral cells with tigrolysis, shrinkage and reduction in no. of cells, and chronic progressive changes: increase in no. of satellite cells, neuronophagia, and coffin-formation. The bulbar nuclei, however, were always normal. Damage to the sp. sensory elements thus also occurs in healthy people. I. A.

Korsakov's syndrome. L. Benedek and A. Juba (Magyar Orv. Arch., 1940, 41, 1-28).—The anatomy and function of the hypothalamus are examined. Korsakov's syndrome is due to lesions of the mammillary body. Association with sleep disturbance is discussed. A. G. P.

Rôle of free amino-acids in electrolyte balance of nerve. R. H. Silber and F. O. Schmitt (J. Cell. Comp. Physiol., 1940, 16, 247-254).—Lobster nerve fluid contains about 4% of free amino-acid, probably dicarboxylic since there is a higher concn. of CO₂H than of NH₂ groups, and an insol. Ba salt is formed in alcoholic solution. Medullated cow or frog nerve contains about 0.4% of free amino-acid, and the anion deficit in extracts may be made up by lipins of the medullary sheath. V. J. W.

Liberation of acetylcholine from the perfused cat's brain. A. L. Chute, W. Feldberg, and D. H. Smyth (*Quart. J. Exp. Physiol.*, 1940, **30**, 65—72).—The almost completely isolated cat's brain was perfused with 50% defibrinated blood. The addition of eserine to the perfusant caused increased reflex excitability with spontaneous movements followed by depression, and the appearance in the blood of small quantities of acetylcholine, which was liberated from the brain. Injection of KCl temporarily increased the acetylcholine liberation. T. S. G. J.

Neurophysiology of walking. L. Halpern (Schweiz, med. Wschr., 1940, 70, 833-835).—The rôle of the frontal cerebral lobe in the nervous control of walking is emphasised.

Relationship between right and left cerebral cortex. O. Pöt2l (*Wien. med. Wschr.*, 1940, **90**, 6–9).—Inhibitory influences from one to the opposite cerebral cortex are described in patients suffering from alternating hemianacusis and from tactile agnosia. A. S.

Papilleedema without raised intracranial pressure (optic neuritis). W. E. Dandy (Ann. Surg., 1939, 110, 161–168).— 44 cases of papilleedema without increased intracranial pressure are presented in detail. There are no changes in the c.s.f. Ventriculograms are normal. The outstanding symptom is loss of vision and the condition subsides spontaneously in few weeks or months. D. S.

Revaluation of treatment of head injuries. J. Browder and R. Meyers (*Ann. Surg.*, 1939, **110**, 357–375).—Review of relationships of changes in c.s.f. pressure, pulse rate, respiratory rate, and blood pressure in cranio-cerebral injuries.

D. S.

Findings similar to encephalitis in brain in sudden death. A. Welz (Virchow's Arch., 1938, 657-676).—At the post mortem of 4 young men between 35 and 44 years of whom two fell dead suddenly whilst the others died after a short attack of vertigo and unconsciousness, only œdema and congestion of brain and meninges and congestion of the internal organs could be found with the naked eye. Microscopically foci were found, more frequently in the grey matter of the cortex than of the basal ganglia, showing lymphocytic cuffing of small vessels, diapedesis, hæmorrhages, and destruction of ganglial cells with loss of tigroid and calcification. It is thought that previous infection has led to local changes of vascular reactivity with subsequent lymphocytic lining. Death was due to acute cerebral vascular disorder with functional blockage following some minor irritation such as head injury, inhalation of benzene, or alcoholism. J. A.

Axon reaction in motor neurons and its effect on end-bulbs of Held-Auerbach. M. L. Barr (*Anat. Rec.*, 1940, 77, 367— 374).—Following unilateral peripheral nerve lesions in cats cell changes characteristic of axon reaction were observed in the dorso-lateral group of the ventral horn in all animals. Marked changes in the cell body, nucleus, and some cytoplasmic constituents occurred but there were no significant changes in the end-bulbs of reacting cells. No evidence was found to support the view of neurofibrillar continuity at the synapse. W. F. H.

Wallerian degeneration in sciatic nerve of rat. R. L. Swank (Arch. Path., 1940, 30, 689-700).—Wallerian degeneration was studied in growing and adult rats, using the osmic acid, Davenport's Ag, and the chlorate-osmic acid methods. In young rats, the earliest reliable evidences of degeneration appeared in axis-cylinders of the distal stump of the sciatic nerve, 8 hr. after cutting the nerve. In adult rats similar changes appeared in the axis-cylinders after 12 hr. At the same time, changes were observed in the myelin involving a transfer of lipins from the myelin droplets to the neurokeratin. During this transfer, the neurokeratin stained black in the chlorate-osmic acid solution. 24 hr. after section of the sciatic nerve a few degenerating myelin sheaths stained black by the chlorate-osmic acid method and 24 hr. later most of the sheaths stained. A few black globules were found in Marchi preps. 96 hr. after section of the sciatic nerve. (12 photomicrographs.) C. J. C. B.

Peripheral stump and nerve regeneration. J. Z. Young, W. K. Holmes, and F. K. Sanders (*Lancet*, 1940, 239, 128-131).—Growth of the peripheral stump after nerve section plays an important part in regeneration. If the cut ends of the nerve are much separated a fresh autograft provides a very satisfactory medium for growth of new fibres. Small nerves, or cable grafts of several thin strands, are more effective than large nerves. C. A. K.

Fibrin suture of peripheral nerves. J. Z. Young and P. B. Medawar (*Lancet*, 1940, 239, 126—128).—The cut sciatic nerve of rabbits or dogs can be effectively joined by applying liquid conc. plasma which clots around the stumps. New fibres grow slightly faster across such a junction than across a simple suture. After a latent period of 8 days regrowth of nerve fibres proceeds at a rate of 3.9 mm. a day. C. A. K.

Results of facio-hypoglossal anastomosis in treatment of facial paralysis. C. C. Coleman (Ann. Surg., 1940, 111, 958-967).—A review. D. S.

Nerve supply of human lung. P. Sunder-Plassmann (*Deut.* Z. Chir., 1938, 250, 705—714).—A non-medullated preterminal plexus of the efferent path of the neuro-vegetative system with many nuclei of Schwann and ending in a syncytial fibrillary terminal reticulum with innumerable anastomoses was demonstrated in bronchi, pulmonary arteries, arterioles, capillaries, and alveolar epithelium of the human lung. The terminal network lies in close contact with the individual cells of the structures named. E. M. J.

Respiratory effects of localised faradic stimulation of medulla oblongata. J. M. Brookhart (*Amer. J. Physiol.*, 1940, **129**, 709-723).—Compact respiratory centres such as have been described for the cat were not found in the medulla oblongata of the dog. M. W. G.

Congenital disturbance of central nervous system. C. de Lange (Jahrb. Kinderheilk., 1938—1939, 152, 309—315).— A case report of extra-pyramidal disturbance of motility, in which symptoms were caused by arrested development of corpus striatum. Atropine treatment was not successful. M. K.

Familial infantile form of diffuse sclerosis of the brain. C. de Lange (Jahrb. Kinderheilk., 1939, 154, 140-179).-The same cerebral syndrome was found successively in 4 children of the same family.: opisthotonus, general stiffness, and deterioration of intelligence. Examination of the brain showed diffuse demyelinisation of the whole cerebrum and spinal cord, and marked proliferation of normal and pathological glia. Degenerative changes and degree of fibrosis of glia varied in different parts of the nervous system. M. K.

Autonomic basis of emotion. E. Gellhorn, R. Cortell, and J. Fieldman (*Science*, 1940, 92, 288—289).—Hypothalamic stimulation in cats with faradic currents eliciting the sham rage produced hypoglycæmia after elimination of the sympathetico-adrenal system; after bilateral vagotomy stimulation results in a slight and delayed rise in blood-sugar. After cutting the spinal cord at the 6th cervical segment a rage response elicited by a barking dog produces a fall in bloodsugar; cutting the vagi below the diaphragm abolishes this reaction. The normal emotional process and sham rage are characterised by a simultaneous discharge over the vago insulin and sympathetico-adrenal system. The latter predominates in the normal animal, and masks the effect on the former. E. R. S.

Resection of first sympathetic thoracic ganglia in pulmonary tuberculosis. M. H. Gaudier (*Bull. Acad. med. Paris*, 1938, **119**, 284–289).—Successful resection of 2nd and 3rd thoracic ganglia in 2 patients suffering from pulmonary tuberculosis promoted healing. M. K. Modified form of lumbar sympathectomy for denervating blood vessels of leg and foot. L. N. Atlas (Ann. Surg., 1940, 111, 117—125).—Variations in the topographical anatomy of the lumbar sympathetic ganglia and their connexions are considered. A technique is described for preganglionic denervation of the vessels of leg and foot by division of the sympathetic trunk and its accessory connexion at the level of the third lumbar vertebra. D. S.

Method of diagnosing idiopathic epilepsy. F. C. De Lorenzo (J. Pediat., 1940, 17, 355-359),--Using the McQuarie antidiuretic and superhydration test 17 normal children showed negative tests and 8 of 10 cases of idiopathic epilepsy gave positive tests. C. J. C. B.

Fractures and dislocations by muscular violence complicating convulsions induced by metrazol for schizophrenia. L. Carp (Ann. Surg., 1939, 110, 107–118).—The typical convulsive response produced by metrazol therapy (3–15 c.c. of 10% solution) is described. The intense spasm resulted in fractures in 1.8% and dislocations in 17% of a series of 687 cases. $\frac{1}{3}$ of the injuries occurred during the initial convulsion. D. S.

Atypical poliomyelitis and its relation to infantile acrodynia. E. Mayerhoffer (*Jahrb. Kinderheilk.*, 1939, **153**, 144– 156). M. K.

Aneurysm of the great vein of Galen causing internal hydrocephalus. D. S. Russell and S. Nevin (J. Path. Bact., 1940, 51, 375–383).—Two cases are described in infants in which an arterio-venous aneurysm of the great vein of Galen was associated with internal hydrocephalus due to compression of the aqueduct of Sylvius. In one case the aneurysm was associated with absence of the sigmoid portion of both lateral sinuses. C. J. C. B.

Psychoneurogenous component of cutaneous reaction mechanisms. J. H. Stokes, H. Beerman, and N. R. Ingraham, jun. (Amer. J. med. Sci., 1940, 200, 560-576).—A crit. review. C. J. C. B.

X.-SENSE ORGANS.

Action of hormones and vitamins on the eye. W. Thau (Eye, Ear, Throat, 1939, 18, 329—335).—A review with good references, the greater part devoted to vitamins. There is mention of hypervitaminoses-A, causing palpebral œdema and hyperæmia in rats, and -C leading to subconjunctival hæmorrhages in rabbits. E. P.

Parenterally administered liver extract in ophthalmological conditions. R. D. Barnard (*Eye, Ear, Throat,* 1940, 19, 176–177, 189).—Of 38 patients with various ophthalmological conditions, improvement occurred in 8 with disseminated choroiditis, and in 7 with high myopia, the response being better in children. Subjective improvement occurred in 3 cases of retinitis pigmentosa. E. E. P.

Treatment of organic retinoses by parenteral administration of liver extract. R. D. Barnard (Eye, Ear, Throat, 1939, 18, 236—239, 252).—Ten cases with various retinal lesions were treated. In a long-standing disseminated choroiditis the scotomata decreased. In a toxic amblyopia, there was recovery during liver and other therapy. Visual acuity improved in a case of congenital amblyopia. A myopia lost her myopic crescent, and a child of 7 with progressive myopia showed increase of fields and acuity. E. E. P.

Iontophoretic medication in ophthalmology. G. Erlanger (Eye, Ear, Throat, 1940, 19, 46—50, 60).—Drugs have been ionised, under 2—3-ma. currents, in the eyes in rabbits. After an initial miosis, the sp. effect of the drug was produced. Adrenaline, acetylcholine, atropine, prostigmine, and histamine were investigated, and data are given of localised distribution of injected or ionised fluorescein. Iontophoretic medication is advocated in corneal lesions. E. E. P.

Ophthalmological aspects of pregnancy. M. B. Gordon (*Eye*, *Ear*, *Throat*, 1939, **18**, 167–170, 185).—A catalogue of the ophthalmological changes which may occur in pregnancy, with some discussion of the prognostic val. of early toxæmic changes. E. E. P.

Eye lesions due to senility. A. A. Cholina (*Trans. Conf. Senility, Kiev,* 1938, 351-356).—Cornea, cryst. lens, and retina are the most affected. M. K.

Ophthalmological aspects of thyroid malfunction. M. B. Gordon (*Eye, Ear, Throat*, 1940, **19**, 210, 218).—The author mentions the importance of cretinism as a cause of internal strabismus, and the occurrence in myxœdema of œdema of the lids, exophthalmos, thinned eyebrows, and ophthalmoscopic findings simulating albuminuric retinitis. E. E. P.

Ophthalmological aspects of thyroid medication. M. B. Gordon (*Eye, Ear, Throat,* 1940, **19**, 78-81).—A discussion on exophthalmos which aims at reconciling seven theories of its origin, but also containing a useful summary of progressive post-operative exophthalmos. E. E. P.

Pilot fitness, a safety factor in aviation. C. E. Ferree and G. Rand (*Brit. J. Ophthal.*, 1940, **24**, 581—597).—A tachistoscope is described in which an E-test-object can be exposed at two distances from the subject, to his right, left, or straight ahead, and rotated into any of four positions so that he cannot guess which way it will appear; the length of the exposure is electrically controlled. Speed of perception, convergence, and accommodation are involved. It is suggested that the instrument would be of use in selecting pilots and measuring their reliability and in training the ocular muscles.

K. J. W. C. Malignant change in melanosis of the conjunctiva. G. T. W. Cashell (*Proc. Roy. Soc. Med.*, 1940, **33**, 545-549). W. J. G.

Psychotherapy in hysterical amblyopia. P. D. Giridhar (*Indian J. Ophthal.*, 1940, **1**, 77–79).—The psychotherapy took the form of saline subconjunctival injections and was effective in the three cases. One case had monocular complete amblyopia with ptosis. E. E. P.

Primitive sight and human squint. F. B. Chevasse (Eye, Ear, Throat, 1939, 18, 171—179, 190).—Binocular vision is attributed to birds and fishes, which have extensive overlap of ocular fields, and habitually orient their eyes so as to bring their prey within this area. In birds of prey there is a fovea in the temporal field corresponding with this function, as well as a nasal fovea for monocular vision; in fishes there is a crowding of sensory elements in the region concerned. The occurrence of squint in the human infant is regarded as abnormal and a signal for treatment. E. E. P.

Superiority of binocular over monocular vision in depth perception in respect to the vertical or horizontal position of object. R. Y. Walker (J. aviat. Med., 1940, 11, 87–95).— Binocular vision is superior when the stimulus is vertical or at an angular displacement from the vertical not greater than 60° . When the stimulus is horizontal the error of perception and the variability of the error are as great for binocular as for monocular vision. F. S.

Treatment of progressive myopia with base-in prisms. W. M. Thompson (*Eye*, *Ear*, *Throat*, 1939, **18**, 13–15).— Progression of myopia is ascribed to the excessive convergence usual while reading, with mechanical changes in the sclera resulting from the tension of internal rectus and optic nerve. Treatment aims at abolishing this convergence by the use of prisms with the base medially set close to the eye, and by exercises with added prism correction. E. E. P.

Action of acetylsalicylic acid on intraocular pressure. J. Várady and F. Jahn (*Dtsch. med. Wschr.*, 1940, 66, 322– 323).—The intraocular pressure, determined by means of a Schötz tonometer, was lowered to 10—16 mm. Hg in 17 patients poisoned with acetylsalicylic acid. A. S.

Cataract, its pathogenesis and treatment. D. D. Sathaye (Indian J. Ophthal., 1940, 1, 52-73).—A historical review of the treatment of cataract since 1000 B.c., with a brief discussion of its causation, following Parsons. Cholera cataract is ascribed to abstraction of water from the lens.

E. E. P. **Congenital retinal fold.** S. Mehkri (*Indian J. Ophthal.*, 1940, **1**, 74—75).—A branch of the upper temporal artery ran along a large retinal fold, and passed forward into the vitreous to end in an oval posterior capsular central discoid lens opacity. E. P.

Testing of light sense. L. L. Sloan (Arch. Ophthal. N.Y., 1940, 24, 258-275).—The light threshold is shown to be proportional to the illumination viewed through a small natural pupil divided by the pupil area after 5 min. dark adaptation, so that a simple correction factor can be applied. This accords with the fact that the Stiles-Crawford effect

B 3 (A., III.)

is negligible at threshold illuminations for the nearly or wholly dark-adapted eye. Such a method of correcting for variations in pupil size allows exact measurement of retinal dark adaptation without the necessity for artificial pupils, which are awkward for clinical use. K. J. W. C.

Visual test in vitamin-A therapy. E. J. P. Steele (Lancet, 1940, 239, 205-206).—A rapid visual test for vitamin-A deficiency is described. Treatment with -A improves most subjects but the action is not enhanced by the addition of -D. C. A. K.

Clinical evaluation of tests of dark adaptation. R. McDonald and F. H. Adler (*Arch. Ophthal. N.Y.*, 1940, 24, 447-461).— Subnormal dark adaptation is found in patients with opacities of the ocular media, retinal degenerations such as retinitis pigmentosa, in the later stages of glaucoma, and in vitamin-*A* deficiency; there was also an indication of defective adaptation associated with 5-10 dioptres of myopia. K. J. W. C.

Dark adaptation and vitamin-A status. E. L. Blanchard and H. A. Harper (*Arch. intern. Med.*, 1940, **66**, 661—669).— A simple sensitive test for detecting impaired dark adaptation was used in 10 healthy, young adults on a diet deficient in vitamin-A. As depletion progressed the time taken to see a test light of const. intensity was prolonged and A supplements shortened this interval. C. A. K.

Clinical studies of vitamin-A deficiency. B. L. Isaacs, F. J. Jung, and A. C. Ivy (Arch. Ophthal., N.Y., 1940, 24, 698—721).—Hecht's adaptometer was found preferable to the biophotometer. Experimental night-blindness was produced by a diet containing 74 U.S.P. units of vitamin-A daily for 43—49 days. Normal subjects showed impaired dark adaptation in September and December. K. J. W. C.

Dark adaptation and human vitamin deficiency. S. Hecht and J. Mandelbaum (Amer. J. Physiol., 1940, 130, 651— 664),—14 out of 17 subjects soon showed considerable rise in threshold with a diet deficient in vitamin-A; the other 3 required 22, 55, and 60 days for a clear effect to appear. Partial recovery sometimes follows large single doses; complete recovery requires some months. K. J. W. C.

Effect of oxygen and glucose on dark adaptation. R. A. McFarland and W. H. Forbes (J. Gen. Physiol., 1940, 24, 69-98).—Hypoglycæmia produced by insulin causes a rise in the light threshold of the dark-adapted eye. Glucose and O₂ both counteract the effects of either sugar or O₂ lack on dark adaptation. Glucose does not appreciably lower the normal dark-adapted threshold if there is an adequate O₂ supply; Hypoglycæmia and anoxia both appear to affect the nerve tissue of the retina and visual system rather than the photochemical processes of the retina. K. J. W. C.

Receptive fields of optic nerve fibres. H. K. Hartline (Amer. J. Physiol., 1940, 130, 690-699).—In the frog and alligator the receptive fields of nerve fibres were mapped out by using a small point of light. It is shown that the axon is the final common path for nervous activity originating in many sensory elements, *i.e.*, many receptors converge on a single ganglion cell. Conversely, a single spot of light excites many nerve fibres so that the receptive areas of different fibres overlap considerably, *i.e.*, there is also some divergence of retinal receptors to serve different optic nerve fibres. Direct measurements of the scattered light around the test spot showed that it could not account for the greater part of the effects observed. K. J. W. C.

Effects of spatial summation in the retina on excitation of fibres of optic nerve. H. K. Hartline (*Amer. J. Physiol.*, 1940, 130, 700—711).—The action potentials in a single peripheral nerve fibre of the frog's retina in response to illuminations of retinal areas of various sizes have been studied. The threshold intensity is the lower the larger is the area stimulated, up to certain limit beyond which further increase in area has a negligible effect. Similarly the frequency of impulses is greater and the latency less with a fixed illumination and increasing area; here, however, a limit is reached, with high intensities, beyond which a further increase in illuminated area causes a diminished response. Stimulation of the margins of the area served by any one nerve fibre is less effective than stimulation of its centre, but subliminal effects from marginal regions can summate to produce a response. K. J. W. C.

Aniseikonia. G. H. Gliddon (J. Opt. Soc. Amer., 1940, 30, 142-144).—Aniseikonia, or inequality in size of the two ocular images, may be a cause of eye strain. It leads to conflict between monocular and binocular spatial perception. W. T. A.

The induced size effect. K. N. Ogle (*J. Opt. Soc. Amer.*, 1940, **30**, 145—151).—A review of the author's previous work on this subject (cf. A., 1940, III, 640). W. T. A.

Hue-sensibility to dominant wave-length change and relation between saturation and colorimetric purity. D. Nickerson and W. C. Granville (J. Opt. Soc. Amer., 1940, 30, 159—162).—The λ differences corresponding with const. Munsell hue differences, at const. saturation, were plotted. The curve superficially resembles the spectral chromaticity scale (in which saturation varies). Both curves show minimal λ differences for hues near 485 and 575 m μ . with a central peak near 525 m μ ., but the ratio of max. (at central peak) to min. λ difference is about 20:1 on the hue scale and only 4:1 on the spectral chromaticity scale, W. T. A.

Validity of Ferry-Porter law in depressed and enhanced states of retinal sensitivity. F. Allen and M. Schwartz (Canad. J. Res., 1940, 18, A, 151-160).—The Ferry-Porter law for flicker was found to hold under all the conditions of adaptation tried. Oscillations of visual sensitivity were found after rest-intervals of 3 min. Depression of the sensitivity of one set of colour receptors is accompanied by enhanced sensitivity of the similar colour receptors in the other eye and the complementary receptors in the same eye. These changes are attributed to oscillations of cellular activity in the visual cortex. K. J. W. C.

Effect of stimulating vision, hearing, taste, and smell on sensitivity of vision. F. Allen and M. Schwartz (J. Gen. Physiol., 1940, 24, 105-121).—Assuming that the crit. frequency of flicker is a direct indication of subjective brightness, the effects of various stimuli on vision were investigated. Red light, sound, quinine, and odours produce depression of red sensitivity and enhancement of green; violet is sometimes enhanced and sometimes depressed; the alteration in flicker frequency produced is about 10 cycles per sec.

K. J. W. C. **Vitamins in ophthalmology and otolaryngology.** W. H. Evans (*Eye, Ear, Throat,* 1939, **18**, 299—304).—A brief review quoting data on vitamin-A deficiency and advocating its use in corneal inflammations and chorioretinal disturbances. A nasal syndrome from $-B_1$ deficiency results in a postnasal discharge in women, with thickening of the posterior tips of the middle turbinatis. E. E. P.

Senile lesions of auditory apparatus. S. M. Kompaneetz (Trans. Conf. Senility, Kiev, 1938, 347-350).—Cells of cochlear ganglion and nerve are affected in the degenerative process. M. K.

Development of otic capsule. V. Residual cartilage and defective ossification and their relation to otosclerotic foci. T. H. Bast (Arch. Otolaryng., 1940, 32, 771-782),-Serial sections of 64 older foctal and 28 infant petrous bones were examined for the occurrence of residual cartilage and defective ossification since such occurrences may be related to production of otosclerotic bone. Residual cartilage or defective ossification has been noted in the following regions of the petrous bone: (1) region of the fissula ant, fenestram, (2) region of the fissula post fenestram, (3) infracochlear region, (4) base of styloid bone, (5) region of the petrosquamous suture and in the capsule beneath the suture, (6) region of the semicircular canals.

A. GL. Clinical observations on nature and treatment of Ménière's disease. A. J. Wright (*Proc. Roy. Soc. Med.*, 1940, 33, 459– 462).—Removal of infected tonsils or teeth, and operative drainage of accessory nasal sinuses, produced beneficial results in a series of cases of Ménière's disease. This supports an infective ætiology. W. J. G.

Taste thresholds and taste preferences of rats for five common sugars. C. P. Richter and K. H. Campbell (*J. Nutrition*, 1940, 20, 31-46; cf. A. 1940, III, 493).—Taste thresholds for aqsugars were: maltose $\cdot 006\%$, glucose $0 \cdot 20\%$, sucrose $0 \cdot 57\%$, galactose $1 \cdot 6\%$. The (descending) order of preference was as named. Animals showed no liking for and even aversion to lactose. In general 10% aq. sugars were the most readily taken. A. G. P.

XI.-DUCTLESS GLANDS, EXCLUDING GONADS.

Senility and endocrine system. N. A. Schereschevski (Trans. Conf. Senility, Kiev, 1938, 31-39).—A review. M. K.

Circumscribed lipomatosis of thyroid gland. J. Pich (Frankf. Z. Path., 1938, 52, 538-546). H. H. K.

Thyrogenic migraine. J. Lasz and E. I. Steuer (Schweiz. med. Wschr., 1940, 70, 853-855).—Patients suffering from Graves' disease and severe migraine were cured of their headache by thyroidectomy. A. S.

Neuro-hormonal cells of vagus system in thyroid gland. P. Sunder-Plassmann (*Deut. Z. Chir.*, 1939, 252, 210—223).— Two types of thyroid cells are described, the colloid-producing thyreocytes and the colloid-absorbing neuro-hormonal cells of the vagus system (cf. following abstract). Their behaviour under various experimental conditions and their identification and significance in the human thyroid of Graves' disease are described. E. M. J.

Vegetative nervous system and thyroid gland. P. Sunder-Plassmann (*Deut. Z. Chir.*, 1939, 252, 1—18).—The thyroid of guinea-pigs treated with thyrotrophic hormone shows innervation of the gland cells and capillaries by a fine intracellular nervous reticulum. Knot-like endings are present in the walls of the blood vessels of the thyroid capsule. Argentophil cells with large vesicular nuclei ("neurohormonal cells of vagal system") lie between the follicular cells; after vagal section during serum hyperergy they wander into the interstitial tissue towards the capillaries, the thyroid simultaneously passing into the colloid state. The cells are most marked after treatment with thyrotrophic hormone and vitamin- B_{1} . E. M. J.

Sympathetic nerve supply of thyroid and thyrotoxicosis. P. Sunder-Plassmann (*Deut. Z. Chir.*, 1938, 250, 543—558).— The finer nerve supply of the thyroid of the rabbit persists after bilateral cervical sympathectomy. After administration of thyrotrophic hormone the nuclei of Schwann of the preterminal sympathetic plexus are enlarged, as are the follicular cells of the thyroid. The terminal reticulum is attached closely to the individual follicular cell, epi- and intra-plasmatically. The preterminal plexus was normal after thyrotrophic hormone in rabbits sensitised with pig serum in which the hormone did not act. Repeated simultaneous administration of pig serum and thyrotrophic hormone intraperitoneally, however, led to changes in the thyroid like those of Graves' disease, to degeneration of the preterminal plexus of the thyroid with its nuclei of Schwann, in Glisson's capsule, and in the receptor fields of the carotid sinus, as well as to necrosis of liver cells and adrenal cortex. E. M. J.

Thyrotoxicosis and liver damage. H. Pietzonka (Disch. Arch. klin. Med., 1939, 185, 164-175).—Several patients who died with symptoms of severe thyrotoxicosis had necrotic changes in the liver resembling those in acute yellow liver atrophy. Some patients developed severe psychoses before death. A. S.

Medical management of hyperthyroidism. H. T. Hyman (Bull. N.Y. Acad. Med., 1940, 16, 265-290).

Influence of thyroid on liver cell. Kastert (Virchow's Arch., 1938, 302, 728-741).—The protein pptns. in the liver cells of normal animals which appear as bright red deposits in sections stained with methyl-green-pyronin are increased in density and quantity after casein feeding for 10-17 days. After administration of thyroxine the substances which are stored in the liver cells disappear, first glycogen, later fat and protein; they are increased after complete thyroidectomy. Foci of liver necrosis which occur in rats infected with Barton-ella muris appear sooner and in greater nos. if thyroxine was administered to such animals. J. A.

Basal metabolism in children with goitre. M. G. Mouriqand, J. Enselme, and M. J. Enselme (*Bull. Acad. méd. Paris*, 1938, **119**, 311–314).—Basal metabolism was normal in 34% of 50 children with goitre. In 40% it was increased, but only in 12% was definite hyperthyroidism observed. Marked decrease of basal metabolism was found in 26%.

M. K.

Prevention of goitre in newborn infants. H. J. Wespi (Schweiz. med. Wschr., 1940, 70, 925-928).—The use of iodised cooking salt (15-20 mg. KI per kg. NaCl) lowered the incidence of enlargement of the thyroid gland from 50 to 5.3%. If the mother takes approx. 150 μ g. of KI in the last 3 months of pregnancy, enlargement of the thyroid in the newborn does not occur. A. S.

Iodine and exophthalmic goitre. D. M. Lyon (*Edinb. Med.* J., [iv], 47, 743-761).—Case records of patients under I treatment all show improvement, which reaches a max. within 8-21 days. The condition subsequently relapses, but wt. may still increase. Longer periods of treatment cause fluctuating changes, and are justified only in mild cases. (B.) E. M. S.

Effect of thyroxine on social order in flocks of hens. W. C. Allee, N. E. Collias, and E. Beeman (*Endocrinol.*, 1940, 27, 827-835).—Doses below the level necessary to cause moulting have no effect. Doses which cause moulting cause loss of social position. V. J. W.

Hyperparathyroidism. H. L. Jaffe (Bull. N.Y. Acad. Med., 1940, 16, 291-311).

Hæmoconcentration with low serum-calcium in vagotomised parathyroidectomised dogs. C. Pfeiffer, C. C. Roby, R. H. Dreisbach, and H. G. Glass (*Endocrinol.*, 1940, 27, 818— 824).—Such dogs have a low serum-Ca and -K and increased serum-protein and hæmatocrit vals. Serum-Na is not changed. V. J. W.

Assay of parathyroid extract from serum-calcium of dogs. C. I. Bliss and C. L. Rose (*Amer. J. Hyg.*, 1940, **31**, **A**, 79– 98).—Miller's data (A., 1938, III, 480), on the relationship between the dosage of parathyroid extract and the rise in serum-Ca were analysed to show that the efficiency of assay could be increased by omitting differences in susceptibility between dogs. Two methods were used to show this and statistical analyses carried out. B. C. H.

Scleroderma and calcinosis. O. Saxl (Jahrb. Kinderheilk., 1939, 154, 103—116).—Case report of scleroderma and calcinosis (deposition of Ca in and under the skin), which developed 2 months after severe diphtheria in a 9-year-old girl. Increased Ca level in blood and negative Ca balance were found. Partial removal of parathyroid glands showed tumour-like increase in one of the glands. Scleroderma is regarded as an affection of the connective tissues, due to toxic, septic, or allergic injury of blood vessels. M. K.

Attentuation of parathyro-prival tetany by previous vagal section above the diaphragm. C. C. Roby, S. Smith, and C. Pfeiffer (*Amer. J. Physiol.*, 1940, **129**, 766—772).—Section of both vagi above the diaphragm 2—8 weeks prior to total thyroidectomy in the dog attenuates parathyro-prival tetany. Serum-Ca attains very low levels without any sign of the acute tetany syndrome. The dogs tolerate cestrus without acute tetany, but cannot withstand the Ca demands of pregnancy. M. W. G.

Adrenal insufficiency. R. F. Loeb (Bull. N.Y. Acad. Med., 1940, 16, 347-367).

Case of adrenal tumour causing sudden death [its importance in forensic medicine]. K. Wickenhäuser (Deut. Z. ges. gerichtl. Med., 1939, 31, 97-101). E. M. J.

Septicæmia with purpura and adrenal hæmorrhage (Waterhouse-Friderichsen syndrome). J. F. Hughes (Brit. Med. J., 1940, II, 353-354).—Case report. C. A. K.

Case of melanin-forming sympathicoblastoma of adrenal. H. Noetzel (Frankf. Z. Path., 1938, 52, 511-518).—A malignant sympathicoblastoma of the left adrenal gland with metastasic formation in many other organs is described in a 52-years-old woman. H. H. K.

Two forms of adrenal tumours and their possible relation to arteriosclerosis. J. Hoffmeyer (Virchow's Arch., 1938, 302, 627-639).—A young man of 25 years suffered for a year before death from attacks of vertigo, vomiting, and headache with high blood pressure (200/130 mm. Hg). Post mortem cerebral hæmorrhage, considerable arteriosclerosis of the aorta, coronary and cerebral arteries, a tumour of the left adrenal medulla, and increased lipin content of the right adrenal cortex were found. The second case, a woman aged 93, showed an adenoma of the right adrenal cortex and few signs of arteriosclerosis. Adrenal hyperplasia and hyperfunction are supposed to counteract the sclerotic changes which the vessels may undergo especially when a phæochromocytoma with increased blood pressure is present. J. A.

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Pheeochromocytoma. E. C. Baumgarten and M. O. Cantor (Ann. Surg., 1940, 111, 112-116).—Case report. D. S.

Adrenal function and vitamin-C. K. Choremis, E. Papachristoll, and J. Korkas (*Jahrb. Kinderheilk.*, 1939, 154, 22– 39).—During grave toxic infections with changes in the adrenal gland, hyperglycæmia was not apparent and the bloodsugar curve was flattened. Administration of vitamin-C and cortin caused reappearance of hyperglycæmia, but not in septicæmia. The beneficial effect of -C on cortex function is annulled by a NaCl-free diet. Presence of -C is vital for functioning of cortin. -C alone does not influence the acidbase balance; cortin shifts the balance to the alkaline side. Both substances combined lower the alkali reserve and shift the $\rho_{\rm H}$ towards the alkaline side. Diseases with a large requirement of -C, such as tuberculosis or typhoid, frequently show disturbances of cortex function. Diminished cortex function produces scorbutic manifestations. M. K.

Transplantation of adrenal tissue into kidney. F. Klages (*Deut. Z. Chir.*, 1938, **250**, 529–534).—The left adrenal gland of several rabbits was excised and part of it transplanted into the ipsilateral kidney. Only one animal survived subsequent cauterisation of the contralateral adrenal 47—160 days later. As was given in all cases between the operations and the transplant had survived in four cases without showing neoplastic changes. The one successful case was killed 312 days after the second operation when small adenomata were found in the transplanted adrenal, the contralateral adrenal still being one third of its original size.

E. M. J. Treatment of Addison's disease by implantation of synthetic hormone. W. W. Firor (Ann. Surg., 1940, 111, 942-949).--Seventeen patients were treated by implantation of pellets of deoxycorticosterone acetate in the infrascapular region under local anæsthesia. The daily requirement of individual patients is first determined. Rate of absorption in man is 0.3 mg. daily from each 100-mg. pellet. The implantations satisfy the patients' needs for 4-9 months. The average gain in wt. was 5.4 kg. The systolic and diastolic pressure shows uniform improvement, and the hæmatocrit and plasma vol. determinations become normal. All the patients maintained a positive NaCl balance. Pigmentation decreased but was not lost. D. S.

Death presumably due to use of salt restriction test in diagnosis of Addison's disease. C. F. Garvin and H. S. Reichle (Ann. int. Med., 1940, 14, 323-324).—Sudden death occurred on the 8th day of a period of salt-free diet in a doubtful case of Addison's disease. A. S.

Spontaneous hypoglycæmia due to adrenal atrophy. J. G. Rushton, R. W. Cragg, and L. K. Stalker (*Arch. intern. Med.*, 1940, 66, 531-540).—A fatal case of spontaneous hypoglycæmia showed no tumour of the pancreas, but there was extreme atrophy of both adrenal glands. There was also marked inflammatory destruction of the thyroid. C. A. K.

Action of adrenaline in anxiety. D. Richter (Proc. Roy. Soc. Med., 1940, 33, 615-618).—Adrenaline taken by mouth is mainly excreted as an ethereal sulphate, *i.e.*, it is destroyed by a "sulphosynthase" system. Deficiency in this system may be associated with certain types of anxiety characterised by increased sensitivity to adrenaline. The hypersensitivity of anxiety neurotics to this hormone is most simply explained by an emotionally charged cerebral cortical pattern, which is excited by the impulses coming from a peripheral or visceral organ, each tending to increase the excitation of the other. W. J. G.

Action of adrenaline on blood-sugar and muscle-glycogen and its relation to liver. T. Soga (Japan. J. Med. Sci., IV, 1940, 12, Proc., 21-23).—Continuous administration of glucose inhibits the decrease of blood-sugar and muscleglycogen in liverless dogs. Injection of adrenaline increases blood-sugar and decreases muscle-glycogen in these dogs. H. H. K.

Action of adrenaline on blood-sugar of rabbit embryo. M. Kaneyuki (*Japan. J. Med. Sci.*, IV, 1940, **12**, *Proc.*, 23-24).--Adrenaline is easily permeable through the placenta. Glycogen is mobilised in the liver during embryonic life in rabbits. H. H. K.

Hyperinsulinism and surgery. E. Åkerberg (Acta Chir. Scand., 1939, 83, 104-122). H. H. K. Morphological and functional recovery of the pancreatic islands [of Langerhans] in diabetic cats treated with insulin. F. D. W. Lukens and F. C. Dohan (*Science*, 1940, 92, 222– 223).—Cats in which 12—4 of the pancreas is removed become permanently diabetic after treatment with anterior pituitary extract. The islets show marked hydropic degeneration. Such cats treated with insulin recover from the diabetes and the islets become histologically normal. Dogs do not recover from the diabetes because of early atrophy of the islets. E. R. S.

Action of depot insulin in normal subjects. K. Mellinghoff and G. Voges (*Dtsch. Arch. klin. Med.*, 1939, 185, 345-356).-40 units of various depot insulins and of insulin were injected into normal subjects maintained on a standard diet. Hypoglycæmia occurs as rapidly with depot insulin as with ordinary insulin. A. S.

Mode of action of insulin. S. Soskin and R. Levine (Amer. J. Physiol., 1940, 129, 782—786).—Administration of insulin to the normal dog does not increase the rate of sugar utilisation by the extra-hepatic tissues at any blood-sugar level, but the storage of muscle-glycogen is increased by additional insulin. The amount of insulin available in the normal animal is sufficient for the max. rate of glucose catabolism, but not sufficient for max. glycogen synthesis. It is suggested that insulin facilitates the formation from glucose of an intermediate substance which precedes and is necessary for both catabolism and synthesis. M. W. G.

Protamine zinc insulin. E. Tolstoi and F. C. Weber (Arch. intern. Med., 1940, 66, 670-678).—84 patients with diabetes mellitus were given daily doses of protamine Zn insulin for a year with no special effort to control glycosuria, which was, however, only constantly present in 27 cases. General health was well maintained and there was no loss of wt. C. A. K.

Hyperpituitarism and hypopituitarism. L. M. Davidoff (Bull. N.Y. Acad. Med., 1940, 16, 227-243).

Effect of ablation of hypophysis on weight of kidney of rat. M. McQueen-Williams and K. W. Thompson (Yale J. Biol. Med., 1940, 12, 531—541).—The compensatory hypertrophy of the kidney which normally follows unilateral nephrectomy did not take place in 28 adult rats hypophysectomised prior to nephrectomy. The kidneys and hearts of hypophysectomised rats are smaller than those of normal controls. Thyroidectomy in 16 rats caused a decrease in the size of the heart but permitted a normal degree of renal hypertrophy after nephrectomy. F. S.

Hypophyseal nanism resulting from craniopharyngeoma. E. Gjörup (*Acta paediatr. Stockh.*, 1939, 27, 508—516).—Case report. M. K.

Simmonds' cachexia. J. C. Doane, N. Blumberg, and G. Teplick (*Endocrinol.*, 1940, 27, 766—775).—A report of 2 cases, of which one died and the other recovered after treatment with 200 units 3 times weekly of anterior pituitary-like hormone (source not stated). V. J. W.

Blood-sugar in case of adiposo-genital dystrophy showing chronic hypoglycæmia. J. F. Hart (*Endocrinol.*, 1940, 27 759—765).—A case report of a patient with a blood-sugar generally below 80 mg.-%. None of a no. of substances tried caused any lasting increase. V. J. W.

Cushing syndrome. S. Silver (Bull. N.Y. Acad. Med., 1940, 16, 368-380).

Cushing's syndrome. A. Delachaux (Schweiz. med. Wschr., 1940, 70, 760—763).—A patient suffering from obesity, arterial hypertension, glycosuria, increased red cell count, hypercholesteræmia, hypogenitalism, and hypertrichosis was treated with anterior pituitary extracts without success. Folliculin lowered the blood pressure and reduced the hyperglycæmia, without influencing the obesity or the red cell count. Phenylhydrazine reduced the red cell count but not the hypertension. X-Irradiation of the pituitary abolished all symptoms. A. S.

Anterior pituitary insufficiency after severe post-partum hæmorrhage. G. Effkemann and E. Müller-Jäger (Arch. Gynäk., 1939, 168, 867—872).—Genital atrophy with hypomenorthæa, sterility, and obesity were observed after severe post-partum hæmorrhage. No connexion between postpartum hæmorrhage and endocrine disturbances could be found. M. K. **Necrosis of anterior pituitary during pregnancy.** H. E. Hutchison (*J. Path. Bact.*, 1940, **51**, 442–445).—A case of massive necrosis of the anterior lobe of the pituitary in a pregnant woman is reported. It is thought that this resulted from circulatory collapse produced by pulmonary embolism and the relation of the lesion to a coincident necrosis of the corpus luteum is discussed. (4 photomicrographs.)

C. J. C. B.

Tissue metabolism of brain cortex and liver after hypophysectomy and treatment with thyrotrophic hormone. L. D. Macleod and M. Reiss (*Biochem. J.*, 1940, 34, 820-822).— After hypophysectomy there is no decrease in O_2 uptake of rat brain slices (contrary to the behaviour of liver slices), but a 25% increase in anaërobic glycolysis. After treatment of hypophysectomised rats with thyrotrophic hormone the O_2 uptake of brain is increased, that of liver is restored or slightly increased. After 16 days' treatment these effects are lessened. With unoperated animals the hormone treatment induces only a slight increase in O_2 uptake of brain. I. H. B.

Preparation of adrenotrophic extracts and their assay on 2-day chicks. R. W. Bates, O. Riddle, and R. A. Miller (*Endocrinol.*, 1940, 27, 781—792).—Extraction depends on the solubility of the principle in H_3SO_4 at $p_H 3.5$. The unit is the quantity required to increase adrenal wt. by 25% when injections are given thrice daily to 2-day-old chicks for 5 days. V. J. W.

Effect of pituitary andrenocorticotrophic hormone and of various adrenal cortical principles on insulin hypoglycæmia and liver-glycogen. J. F. Grattan and H. Jensen (J. Biol. Chem., 1940, 135, 511-517).—Only those adrenal cortical principles which contain keto- or hydroxy-groups in ring III exert an effect on carbohydrate metabolism; deoxycorticosterone is inactive in this respect. The adrenocorticotrophic pituitary factor exerts a definite glycotrophic effect and stimulates deposition of liver-glycogen through the adrenal cortex, but it is uncertain whether it has any direct effect. P. G. M.

Induction of fertility by injection of gonadotrophic preparations. A. S. Parkes and J. Hammond (*Proc. Roy. Soc. Med.*, 1940, 33, 483-486).—Injection of horse pituitary extract into out-of-season ewes during anœstrus produced normal ovulation; injection during the last 3 or 4 days of a normal cestrous cycle caused super-ovulation at the next cestrus, whilst at any other time of the cycle or during pregnancy follicular enlargement, but not ovulation, resulted. Ovulation produced in this way in an out-of-season ewe was not usually accompanied by willingness to mate; for this it may be necessary to give a second injection after an interval of 16—17 days, forming one complete artificial cycle. The applications of this work may be to reinforce cestrus in ewe lambs breeding during their first year; to increase fertility of normal matings; to breed from barren and lost-lamb ewes out of season; and to speed up ewes coming to the ram at the beginning of the breeding season. W. J. G.

Mechanism of action of gonadotrophic hormones of anterior pituitary and follicular hormone. H. Winkler and A. Binder (Arch. Gynäk., 1939, **168**, 877—888).—Large doses of œstrogen (50,000 units of progynon given on 5 consecutive days) cause proliferation in genital tract of infantile rabbits, but inhibit formation of gonadotrophic hormone in anterior pituitary. Pituitary function increased after excretion of the œstrogen. Small doses of prolan (5×100 rat units at intervals of 3 days) had no stimulating effect on uterus or ovary. 5×500 rat units of prolan produced marked luteinisation of ovary and enlargement of the uterus. Size of hypophysis increased correspondingly. Vitamin-C content of pituitary decreases as prolan administration increases. M. K.

Variations in excretion of prolan with age. V. C. Vasilenko and R. M. Maizlisch (*Trans. Conf. Senility, Kiev*, 1938, 417– 428).—Excretion of prolan was often increased in subjects over 50—60 and decreased at a later stage, in men and women. M. K.

Qualitative changes in gonadotrophic complex of rat pituitary following removal of testes. A. A. Hellbaum and R. O. Greep (Amer. J. Anat., 1940, 67, 287—304).—Hypophyses of castrated male rats, implanted in either hypophysectomised or normal immature females, induced primary follicular development. Details of qual. changes following the administration of acetonedried pituitary powder are given. These changes are dependent on the period of castration. Recovered implants readministered in the form of acetone-dried powder induced the development of corpora lutea. W. F. H.

Interstitial cell-stimulating hormone. I. Biological properties. H. Fraenkel-Conrat, C. H. Li, M. E. Simpson, and H. M. Evans. II. Preparation and physico-chemical properties. C. H. Li, M. E. Simpson, and H. M. Evans. III. Methods of determining hormonal content of pituitaries. H. Fraenkel-Conrat, M. E. Simpson, and H. M. Evans (*Endocrinol.*, 1940, 27, 793-802, 803-808, 809-817).—In the female rat this hormone causes repair of interstitial tissue after hypophysectomy, it decreases the effect of pregnant mare serum, and augments the effect of follicle-stimulating hormone. In the male it had little effect on rats of the Long-Evans strain in California, but had the same effect on the seminal vesicles of rats at Harvard as had been described by Fevold as characteristic of his luteinising hormone (f. A., 1939, III, 577). It is a globulin, sol. in 40% alcohol or 1% NaCl, and pptd. by half-saturated $(NH_4)_2SO_4$. It contains 4.45% of hexose, probably mannose, and an equal no. of mols. of glucosamine. Sheep pituitary implants were much more effective when the tissue was fresh and minced than when it was frozen, finely ground, or stored.

V. J. W. **Preparation and properties of pituitary follicle-stimulating fractions prepared by trypsin digestion.** W. H. McShan and R. K. Meyer (*J. Biol. Chem.*, 1940, **135**, 473-482; cf. A., 1939, III, 1945).—The purification of the follicle-stimulating fraction of sheep pituitary gland by means of tryptic digestion is described, by which luteinising, lactogenic, and thyrotrophic activity is destroyed. Trypsin is then destroyed by heatinactivation. The product is stable at 100° in absence of water. It is very sol in water and contains approx. 23% of carbohydrate calc. as glucose, but no pentose or fetose sugars. The hormone is destroyed by takadiastase or ptyalin, or by reduction with cysteine at room temp. for 48 hr. at $p_{\rm H}$ 7.8. The chemical nature is discussed in the light of these observations, and it is suggested that the activity depends on a carbohydrate—peptide-like complex which contains an essential dithio linking. P. G. M.

Depot treatment of diabetes insipidus. K. H. Schölzke (Med. Welt, 1940, 14, 166—168).—A single injection of 0.6 c.c. of a depot-tonephin (equiv. to 36 units) had an antidiuretic effect in severe cases of diabetes insipidus which lasted for 5 days. This was half the previously required amount of antidiuretic principle. A. S.

Diabetes insipidus associated with diabetes mellitus. J. H. Talbott, F. S. Coombs, W. V. Consolazio, and L. J. Pecora (Arch. intern. Med., 1940, 66, 607-624).—A case of diabetes insipidus associated with diabetes mellitus is reported. Serum- Na and -Cl concns. were increased; there was decreased renal clearance of Na and Cl but insulin and creatinine clearances were normal, suggesting increased reabsorption of NaCl by the renal tubules. Injections of posterior pituitary extract corr. these changes temporarily. The combined disturbances may be due to an enlarged hyperactive anterior pituitary encroaching on the supraopticohypophyseal pathway. C. A. K.

Intake of water by frogs during their reaction to pituitrin. E. M. Boyd, K. J. Clark, and A. E. Smith (*Amer. J. Physiol.*, 1940, 129, 645—649).—Six possible routes were studied whereby water might enter the body during the uptake following pituitrin injection in frogs. Water enters through the skin and gastrointestinal tract, and is retained for several hr. In the absence of pituitrin water added to the body is quickly eliminated. Water injected hypodermically is retained by pituitrin. Pituitrin causes retention of water added to the body in any way. M. W. G.

Inactivation of melanophore hormone in cestrus. W. Rodewald (*Dtsch. med. Wschr.*, 1940, 66, 238-240).—Plasma and serum of women in menstruation inactivated melanophore hormone; this observation was also made during cestrus and metcestrus of rats. The anti-melanophore factor can be obtained by extraction with 50% acetone. The melanophore hormone content of the rat's pituitary shows insignificant fluctuations during the cestrous cycle. Plasma inactivates melanophore hormone and the hormone content of the pituitary is diminished if male or female rats are treated with follicular hormone. A. S.

XII.-REPRODUCTION.

Advances in sex hormone therapy. H. E. Dale (Pharm. J., 1941, 146, 2-3).—A brief review.

Lactation. S. J. Folley (*Biol. Rev.*, 1940, 15, 421–458).--A review. J. D. B.

Reproduction in spotted hyena, Crocuta crocuta. L. H. Matthews (Phil. Trans., 1939, B, 230, 1-78).—A detailed account of the anatomy and histology of the genital organs based on extensive material. The reproductive cycle is described and details of gestation are given. Both copulation and parturition take place through the clitoris of the female. The clitoris is capable of erection equal to that of the penis and at parturition great stretching of its ventral wall must take place. It is suggested that the peculiar male facies of the female may be produced by an excess of androgenic substance, accompanied probably by a deficiency of extrogens, derived from the ovary. The resemblance between the conditions found in the normal female and those found elsewhere in adrenal virilism is noted. J. D. B.

Structure of reproductive tract in female gibbon. E. W. Dempsey (Amer. J. Anat., 1940, 67, 229-253).—Thecal luteinisation occurs in the ovary during the luteal phase, pregnancy, and lactation but not during the follicular phase. Penetration of the uterine glands into the mucosa accompanied by marked coiling of the glands occurs during the luteal phase. Cyclic growth and cornification occur in the vagina. The relationship of these events to endocrine production and the similarities to other primates are discussed. W. F. H.

Ovary of adult rat: changes in follicular apparatus during pregnancy. C. E. Lane (Anat. Rec., 1940, 78, 31-41).-Thecal and granulosal vol. is least about the 11th day of gestation, when secretions from these parts reach their lowest concn. Follicles greater than 500 μ . in diameter exhibit variations in the theca and granulosa qualitatively different from those of smaller follicles. The max secretory activity of the placenta occurs between the 11th and 16th day. Follicles 500-700 μ . in diameter are those primarily involved in the secretion of cestrogenic hormones. The mitotic activity in the granulosa is inhibited by placental secretion between the 8th and 16th day. W. F. H.

Effect of increased daily illumination and of reversed day and night on cestrous cycle of mouse. R. A. R. Gresson (*Proc. Roy. Soc. Edin.*, 1940, **60**, 333-343).—Female mice were kept in darkness for 7-8 hr. during the day and were kept under bright illumination for 16-17 hr. beginning at 6 p.m. The control stock paired at night time. The "long-day" conditions accelerated cestrus and induced pairing in midwinter. Reversed day and night conditions induced daytime pairing. In the spring the controls paired more readily during daytime but the proportion of daytime pairings among the experimental animals was somewhat higher than among the controls. A. S.

Pregnancy of viviparous snakes. L. Fraenkel, T. Martins, and R. F. Mello (*Endocrinol.*, 1940, **27**, 836-837).—Removal of corpora lutea causes death of the fœtuses. V. J. W.

Weight and menses in adolescent girls with special reference to build. L. M. Bayer (*J. Pediat.*, 1940, 17, 345-354).-92 adolescent girls were studied with regard to wt., menstruation, and build. Where wt. deviations occur, the tendency is toward underwt. among the hypofeminines, and overwt. among the hyperfeminines. Wt. is judged by the wt.-stature index. C. J. C. B.

Muscular functions of vagina and uterus in rat. S. Genell (Acta Obstetr. Gynec. Scand., 1939, 19, 114—175).—Graphic registration experiments in white rats in vivo and in vitro showed that variations in tonus and motility of the uterine muscle depend on the action of cestrin and are inter-related. Tonus of uterine muscle is low in cestrus, high in dicestrus. In vivo reactions were studied by a modified Trendelenburg method. Tonus of cervical muscle is high in cestrus, low in dicestrus. Tonus and motility in vitro show reverse conditions of those in the uterine horns. Cervical muscle is refractory to pitocin; uterine muscle is more sensitive to pitocin during cestrus. Vaginal muscle has highest tonus during cestrus, is refractory to pitocin, but responds in castrates with increase in tonus and frequency of contraction; this effect is inhibited by cestrin treatment. The func-

tion of the muscular tract is sperm transport. Spermatozoa are thrust up by plunging mechanism into the uterus and are mixed with uterine fluid by pro- and anti-peristalsis. M. K.

Visscher-Bowman pregnancy test. K. Patkay (Arch. Gynäk., 1939, **169**, 13—18).—The test could be improved by examining the ppt. with the agglutinoscope. The reaction was positive in 95% of pregnancy cases, but was also positive in conditions with increased excretion of prolan and in pelvic inflammation owing to reducing substances in the urine. M. K.

Hormonal treatment of habitual and imminent abortion. K. Frohnwieser (*Münch. med. Wschr.*, 1940, 87, 29-30).— Good results in the treatment of habitual and imminent abortion were obtained with prolonged administration of progesterone. The treatment was discontinued 8 weeks before the end of the term. A. S.

Causation of labour. H. von Wattenwyl (Schweiz. med. Wschr., 1940, 70, 757-760).—Various mechanical, nervous, and hormonal factors responsible for the onset of labour are discussed. A. S.

Hormonal and nervous regulation of female sex organs. H. Guggisberg (Schweiz. med. Wschr., 1940, 70, 825-830). A. S.

Influence of follicular hormone on vaginal flora. F. Horstmann and K. Herrnberger (Arch. Gynäk., 1939, 169, 76-85). Administration of follicular hormone (1000-10,000 i.b.u.) in children changed the vaginal flora of mixed cocci into one of vaginal bacilli. M. K.

Oral administration of diethylstilbœstrol dipropionate. B. B. Weinstein, J. C. Weed, F. R. Lock, and C. G. Collins (*Endocrinol.*, 1940, 27, 739—742).—Good results are reported in a no. of menopausal cases after 0.3—15 mg. daily. V. J. W.

Molecular structure in relation to estrogenic activity. Derivatives of 4: 4'-dihydroxydiphenylmethane. N. R. Campbell (*Proc. Roy. Soc.*, 1940, **B**, 129, 528—538).—The æstrogenic activity of 46 a-alkyl, aa-dialkyl, cyclohexyl, cyclopentyl, and a-alkyl-a-aryl derivatives of 4: 4'-dihydroxydiphenylmethane was studied. The homologous series exhibit relationships between structure and max. potency parallel to those in other series of synthetic æstrogens. A biological connexion exists between methyl and other groups on the central C atom, the æstrogenic effects varying considerably with change in chain length of the central groups (for new compounds, cf. A., 1941, II, March). F. O. H.

Alteration of urinary excretion of androgens by estrogenic therapy. E. C. Hamblen, C. J. Pattee, and W. K. Cuyler (*Endocrinol.*, 1940, 27, 734—738).—Total doses of 0.33—2 mg. of estradiol or its various esters caused a fall in urinary androgens (Oesting's method) in women with symptoms of ovarian deficiency (cf. A., 1940, III, 213). V. J. W.

Effect of æstrone on the metabolism of rat uterus. M. Kerly (*Biochem. J.*, 1940, 34, 814—819).—Following injection of æstrone in oöphorectomised rats, the rate of anaërobic glycolysis of the isolated uterus increased after 6—12 hr. and reached a max. at 24—36 hr. after injection, returning to pre-injection level in 96 hr. Injection increased O₂ consumption (at 36 hr.) but the effect was less marked than on anaërobic glycolysis. The latter effect was not modified by hypophysectomy. Neither æstrone nor æstriol had any *in vitro* action on the rate of anaërobic glycolysis of isolated uterus. J. H. B.

Treatment of sterility. M. M. White (Proc. Roy. Soc. Med., 1940, 33, 517-526).—Lipiodol injection was therapeutically superior to tubal insufflation in sterility, but the latter affords a better means of diagnosis. Follicular hormone was beneficial in some cases with non-patent or partially patent tubes, or absent pulsations. When endometrial biopsies showed corpus luteum deficiency as the only possible cause of sterility, remedy of this defect resulted in pregnancy in half the cases studied. W. J. G.

Chronic mastitis and ovarian hormones. R. Wanke (Deut. Z. Chir., 1938, 250, 234-255),.-Diminished excretion of follicular hormone with inversion of the normal excretion curve of the menstrual cycle was seen in two cases of chronic cystic mastitis. E. M. J. Acetylcholine-equivalent content of vagina and vulva of ovariectomised rabbits before and after administration of cestrogen. S. R. M. Reynolds and F. I. Foster (*Endocrinol.*, 1940, 27, 841---842).---1 hr. after injection of a large dose of mixed cestrogens the acetylcholine of the vulva was not affected, whilst that of the vagina was slightly increased but not to the same degree as that of the uterus (cf. A., 1939, II1, 586). V. J. W.

Endocrine dyscrasia of acne vulgaris in women. C. H-Lawrence and N. T. Werthessen (*Endocrinol.*, 1940, 27, 755—758).—Average œstrogen excretion in 8 patients was only $\frac{1}{3}$ that of controls. Androgen excretion was the same in both series. V. J. W.

Metabolism of crystalline progesterone. E. H. Venning and J. S. L. Browne (*Endocrinol.*, 1940, 27, 707-720).—After hysterectomy, or in amenorrhœa, patients only excrete progesterone as pregnanediol when large doses (20 mg. daily) are given or if the endometrium is built up by administration of œstrogens. V. J. W.

Effect of estrogens on pregnanediol output during menstrual cycle. C. J. Pattee, E. H. Venning, and J. S. L. Browne (*Endocrinol.*, 1940, 27, 721—726).—Administration of 20,000—80,000 i.u. of estradiol benzoate in 4-6 daily doses at about the middle of the menstrual cycle caused a decrease in pregnanediol output. V. J. W.

Recovery of pregnanediol from urine. N. L. R. Bucher and C. F. Geschickter (*Endocrinol.*, 1940, **27**, 727-733).—Hydrolysis of Na pregnanediol glycuronidate to pregnanediol does not occur in sterile urine and is dependent on a bacterial enzyme. Venning's method of determination (A., 1939, III, 145) should be supplemented by a test for free pregnanediol. V. I. W.

Induction of sexual receptivity in cestrogen-conditioned spayed female guinea-pigs by orally administered progesterone and pregneninolone. A. L. Soderwall (*Endocrinol.*, 1940, 27, 840-841).—0.05 mg. subcutaneously, or 1.1 mg. by mouth, of progesterone induced receptivity in 6 out of 7 animals. 1 mg. of pregneninolone by mouth induced receptivity in 10 out of 16. V. J. W.

Pregnanediol excretion in pregnancy toxemia. C. L. Cope (Lancet, 1940, 239, 158-159). There was no reduction in urinary excretion of pregnanediol glucuronidate in 10 cases of late toxemia of pregnancy. In I case of chronic nephritis pregnanediol excretion was absent in the last week of pregnancy (cf. Weil, A., 1938, III, 301). C. A. K.

Liver damage and cestrogen inactivation. G. Pincus and D. W. Martin (*Endocrinol.*, 1940, 27, 838-839).—CCl₁ administered by stomach-tube to spayed rats caused an increase of 80% in the no. showing vaginal smear response to $0.5 \,\mu$ g, of cestrone. V. J. W.

Sex hormone changes associated with liver disease. S. J. Glass, H. A. Edmondson, and S. N. Soll (*Endocrinol.*, 1940, 27, 749-752).—In 14 men with cirrhosis of the liver the urine showed high vals. for free æstrogens with little or none combined. Androgen vals. were low and 8 cases showed gynæcomasty (cf. A., 1940, III, 215). V. J. W.

Effect of ageing in female genital tract on fertilising capacity of guinea-pig spermatozoa. A. L. Soderwall and W. C. Young (Anat. Rec., 1940, 78, 19–29).—Spermatozoa introduced by artificial insemination into the genital tract prior to the beginning of heat retained their fertilising capacity for 22 hr. Fertilising capacity remained unaffected until the interval between insemination and ovulation exceeded 17 hr. Between this time and the 22nd hr. there was a decrease in the % of fertile inseminations but no effect on development. The sperm thus differs from the ovum, in which impairment of function begins shortly after ovulation with resultant developmental errors and a high rate of abortion during the 1st half of pregnancy. Fertilisation, implantation, and normal development are unrelated to willingness to copulate provided insemination is properly timed. W. F. H.

Castration in the male. R. C. Mochlig (Endocrinol., 1940, 27, 743-748).—Report of 2 cases in 1 of which daily administration of 25 mg, of testosterone propionate caused return of secondary sexual characters. V. J. W.

Examination of semen and female sterility. W. Stemmer (*Med. Welt*, 1940, 14, 351–354).—Mobile spermatozoa were found in the vagina 2 hr. after coitus. The optimum $p_{\rm H}$ of

semen is 8.0, that of the vagina is 4.5; the $p_{\rm H}$ of the mucus in the uterine cervix is approx. 8.0. A. S.

Treatment of cryptorchidism with chorionic gonadotrophic hormone and male sex hormone. C. Zelson and E. Steinitz (J. Pediat., 1940, 17, 315-321).-17 boys with cryptorchidism (2 bilateral) received a course of combined treatment with injections of chorionic gonadotrophic hormone (pregnyl) and testosterone propionate. Each injection consisted of 500 r.u. of gonadotrophic hormone with 5-10 mg. of testosterone propionate. 9 responded with complete descent of the testes. These included 4 of 9 boys treated with either hormone alone or successively without any effect, and 5 or 8 boys not treated previously. C. J. C. B.

Treatment of cryptorchidism. M. Grauhan (Med. Well, 1940, 14, 243—248).—Treatment should commence when cryptorchidism still persists at the onset of puberty. Surgical procedure is indicated in adults, and when hormonal treatment was unsuccessful. A. S.

Constitution and cryptorchidism. O. E. Rosinsky (Wien. med. Wschr., 1940, 90, 12-16, 32-40, 47-50, 62-66). A. S.

Effect of testosterone propionate on induced creatinuria in rats. J. R. Coffman and F. C. Koch (J. Biol. Chem., 1940, 135, 519—530; cf. A., 1940, III, 645).—Increase in body wt. and decrease in creatinuria produced by daily injection of 900 μ g. of testosterone propionate are more marked in castrated than in normal rats. The muscle-creatine shows no marked difference during creatine feeding, whether testosterone propionate is administered or not. P. G. M.

Does testosterone propionate inhibit ovulation? H. O. Burdick (Endocrinol., 1940, 27, 825-826).—Several mice receiving 0.5 mg. daily ovulated during the course of the injections. V. J. W.

Effect of pregnant mare serum on spermatogenesis in man. J. M. Looney (*Endocrinol.*, 1940, **27**, 753—754).—A case report of increase in spermatogenesis and subjective improvement, resulting from administration of 10 Upjohn units 3 times weekly together with thyroid and numerous vitamins.

V. J. W.

Biological assay of testicular diffusing factor. A. L. Bacharach, M. R. A. Chance, and T. R. Middleton (*Biochem. J.*, 1940, 34, 1464—1471).—A method for comparing the diffusing factor activities of pairs of preps. with an estimate of the error of comparison is described. The mean bleb size produced by injection of the factor into suitable rabbits is determined, followed by the construction for each assay of a response-log dose curve by the method of least squares and calculation of the fiducial limits of the derived potency ratio of the preps. The error is not greater than that in other biological assays performed and evaluated on comparable lines. J. N. A.

XIII.-DIGESTIVE SYSTEM.

Motor functions of stomach after gastrectomy. S. F. Vitkin (Ann. Surg., 1940, 111, 27–48).—Clinical and X-ray observations on 74 cases of gastrectomy are summarised. The vol. and shape of the resected stomach depend on the type of operation but the vol. increases with time after operation. Tone is normal and peristalsis present. The mechanism of emptying of the resected stomach is discussed. D. S.

Body build of male ulcer patient. S. C. Robinson and M. Brucer (Amer. J. dig. Dis. Nutr., 1940, 7, 365-373).-External body measurements, wt., and blood pressure of 250 men with peptic ulcer were compared with those of a control group of 7478 men undergoing medical examination for life insurance. The ulcer group differed statistically from the normal in every measurement except height. The greatest deviations occurred in wt., chest circumference, abdominal circumference, ponderal index, and the ratio of chest circumference to height. The systolic blood pressure was slightly reduced in the ulcer group. It is concluded that the ulcer patient tends to have a narrow or linear type of body build. N. F. M.

Evaluation of the Meulengracht regime in treatment of bleeding peptic uleer. J. Chasnoff, S. Leibowitz, and R. Schwartz (*Amer. J. dig. Dis. Nutr.*, 1940, 7, 373-378).-21 cases of bleeding peptic ulcer were treated with the Meulengracht regime, and the results were compared with 72 similar cases treated by the "starvation-Sippy" method. One of the former group and 8 of the latter died. The average period of hospitalisation was not decreased under the Meulengracht regime, but these patients felt better than the controls. N. F. M.

Shellac bezoars [in stomach]. H. H. Inlow (Radiology, 1940, 34, 618-625).—A shellac bezoar weighing 129.5 g., sp. gr. 1.036, 11 cm. long and 5.3 cm. wide, was removed from the probably congenitally malpositioned stomach (eventration of the diaphragm was present) of a man habitually drinking dry beer mixed with a shellac solution during prohibition days. The bezoar was diagnosed by a previous radiogram and its nature was confirmed by chemical analysis. The other 10 cases in the literature are reviewed. E. M. J.

Secretory studies in whole stomachs: dilution indicator technique and its precision measures. F. Hollander and J. Glickstein (*Amer. J. dig. Dis. Nutr.*, 1940, 7, 386—391).—The history of the dilution indicator technique in gastric analysis is reviewed, and the properties necessary to the perfect indication are listed. Phenol-red is the only substance known to have these properties. A mathematical formulation is given of the degree of accuracy and of the possible errors inherent in the method. Some of the latter can be very large under particular conditions. N. F. M.

Mineral metabolism in patients with gastric hyper-, hypo-, and an-acidity. F. Schmitt (*Disch. Arch. klin. Med.*, 1939, 185, 317—329, 330—337).—Blood-CO₂ capacity is lowered and the Cl content of the red cells is increased during max. gastric secretion in patients with hyperacidity; the Na, K, and Ca content of erythrocytes is diminished. The fasting hyperacid patient has normal ionic composition of the red cells, apart from an increased Cl concn. The K content of erythrocytes of hypo- and an-acid patients is low; the Cl content is more increased than in hyperacid patients. Atropine and histidine hydrochloride increase the Na, K, and Ca concn. in plasma and diminish the Cl content in red cells of patients with hyperacid gastric or duodenal ulcers. Blood-Pb remains const. A. S.

Activity of carbonic anhydrase in relation to gastric secretion. W. Feldberg, D. Keilin, and T. Mann (*Nature*, 1940, **146**, 651-652).—Cats starved for 15 hr. were decerebrated, the cardiac end of the stomach ligatured, and a cannula tied to the pyloric end. 0.2 g. per kg. of Na thiocyanate or 1 g. kg. of sulphanilamide was injected intravenously 1-2 hr. before 0.5 mg. per kg. of histamine subcutaneously. The stomach was washed and filled with 20 ml. of warm saline, which was removed every 40-50 min. and replaced by fresh saline. Thiocyanate and sulphanilamide are excreted by the gastric mucosa and reach a fairly high concn. in the mucosa. Thiocyanate strongly depresses gastric secretion of HCI stimulated by histamine, and is not a strong inhibitor of carbonic anhydrase. Sulphanilamide inhibits completely gastric carbonic anhydrase, but either does not affect the secretion of HCI stimulated by histamine or increases it. The results do not support the view that carbonic anhydrase catalyses directly the gastric secretion of HCI. Carbonic anhydrase takes part in the acid-base metabolism of the body as indicated by the disturbance of this by sulphanilamide treatment. E. R. S.

Effect of cholecystogastrostomy on cinchophen-produced ulcer in dogs. H. Swan (Arch. Surg., Chicago, 1940, 41, 569—584).—Cholecystogastrostomy with ligation of the common duct was performed in 5 dogs and they with 8 control dogs were then fed old cincophen (150—200 mg. per kg.) 5 days a week. All except one control dog died of gastrointestinal ulceration. Bile in the stomach, therefore, did not protect from ulceration. (4 photomicrographs.) F. S.

Disturbances of pancreatic function in diseases of the bile ducts. W. Berger and H. Schnetz (*Disch. Arch. klin. Med.*, 1939, **185**, 1-48).-103 out of 115 patients suffering from diseases of the bile ducts showed disturbances of amylase, 71 of amylase and trypsin secretion; 50 out of 51 patients had signs of disturbed islet function. The disturbances consisted of stimulation or inhibition of external or insulin secretion. 26 patients suffered from hyperinsulinism, 24 had latent or manifest diabetes mellitus. Simultaneous stimulation of amylase and trypsin secretion was found in 8, inhibition in 63 patients. The changes of pancreatic function were irreversible in a no. of patients. A. S.

Golgi apparatus as indicator of secretory activity in pancreatic islet cells. E. Vazquez-Lopez (*Nature*, 1940, 146, 589—590).—Pancreatic tissue from mice treated with œstrogen showed a hypertrophic Golgi apparatus in every islet cell examined. The Cajal formol-U method gave thick regular threads in a loose net through the cytoplasm. These modifications represent the histological basis of functional hyperactivity dependent on excessive pituitary stimulation. E. R. S.

Ætiology of acute hæmorrhagic pancreatitis with special reference to vascular factors. C. J. Smyth (Arch. Path., 1940, 30, 651—669).—Localised areas of acute pancreatic necrosis were uniformly produced in 21 dogs by injecting Hg into the pancreatic artery, but none of the animals died of a spreading type of acute pancreatic necrosis. In these dogs small areas of pancreatic necrosis remained localised even though the adjacent normal acini were stimulated to max. secretory function by food or by acetyl-β-methylcholine or eserine. (7 photomicrographs.) C. J. C. B.

Pancreatic secretion in man. M. W. Comfort and A. E. Osterberg (*Arch. intern. Med.*, 1940, **66**, 688—706).—The actions of secretin and mecholyl on pancreatic secretion were studied in normal men using continuous suction through a double tube (in stomach and duodenum). Secretin produced a large vol. of duodenal contents, increased the $p_{\rm H}$, and reduced enzyme concns. Mecholyl increased the vol. of duodenal contents only slightly, did not alter $p_{\rm H}$, and produced a prolonged increase in enzyme concn. C. A. K.

Congenital duodenal stenosis in two-year-old child and in man of 49 years. H. Braun (Virchow's Arch., 1938, 302, 618—626).—In the two cases vomiting had occurred only during the 1st month of life and prior to death. A membrane with a central opening of 8 mm. and consisting of cedematous connective tissue and circular smooth muscle fibres covered with mucosa obstructed the duodenum, and the common bile duct could be traced to its opening on a papilla of the pyloric surface of the membrane. An ingrowth of mesenchymal elements into the duodenum at the time of its temporary epithelial occlusion (2nd—3rd intra-uterine month) is assumed to be the cause of this stenosis. Identical membranes, although comparatively thicker, were found in 3 newborns. J. A.

Absorption of glucose from duodenum. W. O. Abbott, W. G. Karr, P. M. Glenn, and R. Warren (*Amer. J. med. Sci.*, 1940, 200, 532—536).—The duodenum absorbs glucose very rapidly compared with other regions of the alimentary canal of equal length and at a rate that varies in the individual from day to day. As little as 6 g. per hr. may be absorbed from dil. solutions; the max, rate from solution within the normally occurring concn. range is 20 g. per hr.

C. J. C. B. Case of multiple diverticula of duodenum, jejunum, and colon. S. Hatchette (*Radiology*, 1940, 34, 577-580).

E. M. J Influence of nerves and drugs on secretion by small intestine. Enzymes in intestinal juice. R. D. Wright, M. A. Jennings, H. W. Florey, and R. Lium (*Quart. J. Exp. Physiol.*, 1940, 30, 73-120).—Stimulation of the vagus nerve in the decerebrate cat elicited secretion in the duodenum, but not the jejunum, which may re-absorb the duodenal secretion; this comes principally from the region having Brunner's glands. The vagal supply of the upper duodenum passes from the stomach through the muscular layer of the gut wall. Eserine augments the secretion, but does not sensitise the jejunum. Atropine and luminal caused a lasting inhibition of the effect of vagal stimulation, but eserine partly restores the secretion in the case of luminal. Of all anæsthetics tested, chloralose had the least inhibitory effect. Stimulation of the nervi erigentes caused no secretion in the ileum, although copious colonic secretion occurred. Section of the splanchnic nerves pro-duced an effect, diminished by their stimulation, similar to that of vagal stimulation even after section of the vagus. The inhibitory fibres of the splanchnics on secretion arise below the third thoracic segment of the spinal cord. Ergo-toxine and atropine abolished the secretion. The rate of secretion was in some animals augmented by stimulation of the vagi. The cœliac ganglia assume an inhibitory action within 10 days after section of the preganglionic fibres. Subcutaneous eserine produced a copious secretion which was abolished by atropine and reduced by luminal, but was unaffected by section of the vagus nerve. Acetylcholine augments or initiates submaximal secretion in the duodenum following eserine, but damages the intestinal mucosa. In the pig, dog, and cat, the duodenum secretes a mucoid fluid in response to food after all extrinsic nervous influences have been removed. The production of fully innervated duodenal fistula in the pig is described; these show a response to food similar to the denervated fistula. The injection of secretion into the dog and cat was followed by duodenal secretion. Histamine had no secretory effect on the duodenum of the cat. Stimulation of the vagi and section of the splanchnics both cause depletion of mucin in the Brunner's glands. Duodenal secretion produced experimentally contains amylase or peptidase. The secretion from the duodena of 5 species, both innervated and denervated, have the same digestive properties. Differences in the enzymic content of fluid secreted in response to different stimuli are due to its cellular content. T. S. G. J.

Intubation studies of human small intestine. Concentration and movement of glucose solutions in stomach and duodenum. W. G. Karr, W. O. Abbott, O. D. Hoffman, and T. G. Miller (*Amer. J. med. Sci.*, 1940, 200, 524–532).—There is no delay in the entry of glucose into the duodenum after the ingestion of a conc. solution. Much more glucose is absorbed from the gastro-duodenal than from the jejuno-ileal region. The range of glucose concn. from the cardia to the upper jejunum is from the concn. ingested down to 4-6%. The max. concn. at which glucose on the cardia usually enters the duodenum is 15%. C. J. C. B.

Effect of acute intestinal obstruction on blood and plasma volume. S. Gendel and J. Fine (Ann. Surg., 1939, 110, 25-36).—The average survival time of dogs with distension of the obstructed intestine (15-30 cm. H₂O pressure) is 21 hr. The loss of plasma vol. is 36% within 6 hr. and 55% within 24 hr. Strangulation of the distended intestine increases the rate of plasma loss to 48% within 4 hr. A decrease in plasma vol. occurs before the blood pressure falls to shock level. D. S.

Rôle of nervous system in acute intestinal obstruction. J. Fine, L. Rosenfeld, and S. Gendel (Ann. Surg., 1939, 110, 411-416).—The survival time of cats with obstruction and distension of the small intestine is inversely proportional to the intraluminal pressure. Fluid loss into the lumen and wall of the intestine and peritoneal cavity is not sufficient to account for the rapid death. Denervation of the gastrointestinal tract does not influence the survival time nor significantly alter the fluid loss. D. S.

Bowel obstruction in new-born. G. W. Miller (Ann. Surg., 1939, **110**, 587—601).—Review of cases of congenital obstruction of bowel subjected to operative treatment. D. S.

[Radiological study of] ileocæcal region. A. Oppenheimer (Radiology, 1940, 34, 545—559).—The ileocæcal region was studied 5 hr. after a Ba meal taken in the morning on an empty stomach, ordinary meals being resumed 1 hr. later; a camomile enema the previous night was the only prep. The terminal ileum emptied at 15 min. interval by one tonic contraction of a "stripping" character; the ileocæcal valve was closed at all other times. The cæcum relaxed as soon as the opaque meal filled the preterminal ileal loops ("receptive relaxations"); it later emptied gradually over the course of many hr. and generally rose by 10 cm. during this process. A cæcocolonic sphincter was observed. The appendix emptied by one tonic contraction 5 hr. after its filling had been completed. E. M. J.

Action of morphine on intestine in experimental lieus and after laparatomy. H. J. Lang (Arch. Gynäk., 1939, 169, 93-120).--Guinea-pigs with experimental mechanical ileus lived twice as long after administration of morphine as did control animals without morphine. Experiments in vitro showed increased tonus of isolated guinea-pig's gut and acceleration of fluid transport movement after morphine. M. K.

communior followed by increased activity for the next 100 min.; 150-200 min. after the injection a profound depression began which persisted for several hr. followed by a slow return to normal. Following the intravenous injection of *E. coli* yaccine all animals displayed signs of a general reaction to the vaccine such as salivation, restlessness, periodic increased respiration and heart rate, abdominal distress indicated by a periodic hypertonicity of the abdominal muscles, vomiting, defecation, and occasionally urination. The most significant result following the injection of *S. rubrum* and *Staph. aureus* was a depression of colonic motility becoming profound 150-200 min. after injection. C. J. C. B.

Rectal malformation. G. W. Ault (Ann. Surg., 1940, 111, 96-101).—Case report of congenital absence of anus and lower rectum. D. S.

Treatment of dyspepsia in infants with apple-banana powder. A. Botsztejn-Wyszewianska (*Schweiz. med. Wschr.*, 1940, 70, 932—935).—Good results in the treatment of infantile dyspepsia were obtained with a powder consisting of 33% of dried apple, 17% of banana, 0.5% of agar, 10% of cocoa, and 39.5% of starch and dextrin. A. S.

Chylous ascites. E. P. Buchanan (Ann. Surg., 1939, 110, 140-143).—Report of three cases. D. S.

Pectic enzymes. V. Fate of pectins in the animal body. Z. I. Kertesz (*J. Nutrition*, 1940, 20, 289-296).—Orally ingested pectin is probably not attacked until it reaches the large intestine, where bacterial enzymes effect its hydrolysis. A. G. P.

Osmo- and volume-regulation in alimentary tract of earthworm. N. S. R. Maluf (J. Cell. Comp. Physiol., 1940, 16, 75-187).—Body fluid has a higher concn. of Cl', Na', and K' and a lower concn. of Ca'' and SO₄'' than alimentary contents, which have the higher osmotic pressure. In worms immersed in fresh water, water diffuses by osmosis from body fluid into alimentary canal until stopped by hydrostatic pressure. The kidney is the chief regulator of osmotic pressures and of vol. V I. W

Development of Ankylostoma caninum in the rabbit after oral infection. K. Kamiko (Jap. J. exp. Med., 1940, 18, 59—71).—In rabbits, ripe larvæ of A. caninum given orally following dog blood given intravenously attain full sex status within 17 days. Gastric juice and dog blood orally have some favourable influence on growth of larvæ but are less effective than intravenous dog blood. C. J. C. B.

XIV.-LIVER AND BILE.

Oxygen and carbon dioxide exchanges in turtle's liver. C. D. Snyder and F. H. Tyler (*J. Cell. Comp. Physiol.*, 1940, **16**, 135—147).—O₂ consumption increases with increase of perfusion rate up to an optimum rate of 20 ml. of Tyrode's solution per min. per 100 g. of liver, when 0.23 ml. of O₂ is used up per min. by 100 g. of liver. Surviving slices consume 0.19 ml. per min. per 100 g. CO_2 output is irregular and there may be less in the outflow than in the inflow. V. J. W.

Tests of liver function by means of Quick's hippuric acid test. J. G. Probstein and S. Londe (Ann. Surg., 1940, 111, 230-245).—Tests of the rate of excretion of hippuric acid in normal subjects after ingestion of Na benzoate indicate that 4 g, is the best standard dose. The excretion curve obtained by hourly determinations for 4 hr, after the test dose permits more accurate evaluation of degree of liver impairment. Excretion representing at least 50% of the ingested benzoate within 2 hr. is suggested as indicating normal liver function. D. S.

Hyperhæmatism. I. Influence of cholagogues on liver function. II. Incretory glands and hyperhæmatism. III. Influence of lecithin on liver function. IV. Influence of *l*aspartic acid on liver function. Y. Matsuoka (*Japan. J. Gastroenterol.*, 1936, 8, 145—151).—I. Normal rabbit liver, but not that injured by feeding CHCl₃, responds to intravenous injection of Na taurocholate, atophan, and insulin by increased secretion of bile, excretion of pigment, and fixation of sugar.

II. Thyroxine and adrenal extract promote formation of liver-glycogen even in rabbits poisoned with CHCl₂.

liver-glycogen even in rabbits poisoned with CHCl₃. III. Injection of lecithin emulsion into the ear vein of rabbits accelerates pigment excretion. In fasted animals administration of lecithin with glucose decreases liverglycogen and increases -fat. In animals poisoned with CHCl₃ the treatment produces the reverse changes.

IV. Repeated injection of *l*-aspartic acid increases liverglycogen and decreases fat. CH. Abs. (*p*)

Deposition of glycogen with water in cat's liver. W. O. Fenn and L. F. Haege (*J. Biol. Chem.*, 1940, **136**, 87–101).— Each g. of glycogen stored in the liver is associated with 2.33 c. c. of water in rats, 1.63 ± 0.303 in cats, and 1.46 ± 0.209 in dogs. Each g. of protein in cat's liver is associated with 3.35 ± 0.107 c.c. of water, whilst lipins retain only insignificant amounts. Deposition of glycogen is accompanied by a decrease in Cl' and an increase in K' content and total liver wt.

P. G. M. Isolation of anti-anzemic factor in raw liver. S. K. Mitra (J. Indian Chem. Soc., 1940, 17, 355).—A substance containing N and S which is not an amino-acid or polypeptide has been isolated from liver (no details given). The *picrate*, m.p. 235°, when decomposed at $p_{\rm H}$ 0.5 yields a fraction (*picrate*, m.p. 245°) which gives a pyrole reaction, ppts. with phosphotungstic acid and HgCl₂, and produces a reticulocyte response when administered orally or by injection. J. L. D.

Urobilin and stereobilin excretion of infants with healthy liver after administration of decholin. K. T. Simon (*Jahrb. Kinderheilk.*, 1938–1939, 152, 338–347).—No increased excretion of urobilin occurred after administration of decholin. M. K.

Acute yellow liver atrophy in infancy. B. Ratzkowski (Jahrb. Kinderheilk., 1939, 154, 40-47).—Cases report. The possibility of allergic influences is discussed. M. K.

Effect of dehydrocholic acid on biliary pressure and its clinical application. R. R. Best, N. F. Hicken, and A. I. Finlayson (Ann. Surg., 1939, 110, 67–80).—Biliary pressure was measured manometrically in patients recovering from cholecystectomy and choledochostomy in whom a T-tube is inserted into the common bile duct at operation. The common duct pressure is 50-125 mm. H₂O. Intravenous Na dehydrocholate produces an immediate increase in duct pressure lasting for 10-30 min. Oral administration produces a less marked rise. Treatment with decholin, to increase duct pressure, nitroglycerin or MgSO₄ to relax the lower end of common bile duct, or atropine, is recommended for persistence of symptoms after cholecystectomy which are attributed to obstruction in the common bile duct. D. S.

Influence of metabolisable and non-metabolisable sugars on liver bile secretion. M. Jacobi, C. Zuckerman, B. Kogut, and B. Klein (Amer. J. digest. Dis. Nutr., 1940, 7, 382–385).— Intravenous injection of 50% aq. glucose in a cholecystectomised individual depressed the flow of fistula bile. Nonmetabolisable sugar (xylose) does not have this effect, which is ascribed to an overloading of the glycogenic function of the liver. Large doses of intravenous glucose should be used with caution in cases of liver disease. N. F. M.

Absorption of radio-opaque substances from experimentally obstructed gall bladder. B. G. P. Shafroff and J. R. Bierman (Amer. J. Physiol., 1940, 129, 703-708).—Radio-opaque substances are absorbed from the obstructed gall bladder of the cat. Crystalloidal solutions (diodrast, okiodan, NaI, uroselectan) are absorbed directly into the blood stream. Colloidal solutions (thorotrast, isotonic sol of ThO₂ opaque to X-rays) are not absorbed from the obstructed gall bladder. Lipoidal (lipoidol, 40% I solution in poppyseed oil) and suspensoidal types of solutions are slowly absorbed from the obstructed gall bladder and appear in the omental lymphatics. These substances, whatever their physical state, when placed in non-obstructed gall bladders, are not absorbed but evacuated into the intestinal tract. M. W. G.

Double gall bladder with 2 cystic ducts and 2 cystic arteries. C. L. Wilson (Ann. Surg., 1939, 110, 60-66).—Case report. D. S.

Adenomyoma of gall bladder. P. Eiserth (Virchow's Arch., 1938, 302, 717-723).-13 cases of adenomyoma are described. They all were situated in the fundus of the gall bladder and were commonly associated with other tumours and malformations and with more or less circumscribéd lympho- and leuco-cytic infiltration. The average age was 59 years. Stone formation in enlarged cysts of the tumour had occurred in 1 case. Inflammation of the gall bladder may lead to formation of an adenomyoma only in individuals in whom

maldevelopment and special reactivity of Luschka's ducts in the region of the fundus are present. J. A.

Stone formation in gall-bladder wall. P. Eiserth (Virchow's Arch., 1938, 302, 724-727).—In three cases of persons over middle age bilirubin-cholesterol stones of pin-head size were found in the wall of an otherwise normal gall bladder, especially in the region of the fundus in cystic enlargements of the invaginations of the mucosa. Ordinary gall-stones were present only in one of the three cases and showed a different structure on cross-section. J. A.

Gall-stones produced by lack of vitamin-A in guinea-pigs. V. Erspamer (Virchow's Arch., 1938, 302, 766-783).— Org. débris occurs in the bile ducts and gall bladder of guineapigs kept on food free from vitamin-A owing to increase of degenerative and desquamative processes which sometimes lead to formation of ulcers in gall bladder and cæcum. These concretions consist of mucus, epithelial cells, and bile pigment but are free from cholesterol or Ca. The liver cells and the lining of the bile duct of these animals often contain much fat. J. A.

Component of gall-stones insoluble in ordinary solvent and accounting in part for their dark coloration. H. G. Aronson (Arch. Path., 1940, 30, 670-674).—On extracting 700 g. of mixed human gall-stones with ether, HCl, CHCl₃, and acetic acid, a dark residue was obtained corresponding with 5.6% of the original material and insol. in ordinary solvents. Small amounts of bile acids were present in the alcoholic filtrate. Little or no protein was present in the gall-stones. The dark residue contained practically no inorg. material. It probably consisted of polymerides containing pyrrole derivatives which are degradation products of the bile pigments and accounts for much of the dark colour of some gall-stones. C. J. C. B.

Composition and analysis of bile salts. N. Evers and W. Smith (*Quart. J. Pharm.*, 1940, 13, 213–218).—Methods of analysis are discussed. The mixture of total bile salts is hydrolysed by boiling with aq. NaOH for 12 hr. and, after acidification, the acids are extracted with ether and weighed. The acid val. and [a] of the mixed acids are also determined. The latter is much lower for acids from pig than from ox bile, and is no criterion of the purity of samples of unknown origin. The approx. composition of the salts can be calc. from a determination of total S and total mixed acids. Na tauroglycocholate and glycocholate should contain not less than 70% of total mixed acids after hydrolysis and the acid val. of the latter should not be greater than 145. Na glycocholate should contain not less than 70% of total mixed acids after hydrolysis and the acid val. of the latter should not more than 0.8% of total S.

J. N. A.

XV.-KIDNEY AND URINE.

Acute nephritis. J. M. Hayman, jun., and J. W. Martin, jun. (Amer. J. med. Sci., 1940, 200, 505-514).

C. J. C. B. Treatment of hydronephrosis and renal pain by denervation of kidney. G. Bauer (*Acta Chir. Scand.*, 1939, **83**, 160-184). H. H. K.

Renal rickets. K. G. Kaijser (*Acta paediatr. Stockh.*, 1939, 27, 245-272).---Skeletal changes due to renal lesions are characterised by increase of residual N and phosphates in blood, and a decrease in blood-Ca and basal metabolism. The e.c.g. showed prolonged duration of systole. M. K.

Relation between clinical cedema and excretion of an anlidiuretic substance in urine. F. H. Robinson, jun., and L. E. Farr (Ann. int. Med., 1940, 14, 42-54).—Concentrates of urine of patients suffering from Bright's disease, premenstrual cedema, Cushing's syndrome, and diabetes insipidus contained an antidiuretic factor correlated to the presence of clinical cedema. The substance disappeared from urine in 2 out of 3 cases with nephrosis after the cedema had disappeared, without rise in plasma-proteins. 4 patients with acute nephritis, cedema, and antidiuretic substance in urine did not show hypoproteinamia. 4 patients were given 40 units of pitressin per day for 7 days; the antidiuretic effect of urine was at its max, the first day of administration and decreased then rapidly to normal vals.; the urine became diuretic titre of the urines was paralleled by loss of cedema initially resulting from pitressin administration. A. S.

Excretion of hæmoglobin with special reference to "transfusion "kidney. S. De Vavasquez (J. Path. Bact., 1940, 41, 413-425).—Three cases of death from blood transfusion with oliguria, hæmoglobinuria, and jaundice are described; in 2 the urine was alkaline. There was no histological evidence of obstruction in the kidneys. The excretion of hæmoglobin in a man with paroxysmal hæmoglobinuria, with acid urine, showed no impairment of renal function. The renal threshold for hæmoglobin is 459-482 mg.-% of plasma when the urine has a $p_{\rm H}$ of $5\cdot5-6\cdot3$. 8% of the hæmoglobin liberated in the plasma as the result of hæmolysis was excreted in the urine. Jaundice was absent. Repeated injections of large doses of hæmoglobin solution in rabbits with both acid and alkaline urine showed a higher excretion rate in the former and a greater retention of Fe in the kidneys of the latter. Renal function, judged by the phenol-red excretion test, was normal, although the blood-urea was increased in both. C. J. C. B.

Mechanism of albuminuria. A. Korányi (Orvosi Het., 1936, 80, 579—581).—Nephrotic and febrile albuminuria are not due to pathological changes in serum-allumin but to increased permeability of the kidneys. Artificial albuminuria is observed after administration of foreign albumin only if that albumin has smaller mols. than serum-albumin.

CH. ABS. (p) S. Stability and state of ascorbic acid in human urine. S. Banerjee (J. Indian Chem. Soc., 1940, 17, 463-468).—In their efficacy as preserving agents for vitamin-C (determined by 2: 6-dichlorophenol-indophenol titration) in urine, H2SO4 or HCl, HPO_{a} , diethyldithiocarbamate, and acetic acid decrease in the order given. With $H_{a}SO_{4}$, the result is confirmed by titration before and after treatment with -C oxidase. Similar determination of -C in urine before and after treatment with Ba acctate or H2S shows that urine contains free and combined -C, dehydroascorbic acid, and non-sp. reducing sub-A. LI. stances in both the free and combined states.

Naturally occurring porphyrins. IV. Urinary porphyrin in lead poisoning as contrasted with that excreted normally and in other diseases. C. J. Watson (*J. Clin. Invest.*, 1936, 15, 327—334).—In a case of pulmonary suppuration urinary coproporphyrin-I was abnormally high. Coproporphyrin-III was found in 3 cases of Pb poisoning. CH. ABS. (*p*)

Photelometric determination of bilirubin in urine with diazobenzenesulphonic acid. W. H. Goodson and C. Sheard (*J. Lab. clin. Med.*, 1940, 26, 423-432; cf. A., 1940, III, 852).-On the addition of an acid solution of diazobenzenesulphonic acid to urine that contains bilirubin, the typical. colour of diazobilirubin is developed. The use of a suitable PO₄" buffer prevents the ppth, of albumin and maintains the reaction mixture at $p_{\rm H}$ 4—5.5. Caffeine Na benzoate may be added to develop max, depth of colour and to prevent haze. The photelometer is standardised against a similarly diluted C. I. C. B. sample of the untreated urine.

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

Exchange of energy between man and his environment. H. S. H. Wardlaw (J. Proc. Roy. Soc. New South Wales, 1940, 74, 6-41).—The energy exchanges occurring directly (e.g., heat and mechanical energy) and indirectly (metabolic) in man at various ages and under various conditions are discussed with special reference to data for Australian subjects. F. O. H.

Problems arising from ageing population. L. J. Dublin (Nature, 1940, 146, 566).—Summary of a lecture.

E. R. S.

Calcium and phosphorus contents of chickens of various ages. J. R. Haag (Poultry Sci., 1939, 18, 279-281).—The total Ca and P contents of chicks from hatching up to 20 weeks are determined. Definite trends in abs. and relative proportions of the two elements with advancing age are traced. A, G, P,

Calcium and phosphorus metabolism in relation to chemical structure of bone. II. Experiments with moulting birds. C. Tyler (*Biochem. J.*, 1940, **34**, 1427—1430; cf. A., 1940, III, 435).—The relationship between the Ca of $Ca_3(PO_4)_2$ and residual Ca of bone previously found for laying birds also holds good for moulting birds. P. G. M. Composition of human hair. R. C. Clay, K. Cook, and J. I. Routh (J. Amer. Chem. Soc., 1940, 62, 2709-2710).----Determination of cystine, cysteine, N, and S in 120 samples of human hair discloses as sole difference that the cystine and cysteine content of male exceeds that of female hair and the cystine content of dark exceeds that of light hair. R. S. C.

Analysis of hair keratin. I. Removal of cystine from keratin hydrolysates. C. C. Lucas and J. M. R. Beveridge (*Biochem. J.*, 1940, 34, 1356–1366).—In the method described, cystine is quantitatively removed from the unreduced budrely removed from the unreduced of the second hydrolysates (e.g., of human hair) by direct addition of Cu₂O, high recovery (79% of the keratin-S) of the cryst. compound, as such or as cysteine hydrochloride, being achieved. The mother-liquor remains in a workable condition. Most of the Cl' and all colloidal colouring matter of the hydrolysates are W. McC. also removed by Cu₂O.

Histological changes in senile skin. M. M. Kuznetz (Trans. Conf. Senility, Kiev, 1938, 117-153).-People over 40 show atrophy and degeneration of epidermis, especially of stratum granulosum, followed by hyperkeratosis. The Malpighian layer loses its typical structure, and perinuclear vacuolation occurs. Atypical reaction of epidermis, hyperpigmentation, and proliferation of young Malpighian cells were also observed. These centres of division sometimes produce epitheliomatosis. The Malpighian layer shows atrophy, collagenous fibres are replaced by accumulation of fibrillary debris, and connective replaced by accumulation of normary debris, and connective tissue stains more feebly. Hyaline degeneration of collagen was found in 54% of cases. Increase of elastic tissue, which shows fatty and basophil degeneration, is due to atrophy of collagen. Unna's elastin was found in 97% of cases. A myeloid degeneration was found in 22% of cases, but was present also in young individuals. Early atrophy of sebaceous glands, longitudinal striation and hyaline degeneration of smooth muscles and increase in the ne of smooth cases. smooth muscles, and increase in the no. of sweat glands were observed. M. K.

Studies on absorption from diseased joints with uranin solution. I, II. T. Shinkawa (Nagoya J. med. Sci., 1939, 13, 107-173, 197-261).-65% of a 5% uranin solution injected into normal rabbit's knee joints is recovered from the urine within 4 hr.; the average time of first appearance is 7 min. 87% is recovered after intravenous injection. Absorption is increased in the acute stages after previous inoculation of the joint with turpentine oil, *Staphylococci*, *B. coli*, or *B. pyocyaneus*, decreases later, and returns to normal if sub-lethal doses are given. 63% of a similar solution is recovered from the urine after injection of 1 c.c. into normal human knee joints; the dye first appears after 7 min. Half the absorption occurs within the first hr. The figures for intravenous injection were 88% and 4 min., for subcutaneous injection 78% and 5 min. Absorption is increased in acute joint diseases, decreases in chronic cases, and increases again when ankylosis sets in. E. M. J.

Enzymic studies on exuvial fluid of Bombyx mori, L. I. Detection of enzymes. Y. Hamamura, S. Iida, and M. Otuka, II. Chitinase. Y. Hamamura and Y. Kanehara (J. Agric, Chem. Soc. Japan, 1940, 16, 905-909).-I. The fluid contains protease, invertase, and amylase, but not lipase or tyrosinase. It is suggested that besides exerting a mechanical action at moulting time the fluid also acts enzymically on an inner

part of the old skin. II. The fluid contains chitinase, the optimum $p_{\rm H}$ of which is 8.2 and temp, 50°. The aq. extract of the exuvia contains glucosamine, which shows that the enzyme acts on chitin material at the time of moulting. J. N. A.

Effect of phosphate buffers on development of larva of Sarcophaga carnaria. V. Cianci and G. Di Maria (Boll. Soc. ital. Biol. sperim., 1940, 15, 481–482).—The development of larvæ in media buffered by $PO_4^{\prime\prime\prime}$ at $\rho_{\rm H}7$ is much more rapid than that of larvæ in unbuffered, slightly alkaline media. F. O. H.

Laboratory rearing of flesh flies: relation between tem-perature, diet, and egg production. S. C. Dorman, W. C. Hale, and W. M. Hoskins (J. Econ. Entom., 1938, 31, 44-51). -A method of rearing *Lucilia sericata* is described. Larvæ are fed on fish heads; adults require sugar and water in addition. Carbohydrate is necessary for maintenance of life of the flies, and protein for the development of ovaries. Casein. Caseinates, blood-albumin, and beef extract are inadequate for growth of ovaries. Eggs of old are more sensitive than those of young flies to sterilising agents, e.g., lysol. A. G. P.

Serological specificity of heavy particles derived from normal organs. W. Henle and L. A. Chambers (*Science*, 1940, 92, 313—315).—Particles obtained by high-speed centrifuging (25,000 r.p.m.) from extracts of mouse organs show organ-sp. differentiation as well as the Forssman antigen. Liver and brain particles contain organ-sp. antigens. E. R. S.

l-Galactose as component of a polysaccharide of animal origin. D. J. Bell and E. Baldwin (*Nature*, 1940, 146, 559–560).—Fractionation of the products obtained by splitting methylated galactogen with methyl alcohol + HCl indicates that the original polysaccharide from the albumin glands of *Helix pomatia* contains 7 or 7n galactose units, and that of these one in every 7 arises from *l*-galactose. This is the first indication of the presence of *l*-galactose in a material of animal origin. L. S. T.

Biochemical changes in hæmatogen on storage. V. G. Kirillov (Vopr. Pitan., 1936, 5, 55–58).—Pasteurisation at 54° is inadequate to prevent subsequent bacterial and enzyme action. CH. ABS. (p)

XVII.-TUMOURS.

Production of cancer by pure hydrocarbons. V. G. M. Badger, J. W. Cook, C. L. Hewett, E. L. Kennaway, N. M. Kennaway, R. H. Martin, and A. M. Robinson (*Proc. Roy. Soc.*, 1940, **B**, 129, 439-467; cf. Bachmann *et al.*, A., 1937, J. J. Soch, and S. M. S. Soch, and S. S. Soch, and S. S. Soch, and S. S. Soch, and S. Soch, and S. S. Soch, and and and and soch III, 379).-Approx. 70 hydrocarbons were applied to mice in benzene solution or subcutaneously injected in sesamé oil. Of the 12 possible methyl-1: 2-benzanthracenes, only the 5-, 9-, and 10-isomerides are markedly active in producing sarcomas. The importance of the 5-position is shown by the production of epithelial tumours by 5-n-propyl-, -butyl-, -amyl-, and -hexyl-, -isopropyl-, and -phenyl-1: 2-benz-anthracene. 9: 10-Dimethyl-1: 2-benzanthracene, which acts more rapidly than 20-methylcholanthrene, and its homologues are very active in producing skin tumours but less active in producing sarcomas; the 9:10-oxide, but not -peroxide, of the 9:10-dimethyl compound is carcinogenic. 10-Cyano-9-methyl-1: 2-benzanthracene produces papillomas and epitheliomas in mice known to produce sarcomas rapidly. 9:10-Bishydroxymethyl-1:2-benzanthracene and its di-acetate produce sarcomas. The 6 possible methyl-3:4-benzphenanthrenes, excepting the 5-isomeride, were found to be carcinogenic; the 2-methyl and 2-isopropyl derivatives are very active. It appears that position 2 of the benzphen-anthrene mol. is the position of substitution most favourable for carcinogenic activity and that position 6 is unfavourable; this is confirmed by examination of the pentacyclic hydro-carbons. 3: 4-cycloPentenophenanthrene is inactive, whilst 1 : 2-dimethylchrysene has pronounced activity. Data for the carcinogenic activity of various dibenzacridines, di-benzfluorenes, etc. are given. Multiple tumours met with in experimental work are classified and the distribution and histological types of growth discussed. F. O. H.

Extraction of carcinogenic factor from primary human mammary cancer. J. F. Menke (Science, 1940, 92, 290-291). —Two excised scirrhous carcinomata were extracted with acetone, ether, light petroleum, and ethyl alcohol, and the extracts of each pooled. Groups of 4 and 5 virgin mice were used for testing the preps., one having single pregnancies after 4 injections, the other only 2 injections. In 282 and 229 days one spindle-celled sarcoma appeared in each group at the site of injection. E. R. S.

Endogenic blastogenic substances. H. E. Kleinenberg, S. A. Neufach, and L. M. Shabad (*Amer. J. Cancer*, 1940, 39, 463—488).—Minced liver from 67 patients, of whom 41 died from cancer and 26 from other diseases, was repeatedly extracted with cold benzene. The residue after removal of benzene (or the unsaponifiable fraction from this) was dissolved in olive oil and injected into mice. 318 mice were of the R.V. strain and 219 of other stock. Of 634 control mice of the R.V. strain, 389 reached an age of over 8 months and 40 of these had tumours of some kind, of which only 9 were malignant. 33 of these tumours were adenomata of the lung. Mice of the same strain which received injections of liver extract from patients dying from cancer showed an increased no. of tumours. Among 179 mice of which 108 survived 6 months, 62 tumours were observed of which 24 were malignant. This is a five-fold increase of tumours and a ten-fold increase of malignant neoplasms over the controls. There was an increase in no. of each type of tumour which occurs in this strain. In 6 mice malignant tumours developed at the site of injection. In mice of the R.V. strain treated with liver extracts from non-cancer patients the no. of tumours was far less than in mice treated with extracts from cancer patients, yet larger than the spontaneous occurrence in untreated mice. The % of mice with tumours was more than twice that of the controls but less than half that for mice treated with extracts from cancer livers. No tumour originated at the site of injection. In mice not of the R.V. strain a comparison of the effects of the two extracts gave somewhat similar results. One tumour arose at the site of injection. Of the 7 malignant tumours at the site of injection, 3 were adenocarcinomata of the mammary glands, 1 was a carcinosarcoma, and 3 were sarcomata. It is con-cluded that "the possibility of the human body containing blastogenic substances extractable by means of benzene may be regarded as having been proved." F. L. W.

Production of benign and malignant skin tumours in mice painted with Bantu liver extracts. M. J. A. des Ligneris (Amer. J. Cancer, 1940, 39, 489-495).—Light petroleum extracts containing the unsaponifiable fraction of livers from cancerous and non-cancerous Bantus produced papillomata and epitheliomata when painted on the skin of mice. 25 tumours, of which 7 were malignant, were obtained in 400 mice of which 237 survived 8 months. Similar extracts from non-cancerous Europeans gave no tumours. F. L. W.

Examination of human tissue for carcinogenic factors. I. Hieger (Amer. J. Cancer, 1940, **39**, 496—503).—12 spindle-cell tumours were obtained in 367 mice receiving subcutaneous injections of various extracts of European and Bantu livers. In 8 cases the extract was prepared from the livers of cancerous Europeans and the other 4 tumours were produced by extracts from livers of non-cancerous Bantus. 11 of the 12 tumours occurred in female mice. 2 of the 3 liver extracts which produced 6 sarcomas were each derived from a case of lymphosarcoma. F. L. W.

Arsenic as cause of mucous membrane cancer. W. H. Goeckerman and L. F. X. Wilhelm (*Arch. Dermat. Syphilol.*, 1940, 42, 641-648).—A case is reported in which cutaneous eruptions due to As were followed by cancer of the mucous membranes of ureter and bladder. As was demonstrated by microchemical methods in all the growths but in largest quantity in the cancer of the bladder. C. J. C. B.

Spontaneous uterine and mammary tumours in rabbits. H. Burrows (J. Path. Bact., 1940, 51, 385–390).—Among 25 females rabbits under observation for more than 900 days, primary uterine tumours (adenocarcinomas) appeared in 15 and in 3 of these there were tumours of the breast also. The ovaries showed advanced changes and it is suggested that they may have played a part in causing the neoplasia. Most, and possibly all, of the rabbits had been repeatedly pseudopregnant. (4 photomicrographs.) C. J. C. B.

Cytology of 1:2:5:6-dibenzanthracene mouse tumours. M. Levine and H. Bergmann (*Amer. J. Cancer.*, 1940, 39, 504—520).—The cytology of 2 tumours induced by 1:2:5:6 dibenzanthracene and transplanted though 14 and 22 generations respectively is described. In one tumour isolated fat cells appeared in the 7th transplant. In the 8th transplant generation the fat cell type became dominant, forming a liposarcoma. The following generations showed a reversion to fibrosarcoma. Filtrates of *P. tumefaciens* injected into mice with well-developed tumours produced haemorrhages and tumour necrosis, but no regression of the tumours.

F. L. W. Silica and iron oxide and lung tumours. J. A. Campbell (Brit. Med. J., 1940, II, 275–280).—Exposure to dust containing SiO₂ or Fe₂O₃,H₂O trebles the incidence of primary lung tumours in mice living 10 months or longer. Fe₂O₃ increases malignancy. Previous negative results with SiO₄ and other dusts are attributed to the fact that the animals were not allowed to live to the tumour-producing age and to natural insensitivity. C. A. K.

Experimental carcinoma of lung. N. Samssonow (Z. Krebsforsch., 1939, 49, 525-559).—A light oil from tar, of which 2 c.c. when painted on the skin of mice caused intoxication with clonic convulsions and death within 1 hr., was

diluted with 10 vols. of paraffin and painted on the skin of 60 white mice twice weekly for 8 months. 12 of the 23 mice surviving 50 weeks developed lung carcinomata. 20 other mice were painted with road tar and 8 of 12 mice surviving 23 weeks developed carcinoma of the lung. The right lung was affected more often than the left. The tumours originated in the epithelium of the alveoli. The lung is thought to excrete benzpyrene. E. M. J. E. M. J.

Light oils of coal tar as ætiologic factor of primary pul-monary cancer. A. Kling, N. Samssonow, and M. Heros (Bull. Acad. méd. Paris, 1938, 119, 439-443).—A brief account of work already noted (see preceding abstract). M.K.

Effect of tar injections on Cephalopod molluscs. A. Jullien (Compt. rend., 1940, 210, 608-610).-Subcutaneous injection of tar or extracts of the purple gland of Murex into the cuttlefish causes necrosis and scar formation without evidence of carcinogenic action. J. L. D.

Retardation of rate of tumour induction by substances which inhibit glycolysis. H. G. Crabtree (J. Path. Bact., 1940, 51, 303-309).—Three properties of a series of simple chloro-compounds : monochloroacetal, a-chlorohydrin, a-chlorodiethyl ketone, methyl chloropropyl ketone, and mono-chloroacetone, can be arranged as above in order of their increasing activity, namely (a) the chemical reactivity of their Cl atoms, (b) their power of reversibly inhibiting cell glycolysis in vitro, and (c) their power of inhibiting the rate of tumour induction by 3: 4-benzpyrene and 1:2:5:6-dibenzanthracene when applied to the skin of mice. С. Ј. С. В.

Protective action of thiol compounds against 1:2:5:6-dibenzanthracene. S. P. Reimann and E. M. Hall (Arch. Path., 1936, 22, 55-61).—Thiocresol reduced the incidence of cutaneous tumour in mice treated with 1:2:5:6-dibenzanthracene. Сн. Авз. (р)

Irradiation and hereditary mammary cancer. S. E. Owen and A. E. Williams (*Radiology*, 1940, **34**, 541—544).—The ventral surfaces of female C_3H mice were irradiated with X-rays at the age of four months after having nursed one litter. A marked lowering of the incidence of spontaneous mammary cancer occurred. Dosages as low as 100 r. either deep or superficial were effective, dosages of 400 r. and over more so. E. M. J.

Influence of radiant energy on the phosphatase of carcinoma tissue. K. Shibuya (Arb. dritt. Abt. anat. Inst. Kyoto, 1935, C, No. 5, 199-206).—The intensity of phosphatase action under various conditions in transplanted rat carcinoma tissue and the relation between enzyme content and alteration in tissue structure have been studied. Aq. extracts of freshly enucleated nodules, 2-4 weeks after implantation, were all actively phosphatolytic, but those from the non-necrotic periphery were more active than those from the central necrotic portion. X-Irradiation for 5-7 hr. enhanced, or for up to 10 hr. restricted, the effect; Ra irradiation produced tissue degeneration and diminished phosphatolysis. Parallelism between phosphatase content and histological Сн. Авз. (р) alteration of the tissue is postulated.

In vivo effects of localised nuclear disintegration products on a transplantable mouse sarcoma. P. A. Zahl, F. S. Cooper, and J. R. Dunning (*Proc. Nat. Acad. Sci.*, 1940, **26**, 589— 598).—Mice bearing Crocker sarcomata were injected with (a) R. (b) LiBO and (c) H BO supended in according cit (a) B, (b) LiBO₂, and (c) H_3BO_3 suspended in sesamé oil and irradiated with slow neutrons. The injection of these substances, all of which capture slow neutrons, increased the tumour regression caused by the irradiation. E. B.

Influence of quinine and its derivatives on rate of growth of Fujinawa's rat sarcoma. N. Sofue (Japan. J. Med. Sci., IV, 1940, 12, Proc., 7-9).—Cinchonine derivatives show an inhibitory effect. Quitenine and quinine have an opposite effect; hydroquinidine and iodohydroquinine show marked inhibition, whilst bromo- and chloro-hydroquinine show marked potent and dibromo- and dichloro-quinine have no effect. Ethylapoquinine, eucupine, and optochine derivatives have little action. Iodohydroquinine, hydroquinidine, and bromohydrocinchonine are most effective in suppressing the growth of tumours when administered before transplantation. H. H. K.

Skin colour and skin cancer. J. Taussig and G. D. Williams (Arch. Path., 1940, 30, 721-721).—The skin colour of the forehead, arm, and back was determined colorimetically in 100 patients with skin cancer and 100 non-cancerous patients.

Statistical examination of these determinations showed that the exposed skin of the forehead and arms of patients with skin. cancer was redder and darker than that of the non-cancerous. The unexposed skin of the back showed no such difference. Subjects whose skins on unusual exposure tend to darken Subjects whose skins on unusual exposure that to define and redden, if they show skin cancer, more often exhibit the basal or the mixed types. Those who do not so react to unusual exposure more frequently show the squamous variety if cancer develops. C. J. C. B.

Histology of tumours of the peripheral nerves. N. C. Foot (Arch. Path., 1940, 30, 772-808).-A crit. review.

С. Ј. С. В.

XVIII.-NUTRITION AND VITAMINS.

Minimum dietary standards for East African natives. W. D. Raymond (*East African Med. J.*, 1940, 17, 249-265).— The dietary requirements of African natives are discussed in relation to available foods and institutional diets. Consumption of animal protein and Ca is low; oxalic acid in green leaves reduces absorption of Ca. Standards suggested are 2600 cal. for moderate and 3400 for heavy work, protein 100 g. including 10 g. of animal protein, fat, 50, Ca 0.5, P 1 g., Fe 20 mg., vitamin-A 3000, -B 10 i.u. per 100 cal., -C 30 mg. Figures are given for nicotinic acid content of some foods but no standard is suggested. -D and -E are assumed to be adequate in the usual East African diets. R. L. E.

Influence of lactic and citric acid-milk feeding on acid-base balance of sucklings. R. Rodler (Jahrb. Kinderheilk., 1939, 153, 209–221).—Feeding periods of lactic acid-milk were characterised by increased excretion of org. acids and decreased excretion of urinary phosphate and fixed base. The citric acid periods showed an excess of urinary cations. M. K.

Protein optimum in the rations of school children. III. Retention of nitrogen for various proportions of animal and plant proteins in the rations of healthy normal children. V. A. Belousov and M. H. Gilman (Vopr. Pitan., 1936, 5, No. 3, 68-72) .- Max. utilisation occurs when animal : plant proteins = 3:2; 3 g. per day per kg. body-wt. is recommended. Сн. Авз. (р)

Effect of varying levels of wheat bran on age at sexual maturity. L. W. Taylor and I. M. Lerner (Poully Sci., 1939, 18, 323-326).—Inclusion of 15-25% of wheat bran in a ration comprising fish meal, skim milk, lucerne meal, greenfeed, minerals, and sardine oil resulted in more rapid growth and earlier sexual maturity in pullets. Early egg-wt. was lowered but the total annual production was unaffected.

A. G. P. Effect of single cereal grains on hatchability of eggs and subsequent growth of chicks. V. D. Call and H. L. Wilcke (*Poultry Sci.*, 1939, 18, 308-317).—Comparison is made of the effects of rations in which only the nature of the grain was varied. Use of oats as sole grain favoured viability, whereas wheat tended to cause diarrhœa in adult birds and high mortality in chicks. Egg production with wheat or oat rations was notably less than with maize or mixed grains. Fertility was unaffected by the nature of the grain used. Hatchability with the different rations was in the (descending) order, wheat, oats, maize (= mixed grain). Chicks from wheat- or oat-fed hens were more vigorous than from those receiving maize. A. G. P.

Alternate white and yellow layers of yolk in hens' ova. R. M. Conrad and D. C. Warren (*Poultry Sci.*, 1939, 18, 220-224).—Alternate white and yellow bands in egg yolks are due to periodic intake of different amounts of dietary xanthophyll and not to diurnal variations in metabolic rates. Birds. phyn and not to dramar throughout the day do not produce banded volks. A. G. P.

Hypochromic anæmia in dogs. I. Evaluation of a standard. bread diet and of a meat diet on formation of a standard before and after gastrectomy. F. Kellogg, S. R. Mettier, and K. Purviance (J. Clin. Invest., 1936, 15, 241-248).—The daily output of hæmoglobin by dogs on a standard bread-salmon diet was increased by unput standard breadsalmon diet was increased by supplementary feeding of beef but declined to a low level after gastrectomy. When body reserves of Fe are depleted hypochromic anæmia persists in the: absence of gastric secretion even if the diet is rich in Fe. Сн. Авз. (р)

 $p_{\rm H}$ values of the ingesta of the bovine rumen. C. F. Monroe and A. E. Perkins (*J. Dairy Sci.*, 1939, 22, 983–991).— Average vals, when the animal received various rations were: maize silage-lucerne hay 6.96, lucerne hay 6.8, maize silage 6.68, pasture 6.69. The ingesta were most alkaline immediately before feeding. J. G. D.

Changes in cartilage and bone of immature female guineapigs due to undernourishment. M. Silberberg and R. Silberberg (Arch. Path., 1940, 30, 675-688).—In growing female guinea-pigs underfeeding causes atrophy of the cartilage cells and increased sclerosis of the matrix of the growth zones. The proliferation of the cartilage and its ossification continue, but endochrondral and periosteal bone formation proceed at a diminished rate, the degree of diminution depending on the degree of underfeeding. On refeeding, the sclerosis of the matrix disappears and the cartilage cells resume their normal appearance. Overproduction of cartilage cells and bone occurs during an early period of refeeding; at later stages normal conditions are restored. No lines of arrested growth or changes which could be intrepreted as forerunners of such lines could be observed. (6 photomicrographs.)

C. J. C. B. Iron and manganese requirement of the human adult. K. P. Basu and M. C. Malakar (*j. Indian Chem. Soc.*, 1940, 17, 317-325).—Adult males require about 9.4 mg. of Fe and 4.6 mg. of Mn daily to be in balance. The amount of available Fe or of Ca in milk has no effect on Fe retention. A negative Mn balance was never produced and milk was without effect on Mn metabolism. Only traces of Mn appeared in the urine. I. L. D.

Pining in sheep not curable by cobalt. W. L. Stewart and A. P. Ponsford (*Nature*, 1940, 145, 1023),—Pining was not cured by Co administration, but was cured by feeding a special mineralised diet or anthelmintic treatment. (Cf. A., 1941, III, 130.) E. R. S.

Clinically associated deficiency diseases. T. D. Spies, A. P. Swain, and J. M. Grant (*Amer. J. med. Sci.*, 1940, 200, 536—541).—1250 persons with clinically associated deficiency disease syndromes were treated without a fatality whereas the mortality rate a few years ago was 54%. The clinical studies of these persons and analysis of their diets indicate that they have a deficiency in calories, protein, Ca, P, Fe, and the known yitamins. The administration of water-and fat-soluble vitamins, together rather than individually, helps these deficiency states. C. J. C. B.

Vitamin deficiencies in gastro-intestinal disease. T. T. Mackie, W. H. Eddy, and M. A. Mills (Ann. int. Med., 1940, 14, 28–41).—The vitamin-A, carotene, and ascorbic acid content of fasting blood was low in 51 patients suffering from peptic ulcers. There was no correlation of the blood-A and -carotene levels. Blood-A and -ascorbic acid were also below normal in 63 cases of chronic ulcerative colitis; the -carotene content was normal. The prothrombin time of Quick was increased in 22 out of 73 miscellaneous non-jaundiced patients; 18 out of the 22 suffered from ulcerative colitis. A. S.

Insect life without vitamin-A. R. E. Bowers and C. M. McKay (Science, 1940, 92, 291).—Cockroaches (Blattela germanica, L.) were reared on an equal mixture of whole wheat flour and dried skimmed milk exposed to hot air at 115° for 6 hr., a diet which will not support growth of rats. 150 g. of oil were extracted in the cold from 2-5 kg, of cockroaches and gave a negative colour test for vitamin-A, and a negative assay on rats (0-1 g. daily). The cockroach can function normally without -A. E. R. S.

Efficiency of carotene as supplied by lucerne meal in meeting the vitamin-A requirement of laying hens. J. K. Williams, C. E. Lampman, and D. W. Bolin (*Poultry Sci.*, 1939, 18, 268—275).—Inclusion in the ration of sufficient lucerne meal to provide 0.2 mg, of carotene per bird daily maintained the body-wt. of hens and the production and hatchability but not the normal vitamin-A content of eggs; deficiency lesions were prevented. A. G. P.

Vitamin-B complex in normal nutrition. C. A. Elvehjem (*Nature*, 1940, **146**, 669-672).—Vitamins should be obtained from natural sources; vitamin concentrates have their uses but no virtue in themselves as concentrates; there is no objection to the addition of synthetic vitamins to foods.

New factor of vitamin-B complex required by the albino monse. E. R. Norris and J. Hauschildt (*Science*, 1940, 92, 316-317).—Mice require a water-sol. factor other than aneurin, nicotinic acid, pyridoxine, riboflavin, and the filtrate factor. The factor is present in yeast and liver. Deficiency leads to skin lesions and loss of hair. E. R. S.

Effects of vitamin-B on the blood count and hæmoglobin content of normal albino rats. R. Summer (Univ. Colorado Stud., 1936, 23, 315—320).—Whole vitamin-B increased the erythrocytes and decreased hæmoglobin, leucocytes, and blood platelets. The effects were reversed by feeding cryst. -B₁. CH. ABS. (p)

Tuberculosis and aneurin metabolism. H. G. K. Westenbrink and J. Goudsmit (Nederl. Tijds. Geneesk., 1938, 82, 3964—3971; Chem. Zentr., 1938, ii, 3417).—No sp. disturbance of aneurin metabolism was detected in 51 tuberculosis patients, although a reduction ascribed to loss of appetite was observed. A. J. E. W.

Effects on human gastric juice of six weeks' deprivation of vitamin- B_1 . W. C. Alvarez, F. Pilcher, M. A. Foley, A. Mayer, and A. E. Osterberg (*Amer. J. digest. Dis. Nutr.*, 1936, 3, 102—107).—Definite changes in the gastric juice were not observed. Blood-hæmoglobin fell by 11% and the crythrocyte count by 7—8%. CH. ABS. (p)

Vitamin-B, in vertebrate muscle. M. Pyke (Biochem. J., 1940, 34, 1341—1347; cf. A., 1940, III, 428).—The vitamin-B₁ content of vertebrate muscle in health and disease varies from species to species and, within species, from muscle to muscle. The $-B_1$ content of pig's muscle is much greater than that of other vertebrates, the psoas muscle having a higher $-B_1$ content than the longissimus dorsi muscle. Cardiac muscle has a higher $-B_1$ content than skeletal muscle and there is a higher conc. of $-B_1$ in the ventricles than in the auricles of the heart. Red rabbit muscle contains a higher $-B_1$ concent that for the free $-B_1$ content of minced pig's muscle increases on keeping probably because of degradation of cocarboxylase to $-B_1$. Probably $-B_1$ monophosphate is produced in horse's heart on keeping. W. McC.

Photochemistry of thiazole component of vitamin- B_1 . F. M. Uber and F. Verbrugge (J. Biol. Chem., 1940, 136, 81-86).—Ultra-violet irradiation at λ 2537 A. of the thiazole component of vitamin- B_1 results in loss of selective absorption and ability to support growth of *Phycomyces*. The quantum yield is 0.347 compared with 0.0184 for the pyrimidine component. P. G. M.

Clinical application of thiochrome reaction in study of thiamin deficiency. H. J. Borson (Ann. int. Med., 1940, 14, 1-27).—Thiamin is oxidised by $K_3Fe(CN)_6$ in strongly alkaline solution to thiochrome, which fluoresces intensely blue in ultra-violet light; the fluorescence may be measured by means of a photo-electric cell or by visual comparison with standards. A detailed description of the method is given. Interfering bile pigments can be removed by extraction of the urine with *iso*butyl alcohol; 5% of the thiamin is lost. The experimental error is 10%. Normal urinary thiamin excretion is 100—300 µg. Daily large oral doses are incompletely absorbed; large parenteral doses are rapidly excreted; small frequent doses are most efficiently utilised. In patients with severe thiamin deficiency approx. 100 mg. are required to restore normal excretion. Thiamin is a renal non-threshold substance. Excretion is increased in patients suffering from diffuse liver disease. Thiamin deficiencies were found in cases of thyrotoxicosis, neuritis, multiple sclerosis, and other diseases of the central nervous system (80%) of patients with syphilis) or severe diarrhœa. Symptomatic relief was obtained with thiamin in a large % of patients with nervous disorders. A. S.

Routine determination of vitamin-B in urine, J. W. Ferrebee and G. A. Carden (J. Lab. clin. Med., 1940, 25, 1320-1324).—A modification of Hennessy and Cercedo's method (A., 1939, III, 287) is described. C. J. C. B.

Determination of vitamin-B_1 in urine. M. Jowett (*Biochem. J.*, 1940, **34**, 1348—1355).—Vitamin- B_1 in 1—20 ml. of human urine is photometrically determined after adsorption on a synthetic zeolite. The method is inapplicable to the determination of low dietary excretions but measures response to test-doses, such response being the best test of nutritional level. The time-lag before excretion after ingestion of 5 mg. of $-B_1$ depends chiefly on the time required for the stomach

to empty whilst in saturation tests the min. suitable period of urine collection is 5 hr. The kidney can concentrate $-B_1$ from plasma. W. McC.

Vitamin-B₂ complex of liver. Identity of liver filtrate factor with pantothenic acid. B. Luthgoe, T. F. Macrae, R. H. Stanley, A. R. Todd, and C. E. Work (*Biochem. J.*, 1940, 34, 1335—1340; cf. A., 1939, III, 1071; Williams and Major A., 1940, II, 203).—Micro-titration with NaOH of the conc. factor, isolation from it by hydrolysis of β -naphthalenesulphonyl- β -alanine, demonstration of the biological activity of material reconstituted by coupling the lactone portion of the hydrolysed factor with β -alanine, and comparison of the activity of the factor with β -alanine, and comparison of the suphonyl- β -alanite, demonstration of the biological activity of material reconstituted by coupling the lactone portion of the hydrolysed factor with β -alanine, and comparison of the extivity of the factor with that of synthetic pantothenic acid show the identity of the substances and indicate that the purest prep. of the factor so far obtained contains approx. 25% of pantothenic acid. Growth experiments with rats show that liver extracts contain also a biological entity (factor β) not adsorbed by fuller's earth and not extracted from aq. acid by amyl alcohol, and that acid-autoclaved whole extract of liver contains the third factor, γ . β -Alanine ethyl ester in pyridine treated at 0° with allylacetyl choride and heated at 90° for 16 hr, gives the ethyl ester of allylacetyl- β -alanine, which is hydrolysed to allylacetyl- β -alanine, m.p. 70°. The Ba salt of this acid is oxidised with aq. Ba(MnO₄)₂ and the product is converted by treatment with diazomethane into $\gamma\delta$ -*dihydroxyvaleryl-\beta-alanine methyl ester*, m.p. 48—49°, b.p. 80—90/10⁻⁵ mm. W. McC.

Riboflavin requirements of chicken. C. H. Hunt, A. R. Winter, and R. M. Bethke (*Poultry Sci.*, 1939, **18**, 330—336).— Food consumption per bird and the riboflavin content of the eggs increased with the riboflavin content of the ration. High hatchability and survival of chicks are associated with high riboflavin content of eggs. For max. hatchability of eggs the hen ration should contain 220—230 μ g. of riboflavin per 100 g.; the optimum for egg production is smaller. For max. growth of chicks up to 12 weeks 190—200 μ g. of riboflavin per 100 g. of food is necessary. A. G. P.

Synthesis of flavin-adenine dinucleotide from riboflavin by human blood cells in vitro and in vivo. J. R. Klein and H. I. Kohn (J. Biol. Chem., 1940, 136, 177–189).—The determination of the dinucleotide by a modification of the method of Warburg and Christian (A., 1938, III, 1047) and a spectrophotometric method (error $\pm 15\%$) of determining urinary riboflavin are described. The dinucleotide is produced in the cells when defibrinated blood is incubated at 30—34° with Ringer-PO₄''' solution containing riboflavin and when an aq. suspension of riboflavin is ingested. The ingestion also increases urinary excretion of riboflavin When the amount ingested is approx. 200 mg., approx. 25% is recovered unchanged in the urine and the accompanying 30% increase in the dinucleotide content of the blood cells accounts for 0.14%. During the period of max. excretion of riboflavin following its ingestion, the dinucleotide contents of urine and saliva are less than 0.01 µg. per ml. W. McC.

Rat assay method for determination of riboflavin. J. R. Wagner, A. E. Axelrod, M. A. Lipton, and C. A. Elvehjem (J. Biol. Chem., 1940, 136, 357-364).—The prep. of a basal diet low in riboflavin for riboflavin assays with the rat is described. Vitamin- B_1 and $-B_6$ and nicotinic acid are added to the diet whilst the remainder of the -B complex is supplied in the form of a liver extract from which almost all the riboflavin has been removed. The prep. of this extract is described. Normal rates of growth are obtained when rats are fed this diet together with adequate amounts of riboflavin, and with 30 μ g. of the latter daily, an increase in wt. of 4 g. per day is obtained. With smaller amounts of riboflavin the rate of growth is practically proportional to the amount of riboflavin. The amounts of riboflavin in various natural products are determined and agree with those obtained by the microbiological assay of Snell and Strong (A., 1939, ILI, 766). J. N. A.

Factor V (co-enzymes I and II) content of rat tissues: evidence for synthesis of nicotinic acid by the rat. W. J. Dann and H. I. Kohn (J. Biol. Chem., 1940, 136, 435–442).—The rate of growth of rats on two diets producing blacktongue in dogs is not increased by added nicotinic acid. The co-enzyme content of the liver, kidney, and thigh muscle is 10% lower in these rats than in those on diets rich in nicotinic acid. Rats on the less deficient diet synthesise nicotinic acid.

E. M. W.

Influence of excretion of other pyridine compounds on interpretation of urinary nicotinic acid values. D. Melnick, W. D. Robinson, and H. Field, jun. (*J. Biol. Chem.*, 1940, **136**, 131—144).—Nicotinamide is stable in acidified urine (30 c.c. of $N-H_sSO_4$ per 24-hr. specimen) at room temp. for more than 30 days. Nicotinuric acid is even more stable to acid, and can be hydrolysed to nicotinic acid only by prolonged acid hydrolysis (4n-HCl for 4—10 hr.). Even this procedure does not hydrolyse trigonelline, which requires alkaline treatment (9n-NaOH for $\frac{1}{2}$ hr.). These reactions render possible the separate determination of these compounds in a sample of urine. Trigonelline is a normal urinary excretion product even in non-smokers and in the absence of ingestion of tea, coffee, etc. Vitamin- B_6 , even after submission to all the above hydrolytic procedures, fails to give any colour reaction with the nicotinic acid reagents. P. G. M.

Urinary excretion of nicotinic acid and its derivatives by normal individuals. D. Melnick, W. D. Robinson, and H. Field, jun. (J. Biol. Chem., 1940, 136, 145-156).—The "nicotinic acid" excreted in 24 hr. by normal individuals is $1\cdot7$ -29.3 mg. The additional excretion as trigonelline is approx. 60 mg. When a test dose of nicotinic acid is given, 51% of that excreted in 4 hr. occurs as trigonelline, 36% as nicotinuric acid (which is not a normal constituent of urine), and 13% as nicotinic acid or its amide. Nicotinamide is more slowly excreted, and 80-90% occurs as trigonelline.

Determination of nicotinic acid in biological material. E. Bandier (*Biochem. J.*, 1939, 33, 1130—1134).—The colorimetric method previously described (cf. A., 1939, II, 196) is fairly sp. Small amounts of pyridine, picolinic acid, etc. give no colour in the presence of KH₂PO₄. Results of analyses of ox and pig organs and some medicinal preps. are given. P. G. M

P. G. M. Pantothenic acid in human nutrition. T. D. Spies, S. R. Stanberry, R. J. Williams, T. H. Jukes, and S. H. Babcock (J. Amer. Med. Assoc., 1940, **115**, 523-524).—Ca and Na pantothenate (100 mg.) produced no changes in blood pressure, pulse, temp., or respiration on intravenous injection in 15 normal subjects. The blood content was raised by 50% within 3 hr. of injection and the urinary concn. was increased during the first 24 hr. In pellagra, beriberi, and riboflavin deficiency the blood levels were decreased by 23-50%. Administration of pantothenic acid increased the bloodriboflavin content, and riboflavin increased the bloodpantothenic acid. C. A. K.

Pantothenic acid and nutritional achromotrichia in rats. P. György and C. E. Poling (*Science*, 1940, 92, 202–203). Pantothenic acid has a curative effect on nutritional achromotrichia in rats fed a diet free from pantothenic acid. 50 μ g, per day had a pronounced effect; 70–100 μ g. per day gave almost complete recovery in 3–7 weeks. E. R. S.

Biological activity of esters of pantothenic acids.—See A., 1941, II, 29.

Vitamin-C metabolism in athletes. S. Matthes (Med. Welt, 1940, 14, 405-410).—The athletic performance suffered when the vitamin-C deficit was higher than 1 g. Post-hyperglycæmic hypoglycæmia was observed in subjects with marked -C deficit; intravenous injection of ascorbic acid did not lower the blood-sugar as in -C-saturated subjects.

Vitamin-C requirements in Bantus. F. W. Fox, L. F. Dangerfield, S. F. Gottlich, and E. Jokl (*Brit. Med. J.*, 1940, II, 143—147).—Two groups of 950 Bantu mine labourers were given for 7 months an adequate diet containing 12-25 mg. of ascorbic acid, one group having in addition 40 mg. of ascorbic acid. Both groups maintained excellent health, except that 12 cases in the untreated and 1 in the treated group developed scurvy. Low plasma-ascorbic acid vals. e.g., $0\cdot 2-0\cdot 3$ mg. per 100 c.c., were often seen in both groups. C. A. K.

Chemical reducing capacity. A. F. Watson (Brit. J. Exp. Path., 1936, 17, 124-134).—Loss of reducing substances from normal and malignant tissues follows omission of vitamin-C from diet of guinea-pigs; the change is reversed by recommencement of -C feeding. The -C content of dried Jensen rat sarcoma is appreciable and corresponds approx. with its reducing power; that of transplantable tumours is small. Reserves of -C in tissues of scorbutic rats are ex-

hausted more rapidly if the animals are affected by rapidly growing tumours. Tumour cells utilise -C. CH. ABS. (p)

Paradontosis and vitamin-C. K. Wachholder, A. Holz, and H. J. Briem (*Dtsch. zahnärzl. Woch.*, 1938, **41**, 625-627; *Chem. Zentr.*, 1938, ii, 3565).—No relation between paradontosis and a general vitamin-*C* deficiency is indicated by a study of saliva and plasma. Paradontosis is not cured by saturation with -*C*; favourable effects are ascribed to a stimulating action of excess of -*C*, for which a daily dose of approx. 300 mg. over a long period is recommended.

A. J. E. W.

Significance of hypovitaminosis-C as an ætiological factor in paradontosis. O. Brinch (Zahnärztl. Rundsch., 1938, 47, 34-40; Chem. Zentr., 1938, ii, 3565).—Paradontosis may develop from several conditions and is not a simple disease. A study of vitamin-C relations in chronic gingivitis is recommended. A. J. E. W.

Relation of vitamin-C to teeth. Caries prophylaxis and experiments on animals with "Cantan." M. Schneider (Dtsch. zahnärzll. Woch., 1938, 41, 395—398; Chem. Zentr., 1938, ii, 3565).—Changes in the jawbone and teeth due to avitaminosis- and hypovitaminosis-C have been detected in guinea-pigs. -C is prophylactic to caries, particularly in pregnancy and during teething in infancy. A. J. E. W.

Effect of vitamin-C on the course of tuberculosis in bones and joints. E. H. J. Warns (*Nederl. Tijds. Geneesk.*, 1938, 82, 4426—4435; *Chem. Zentr.*, 1938, ii, 3565).—A therapeutic action of vitamin-C, other than a slightly improved general condition, was not detected in 26 patients kept at saturation with -C for 4½ months. A -C deficiency in tubercular subjects was confirmed, the daily intake being 3—5 times normal. A parallelism exists between -C intake and tubercular activity. A. J. E. W.

Vitamin-C in epilepsy. H. H. Merritt and A. Foster (Amer. J. med. Sci., 1940, 200, 541—544).—The plasma-vitamin-C content of 257 ambulatory patients with convulsive seizures was 0.0-1.6 mg.-% (average 0.45). The plasma-C content of these patients was not influenced by the type of therapy they were receiving. The long-continued administration of dilantin Na had no effect on the plasma-C level and did not influence the absorption of -C given by mouth. Hypertrophic gingivitis developing in patients under treatment with dilantin Na is not related to the plasma-C content or utilisation of -C. The low level of plasma-C of clinic patients with epilepsy is due to an inadequate -C intake; administration of food containing -C to a group with low -C vals. resulted in a 5-fold increase.

Action of vitamin-C in treatment of acute infectious diseases. F. Szirmai (Disch. Arch. klin. Med., 1940, 185, 434-443). I of 16 patients suffering from toxic œdematous diphtheria died after treatment with high doses of antitoxin and ascorbic acid (control result without ascorbic acid 15 deaths out of 54). I patient of 162 suffering from typhoid and treated with ascorbic acid developed intestinal hæmorrhage (control figure: 20 of 254). The amounts of vitamin-C were insufficient to cover the -C deficit, as determined with the Harris-Ray-Tillmans method. A. S.

Ascorbic acid and rheumatic fever. I. Index of ascorbic acid utilisation in human beings: application to study of rheumatic fever. J. Sendroy, jun., and M. P. Schultz. II. Test of prophylactic and therapeutic action of ascorbic acid. M. P. Schultz (J. Clin. Invest., 1936, 15, 369-383, 385-391).—I. The urinary excretion test for adequacy of dietary ascorbic acid is placed on a quant. basis. Results do not support the theory that deficiency of ascorbic acid is a predisposing cause of rheumatic fever.

II. Rheumatic children developed subclinical scurvy (capillary permeability tests) but incidence of rheumatic fever was not affected by ascorbic acid medication. Large intravenous doses of ascorbic acid over several months, and large doses of orange juice, did not affect clinical manifestations of rheumatic fever. CH. ABS. (p)

Ascorbic acid excretion in urine of healthy and febrile children. G. Görtz (Acta paediatr. Stockh., 1939, 27, 429– 436).—The renal threshold for ascorbic acid is lowered during febrile diseases. The threshold val. is in direct proportion to ascorbic acid level of serum. Oral administration of 10 mg. of ascorbic acid per kg. body wt. increases the renal threshold. M. K. Vitamin-C studies on surgical patients. M. K. Bartlett, C. M. Jones, and A. E. Ryan (Ann. Surg.; 1940, 111, 1-26).--Plasma-vitamin-C determinations on 188 patients show that 65% have a fasting level of less than 0.5 mg.-%. This is not related to any disease group. Following operation the fasting level shows a consistent drop with gradual return to preoperative vals. The clearance curve after intravenous -C (1000 mg.) is significantly altered after operation. The post-operative increased clearance of -C is attributed to increased need of -C for tissue repair and wound healing. D. S.

Roentgenographic changes in bones as early sign of scurvy in infants. P. W. Braestrup and S. A. Chrom (*Acta paediatr. Stockh.*, 1939, 27, 63—66).—No bone changes were found in infants with low plasma-ascorbic acid. M. K.

Rapid test for vitamin-C reserves. J. Pemberton (*Brit. Med. J.*, 1940, II, 217—219).—A simplified test with a single urinary determination of vitamin-C after a test dose of ascorbic acid clearly differentiated 2 groups of boys whose daily intakes were about 35 and 63 mg. of -C. C. A. K.

Ascorbic acid content of blood plasma of laying hens. A. D. Holmes, F. Tripp, and G. H. Satterfield (*Pouliry Sci.*, 1939, 18, 192—200).—No significant correlation was apparent between blood-ascorbic acid and egg production, body-wt., food intake, or age of hens. A. G. P.

Vitamin-C content of hips (Cynosbatta). E. Gedda and K. Kjellberg (Jahrb. Kinderheilk., 1939, 153, 104-112; cf. A., 1941, III, 28).—Vitamin-C content of hips was very high, especially in fresh fruits (reduction val. of 454-833 mg.-%). Dried fruits had a lower val. (333 mg.-%). M, K,

Effects on monkeys of small doses of a concentrated preparation of viosterol. E. V. Cowdry and G. H. Scott (Arch. Path., 1936, 22, 1-23).—In Macaca rhesus the average serum-P rose from 5.96 to 7.75 (male) or 6.02 to 7.44 (female) mg. per 100 c.c.; average serum-Ca was unchanged (11.62, 10.99) with increased dosage; terminal serum-Ca was over 17 mg. per 100 c.c. Cebus fatuellus reacted differently.

CH. ABS. (p) Influence of combined calcium and vitamin-D therapy on growth and tooth-forming power. U. Rheinwald (Dtsch. zahnärztl. Woch., 1938, 41, 535—537; Chem. Zentr., 1938, ii, 3418).—Addition of Ca (as "Calcipot") to a normal diet has no effect on the growth and tooth formation of guineapigs, but animals treated simultaneously with Ca and vitamin-D (as "Calcipot D," which also contains irradiated yeas) reach a higher wt. in $\frac{3}{4}$ of the time taken by controls; the normal length of the upper and lower incisors is also reached in $\frac{3}{4}$ of the normal time, and the blood-Ca is increased.

A. J. E. W. Osteomalacia and dental caries. G. F. Taylor and C. D. M. Day (*Brit. dent. J.*, 1940, **69**, 316—319).—Women with severe clinical osteomalacia were examined in the Kangra District of the Punjab. In 22 cases only 34 cavities were found in 565 teeth, or an average of 1.54 cavities per head. In 8 of the 22 cases no caries whatever were observed. Hypoplasia was noted in 7 of the women. 7 children of the women had severe rickets. 144 teeth of these rickety children showed only 2 cavities. H. H. K.

Effect on metabolism of massive dosage of vitamin-D in rickets and tetany. E. Freudenberg and H. Goetz (Jahrb. Kinderheilk., 1939, 153, 233—262).—A single dose of 15 mg of vitamin-D₂ decreased excretion of NH₃ and org. acids in rachitic infants. The amount of PO₄''' excreted in urine of rachitic children without tetany varied; thus the increased excretion of NH₃ in rickets is not due to hypophosphaturia. Fixed alkalis, Cl', and SO₄'' were not changed. In rickets with tetany massive -D₂ dosage was not so effective, the excreted amount of org. acids was smaller, phosphaturia was increased, especially mono-phosphates, NH₃ was diminished, fixed alkalis and Cl' were unchanged. Excretion of citric acid was augmented after massive dosage in pure rickets as well as in rickets with tetany. 25—35% of cations were bound by org. acids in rickets, 22% in tetany; vitamin dosage reduced the %. M. K.

Massive dose treatment with vitamin-D in rickets. B. Löper (Arch. Kinderheilk., 1939, **116**, 248—263).—Serum-P and -Ca increased 48 hr. after administration of vitamin- D_2 and $-D_3$ concentrates (7.5—15 mg.) in 38 children. -Ca vals. became normal within a week, while -P remained high.

In cases with spasmophilia the increase of Ca^{**} was marked, -P remained unchanged or decreased. Tetanic symptoms disappeared quickly after -D. Craniotabes was diminished 4--7 days after administration and disappeared altogether after 3--4 weeks. No toxic symptoms and no hypercalcæmia occurred. M. K.

Curative method for assay of vitamin-*D* with chicks. J. S. Carver, V. Heiman, and J. W. Cook (*Poullry Sci.*, 1939, **18**, 288—294).—The method depends on the use of day-old sexed cockerels which are depleted (8—10 days) on a vitamin-*D*- and mineral-deficient diet. Curative response to -*D* feeding is measured by differences in body-wt., degree of healing of right tibia, and ash of left tibia. A. G. P.

Spectrophotometric determination of vitamin- D_2 and $-D_2$. C. H. Nield, W. C. Russell, and A. Zimmerli (*J. Biol. Chem.*, 1940, **136**, 73-79).-0.2 μ g. of vitamin- D_2 or $-D_3$ can be determined by a modification of Brockman and Chen's SbCl₃ method (A., 1936, 1162), in which acetyl chloride is substituted for the mixture of acetic anhydride and HCl. A yellowish-pink colour is produced, which attains max. intensity within 30 sec. and is stable for 4--5 min. The absorption curves for $-D_2$ and $-D_3$ are identical and show a max. at 500 m μ , at which $\lambda E_{1\,\text{cm.}}^{1,\text{cm.}} = \text{approx.}$ 1800 in both cases. P. G. M.

Determination of 2-methyl-1: 4-naphthaquinol diacetate.— See A., 1941, II, 24.

Egg-white injury in chicks and its relationship to deficiency of vitamin-H (biotin). R. E. Eakin, W. A. McKinley, and R. J. Williams (*Science*, 1940, 92, 224—225).—10—20% of intake of biotin was excreted by chicks as free, and 15-25%as bound, biotin. Chicks taking purified case in as 20% of the diet were normal at 8 weeks, whereas those taking dried egg-white in place of the case in showed the usual symptoms of injury. Tissues of chicks in the latter group showed consistently lower biotin content than those in the former, though the intakes were higher than in the former group. The egg-white renders the biotin unavailable. E. R. S.

New dietary essential for mice. D. W. Woolley (J. Biol. Chem., 1940, 136, 113—118).—A diet is described which contains all the known vitamins of the *B*-complex, but on which mice lose hair and fail to grow. The feeding of certain liver fractions restores the hair. The active principle is non-dialysable and comparatively insol. in alcohol.

P. G. M.

Nutritional gizzard lesions in chicks. W. B. Esselen, jun. (Poultry Sci., 1939, 18, 201-209).—Dried pig lung, soya-bean meal, oat groats, wheat middlings and (notably) lucerne leaf meal exhibit curative effects on gizzard lesions. Chicks do not accumulate appreciable reserves of the anti-gizzard lesion factor. Turkey poults are either non-susceptible or have much greater resistance to nutritional gizzard lesions.

A. G. P.

XIX.-METABOLISM, GENERAL AND SPECIAL.

Protein anabolism in heart, kidney, and liver after consumption of food proteins. D. W. Yuen, L. J. Poo, W. Lew, and T. Addis (*Amer. J. Physiol.*, 1940, 129, 685-690).—Celhular proteins (kidney, liver, and yeast), milk proteins (casein, colostrum, lactalbumin), and serum-proteins (albumin, globulin) were fed in 70% concn., in a diet containing vitamins, fats, and little carbohydrate, to rats fasted for 7 days. On all the diets the protein content of the kidney increased steadily up to the 7th day of feeding. The greatest deposition of protein was attained on casein, kidney, and liver diets. Protein laid down in the liver was relatively greater than in the kidney, but there was a decrease in the rate of protein anabolism after the 2nd day, except on kidney and liver diet. Casein was ineffective. The protein content of the heart was not altered by any of these foods. M. W. G.

Nitrogen metabolism in anæmia during regeneration of blood. C. W. Heath and F. H. L. Taylor (*J. Clin. Invest.*, 1936, 15, 411—418).—Hæmoglobin formation is accompanied by a positive N balance only when the diet contains over 6·2 g. of N daily, but may proceed at a normal rate when the N balance is negative, the N being supplied from tissue or plasma. CH. ABS. (*p*) Biological conversion of ornithine into proline and glutamic acid. M. Roloff, S. Ratner, and R. Schoenheimer (J. Biol. Chem., 1940, 136, 561—562; cf. Clutton *et al.*, A., 1940, III, 237).—The D content of proline and glutamic acid isolated from the hydrolysate of the proteins of the mice used to demonstrate conversion of ornithine into arginine shows that conversion of ornithine into proline and glutamic acid also occurs. In healthy mice on a normal diet, the conversion of ornithine into arginine, proline, and glutamic acid and the introduction of these compounds into the body-proteins are continuous processes. W. McC.

Experimental lipoidoses. I. Phosphatides. A. Ferraro and G. A. Jervis (*Arch. Path.*, 1940, **30**, 731-744).—Rabbits and monkeys were given 8-30 g. of sphingomyelin intravenously. Morphologically, the resulting changes bore striking similarities to the pathological picture of human cases of Niemann-Pick disease. (5 photomicrographs.) C. J. C. B.

Infectious reticulo-endotheliosis (Abt-Letterer-Siwe disease) and its relation to Schüller-Christian lipoid xanthomatosis. E. Glanzmann (Jahrb. Kinderheilk., 1940, 155, 1-8).—The syndrome of so-called infectious reticulo-endotheliosis (purpura, adenopathia, hepato-splenomegaly, hypochromic anæmia) represents probably the acute septic form of Schüller-Christian disease in early infancy or a special form of reaction to a streptococcal infection. M. K.

Atherosclerosis. T. Leary (Arch. Path., 1936, 21, 459-462).—The disease is due to disturbances of cholesterol metabolism. CH. Abs. (p)

Ketogenic action of fatty acids having odd numbers of carbon atoms. E. M. MacKay, A. N. Wick, and C. P. Barnum (J. Biol. Chem., 1940, 136, 503—507; cf. A., 1940, III, 918; Jowett and Quastel, A., 1935, 1408).—The ethyl and glyceryl esters of valeric, heptoic, pelargonic, and undecoic (but not of propionic) acid administered by stomach tube to fully fed rabbits increase the ketone contents of the blood. The esters, which are less toxic than the free acids, are much more slowly absorbed than are those of acids having an even no. of C atoms and also differ amongst themselves in rate of absorption. W. McC.

Relative antiketogenic activity of glucose, glycine, and alanine. A. N. Wick, E. M. MacKay, H. O. Carne, and H. M. Mayfield (*J. Biol. Chem.*, 1940, **136**, 237-242).—The antiketogenic effects, measured by ketonic substances in the blood and urine in fasting rats, of equiv. amounts of glucose, glycine, and *dl*- and *l*-alanine are identical. H. G. R.

Resynthesis of muscle-glycogen after exercise. E. V. Flock and J. L. Bollman (J. Biol. Chem., 1940, 136, 469–478).—The breakdown of glycogen in the leg muscles of rats during work is rapid for the first min., less rapid for the next two min., then very slow. During rest after work glycogen is resynthesised very slowly. Administration of Na lactate, insulin, or adrenaline has no effect on the rate of resynthesis but glucose produces a slight increase. E. M. W.

Metabolism of glucose fragments in man. F. F. Beck, R. Musser, C. J. Carr, and J. C. Krantz, jun. (Ann. int. Med., 1940, 14, 122–128).—A cold solution of 100 g. of glucose in 500 c.c. of water was shaken with 0.5 g. of CaO and heated at 70° for 1 hr.; then 0.5 g. of CaO was twice added at a temp. of 70° for 1 hr. each. The solution was distilled until 100 c.c. of the syrup remained; $[a]_{D}^{25}$ was $+3.7^{\circ}$. Alkalinised glucose given to rabbits by mouth or by intravenous injection produces a slight rise of the blood-sugar curve. The degree of hyperglycamia with glucose and alkalinised glucose, hyperglycamia was less marked in patients suffering from moderately severe diabetes. A. S.

Sugar distribution in the organism and action of insulin. L. Pollak and G. Flaum-Fehér (Anz. Akad. Wiss. Wien, math.nat. Kl., 1937, 135—136; Chem. Zentr., 1938, ii, 3562).—An analogy between organic absorption and intestinal reabsorption (A., 1938, III, 192) has been confirmed by experiments with phloridzin. Inhibition of galactose absorption by phloridzin is suppressed by insulin. A. J. E. W.

Disturbance of carbohydrate metabolism in diphtheria. A. Schweers (Disch. Arch. klin. Med., 1940, 185, 458-470).— Glucose-tolerance tests were carried out in experimental diphtheria intoxication in rabbits, and in children and adults suffering from diphtheria. Fasting blood-sugar is often increased and the curve takes a course as in diabetes. Blood-sugar is the more increased and the return to normal more delayed the more serious is the infection. Treatment with adrenal cortex preps. and ascorbic acid has no effect on the glucose assimilation. A. S.

Effect of sodium chloride on the glucose tolerance of the diabetic rat. J. M. Orten and H. B. Devlin (*J. Biol. Chem.*, 1940, **136**, 461-467; cf. A., 1940, III, 327).—The mechanism of the effect is discussed. E. M. W.

Utilisation of carbon dioxide in synthesis of α -ketoglutaric acid. E. A. Evans, jun., and L. Slotin (*J. Biol. Chem.*, 1940, **136**, 301–302).—Synthesis of α -ketoglutaric acid from pyruvic acid by pigeon liver is due to combination of CO₂ with pyruvic acid to form oxalacetic acid, which combines with a further mol. of pyruvic acid to give α -ketoglutaric acid.

H. G. R. Biological synthesis of oxalacetic acid from pyruvic acid and carbon dioxide. H. A. Krebs and L. V. Eggleston (*Biochem.* J., 1940, 34, 1383–1395).—When pyruvate is added to minced pigeon liver, a-ketoglutarate, fumarate, etc. are formed, probably via oxalacetate, since the rate of formation of these metabolites depends on the concn. of CO_2 and NaHCO₂, and is reduced by lack of vitamin-B₁, which does not affect the citric acid cycle in muscle. Experiments with B. coli confirm the view that a similar reaction occurs with anaërobic bacteria. P. G. M.

Physiological action of high temperatures on poikilothermic animals. III. Changes in phosphorus distribution of the body fluid of insects under the influence of high temperature. H. S. Hopf (*Biochem. J.*, 1940, **34**, 1396—1403).—Exposure of the larvæ of *Calliphora erythrocephala* and *Phormia terra-novæ* to a temp. of 38·5—46° results in an increase in lipin-, inorg., and adenyl pyrophosphate-P of the body fluid. The fact that total P increases by 15—30% shows that this effect is not entirely due to increased concn. of the fluid, since the dry wt. increases by only 3%. The P distribution depends on the environment immediately preceding collection of the sample and not on the temp. of breeding. P. G. M.

Effect of alkalosis on composition of brain, skeletal muscle, liver, and heart. H. Yannet (*J. Biol. Chem.*, 1940, 136, 265— 274).—Alkalosis in cats produces no change in brain or skeletal muscle. An increase in K and P, but no change in the water content, of cardiac muscle and increases in water, K, P, and, to a smaller extent, Na of liver occur. H. G. R.

Metabolism of carotenoid pigments in California sea mussel (Mytilus californianus). B. T. Scheer (J. Biol. Chem., 1940, 136, 275–299).—Xanthophylls of a few types, including an acidic xanthophyll mytiloxanthin, m.p. 140–144° (Berl block; corr.) (absorption max. at 500 m μ .), are present in the tissues, the concn, being greater in females than in males. The gonads act as a store of carotenoid and carbohydrate, but not lipins, and during fasting a slight loss of pigment occurs, zeaxanthin being formed at the expense of mytiloxanthin, both the pigments increasing when Nitzschia closterium is fed. Feeding and gametogenesis are associated with increased destruction of pigment, H. G. R.

Case of atypical amyloidosis (paramyloidosis). K. Murumcekci (*Virchow's Archiv*, 1938, 302, 607-617).—A woman 50 years of age was suffering from cardiac decompensation with ascites, enlarged liver, and bilateral pleural effusion. Post-mortem extensive amyloidosis of lungs, heart, muscles, and, as a special rarity, also of the mamma was found; some of the usual sites for amyloid were free from deposits. The content of chondroitinsulphuric acid, estimated from the glucosamine, varied from 2% in spleen and lungs to 0.4% in the liver. From the difference between the radiogram of the lungs taken 4 days before death and showing normal structure, and the extensive amyloidosis of this organ found after death, it is concluded that it must have been pptd. within these few days. J. A.

Fate of sodium sulphate injected intravenously in man. J. Bourdillon and P. H. Lavietes (J. Clin. Invest., 1936, 15, 301-311).—Following intravenous injection of hypertonic solutions of Na₂SO₄, Na^{*} and SO₄" were excreted at similar rates proportional to the concn. in the serum. The salt is distributed only in the interstitial fluid. Large doses caused a dilution of the fluid and a shrinkage of red cells.

Examination of the urine of sheep dosed with phenothiazine. M. Lipson (Austral. J. Exp. Biol., 1940, **18**, 269—272).— When sheep are dosed with phenothiazine, this compound (to the extent of about 10% of the original dose) can be recovered from the urine. Thionol and phenothiazone, oxidation products of phenothiazine, are also excreted.

D. M. N.

XX.-PHARMACOLOGY AND TOXICOLOGY.

Isolation of acetylsulphathiazole from human and rabbit urines following administration of M. & B. 760. W. V. Thorpe and R. T. Williams (*Nature*, 1940, 146, 686-687).--Crystals obtained from urine had the same appearance and m.p. as acetylsulphathiazole. A conjugated glycuronide, presumably of hydroxysulphathiazole, was also obtained from rabbit urine, and is analogous to the glycuronide of a hydroxysulphanilamide found in urine from rabbits treated with sulphanilamide. E, R. S.

Influence of sulphanilamide and sulphapyridine on experimental pneumococcic pneumonia in rats. D. H. Golstein and I. Graef (Arch. Path., 1940 30, 701—720).—Sulphanilamide or sulphapyridine administered to rats shortly after intratracheal injection of lethal doses of type III pneumococci lowered mortality and promoted recovery equally. In the treated animals as compared with the controls, the extent of the pneumonia was limited and the evolution of the inflammatory pattern was altered by the early appearance of mononuclear cells. In the treated rats there was early disappearance of pneumococci from the lung, and no bacteræmia. The incidence of empyema was 75% in the controls and 5% in treated animals. 25% of the untreated rats showed abscess formation, pulmonary thrombosis, and pulmonary infarction. The treated rats showed the same incidence of abscess formation and a 10% incidence of thrombosis and infarction. The disposal of bacteria in the treated animals was not related to phagocytosis. (4 photomicrographs.) C. J. C. B.

Mechanism of chemotherapeutic action of sulphur derivatives in experimental pneumococcal infections. C. Levaditi, A. Vaisman, and D. Krasnoff (Bull. Acad. méd. Paris, 1938, 119, 553-576).—Intraperitoneal inoculation with pneumococci (virulent and non-virulent groups, *i.e.*, with and without capsules) was performed in 300 mice. Capsulogenesis and virulence were inter-related. Capsules protected not only the living cocci from phagocytosis, but also those killed by heating to 60° or by ether. S-containing aromatic drugs inhibit normal segmentation and capsule formation by modifying the medium (especially peritoneal exudate) and thus facilitate destruction by phagocytes. M. K.

Treatment of pneumococcic pneumonia with sulphapyridine. K. G. Kohlstaedt and I. H. Page (Ann. int. Med., 1940, 14, 129-145).-50 patients suffering from pneumococcal pneumonia were treated with sulphapyridine; 3 died. The mortality rate in previous years without sp. treatment was 48 and 33%; there was no strict relationship between the amount of sulphapyridine administered, concn. in blood, and occurrence of toxic symptoms. 83% of the patients suffered from nausea and vomiting. The leucocyte count usually ran parallel to the temp. curve. Initial leucopenia does not necessarily contraindicate the use of sulphapyridine. The concn. of sulphapyridine in the pleural fluid in 2 cases of empyema was half that in the blood. A. S.

Treatment of psittacosis with sulphapyridine. H. C. Hinshaw (Proc. Staff Mayo Clin., 1940, 15, 657-662).—A report of 2 cases. Administration of sulphapyridine in one case produced dramatic improvement. H. H. K.

Treatment of chronic ulcerative colitis with sulphanilamide. E. N. Collins (Ann. int. Med., 1940, 14, 55-64).-15 out of 26 patients suffering from non-toxic and toxic ulcerative colitis benefited from sulphanilamide given by mouth and as retention enema. Therapeutic results should be obtained within 7-14 days after commencement of treatment. A S.

Action of sulphapyridine in Pfeiffer bacillus meningitis. C. C. McLean, A. W. Woods, and H. H. Henderson (Ann. int. Med., 1940, 14, 331-333).—Sulphapyridine was successful in the treatment of meningitis due to Pfeiffer bacillus. A. S. Sulphathiazole in Staph. aureus meningitis. F. W. Dietel and A. D. Kaiser (J. Amer. Med. Assoc., 1940, 115, 601) .---A successful case report. C. A. K.

Treatment of chancroid with sulphanilamide. O. Canizares and J. A. Cohen (Arch. Dernal. Syphilol., 1940, 42, 649-652).—Sulphanilamide is of val. in the treatment of chancroidal infections. C. J. C. B.

Manometric determination of the effects of various sulphanilamide compounds on Brucella melitensis. W. Kempner, B. Wise, and C. Schlayer (Amer. J. med. Sci., 1940, 200, 484-492).—The effect of various sulphanilamide drugs on large inocula of Huddleson's strain of *Br. melilensis* was examined by measuring manometrically with the Warburg method the O_a consumption of the culture, and the density with the Libby photron effectometer. The drugs tested were : sulph-anilamide, sulphapyridine Na, sulphathiazole, sulphamethylaniamide, sulphapyridine Na, sulphathiazole, sulphamethyl-thiazole, Na disulon, benamide, and promin. All these drugs were effective in retarding growth. The order of their effectiveness, in concns. of 5 mg.-% in broth cultures, after 20 hr., was : promin inhibited growth by 44%, benamide by 48%, sulphanilamide by 78%, sulphapyridine Na by 91%, sulphathiazole by 94%, Na disulon by 96.5%, and sulpha-methylthiazole by 98%. C. J. C. B.

Use of sulphathiazole as urinary antiseptic. H. F. Helm-holz (*Proc. Staff Mayo Clin.*, 1940, **15**, 651-566).—The effectiveness of the drug for the various bacteria on an ascending scale is as follows: *Pseudomonas aeruginosa*, *S*. fæcalis, E. coli, Aerobacter aerogenes, Proteus ammoniæ, and Staph. aureus. The bactericidal range is from 300 to 25 mg.-%. There is some variation in the effect of the drug at various p_H levels, particularly marked in S. fæcalis.

H. H. K.

Effect of promin (sodium salt of *pp*'-diaminodiphenyl sulph-one *NN*-glucosesulphonate) on experimental tuberculosis. W. H. Feldman, H. C. Hinshaw, and H. E. Moses (*Proc. Staff*) Mayo Clin., 1940, 15, 695-699).-30 guinea-pigs were fed on a promin-containing diet (300 mg. of the drug was added to 1 oz. of diet). A suspension of tubercle bacilli was injected subcutaneously into these 30 and 25 other animals which served as a control. The animals in the group that received promin lived longer than those not treated. Promin produced a definite inhibition on character and degree of tuberculosis. No toxic drug manifestations were observed. H. H. K.

Use of sulphanilamide in treatment of peritonitis associated with appendicitis. I. S. Ravdin, J. E. Rhoads, and J. S. Lockwood (Ann. Surg., 1940, 111, 53-63).—The use of sulphanilamide in all severe cases reduced the mortality from 1.5% (550 cases) to 0.4% (250 cases) in a series of consecutive cases of acute appendicitis. D. S.

Chemotherapy in surgery. N. C. Lake (*Proc. Roy. Soc. Med.*, 1940, **33**, 601-606).—Sulphanilamide is very effective against hæmolytic streptococci, but is of little use against the fæcalis type, and staphylococci. Sulphanilamide and sulphanilamide is the sulphanilamide is sulphanilamide in the sulphanilamide is supplemented in the supplemented is supplemented in the supplemented in the supplemented is supplemented in the supplemented in the supplemented in the supplemented in the supplemented is supplemented in the superscript in the supplemented in the superscript in the super sulphapyridine are a useful addition to surgical treatment in pleural infections; they are of little val. in staphylococcal infections like acute osteomyelitis, in which uleron may be valuable. They may usefully be employed in secondary infection associated with discharging sinuses in tubercular bone conditions, in diverticulitis of the colon, in appendicular pain in children, and in Crohn's disease. W. J. G.

Clinical experiences with sulphathiazole in therapy of staphylococcal infections. A. J. Ewins, E. C. B. Butler, H. M. McCrea, and G. Melton (*Proc. Roy. Soc. Med.*, 1940, 33, 1940, 33, 673-684).-The sulphonamides are reviewed. Sulphathiazole is as effective as sulphanilamide and sulphapyridine against the hæmolytic streptococcus in the animal; against the pneumococcus, it is superior to the former, but not as active as the latter drug. Its action in staphylococcal infections is uncertain. Sulphathiazole is of little or no use in staphylococcal infections with a positive blood culture; in the absence of a septic focus, or in localised lesions, it may be of val. Drugs should not supplant surgery and antitoxin W. J. G. treatment.

Penetration of blood clot by sulphanilamide, sulphapyridine, sulphathiazole, and sulphamethylthiazole. C. N. Duncan and J. M. Faulkner (*Amer. J. med. Sci.*, 1940, **200**, 492–494).— Human blood clots suspended in solutions of sulphanilamide, for sulphapyridine, sulphathiazole, and sulphamethylthiazole for

24 hr.-15 days did not show any penetration by the drugs; C. J. C. B.

Thrombocytopenic purpura due to sulphapyridine. Russell and R. C. Page (Amer. J. med. Sci., 1940, 200, 495-498).—Two cases of thrombocytopenic purpura developing during the course of treatment with sulphapyridine are reported. One case also showed evidence of acute toxic necrosis of the liver. C. J. C. B.

Co-existence of toxic hepatitis, acute hæmolytic anæmia, solution and renal damage following sulphonamide treatment. M. Spring and I. Bernstein (Ann. int. Med., 1940, 14, 153-164).—Two patients developed acute hæmolytic anæmia, toxic hepatitis, and renal damage (albumin and casts in urine) 24 and 60 hr. after commencement of sulphonamide treatment (total dose 4.6 g. and 7.3 g.). A. S.

Acute hæmolytic anæmia, hæmoglobinuria, and uræmia following sulphonamide treatment. G. B. Myers and J. Rom (Ann. int. Med., 1940, 14, 164-168).—A patient suffering from type VIII pneumococcal pneumonia developed acute hæmolytic anæmia with hæmoglobinuria, uræmia, and anasarca after treatment with 460 grains of sulphonamide over a period of 60 hr. A. S.

Acute toxic necrosis of the liver following sulphonamide treatment. H. K. Russell (Ann. int. Med., 1940, 14, 168-170).—Fatal necrosis of the liver developed in a patient who had taken 1250 grains of sulphonamide during treatment for gonorrhœa over a period of 6 weeks. A. S.

(N4)-Amino-substituted heterocyclic derivatives of sulphanilamide.—See A., 1941, II, 23.

Treatment of malaria. A. C. Reed (J. Amer. Med. Assoc., 1940, 115, 602-605).--A review. C. A. K.

Paralytic symptoms after administration of synthetic anti-malaria drugs. K. Choremis and G. Spiliopoulos (*Jahrb. Kinderheilk.*, 1939–1940, **154**, 194–198; cf. A., 1939, III, 179).-Overdosage with plasmoquin and plasmoquin-atebrin in 2 children produced symptoms of paralysis chiefly affecting the respiratory muscles. In one case Cheyne-Stokes breathing developed which was especially pronounced during sleep, but disappeared during febrile periods and returned when the temp. became normal. The second case showed laryngeal stenosis and partial paralysis of respiratory muscles. These disturbances disappeared almost completely after 8 intra-venous injections of vitamin- B_1 . M. K.

Eruption caused by Trichophyton rubrum [treated with ethyl iodide]. J. H. Swartz and N. F. Conant (Arch. Dermat. Syphilol., 1940, 42, 614-624).-4 cases of severe dermatophytoses causing an extensive lichenous eruption resistant to local treatment are reported. Inhalations of ethyl iodide proved the most effective form of therapy. C. J. C. B.

Treatment of dermatophytosis pedis with medicated insoles. M. Seldowitz (Arch. Dermat. Syphilol., 1940, **42**, 576—586).— The fungistatic action against *T. interdigitale* of leather insoles containing rubber impregnated with 8-hydroxy-winsplace to show mydrol acts the show to show the show to show the sho quinoline, p-chloro-m-xylenol, and chlorothymol is demon-strated. 72% of 40 treated patients with positive cultures and demonstrable mycelia cleared up in 4 months. Of 19 treated patients with negative cultures but demonstrable mycelia 80% cleared in 21 months. All of 51 treated patients with negative cultures and no microscopic findings cleared in two months. C. J. C. B.

Aniline dyes for chronic blepharitis. A. T. Elder (Brit. Med. J., 1940, II, 185—187).—A paste containing 0.5% of gentian-violet and 0.5% of brilliant-green was successfully used in 44 cases of chronic blepharitis. C. A. K.

Discussion on effect of antiseptics on wounds. A. Fleming et al. (Proc. Roy. Soc. Med., 1940, 33, 487-502).-The bacteriostatic action of an antiseptic is more important that the bactericidal. Dakin's fluid in a wound loses its antiseptic power in less than 10 min., so that in the Carrel-Dakin method there is antiseptic in the wound for 10 min. only in every 2 hr. The affinity of antiseptic dyes for dressings is illustrated, and the difficulty of chemically sterilising a war wound emphasised. The antibacterial power of pus, the antileucocytic power of chemical antiseptics, the synergic action of Hg salts and leucocytes on the hæmolytic streptococcus, and the action of hypochlorites on wound drainage are evidenced. Antiseptics are contraindicated in a septic wound the walls of which are invaded by bacteria, but if surgery is delayed, a bacteriostatic antiseptic might be useful; antiseptics of the acridine series, and the sulphonamides, are most suitable. W. J. G.

Mode of action of veritol. A. Reis (Quart. J. Exp. Physiol., 1940, 30, 1—11).—Doses of veritol and adrenaline equally pressor in cats are in the ratio 1:100, but the effect of veritol lasts longer. The curve relating rise in blood pressure and log dose is sigmoid for both. Veritol has no action on the heart rate, but increases the min. and stroke output as does adrenaline, but the action of the former is delayed and prolonged. Veritol neutralises the effects of Na evipan on the heart and venous pressure. Injection into the general circulation or into the blood-perfused hind limb, with the nerves intact or cut, causes immediate local vasoconstriction, less than the accompanying general vasoconstriction, and only if the prep. is in good condition. In hind limbs perfused for some hr., or if Locke's fluid is used instead of blood, veritol causes vasodilatation, although adrenaline is still vasoconstrictor. T. S. G. J.

Actions of methylatropine nitrate (eumydrin). J. D. P. Graham and S. Lazarus (*J. Pharm. Exp. Ther.*, 1940, 70, 165–170).—Eumydrin caused fall in tone and loss of movements in rabbits' intestine, isolated or *in situ*, and antagonised eserine spasm. This action was equal to that of atropine, but eumydrin was 3 times as toxic, in mice. E. M. S.

Treatment of obesity due to overeating with benzedrine sulphate. J. S. Ersner (*Endocrinol.*, 1940, 27, 776—780).— Dosages reaching 10 mg. after each meal were used in combination with a reduced diet, and gave good results. V. I. W.

Action of benzedrine sulphate on orthostatic hypotension. E. S. Brewster (Ann. int. Med., 1940, 14, 326-331).—Prolonged treatment with benzedrine sulphate (10 mg. 3 times per day) was beneficial in orthostatic hypotension. A. S.

Action of vitamin- B_1 on isolated frog's heart. H. Ko (Japan. J. Med. Sci., IV, 1940, 12, Proc., 167).—Vitamin- B_1 potentiates the action of pilocarpine and acetylcholine on isolated frog's heart, but does not affect the action of adrenaline or Ba. H. H. K.

Comparative toxicity studies of the glucosides of Digitalis lanata in the pigeon, cat, and dog; influence of anæsthesia. J. J. Kaplin and M. B. Visscher (J. Pharm. Exp. Ther., 1940, 70, 228-234; cf. A., 1938, III, 1037).—For the 3 lanata glucosides, the pigeon emesis dose and the lethal doses in cat and dog are in approx. the same ratio. In cat and dog the lethal dose is higher under Na pentobarbital than under ether. Results under the barbiturate are nearly identical with those in unanæsthetised animals. E. M. S.

Detoxification of digitalis in the embryonic chick heart. G. H. Paff (*J. Pharm. Exp. Ther.*, 1940, 70, 235–238; cf. A., 1940, III, 862).—Rhythmic activity was restored in excised ventricles, after arrest by digitalis, by transferring them either to Ca-free Tyrode's solution or to Tyrode's solution containing non-ionised Ca (by the addition of hexametaphosphate), or by adding the latter solution directly to the digitalis solution surrounding the ventricles. E. M. S.

Comparison of digoxin with k-strophanthoside. J. M. Walker (*J. Pharm. Exp. Ther.*, 1940, **70**, 239–244),—The rabbit is 6 times, the pigeon 4 times, and the cat less than 3 times as resistant to digoxin as to k-strophanthoside. Digoxin is cumulative in the rabbit, k-strophanthoside is not.

E. M. S.

Changes in blood pigments associated with the prolonged administration of large doses of acetanilide and related compounds. P. K. Smith (*J. Pharm. Exp. Ther.*, 1940, 70, 171–178; cf. A., 1940, III, 337).—Abnormal pigments in blood of rats and monkeys were re-determined, using a photoelectric colorimeter. Administration of large doses ($\frac{2}{3}$ L.D. 50) of acetanilide, phenacetin, aniline, or benzoquinone was associated with formation of methæmoglobin and sulphæmoglobin. Addition of S or NaHCO₃ to acetanilide did not affect pigment formation. Administration of methylene-blue, when both pigments were present, reduced methæmoglobin only.

E. M. S.

Lymphagogue action of corbicula extract. H. Yamasaki, H. Moriki, and K. Kobayashi (*Japan. J. Med. Sci.*, IV, 1940, 12, *Proc.*, 108—110).—Extracts were prepared from muscle and viscera of *C. sandai*. Intravenous injection of 0.5—1 g. of the extract, dissolved in saline, produced increased lymph flow from the thoracic duct in dogs. The protein content in lymph increased and the coagulability markedly decreased; blood pressure fell temporarily. Vol. of liver markedly increased and this change went parallel with the rise of portal pressure. The pharmacoactive substance is insol. in alcohol and ether, and is pptd. with phosphotungstic acid. H. H. K.

Pharmacological studies of camphor and related substances. K. Yamada (Japan. J. Med. Sci., IV., 1940, **12**, Proc., 172– 174).—Camphor stimulates isolated frog's heart paralysed by acetylcholine, choline, neurine, muscarine, tetramethylammonium chloride, or pilocarpine; it is ineffective, however, in heart paralysis caused by quinine, papaverine, aconitine, or chloral hydrate. Camphor in rabbits or frogs counteracts the slowing and irregularities of the heart caused by acetylcholine or arecoline hydrobromide. The contraction of isolated rabbit's intestine after acetylcholine or pilocarpine is abolished by camphor but not so typically as by atropine. The contraction of isolated intestine after BaCl₂ is also abolished by camphor and *d*-fenchone show strongest antagonising effect to the action of acetylcholine or arecoline on isolated frog's heart. Coramine and cardiazol antagonise acetylcholine on isolated frog's heart only slightly. H. H. K.

Pharmacological study of a new synthetic antispasmodic, benzyl β -dimethylamino-a-phenyl-a-ethylpropionate hydrochloride. K. Unna (J. Pharm. Exp. Ther., 1940, 70, 179– 188).—The benzyl ester, m.p. 167—168°, has a papaverinelike action on smooth muscle. It relaxes and inhibits movements in isolated intestine, abolishing BaCl₂ spasm. It causes a transitory fall in blood pressure and vasodilatation, but does not inhibit the effect of acetylcholine on blood pressure or intestine. In mice and rabbits it is 25% less toxic than papaverine. E. M. S.

Action of histamine on liver vessels. S. Utasiro (Japan. J. Med. Sci., IV, 1940, 12, Proc., 146).—Histamine constricts hepatic artery and portal vein of rabbits. H. H. K.

Influence of amino-acids on enzymic decomposition of histamine. T. Satake and S. Shibata (Japan. J. Med. Sci., IV., 1940, 12, Proc., 156—157).—Addition of amino-acids, especially of *l*-histidine, protects histamine from destruction by histaminase (torantil or prep. of intestinal mucosa of rabbits). H. H. K.

Depressor substance in persimonen tannin. T. Ishihara (Japan. J. Med. Sci., IV, 1940, **12**, Proc., 160—161).— Alcoholic extracts of persimonen tannin decrease blood pressure in cats. This effect is not abolished by atropine. The extract lowers blood pressure in rabbits, increases tonus and contraction of rabbit's intestine, and produces diastolic arrest of the isolated toad's heart. The pharmacological action of the extract disappears after treatment with torantil. The pharmacoactive substance is sol. in alcohol, but insol. in ether and CHCl₂. It gives a white ppt. with phosphotungstic acid and a positive Pauly diazo-reaction.

н. н. к.

Peripheral action of antipyrine on blood vessels. A. Osio (Japan. J. Med. Sci., IV, 1940, 12, Proc., 163).—Antipyrine has no effect on blood vessels of rabbit's ear perfused with Ringer's solution. It produces transitory vasoconstriction followed by long lasting vasodilatation in a rabbit's ear perfused with blood. H. H. K.

Synthesis of local anæsthetics.—See A., 1941, II, 40.

Ether convulsions. H. Bailey (Brit. Med. J., 1940, II, 222– 223).—Ether convulsions were stopped in 1 case by intravenous evipan. C. A. K.

Importance of impurities in ethyl ether used for narcosis. L. Gisselsson and G. Lindgren (*Acta Chir. Scand.*, 1940, 83, 45-73).—In mice, guinea-pigs, and rabbits, no change in time of induction of anæsthesia was observed with administration of pure ether or ether and 0.5% acetaldehyde but the latter caused accelerated respiration in rabbits. Increase in respiratory rate occurring with the depth of anæsthesia, however, was the same in both cases. No disturbances or irregularities in the respiration that could be ascribed to the acetaldehyde content of ether were observed when this content did not exceed 0.5%. On Langendorff hearts, ether containing up to 1% of acetaldehyde had the same effect as pure ether in the same concn. and no difference was observed in the arterial or the venous pressure of dogs and rabbits. H. H. K.

Method of administering continuous intravenous anæsthesia for abdominal surgery. L. C. Rivett and G. Quayle (*Proc. Roy. Soc. Med.*, 1940, 33, 631-636).—An apparatus is described for the alternate introduction of pentothal and salineglucose solution intravenously. The pentothal is diluted to 2%. Results are superior to those obtained with inhalation anæsthesia; relaxation is good, breathing is shallow, and recovery pleasant. Experiences in 50 abdominal operations are given. W. J. G.

Therapy of barbiturate poisoning. B. Fantus and R. K. Richards (J. Amer. Med. Assoc., 1940, 115, 527-529).—A review. C. A. K.

Sedatives and alcohol [in relation to their effect, singly or jointly, on the car driver]. H. Peter (*Deut. Z. ges. gerichtl. Med.*, 1939, 31, 113—154).—Alcohol was given as cognac, 1 g. per kg. body-wt.; max. blood vals. of $0\cdot1-0\cdot14$ g.-% were obtained. $0\cdot3$ g. of luminal produced similar efficiency curves but no marked euphoria; given together with alcohol it produced summation of effects. 0.75 g. of sedormid had no effect in one, and an effect similar to that of alcohol in another, person. There is summation of effects if given with alcohol. 0.75 g. of cibalgin (dial + pyramidon) had no effect by itself but given after alcohol there is a marked biphasic drop in efficiency. Alcohol and pyramidon alone produced curves similar to alcohol but euphoria was more pronounced. Alcohol absorption curves were not influenced greatly by any of these drugs, nor did they imitate alcohol in chemical tests on the blood. E. M. J.

Test for barbitone in putrified or exhumed corpses. E. Weinig (*Deut. Z. ges. gerichtl. Med.*, 1939, **31**, 189–193).— Oettel's test for barbiturates in urine (A., 1936, 363) was successfully adapted for examining blood, c.s.f., and muscle tissue post-mortem; no substance other than barbitone gave a positive reaction with this test even after putrefaction.

E. M. J.

Use of barbiturates in preventing irregularities under cyclopropane or morphine and cyclopropane anæsthesia. B. R. Robbins, J. H. Baxter, and O. G. Fitzhugh (Ann. Surg., 1939, 110, 84—92).—Blood gas determinations and e.c.g. changes are recorded in dogs receiving morphine, barbitone, or amytal as premedication for cyclopropane anæsthesia. Morphine-cyclopropane anæsthesia is associated with bradycardia and cardiac arrythmia. Barbiturate premedication prevents the development of these irregularities and intravenous injection of amytal abolishes them. D. S.

Enzymic deacetylation of heroin and closely related morphine derivatives by blood serum. C. I. Wright (Science, 1940, 92, 244—245).—Sera (0.05—0.5 c.c.) from rabbits, when added to heroin (5 mg.) in bicarbonate Ringer's solution, caused rapid liberation of CO₂, equiv. to 85% of theoretical for both acetyl groups. Other rabbits gave sera which hydrolysed only one acetyl group. Results were repeatable two months later. Diacetyldihydromorphine gave similar results; in both cases the 3-acetyl derivative was always hydrolysed. Human serum deacetylates heroin but at a slower rate. Eserine inhibits the hydrolysis. E. R. S.

Viburnum. IX. Pharmacognosy and pharmacology of V. alnifolium. H. W. Youngken and J. G. Munch (J. Amer. Pharm. Assoc., 1940, 29, 439-447).—The bark of V. alnifolium yields extracts showing uterine sedative and depressor action typical of Viburnum barks but also containing an unknown toxic principle which is lethal in dogs in doses equiv. to approx. 0.8 g. of bark per kg. F. O. H.

Relative retention by growing rats of lead ingested in water and in food, and in soluble and insoluble forms. J. B. Shields, H. H. Mitchell, and W. A. Ruth (J. Ind. Hyg., 1940, 22, 199-205).—Pb was administered to rats with their food as $Pb(NO_3)_2$ or PbHASO₄, and with drinking water as $Pb(NO_3)_2$ (36·5 p.p.m. of Pb), and feeding was continued until all animals had taken approx, the same amount of Pb. Analysis of bodies showed that admixture with solid food reduced absorption of sol. Pb by 27%; absorption of PbHASO₄ was 14% less than that of Pb(NO₃)₂. E. M. K.

Lead arsenate poisoning of sheep and cattle. E. C. Mc-Culloch and J. L. St. John (J. Amer. Vet. Med. Assoc., 1940, 96, 321-326; cf. A., 1941, III, 41). Cerebellar form of encephalopathy due to lead poisoning. A. Biemond and S. van Creveld (*Acta paediatr. Stockh.*, 1939, 27, 51-62).—Case report. M. K.

Toxicity, treponemicidal activity, and potential therapentic utility of substituted phenylarsenoxides. II. Monosubstituted phenylarsenoxides (Cl; NO₂; CH₃; C₂H₄OH; C(CH₃):NOH; NH₂, OH, CH₂NH₂ and derivatives). H. Eagle, G. O. Doak, R. B. Hogan, and H. G. Steinman. III. Monosubstituted compounds: acids, esters, benzophenone, methylsulphone. H. Eagle, R. B. Hogan, G. O. Doak, and H. G. Steinman (J. Pharm. Exp. Ther., 1940, 70, 211-220, 221-227; cf. A., 1940, III, 864).-II. The toxicity in mice of 27 compounds, 20 new (cf. A., 1940, II, 111), ranged between 7 and 120 referred to that of phenylarsenoxide as 100. Treponemicidal activity in vitro, expressed similarly, varied between 21 and 147. Most of the compounds were less active and toxic than phenylarsenoxide. Only the m-OH-, p-OH-, m-NH₂-, p-NH₂-, p-aminomethyl, and p-aminobenzamido-compounds, their acetyl derivatives, p- β -hydroxyethyl- and p-nitro-phenylarsenoxides had activity : toxicity ratios exceeding that of the unsubstituted compound. None is potentially as valuable as mapharsen in the treatment of syphilis.

III. Monosubstitution with an acidic group inhibited the activity and decreased the potential therapeutic utility of phenylarsenoxide. Blocking the acidic group removed the inhibitory effect of the acid on treponemicidal activity, and with the p-ethylbenzoate and the p-methylsulphone compounds resulted in activity ; toxicity ratios exceeding that of phenylarsenoxide. E. M. S.

Toxicity of tryparsamide and neocryl. A. O. F. Ross (*Brit. Med. J.*, 1940, II, 283–284).—Tryparsamide was given to 256 cases and neocryl to 314 cases of different kinds of neurosyphilis (dosage = 3 g. weekly up to 30 g. for both drugs). 78 of the former group and 27 of the latter showed toxic signs. Visual disturbances occurred in 47 cases given tryparsamide and in only 1 case with neocryl. C. A. K.

Gold therapy in rheumatoid arthritis. P. Ellman, J. S. Lawrence, and G. P. Thorold (*Brit. Med. J.*, 1940, II, 314—316).—Solganal B (aurothioglucose) was given in doses of 0.1 g. weekly to 30 cases of typical rheumatoid arthritis, 0.2 g. weekly to 30 more cases, and 30 control cases were given injections of sterile almond oil. The greatest clinical improvement and the greatest toxicity occurred in the 2nd group. Stomatitis and dermatitis were the commonest toxic signs. C. A. K.

Pining in sheep not curable by cobalt administration. W. L. Stewart and A. P. Ponsford (*Nature*, 1940, 145, 1023).— Controlled experiments in the Cheviot area showed that the death rate of animals treated with Co for 5 months was as high as of those untreated. Field investigation has shown that "pining" may be prevented either by feeding a special mineralised cake or by anthelmintic treatment. (Cf. Corner and Smith, A., 1938, III, 1023.) E. R. S.

Cobalt and pine disease. H. H. Corner and A. M. Smith (*Nature*, 1940, **146**, 168).—In contrast to Stewart and Ponsfords' findings (preceding abstract), the use of Co for curative and preventive purposes in sheep on the Scottish border gave highly successful results. Sheep have been thus kept for 2 years on pining land and remained healthy. E. R. S.

Common properties of snake poisons of Formosan Crotalinæ on change of rabbit's blood-sugar. T. Ri (Japan. J. Med. Sci., IV, 1940, 12, Proc., 121-123). H. H. K.

Minimal lethal doses of Naja-naja-atra poison in different animals. Y. Oh (Japan. J. Med. Sci., IV, 1940, 12, Proc., 125—128).—Dried naja-naja poison was dissolved in physiological saline and injected subcutaneously. Min. lethal dose was in monkeys 0.4, dogs 0.6, rabbits 0.3, guinea-pigs 0.15, mice 0.75, fowls 0.3, and Rana tigeriana 70 mg., per kg. Animals showed first central nervous system stimulation; later paralysis, and arrest of respiration. H. H. K.

Actions of poison of Bungarus multicinctus, Blyth. S. To and S. Chin (Japan. J. Med. Sci., IV, 1940, 12, Proc., 128– 129).—The min. lethal dose was in frogs 0.5, mice 0.1, and rabbits 0.5 mg. per kg. body wt. The animals showed paralysis of central nervous system and arrest of respiration. 0.005-0.1% solution of Bungarus toxin produced digitalislike action on isolated frog's heart. The blood vessels of rabbit's ear and lungs, frog's hind legs and abdominal vein always showed constriction. 0.0001-0.005% solution constricted, 0.01-0.05% dilated, and 0.1% constricted vessels of kidney and spleen. The toxin had no influence on rabbit's blood pressure but depressed the respiration. It lowered the tonus of rabbit's gut but had no effect on rabbit's uterus. It produced a curare-like effect on frog's nerve muscle prep. H. H. K.

Pharmacological action of poison of Enhydris plumbea (Boie). Y. Takahasi (Japan. J. Med. Sci., IV, 1940, 12, Proc., 129—130).—The toxin of E. plumbea produced paralysis of central nervous system with disturbances of respiration and circulation in mice. The min. lethal dose in mice was 200 mg. per kg. body-wt. by subcutaneous injection. The toxin had a digitalis-like effect on isolated frog's heart. It constricted blood vessels of frog's hind legs and rabbit's ear. Small doses stimulated rabbit's gut and uterus; larger doses (0·1% and more) produced inhibition. It caused paralysis of frog's nerve muscle prep. Intravenous injection of small doses did not influence rabbit's blood pressure; injection of 15 mg. per kg. stimulated and later depressed respiration.

Н. Н. К

Habit formation of sinomenine hydrochloride. S. Rin (Japan. J. Med. Sci., IV, 1940, 12, Proc., 138).—Injection of the drug into rabbits lowers body temp. The decrease of body temp. becomes less after repeated daily injections. H. H. K.

Effects of intravenous and intraperitoneal introduction of polyvinyl alcohol solutions on blood. W. C. Hueper, J. W. Landsberg, and L. C. Eskridge (J. Pharm. Exp. Ther., 1940, 70, 201—210; cf. A., 1939, III, 1090).—The immediate effect of intravenous administration, on blood of rabbits and dogs, is reduction in no. of erythrocytes and in amount of hæmoglobin, and shortening of sedimentation time of red cells. With repeated intravenous or intraperitoneal administration the effects are more severe and always progressive, often with impairment or suppression of clotting. The effects resemble those of gum acacia sols. E. M. S.

Toxicity of vanillin and ethylvanillin for rabbits and rats. W. Deichmann and K. V. Kitzmiller (J. Amer. Pharm. Assoc., 1940, 29, 425—428).—Administration by stomach tube or subcutaneous injection of doses of vanillin or ethylvanillin (4—5% solution in milk) above approx. 3 g. per kg. causes an acute toxæmia and death by circulatory failure. Quantities used as flavouring materials in foods are harmless.

F. O. H.

Acute and chronic toxicity of triethanolamine. V. H. Kindsvatter (J. Ind. Hyg., 1940, 22, 206-212).—In acute toxicity experiments the L.D. 50 for guinea-pigs and rats was 8 g. per kg.; the mono- and di-ethanolamines in the commercial product did not affect toxicity. Daily doses of 1/40 to 1/5 L.D. 50 caused cloudy swelling of liver and kidneys and scattered myelin degeneration of sciatic nerve; the degree of damage was correlated with dose. Application of one L.D. 50 daily to the skin caused toxic visceral changes, necrosis of skin, and death in less than 20 days. E. M. K.

Response attending exposure of laboratory animals to vapours of methyl bromide. D. D. Irish, E. M. Adams, H. C. Spencer, and V. K. Rowe (*J. Ind. Hyg.*, 1940, 22, 218—230).— Rats and guinea-pigs succumbed to single exposures of 12 to 24 hr. at a concn. of 0.85 mg. per l.; repeated exposures to lower concns. were survived by some animals, but growth was retarded, and the lungs showed damage varying from slight congestion to marked consolidation and abscess formation. Rabbits and monkeys developed nervous symptoms, but no lesions of the central nervous system were observed. E. M. K.

Treatment of casualties from lung-irritant gases with particular reference to the use of oxygen and carbon dioxide mixture. A. T. Jones (J. Ind. Hyg., 1940, 22, 235-243).— Treatment of poisoning by Cl₂ or COCl₂ is described in detail. Use of O₂ is important, and the addition of 7% CO₂ is advantageous in the early stages. E. M. K.

Feeding tests with thiourea. F. B. Flinn and J. M. Geary (Contr. Boyce Thompson Inst., 1940, 11, 241-247).—Thiourea, used to prevent browning of cut surfaces of fruit, is not toxic to rabbits, rats, or dogs in much larger dosses than could be taken in fruit. Single doses of 9 g. per kg. bodywt. fed to rats and rabbits, and daily doses of 25 mg. per kg. fed to rats, rabbits, and pupples, were harmless. R. L. E.

Feeding experiments with thiourea. A. Hartzell (Contr. Boyce Thompson Inst., 1940, **11**, 249–260; cf. preceding abstract).—Thiourea is harmless to guinea-pigs, rats, and man, and does not impair palatability of fruit treated with it. B. L. F.

Nicotine poisoning in child. R. W. Cragg and A. E. Osterberg (J. Amer. Med. Assoc., 1940, 115, 600-601).—Case report. C. A. K.

Damaging action of nicotine on circulation. B. Weicker (*Dtsch. Arch. klin. Med.*, 1940, **185**, 393-415).—Cardiac infarction, disturbances of intraventricular conduction, coronary insufficiency, and thrombo-angiitis obliterans were observed in 24 men at the age of 17-53 years. All of them were heavy smokers. A. S.

Organ analysis in case of fatal nicotine poisoning. K. O. Moller and M. Simesen (*Deut. Z. ges. gerichtl. Med.*, 1939, 31, 55-59).—Nicotine was determined as the dipicrate in the organs of a man who died after taking an 80% solution of nicotine in port wine. The contents in mg.-% were : spleen 12.4, liver 5.2, blood 2.8, kidney 1.0, brain 0.9, urine 10.4 (total vol. 52 c.c.), gastric contents 192.8 (total vol. 390 c.c.), small intestine 0.8. The total in these organs was 1 g. Alcohol content of blood was 0.18%, of urine 0.16%, and of gastric contents 1.15%. E. M. J.

Fatal iodine poisoning after abortions from intrauterine injection of tincture of iodine. J. Camerer (*Deut. Z. ges. gerichtl. Med.*, 1939, **31**, 21—39).—Injection of 3—4 c.c. of tincture of I diluted with alcohol into the gravid uterus of a 23-year-old girl produced abortion and caused death with hæmoglobinuria and anuria. There was ædema of mucous membranes and of the lung, jaundice, hæmoglobinæmic nephrosis with ascending nephritis, endometritis fibrinosa, and a closed perforation of the uterine fundus without peritonitis or other evidence of infection. A similar procedure led to abortion in the same girl 9 months previously without complications. Temporary intolerance towards I is discussed as a causal factor and a review of the literature is appended. E. M. J.

Case of fatal satioylic acid (? acetylsalicylic acid) poisoning with organ analysis. F. Halstrom and K. O. Moller (*Deut, Z.* ges. gerichtl. Med., 1939, **31**, 182—188).—11.9 g. of salicylic acid were found in the organs analysed, the muscles accounting for all but 1.2 g., in a man who died with clinical signs of cerebral tumour. He was known to have taken aspirin regularly for a long time and was presumed to have taken a very large dose shortly before death. No pathological findings were made besides the abnormal presence of salicylic acid (kidneys 82.4, liver 46.5, spleen 36.1, muscle 29.4, brain 20.0, blood 0.6, and contents of small intestine 34.4 mg.-%, the last named not being included in the above total). E. M. J.

Chronic acetanilide poisoning. T. N. Morgan and A. G. Anderson (*Brit. Med. J.*, 1940, II, 187–188).—Case report. When *p*-aminophenol is added to laked blood containing a trace of sulphide, sulphhæmoglobin is rapidly formed.

C. A. K.

Application of carbamide (urea) therapy in wound-healing. H. G. Holder and E. M. Mackay (Ann. Surg., 1939, 110, 94-99).—Five cases are reported illustrating the efficacy of urea in stimulating wound healing. The effect is attributed mainly to a lytic action on necrotic tissues. D. S.

Artificial fever therapy in infants and children by intravenous injection of typhoid-paratyphoid vaccine and pyrifer. W. Heymann and L. S. Enright (Jakrb. Kinderheilk., 1939, 154, 1—21).—No harmful effects were observed after 4—6 courses of fever therapy, each course consisting of 3 or 4 weeks of daily treatment. 18 of 23 cases of chorea were cured; 5 of 6 cases of syphilitic interstitial keratitis showed improvement. The Wassermann reaction became negative in 4 of 11 cases of nervous syphilis; mental and speech disturbances as well as bladder symptoms improved. The treatment was ineffective in epilepsy, bronchial asthma, or lipoid nephrosis. M. K.

[Potassium for infantile eczema.] F. Goldmann (Jahrb. Kinderheilh., 1938–1939, 152, 235–251).—Administration of K has beneficial effect on a form of infantile eczema which is characterised by Na retention. M. K.

Treatment of acne vulgaris by cryotherapy (slush method). W. L. Dobes and H. Keil (Arch. Dermat. Syphilol., 1940, 42, 547—558).—Cryotherapy is an important adjuvant measure for some types of acne, especially the papulopustular and the hard, indurated form. This treatment should never be used in the Negro or in the presence of pigmented nævi.

C. J. C. B.

Н. Н. К.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Medical and social approaches to problem of chronic rheumatism. R. B. Osgood (Amer. J. med. Sci., 1940, 200, 429– 445).—A lecture. C. J. C. B.

XXII.-RADIATIONS.

Recent advances in nuclear physics. E. U. Condon (Radiology, 1940, 34, 581-586). E. M. J.

Biological effects of high-frequency and magnetic fields. K. F. Nagelschmidt (*Nature*, 1940, **146**, 590).—The magnetic field produced by diathermy apparatus has an effect on tissues. A flowing salt solution (60 cm. per sec.) in a d.c. magnetic field (5000 gauss) gave 2 mv. The use of diathermy apparatus would produce localised electric currents in the tissues before the heating effect could be detected, and probably accounts for immediate relief of pain in some cases. E. R. S.

Radiobiological importance of energy distribution along ionisation tracks. R. E. Zirkle (J. Cell. Comp. Physiol., 1940), 16, 221-235).—Effects of a-particles on organisms were examined after passing through various thicknesses of foil. Increase of linear energy absorption caused in Aspergillus spores increased effectiveness per unit dose. In Saccharomyces increase in effectiveness was less, and in B. coli effectiveness was decreased. V. J. W.

Intracellular photodynamic action. C. Hyman and R. B. Howland (J. Cell. Comp. Physiol., 1940, 16, 207-220).—Toxic effects of injection into amobæ of rose-Bengal or eosin, followed by illumination, are described. These indicate that the chief effects are exerted on the cell membrane and the mechanism of the contractile vacuole. V. J. W.

Biological action of coloured light. H. Vollmer (Arch. phys. Ther., 1938, 19, 197–211; Chem. Zentr., 1938, ii, 3403).—No sp. effects are shown by experiments with filtered red and blue light on plants, fish, and mammals, or by irradiation of ultra-violet burns in man with coloured light. Contrary medical observations are due to psychological factors. A. J. E. W.

Use of artificial light for turkeys. H. L. Wilcke (Poulity Sci., 1939, 18, 236-243).—Artificial lighting accelerated egg production and increased the total production per bird; fertility, hatchability, egg wt., and total food consumption were unaffected. Birds in heated houses consumed more mash and less grain than did those in unheated houses.

A. G. P.

Effects of intense sound waves on some biologically important reactions. L. A. Chambers (*Amer. J. med. Sci.*, 1935, 190, 857).—Reactions accelerated or induced by audible sound include oxidation of halides and of water, hydrolyses, depolymerisations, and protein denaturation. The reactions are not affected in the absence of cavitation. Certain sp. dissolved gases are essential to protein denaturation, others inhibit it. CH. ABS. (*p*)

XXIII.-PHYSICAL AND COLLOIDAL CHEMISTRY.

Phosphatides and inorganic salts. H. N. Christensen and A. B. Hastings (*J. Biol. Chem.*, 1940, **136**, 387–398).—Ionic activity determinations with Ag-AgCl and amalgam electrodes, electrometric titrations, and determination of the

distribution of ions across membranes show that lecithins, kephalins, and sphingomyelins do not combine with appreciable amounts of Cl', that lecithins and sphingomyelins over a wide $p_{\rm H}$ range do not combine with Na', and that kephalin combines with both Na and K with equal affinity, the amount increasing with increase of $p_{\rm H}$. The behaviour of kephalins on titration and their instability suggest that they have structures different from those assigned to them. Possibly they play a part in tissue-electrolyte distributions, as they combine with approx. 0.5 equiv. of base per mol. at neutrality and the base is united mainly in a non-ionised form.

J. N. A. **Problem of plastein formation. III. Complexity of peptic plastein in urea solution.** H. B. Collier (*Canad. J. Res.*, 1940, **18**, **B**, 305—308; cf. A., 1941, III, 137).—A solution of peptic plastein in urea solution exhibits a slight antigenic effect. In the ultracentrifuge it sediments inhomogeneously, but the presence of a proportion of particles of protein dimensions is indicated. F. J. G.

Interaction of casein with aqueous acetic, lactic, and citric acids.—See A., 1941, I, 44.

Thermal denaturation of proteins.—See A., 1941, I, 45.

Physical chemistry of thermal denaturation of proteins.—See A., 1941, I, 45.

Colloid-chemical hydrolysis of proteins.—See A., 1941, I, 45.

Electrophoretic study of proteins of egg white.—See A., 1941, I, 46.

Pressure-soluble and pressure-displaceable components of monolayers of native and denatured proteins.—See A., 1941, I, 39.

Measurement of static and dynamic foams in characteristic units.—See A., 1941, I, 59.

XXIV.-ENZYMES.

Effect of X-rays on enzymes. W. M. Dale (Biochem. J., 1940, 34, 1367-1373).—The degree of inactivation of cryst. carboxypeptidase and partly purified polyphenol oxidase is a function of the concn. of enzyme for a given dose of radiation. With carboxypeptidase, the effect is uniform over the whole range of doses, a definite amount of radiation energy absorbed corresponding with a const. amount of enzyme inactivated. Hence the inactivating dose decreases with decreasing concn. of enzyme, for a given degree of inactivation, to levels much below those normally used in radiotherapy. When carboxypeptidase is in presence of its substrate, X-rays cause no inactivation although in absence of substrate 85% inactivation is attained. W. McC.

Enzymic function of pharyngeal, thoracic, and post-cerebral glands of Apis mellifica. H. Inglesent (Biochem. J., 1940, 34, 1415—1418).—The nurse bee has the most powerful proteolytic enzyme system, whilst invertase predominates in the foraging bee and a lipoid system in the wax bee.

P. G. M.

Succinic dehydrogenase-cytochrome system of cells. Intracellular respiratory system catalysing aërobic oxidation of succinic acid. D. Keilin and E. F. Hartree (*Proc. Roy. Soc.*, 1940, **B**, **129**, 277—306; cf. A., 1939, III, 719).—Succinic dehydrogenase, together with the complete cytochrome system, is essential for the aërobic oxidation of succinic acid by tissue or cell-free colloidal tissue preps., the catalytic activity, in this system, of cytochrome c, being represented by its activity or turnover val. of 1420. The catalytic activity of the cytochrome components depends on their non-autoxidisability; cytochrome c, when it becomes autoxidisable, loses its catalytic power in the systems oxidising succinic acid and p-phenylenediamine. Methylene-blue replaces, but is less efficient than, the cytochrome system in tissue preps. oxidising succinic acid. Although every prep. that, in presence of succinic acid, reacts with cytochrome c also reacts with methylene-blue, preps. are obtained which reduce methylene-blue but not cytochrome c. Since, in some of these, cytochrome oxidase and succinic dehydrogenase are active independently but together do not catalyse aërobic oxidation of succinic acid, it follows that the succinic dehydrogenase are active independently component the succinic dehydrogenase are active independently but together do not catalyse aërobic oxidation of succinic acid, it follows that the succinic dehydrogenase are active independently (e.g., cytochrome b or an unknown

component of the system) or that, in these preps., the succinic system has lost its accessibility to cytochrome c while remaining accessible to methylene-blue. The inhibition of aërobic succinic acid oxidation in presence of cytochrome capparently caused by Na diethyldithiocarbamate is due to tetraethyldithiocarbamyl disulphide (derived from the Na salt by an oxidation catalysed by the oxidase-cytochrome system) which at concess of 5×10^{-6} and 2×10^{-5} M. produces 70 and 100% inhibition, respectively. Similar insystem) which at concuss of 5×10^{-6} and 2×10^{-6} M. produces 70 and 100% inhibition, respectively. Similar inhibition is produced by Na₂S₄O₆, K₂S₂O₈, and the oxidation product of K ethylxanthate, the effect being probably due to oxidation of thiol groups in the enzyme. Hence the thiol groups of succinic dehydrogenase are not its prosthetic groups taking part in H transfer to other components of the system but possibly serve to unite substrate with enzyme. Very low concns. of co-enzyme I inhibit oxidation of succinic acid, the effect being due to production, in presence of coenzyme, of oxalacetic acid, which powerfully inhibits the action of succinic dehydrogenase. The activity of the succinic system is also inhibited by low concns. of pyocyanine. Even in the cell-free colloidal preps, the succinic dehydro-genase-cytochrome system behaves as a true respiratory system of the cell, having high catalytic activity and being affected by all inhibitors in the same way and to the same extent as is the normal respiratory system of intact cells. The efficiency of the former system depends on the integrity of its components and on that of the supporting colloidal structure which assures accessibility. W. McC.

Triose phosphate dehydrogenase of Bacterium coli. J. L. Still (Biochem. J., 1940, 34, 1374—1382; cf. A., 1940, III, 930).—Cell-free aq. extract, obtained by crushing B. coli in a mill (Booth and Green, A., 1938, III, 625), centrifuging, heating to 55°, again centrifuging, and dialysing, contains zymohexase (converts hexose diphosphate into phosphoglyceraldehyde) and phosphoglyceraldehyde dehydrogenase (oxidises 3-phosphoglyceraldehyde). The action of the dehydrogenase is inhibited by iodoacetate. In presence of F', the oxidation of 3-phosphoglyceraldehyde to the main or only product, 3-phosphoglyceraldehyde and 1:3-diphosphoglyceric acid since co-enzyme I and inorg. $PO_4^{\prime\prime\prime}$ or AsO $4^{\prime\prime\prime}$ are required for the reaction. It is shown that, as far as reduction and oxidation of co-enzyme I are concerned, the reaction is reversible. The effect of variations in the concr. of co-enzyme I, substrate, carrier (methylene-blue), and AsO $4^{\prime\prime\prime}$ on the reaction, when O₂ is oxidant, is demonstrated graphically. The enzyme prep. dismutes phosphoglyceraldehyde under certain conditions, presumably converting it into 3-phosphoglyceric acid and a-glycerophosphate. It also contains malic dehydrogenase and hence phosphoglyceraldehyde is oxidised in a co-enzyme-linked reaction with oxalacetic acid. W. MCC.

Inhibition of flavoprotein oxidative catalysis by substituted phenols. M. E. Krahl, A. K. Keltch, and G. H. A. Clowes (J. Biol. Chem., 1940, 136, 563-564).—The action of *d*-aminoacid oxidase and of the flavoprotein of heart muscle (Straub, A., 1939, III, 719) is inhibited by 4:6-dinitro-o-cresol, 2:4-dinitro-o-cyclohexylphenol, and 2:4:5-trichlorophenol but these substances have no effect on the action of the xanthine oxidase of milk. o-Nitrophenol does not affect the action of these enzymes. Where inhibition occurs, its extent varies with variation in $p_{\rm H}$ and in substrate and enzyme conc. W. McC.

Oxidase reaction of human milk. O. S. Rougichitch and E. Dumitrescu (*Arch. Dis. Childh.*, 1936, **11**, 61-64).— Positive guaiacol-H₂O₂ reactions are recorded, max. intensity occurring from the 3rd to the 6th month of lactation. CH. ABS. (ϕ)

Use of ascorbic acid as substrate in oxidase measurements. B. D. Ezell and F. Gerhardt (*J. Agric. Res.*, 1940, **60**, 89– 99).—Ascorbic acid is preferable to "glucose derivative" (Guthrie, A., 1930, 1473) as a substrate in determinations of oxidase activity; it is less injurious to the enzyme and more sensitive to oxidative changes. Applications in the examination of soft scald and other physiological diseases of fruit are indicated. A. G. P.

Respiration and anaërobic fermentation of tea leaf and their relationship to tea fermentation. S. B. Deb and E. A. H. Roberts (*Biochem. J.*, 1940, **34**, 1507-1516).—The R.Q. of fresh tea leaf is 1.0 and falls as a result of fermentation.

There is a striking analogy with barley with respect to the effect of reduction of carbohydrate. A lag occurs in the inhibiting effect of HCN, which reaches a max. at 0.01m. The leaves appear to contain a CN'-stable oxidase, since mature leaves are less sensitive, although the "fixed" Fe may be able to form complexes with CN'; thus the oxidase closely resembles the cytochrome system. Damage to leaf tissue destroys its ability to undergo anaërobic fermentation but, since dehydrogenase activity is not equally affected, its effect seems to be inactivation of the co-enzymes concerned in carbohydrate oxidation. P. G. M.

Tannins as hydrogen carriers in biological oxidation. E. A. H. Roberts and S. N. Sarma (*Biochem. J.*, 1940, 34, 1517—1523).—It is confirmed that tannins act as H carriers in biological oxidation systems, since there is a positive correlation between tannin content and O_2 uptake of tea leaves. Cozymase is unnecessary, a finding which appears to distinguish the *o*-quinone of tea tannin from *o*-benzoquinone itself. P. G. M.

Catalase. III. J. B. Sumner, A. L. Dounce, and V. L. Frampton (*J. Biol. Chem.*, 1940, 136, 343-356; cf. A., 1939, III, 422).—The prep. of cryst. horse-liver catalase is described. The Kat. f. or "capability" of this catalase varies from 22,000 to 55,000 whilst that of cryst. ox-liver catalase varies from 28,000 to 35,000. The "capability" of various catalase preps. varies inversely as the ratio "blue Fe": hæmin-Fe, and it is suggested that catalase activity depends on the no. of hæmatin groups in the mol., and that the blue substance, which is formed together with hæmin by the action of HCl and acetone on the enzyme, represents altered hæmatin prosthetic groups which result in decrease of activity. Horse- and ox-liver catalase contain approx. 0.09% of total Fe, which is equal to the sum of hæmin- and "blue" Fe. The diffusion const. of both types of catalase is 4.5×10^{-7} at 20°. J. N. A.

Relation of zinc to carbonic anhydrase. E. Hove, C. A. Elvehjem, and E. B. Hart (*J. Biol. Chem.*, 1940, 136, 425– 434; cf. A., 1939, III, 1096).—It is confirmed that all the Zn of the red blood cells, at least 0.3%, is contained in the carbonic anhydrase. Slight decreases in hæmoglobin, carbonic anhydrase, and Zn occur in rats on Zn-deficient diets. Saturated aq. dithizone partially inhibits carbonic anhydrase, as do high [Zn"]. KCNS has a marked inhibitory effect. E. M. W.

Effect of cyanide on Cypridina luciferin, A. C. Giese and A. M. Chase (J. Cell. Comp. Physiol., 1940, 16, 237-246).— When purified luciferin is dissolved in 0.000033M-KCN luciferase fails to cause luminescence. Luciferase is not affected. In smaller concns. KCN reduces luminescence in proportion to the concn. Crude Cypridina extracts are not inhibited by much greater concns. V. J. W.

Arginase and canavanase. M. Damodaran and K. G. A. Narayanan (*Biochem. J.*, 1940, **34**, 1449—1459),—The kinetics of hydrolysis of arginine and canavanine by arginase and canavanase from animal and plant sources are determined. The differences observed can be explained by differences in substrates. The optimum $p_{\rm H}$ for hydrolysis of arginine and canavanine are approx. 9.4 and 7.5 respectively. The optimal substrate concn. for arginine is 0.066M. and for canavanine 0.33M., the val. for the Michaelis const. for the two reactions being 0.0118M. and 0.0371M,, respectively. In presence of Co[°], the $p_{\rm H}$ optimum for both amino-acids is 7.5, whichever enzyme prep. is used. Both reactions are inhibited by KCN. Attempts to separate the two enzymes are unsuccessful, and with all enzyme preps. the action on canavanine is slower than that on arginine. Factors which affect the activity of arginase influence canavanase in the same direction and frequently to the same extent. In blood and tissues of animals they are always present together or not at all. It is concluded that the two enzymes are identical. I. N. A.

Specificity of salmon pepsin. J. S. Fruton and M. Bergmann (J. Biol. Chem., 1940, 136, 559-560; cf. Norris and Elam, A., 1940, III, 261).—Cryst. salmon pepsin does not hydrolyse carbobenzyloxy-, glycyl-, and carbobenzyloxy glycyl-l-glutamyl-l-tyrosine, or benzoyl-l-arginineamide but hydrolyses benzoyl-l-tyrosylglycineamide slightly and edestin extensively. W. McC. Influence of mucoitinsulphuric acid on peptic digestion. S. A. Komarov (*Amer. J. digest. Dis. Nutr.*, 1936, **3**, 164– 166).—Mucoitinsulphuric acid inhibits the activity of commercial pepsin preps. and usually the peptic activity of gastric juice. CH. Abs. (*p*)

Action of trypsin on modified proteins. A. R. Kizel and O. P. Roganova (*Biochemistry*, U.S.S.R., 1936, 1, 1-20).— The relative amounts of modified edestin decomposed were (edestin = 100): ethylated 84.4, sulphonated 71.0, deaminised 98.0, benzoyl- (pyridine method) 4.4 (NaHCO₃ method) 0.6, benzoyl- (after methylation) 2.8, benzoyldeaminised 1.0, saponified benzoyl- 97.2; saponified benzoyldeaminised 74.6. The activity of trypsin does not depend on the presence of free carboxyl groups, but that of free NH₂ and OH groups plays a leading rôle in trypsin hydrolysis.

CH. ABS. (p) **Pancreatic enzymes and tissue metabolism.** H. C. Bradley and S. Belfer (*Amer. J. digest. Dis. Nutr.*, 1936, **3**, 220—223). —Hog spleen and liver show no tryptic activity even under optimum conditions. Small amounts of trypsin added to the tissues retain their activity. Spleen and liver contain proteolytic enzymes not present in pancreatic juice.

С́н. Авз. (р)

Milk-clotting activity of papain. C. V. Ganapathy and N. B. Sastri (*Current Sci.*, 1940, 9, 413; cf. A., 1939, III, 940).—The milk-clotting activity of papain is suppressed by treatment with oxidising agents $(e.g., H_2O_2)$, subsequent reduction by CN' or H₂S reactivating the enzyme. Milkclotting (which is probably associated with the thiol group) by papain is inhibited by maleic acid or Cu (with the latter, inhibition is annulled by CN') and, irreversibly, by iodoacetic acid. F. O. H.

Plastein formation. II. Chemical changes involved in plastein formation by papain and by pepsin. H. B. Collier (Canad. J. Res., 1940, 18, B, 272—280; cf. A., 1940, III, 932). —Formation of plastein from active papain and ovalbumin proteose involves a decrease in "tyrosine-" but an increase in amino- and carboxyl groups; synthesis and hydrolysis are simultaneous. Plastein is hydrolysed by papain or by pepsin, with increase in all the above groups : these all decrease when plastein is synthesised by pepsin. Plastein formation is regarded as a true enzymic synthesis. The plasteins resemble typical proteins, in which the tyrosine phenolic groups probably play an essential structural rôle. Benzaldehyde forms a ppt. with proteose, but does not increase the formation of plastein by pepsin. E. W. W.

Cleavage of phosphoric acid esters of aliphatic and aromatic alcohols. S. Fujita (Arb. drilt. Abt. anat. Inst. Kyoto, 1935, **C**, No. 5, 171–194).—The cleavage of K salts of monoand di-methyl, -ethyl, -propyl, and -benzyl (A) and of monoand di-phenyl, -o-, -m-, and -p-tolyl esters (B) of H_3PO_4 (prep. described) by takaphosphatase and by rabbit renal and hepatic phosphatase was studied. All the esters of both series are readily hydrolysed by takaphosphatase, whilst the di-esters of the aliphatic series are almost entirely unaffected by rabbit organophosphatases and by purified renal phosphatase. The biochemical separation of dialkyl esters is possible. Renal and hepatic phosphatase effected 95% and 100% cleavage of the monoarylphosphoric acids in 3 and 5 days, respectively. The two series and the monoand di-esters of each series show a certain substrate specificity towards the phosphatases. Ch. Abs. (p)

Cleavage of position and structural isomerides of hexosemonophosphoric acid by phosphatase. M. Watanabe, N. Fujimoto, K. Nomura, and S. Fujita (*Arb. dritt. Abt. anat. Inst. Kyoto.* 1935, **C**, No. 5, 215–241).—Ba glucose-1-, -3-, $\{a]_D + 32\cdot7^\circ$, and -6-monophosphate, $[a]_D + 18\cdot02^\circ$, and Ba fructose-1-, $[a]_D - 34\cdot5^\circ$, and -6-monophosphate, $[a]_D - 16\cdot4^\circ$ (prep. described) are hydrolysed by takaphosphatase, rabbit renal, hepatic, and tubercle phosphatase. Hydrolysis is optimal at $p_H 8\cdot0-8\cdot3$ (takaphosphatase) or $9\cdot0-9\cdot8$ (renal hepatic phosphatase). At p_H above $9\cdot8$ the esters decompose spontaneously. The PO₄ group attached at C₍₁₎ is most easily hydrolysed, and fructose esters are less stable than the corresponding glucose esters. Disopropylideneffuctose has m.p. $108-109^\circ$, $[a]_D - 17\cdot6^\circ$; β -diisopropylideneffuctose has m.p. $96-97^\circ$, $[a]_D - 31\cdot4^\circ$. CH. ABS. (p)

Influence of thiocyanates on phosphatases. M. Watanabe (Arb. dritt. Abt. anat. Inst. Kyoto, 1935, C, No. 5, 195-198).----No notable influence of KSCN on the course of hydrolysis of Ba glucose-1- or -3-monophosphate or Ca fructose-6monophosphate by taka-, renal, hepatic, or experimental tubercle phosphatase was observed. CH. Abs. (p)

Determination of "acid" phosphatase of blood serum. E. B. Gutman and A. B. Gutman (J. Biol. Chem., 1940, 136, 201-209).—A modification of King and Armstrong's method (A., 1935, 403) is described. The substrate preferred is pure Na₂ phenyl phosphate but β -glycerophosphate is also used. At the $p_{\rm H}$ chosen (4.9), the action of "acid" phosphatase is at a max. and that of "alkaline" phosphatase negligible. Within the concn. range 0.005-0.01M., changes in concn. of Na₂ phenyl phosphate scarcely affect the amount of phenol liberated. Healthy human serum contains 0.5-2.0 units of "acid" phosphatase per 100 c.c. In persons with metastasising prostatic carcinoma the val. increases several 100-fold. W. McC.

 β -Glucuronidase. III. Increase in β -glucuronidase activity of mammalian tissues induced by feeding glucuronidogenic substances. W. H. Fishman (J. Biol. Chem., 1940, 136, 229-236).—Increases in the β -glucuronidase activity of dog and mouse tissues occur on oral administration of borneol and menthol, respectively. H. G. R.

[Enzymic] decomposition of glucosamine. I. Kawakami (Fukuoka-Ikwad.-Zasshi, 1936, 29, 958—984).—Glucose, fructose, $(NH_4)_2SO_4$, NH_4Cl , alanine, glycine, and methylamine do not prevent, but rather accelerate, the enzymic decomp. of glucosamine; Esch. coli forms NH_3 and acid, max. at the 7th day. Glucosamine is decomposed by C with deamination and acid formation. Deamination of glucosamine by hæmatoporphyrin runs parallel with incubation time and hæmatoporphyrin concn. CH. ABS. (p)

Soluble enzymes secreted by Aspergillus fumigatus. S. Mihaéloff (Bull. Inst. Égypte, 1935, 17, 163—195).—A. fumigatus secretes amylase, emulsin, and lipase. The action of lipase is not inhibited by repeated filtration through paper, or by small quantities of phenolphthalein; it is retarded by alkalis, but not by acids, in small amounts. Lipase is sp. for glycerides; up to 45° its activity α temp., thereafter decreasing rapidly to zero at 68° . CH. ABS. (p)

Resolution of *dl*-phenylalanine by asymmetric enzymic synthesis.—See A., 1941, II, 42.

XXV.-MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Amino-acids as yeast nutrients. H. K. Mitchell and R. J. Williams (*Biochem. J.*, 1940, 34, 1532—1536).—Many individual amino-acids (e.g., glutamic and aspartic acids, arginine, leucine, etc.) and their mixtures, whilst not essential components of the media, exert a strong stimulating action on the growth of *Saccharomyces cerevisiæ* and *S. ellipsoideus*. In two cases growth was increased 530% by aspartic acid and 1400% by a caseinogen digest. P. G. M.

Determination of phosphatase in yeast. J. J. Rae and E. V. Eastcott (*J. Biol. Chem.*, 1940, **136**, 443—447; cf. A., 1935, 403).—Phosphatase in yeast is determined by measuring the phenol liberated after 20 min. at 37° from 10 mg. of yeast and 10 c.c. of 0.01M-Na₂ phenyl phosphate, buffered with acetate-veronal at $p_{\rm H}$ 4.1. E. M. W.

Sclerotiorin, $C_{20}H_{20}O_5Cl$ (?), metabolic product of *Penicillium* sclerotiorum, von Beyma. T. P. Curtin and J. Reilly (Biochem. J., 1940, 34, 1419–1421; cf. A., 1940, III, 868).—*P. sclero*tiorum grown on Czapek–Dox medium in the dark at 25° produces sclerotiorin, $C_{20}H_{20}O_5Cl$ (?), which in alcoholic solution gives no colour with FeCl₃. A red by-product, m.p. 150° approx., also accompanies sclerotiorin. P. G. M.

Synthesis of cynodontin (1:4:5:8-tetrahydroxy-2-methylanthraquinone), a metabolic product of species of *Helmintho*sporium.—See A., 1941, II, 49.

Penicelliopsin, the colouring matter of *Penicilliopsis clavarix-formis*, Solms-Laubach.—See A., 1941, II, 49.

Pigment of Penicillium roseo-purpureum, Dierckx.—See A., 1941, II, 49.

Effect of inhibition of respiration and assimilation on diatom Ditylum Brightwelli (West). D. Bhatia (Proc. Roy. Soc. Edin., 1940, 60, 245-259).—Low concn. of urethane produces delayed plasmolysis and recovery on return to normal conditions in the cells of D. Brightwelli; similar results were obtained in absence of light. Plasmolysis produced by CN' or S' and subsequent recovery resemble the changes due to reduced sea-water and inhibition of oxidation. Absence of light does not alter the effect of O₂ deficiency. Alcohols produce incomplete plasmolysis, their effectiveness increases in the order methyl, ethyl, butyl, amyl, octyl. The "artificial" resting spores partly recover in darkness or in urethane; under anaërobic conditions they recover to the "early amœboid" stage. Resting spores due to O₂ lack recover to the "tubular" stage if oxidation is restored but assimilation inhibited. A. S.

Need of Chilomonas paramecium for iron. J. O. Hutchens (J. Cell. Comp. Physiol., 1940, 16, 265-267),—FeCl₃ stimulates growth of paramecia provided that the medium contains enough thiamin, and extracts of the organisms contain cytochrome-c. V. J. W.

Growth-stimulating factors for micro-organisms. M. Sahyun, P. Beard, E. W. Schultz, J. Snow, and E. Cross (*J. Infect. Dis.*, 1936, **58**, 2844).—Activators which accelerate the consumption of carbohydrate by *B. coli* in synthetic media and increase its rate of growth in 1% peptone were obtained from blood and peptone (1) by extraction with 80% alcohol and (2) utilising the hydrolysate of blood with 25% HCl. In (1), two principles, respectively sol. and insol. in butyl alcohol, were obtained; in (2) the product was insol. in butyl alcohol. The activator can be isolated from cultures of *B. coli* in synthetic media. Cysteine, glutamic acid, aspartic acid, asparagine, tryptophan, tyrosine, histidine, and proline markedly affect the growth of the colon bacillus; growth is retarded by cysteine and tyrosine in high concn.

CH. ABS. (p)Bacterial nutrition. II. Distribution of a growth-stimulating factor in animal and plant tissues. S. A. Koser, F. Saunders, I. J. Finkle, and R. C. Spoelstra (J. Infect. Dis., 1936, 58, 121-127).—A boiled aq. extract of calf spleen, calf liver, or yeast was treated with C, which was then extracted with alcohol. The product stimulated bacterial growth in a synthetic medium. CH. ABS. (p)

Bactericidal properties of "royal jelly" of the honey bee. C. S. McCleskey and R. M. Melampy (*J. Econ. Entom.*, 1939, 32, 581—587).—The bacteriostatic action of the jelly was greater against Gram-positive and bactericidal action greater against Gram-negative organisms. The bactericidal effect was lowered by increasing the $p_{\rm H}$ of the jelly from 4.5 to 6.0 and practically disappeared at $p_{\rm H}$ 8.0. The active agent was separated by centrifuging and survived autoclaving at 120° for 20 mm.; it was extracted from the jelly by alcohol and acetone. Cryst. preps. were obtained. A. G. P.

Relationships between respiratory activities of bacteria and their sensitiveness to sulphanilamide, p-hydroxylamino- and p-nitro-benzenesulphonamide. H. Burton, J. W. McLeod, T. S. McLeod, and A. Mayr-Harting (Brit. J. exp. Path., 1940, 21, 288-301).—In vitro tests on 32 different strains of pathogenic bacteria showed that most were more sensitive to either p-hydroxylamino- or p-nitro-benzenesulphonamide or to both than to sulphanilamide, suggesting that the therapeutic action of sulphanilamide is due to the formation of one of these substances or some other oxidation product. Since p-hydroxylaminobenzenesulphonamide was more active than the amino-compound on bacteria devoid of catalase, its action cannot be due to its known ability to destroy catalase. F. S.

Determinations of carbohydrate utilisation by bacteria. Comparison with acid-indicator methods. A. G. Wedum (J. Infect. Dis., 1936, 58, 234-246).—For most aërobic bacteria of medical importance the acid-indicator method is trustworthy; delayed fermentation in certain cases is due to the appearance of variant forms. In most of the instances in which acid was not evident it became evident when a min. buffer synthetic medium was employed. Whereas in org. media with an acid indicator a positive reaction is definite, a negative reaction should be checked by quant. analysis. CH. Abs. (p)

Fermentation of carbohydrates in soil. V. Cianci and G. Matarese (*Boll. Soc. ital. Biol. sperim.*, 1940, 15, 478–481).— Cultures of various types of soil with peptone and glucose, infected with *B. coli*, show reduction in sugar content and changes in $p_{\rm H}$. F. O. H.

Mechanism of microbiological oxidation of ammonia. III. G. G. Rao and W. V. S. Rao (J. Indian Chem. Soc., 1940, 17, 340—346; cf. A., 1940, III, 539).—Humic acid and cellulose, in concns. in which they are present in soil, do not inhibit (liquid culture method) the action of Winogradsky nitrifying bacteria. Starch (0.1%), sucrose (0.05%), glucose (0.05%). Na acetate or oxalate (0.05N.) retard nitrification, but in lower concns., sucrose, acetate, and oxalate stimulate it. Because sol. org. substances retard the nitrifying action of bacteria in pure cultures, other bacteria in soil by their action on org. matter may render the environment suitable for the autotrophic bacteria. J. L. D.

Photosynthesis in bacteria. C. B. van Niel (Cold Spring Harbor Symp. Quant. Biol., 1935, 3, 138—149).—In green plants, green and purple bacteria are associated with reduction of CO_2 during uptake of red light energy. A H donor is necessary for photosynthesis in green bacteria. Chlorella absorbed 4 quanta and some purple bacteria only 1 quantum per mol. of CO_2 reduced. CH. ABS. (p)

New autotrophic, thermophilic sulphur bacterium. V. Czurda (Zentr. Bakt. Par., 1937, II, 96, 138–145).—A third organism (Sulphomonas No. 3) isolated from the Pistyan hot springs is described. It is aërobic and C-autotrophic and transforms S_2O_3'' into S and SO_4'' (temp. optimum 48–56°). A. G. P.

Reductase test of cows' milk: mechanism of reduction. H. O. Jensen (Zentr. Bakt. Par., 1937, II, 96, 110-138).— Milk micro-organisms concerned in the reductase test are examined and a new theory of the mode of reduction is given. A. G. P.

Pentose-fermenting lactic acid bacteria. M. Iwasaki (J. Agric. Chem. Soc. Japan, 1940, 16, 979–984).—Lactobacillus pentoaceticus, var. magnus, isolated from Golocasia antiquorum and L. mannitopoeus, var. fermentus, isolated from fermented mash of Shao-hsing-chiu readily ferment xylose and arabinose; 85-96% of the former is converted into dl-lactic and acetic acids in the ratio 58-59:41-42. Neither organism liquefies gelatin or forms catalase. The optimum temp. for growth are $33-35^{\circ}$ and $31-33^{\circ}$, respectively, and for acid formation $31-33^{\circ}$ and 28° , respectively. In general hexoses and disaccharides are hydrolysed slowly, whilst mannitol and inulin are not affected by the organisms. J. N. A.

Presence of anaërobic sporing bacteria in milk in reference to its hygienic quality. W. Dührsen (Zentr. Bakt. Par., 1937, II, 96, 35–74).—In 85% of milk samples examined there occurred Bac. putrificus vertucosus, B. saccharobutyricus, B. tetanomorphus, B. amylobacter, B. sphenoides, and Pectinobacter amylophilum in decreasing order of frequency as named. Summer and winter, raw and heated milks showed no essential differences. Methods of detecting and counting the anaërobic organisms are compared; the sensitivity of the Weinzerl, the sedimentary, and the dilution methods of counting were 1:44:262. The no. of calories developing on meat extract-lactose-agar exceeded that on the corresponding glucose medium. The bromothymol-blue plate method recorded a greater no. of coliform organisms than did the McConkey medium. The total no. of facultative anaërobes in milk was of the same order as that of aërobes. A general parallelism between the nos. of aërobes, obligate anaërobes, and B. coli is established in raw but not in heated milk.

A. G. P.

Bacterium coli in milk. H. Oeser (Zentr. Bakt. Par., 1937, II, 96, 287-329).—Factors affecting, and the significance of, morphological and biochemical tests of these organisms are examined. A. G. P.

Efficacy of pseudoglobulin in Avisepticus immune serum. T. Inoue and M. Takematsu (*Rep. Inst. Sci. Res. Manchoukuo*, 1940, **4**, 243—246).—The min. lethal dose for mice of *B. avisepticus*, propagated in bouillon for 24 hr. at $p_{\rm H}$ 6.6, is approx. 2×10^{-7} c.c. The derived immune serum-protein, treated by Howe's method (A., 1922, ii, 171), yields pseudoglobulin I and II, euglobulin, and albumin, the pseudoglobulin I only having immune efficacy which is equal to that of the original serum. W. McC.

Extraction of a precipitable substance from the genus Brucella. D. O. Reiter (J. Infect. Dis., 1936, 58, 45-58).— The sp. precipitable substances of polysaccharide nature were feebly antigenic in rabbits, but only two of the three gave a protein reaction (biuret; doubtful). The sp. substance from Br. abortus, but not those from Br. melitensis and porcine strains, caused a typical anaphylactic reaction in a guinea-pig. Preps. from the three species pptd. Brucella antisera, but not heterologous sera from the Salmonella group. The differences observed in the sp. precipitable substances from the three species may be quant. rather than qual.

Сн. Авз. (р)

Serological classification of the *Brucella* group. L. Vezzie and K. F. Meyer (*J. Infect. Dis.*, 1936, **58**, 280–287).—All the smooth cultures were easily separated into two main types, corresponding with the serological "*abortus-suis*" and "*melitensis*" types; a small sub-type was observed. The results conflicted with those obtained by means of dye reactions and H_2S production in only 5.8% of the cases.

CH. ABS. (p)**Evaluation of** Brucella opsonocytophagic test. B. Wise (Amer. J. med. Sci., 1940, 200, 520-523).—The usual range of the Brucella opsonocytophagic index in normal individuals, as expressed by the index no., is 0-30. A positive index is sp. i.e., blood that is positive for Brucella does not phagocyte other organisms to any considerable degree. There is significant difference in the phagocytosis of non-encapsulated and encapsulated strains of Brucella organisms. The Brucella index is most useful in indicating contact with Brucella organisms and is the most useful single test for survey work. The index is not diagnostic of active Brucella infection and may be negative even when active infection exists.

C. J. C. B.

Toxicity of organs in experimental diphtheric intoxication. F. Semah (*Acta paediatr. Stockh.*, 1939, 27, 219—232).—Blood and tissue extracts of guinea-pigs that died after inoculation with diphtheria toxin were very toxic. The greatest toxic effect was obtained after 24 hr. incubation at 37°. Injection of these extracts into a second group of guinea-pigs caused rapid death in 62% of the animals. All showed hæmorrhagicnecrotic lesions of adrenals. The same results were obtained in a 3rd group of guinea-pigs, and also in a 4th and 5th series of animals which were treated with tissue extracts belonging to animals of the preceding group. Administration of antidiphtheritic serum showed only temporary effect and did not prevent the characteristic lesions. The toxic properties of blood and tissues of intoxicated animals are attributed to special toxic substances produced by the enzymic activity of the diphtheria toxin. This "histotoxin" is apparently produced in great amounts which cannot be neutralised by antidiphtheric serum. M. K.

C. diphtheriæ and composition of its toxin in relation to severity of diphtheria. R. A. Q. O'Meara (J. Path. Bact., 1940, 41, 317—335).—The hypertoxic type of diphtheria as it occurs in man may be reproduced in the guinea-pig by a combination of Park-Williams no. 8 toxin and bacteria-free preps. of gravis strains although either alone failed to reproduce it. Diphtheria toxin thus has two components (substances A and B) which together constitute diphtheria toxin. Park-Williams no. 8 toxin contains a high proportion of substance A relative to B whilst the toxin produced by gravis strains contains a high proportion of B relative to A. Ehrlich's phenomenon, avidity, the Danysz phenomenon, and the failure of toxin-antitoxin titrations to follow a law of multiple proportions are all capable of explanation on the hypothesis that exotoxins are composed of two antigenically distinct substances giving rise to two distinct antibodies which together endow an immune serum with its antitoxic properties.

C. J. C. B.

Antitoxin response to concentrated diphtheria toxoid applied to nasal mucous membrane. D. T. Fraser, E. L. Davey, and K. C. Halpern (*Canad. Publ. Health J.*, 1940, **31**, 376—380).—High concn. of the diphtheria toxoid was employed in experiments, and since adults were used at the outset, it was deemed prudent to prevent the possibility of the material reaching the sinuses or lungs as might happen if drops were used. Method of application of toxoid on cottom pledgets is wasteful, but it has been shown to be safe and reasonably effective. In subsequent trials one drop in each nostril will be used in children. The nasal route may be of practical val, in reinforcing or augmenting antitoxic immunity, but it is somewhat disturbing that a certain no. of persons in the series did not show an increase in antitoxin after one application. The reasons for failure must be thoroughly explored. Because a subcutaneous injection of toxoid is so very effective as a secondary stimulus, that method should not be abandoned in favour of one which looks simpler, and is less painful, but is not yet shown to be as efficacious.

C. G. W. Use of sodium thioglycollate in culturing large volumes of anaërobic bacteria. L. S. McClung (Science, 1940, 92, 340).— Addition of Na thioglycollate to the medium greatly improves the culture of *Clostridium ædematiens*, *C. welchii*, *C. septicum*, *C. ædematoides*, *C. tetani*, and *C. parabotulinum*.

Neurotoxic and circulatory effects of the toxin of Cl. welchii type D. C. H. Kellaway, E. R. Trethewie, and A. W. Turner (Austral. J. Exp. Biol., 1940, 18, 225–252).—Toxin pptd. by $(NH_4)_2SO_4$ contains two non-sp. impurities : a histamine-like constituent (which can be removed by alcohol pptn.) and a cardio-depressant constituent. The toxin causes sp. contraction of the guinea-pig jejunum. In lambs the chief clinical feature after intravenous doses of the toxin slightly greater than the m.l.d. is convulsions produced by direct action on the central nervous system, probably mainly on the basal ganglia. Death may occur by failure of respiration or by cardiac failure complicated by cedema of the lungs. In the rabbit, the clinical effects of small doses (ataxia and loss of muscular tone) are probably central in origin. In the rabbit the toxin produces bradycardia, prolongation of the P-R interval, and block. Tolerance of repeated doses of toxin was acquired by the isolated jejunum of the guinea-pig, the vessels of the hind limb, the adrenals, and the vessels of the lung of the rabbit and cat. D. M. N.

Liberation of histamine and of adenyl compounds by the toxin of Cl. welchii type D. C. H. Kellaway, E. R. Trethewie, and A. W. Turner (Austral. J. Exp. Biol., 1940, 18, 253— 264).—The toxin of Cl. welchii type D liberates histamine from the perfused lungs of the cat. Large doses were necessary; that the effect is not due to impurities was shown by the fact that over-neutralised toxin caused no histamine liberation on perfusion. The histamine liberation is probably one cause of the cedema of the lungs, often a marked symptom of Cl. welchii toxæmia; it may also contribute to the liberation of adrenaline from the adrenals in the rabbit. Perfusion of cat heart and rabbit liver with the toxin set free adenyl compounds and also an enzyme which inactivated these compounds. The bradycardia, slowed conduction, and block observed in the rabbit on injection of the toxin may be due to liberation of these compounds in the heart tissue.

Therapeutic serum and leptospiral agglutination tests. J. M. Alston (*Brit. Med. J.*, 1940, II, 256-257).—Rabbit experiments show that after 72 hr. the effect of therapeutic injection of antileptospiral serum on agglutination tests of the patient's serum can be ignored. C. A. K.

Antigenic structure of organisms of genus Listerella. J. S. Paterson (J. Path. Bact., 1940, 51, 427-436).—The flagellar and somatic antigens of 54 strains of Listerella from a variety of animals and from man are divided into four types. The two largest comprise 43 strains of animal and human origin. Ten strains isolated in Denmark from human infectious mononucleosis form a third type by themselves.

C. J. C. B. Experimental infection of chick embryo with organisms of genus Listerella. J. S. Paterson (J. Path. Bact., 1940, 51, 437—440).—Lesions developed on the chorio-allantoic membrane resembling those seen in virus infections; in the liver, heart, and central nervous system lesions occurred which closely resembled those of natural listerellosis. Infection of the nervous system appeared to be produced by way of the blood stream. C. J. C. B.

Active immunisation by intranasal route. R. P. Dow (Canad. Publ. Health J., 1940, **31**, 370—375).—The intranasal infection of mice under ether–CHCl₃ anæsthesia is advocated as a useful method of demonstrating virulence of H. pertussis strains. Mice can be actively immunised with H. pertussis antigens by the intranasal route; various antigens can be compared as to antigenic power by this means. The desirability of using the intranasal route in active immunisation of human beings is suggested. C. G. W.

Antigenic similarity of two strains of non-capsulated, methæmoglobin-producing organisms to type XXIX pneumococcuis. S. Eyre and W. D. Stovall (J. Infect. Dis., 1936, 58, 190-194).—The antigenic similarity, residing apparently in the type-sp. carbohydrate fraction, of two strains of organisms classified as *Streptococcus mitior* and type XXIX pneumococcus is demonstrated. CH. ABS. (p)

Oxidation-reduction potentials in Salmonella cultures. II. Characteristic potentials produced by members of the suipestifer and enteritidis groups. W. Burrows and E. O. Jordan (J. Infect. Dis., 1936, 58, 259-262).—The characteristic potentials of S. suipestifer, var. Kunzendorf, and S. paratyphi C are indistinguishable; that of S. sendai differs. Strains of a single type tend to attain a characteristic potential. No single metabolic or antigenic factor determines the potential level. CH. ABS. (p)

Function of nicotinic acid in the metabolism of the colontyphoid group of bacteria. I. J. Kligler and N. Grossowicz (Nature, 1940, 146, 652-653).—Further experiments with S. paratyphi A. and Shigella dysenteriæ, Shiga (A., 1938, I, \$51), show that in absence of nicotinic acid even 0.01% of glucose inhibits growth, and that in absence of a fermentable C compound minimal amounts of nicotinic acid exert an inhibitive effect on growth. Further, nicotinic acid acts only after it is converted by the cell into an activator, possibly a codehydrogenase, and by making available a simple source of energy it effects an accelerated and more abundant growth. L. S. T.

Capsulation of hæmolytic streptococci in relation to colony formation. J. E. Morison (J. Path. Bact., 1940, 51, 401– 412).—In Lancefield's group A streptococci which had not been subjected to artificial conditions to induce variation, the amount of capsular material and its persistence varied with the medium and the strain. The importance of the capsule and of its size and duration in determining mucoid colony form is illustrated and the internal structure of the young colony investigated by a method of cultivation on Cellophane. (22 photomicrographs.) C. J. C. B.

Obligately anaërobic streptococci. Resistance to heat and disinfectants. H. J. Sears and D. Vinton (J. Infect. Dis., 1936, 58, 299-305).—Under conditions leading to rapid killing of most of the bacteria, some individuals survived for long periods. CH. Abs. (ϕ)

Effect of dissociation of streptococci on their fibrinolytic and anticlotting activity. R. Tunnicliff (J. Infect. Dis., 1936, 58, 92—97).—The fibrinolytic activity of hæmolytic streptococci appears to be associated with the virulent smooth type. Smooth and rough cultures of Streptococcus mitior and of anhæmolytic streptococci do not dissolve the normal fibrin clot, but smooth cultures completely prevent its formation. The plasma clot of patients recovering from hæmolytic streptococcus infections appears to resist the lytic action of the hæmolytic streptococcus, and the plasma appears to resist the anticlotting property of greening and anhæmolytic strains of streptococcus. CH. ABS. (ϕ)

Demonstration of capsules about hæmolytic streptococci with India ink or azo-blue. E. M. Butt, C. W. Bonynge, and R. L. Joyce (*J. Infect. Dis.*, 1936, 58, 5-9).—India ink or azo-blue in 6% glucose demonstrates a large capsular zone about hæmolytic streptococci. CH. ABS. (*p*)

Stable solution of copper ammonium sulphate suitable for intravenous use. C. A. Grau (*Rev. farm., Buenos Ayres*, 1936, 78, 213–217).—A solution of $Cu(NH_3)_4SO_4,H_2O$, NH_4Cl , and Na camphorsulphonate is stable over 19 months and is suitable for use in streptococcal infections.

CH. ABS. (c) Anticomplementary action of serum and Wassermann reaction. W. Hayes and H. Sachs (*J. Path. Bact.*, 1940, 51, 455—458).—The examination of a syphilitic serum with strong anticomplementary action proved that the Wassermann reaction could be carried out on unheated serum since the anticomplementary action developed only on heating. It was also possible to perform the reaction on the heated serum by using the fluid remaining after pptg. the anticomplementary globulins with dil. HCl. Inhibition of the flocculation reactions and a distinct increase in precipitability by very dil. HCl coincided with the development of anticomplementary action on heating the serum. C. J. C. B.

Technique and mechanism of Takata reaction. F. Condorelli (*Klin. Woch.*, 1939, 18, 1296-1297). M. K. **Cause of death in tetanus.** W. M. Firor, A. Lamont, and H. B. Schumacker (*Ann. Surg.*, 1940, 111, 246—274).— Tetanus toxin injected into a non-vital area of the central nervous system causes death in doses which are not lethal when injected elsewhere in the body. It is suggested that tetanus toxin is altered in the spinal cord into a lethal agent which is absorbed and affects the vital centres, chiefly the respiratory. Tetanus antitoxin does not neutralise this lethal agent. D. S.

Effect of carbon dioxide on growth of tubercle bacillus. R. Davies (*Brit. J. exp. Path.*, 1940, **21**, 243—253).—Optimum growth was obtained in the presence of $2 \cdot 5\%$ CO₂ in equilibrium with 0.0125M-NaHCO₃ at $p_{\rm H}$ 7.4. Higher concens. of CO₂ were inhibitory. F. S.

Chemistry of lipins of tubercle bacilli. LXI. Polysaccharide of the phosphatide obtained from cell residues from the preparation of tuberculin. R. J. Anderson, R. L. Peck, and M. M. Creighton (J. Biol. Chem., 1940, 136, 211–227; cf. A., 1940, III, 613; 1938, III, 961).—Polysaccharides from two phosphatide preps. were not identical and neither yielded maninositose. The first, when freed from P, yielded inositol and a glycoside which gave approx. equal amounts of mannose and another reducing sugar on hydrolysis. The second when dephosphorylated yielded a glycoside which gave approx. equal amounts of inositol and mannose on hydrolysis, another reducing sugar being also produced. The reducing sugars (not mannose) yielded glucosazones. Org. phosphoric acids separated from the polysaccharides were similar to or identical with inositolmonophosphoric acid and glycerophosphoric acid. The yields of polysaccharide from 40 g. of phosphatide were 7.8 and 11.2 g., respectively. Both phosphatides also yielded approx. 27 g. of fatty acids per 40 g. W. McC.

Vaccination against tuberculosis with BCG vaccine. J. A. Baudouin (*Canad. Publ. Health J.*, 1940, **31**, 362–366).— Vaccination against tuberculosis by Calmette's method increases human resistance to tuberculosis for 2 or more years. Vaccination of new-born babies with BCG vaccine is safe, and should be included in any campaign directed against tuberculosis. C. G. W.

Pathological changes produced in rats and mice by a toxic fraction derived from *Bact. typhi murium.* G. R. Cameron, M. E. Delafield, and J. Wilson (*J. Path. Bact.*, 1940, **51**, 223—233).—A bacterial fraction derived from the bodies of *B. typhi murium* by tryptic digestion followed by alcohol pptn. produces, on intraperitoneal administration to mice and rats, marked congestion of the portal vessels, sometimes with haemorrhage and thrombosis, necrosis in the liver, and necrosis of the Malpighian bodies and lymphoid follicles in the spleen and lymph glands. Liver-glycogen decreases rapidly in both rats and mice and the blood-sugar in mice also diminishes. These carbohydrate disturbances are primarily hepatic in origin. (6 photomicrographs.) C. J. C. B.

Action of chloroform on flagellar agglutination H and somatic agglutination O of vibrios: serological mutation of their antigens. P. C. Basileiados (J. Egypt. Med. Assoc., 1936, 19, 247–283).—Extraction of vibrio suspensions with CHCl₃ lowers their agglutination O by sp. serum. The heat-stable antigen O is not destroyed. The agglutination Hof agglutinable vibrios is increased and that of non-agglutinating vibrios is rendered possible. Agglutinations H and Oare not influenced by addition of 0.5% phenol to suspensions. CH. ABS. (p)

Method of obtaining flagellar fraction of vibrios. P. B. White (J. Path. Bact., 1940, 51, 446-447).—Using R or ρ cultures, CHCl₃ is added to a thick saline suspension and the mixture centrifuged. The supernatant contains the flagella and these are pptd. by adding an equal vol. of saturated (NH₄)₂SO₄. C. J. C. B.

R and ρ agglutination reactions and agglutinating antigens of V. choleræ. P. B. White (J. Path. Bact., 1940, 51, 447— 449).—The major component in the somatic agglutination of R and ρ vibrios is a heat-stable antigen which, although it perhaps contains protein, is considerably resistant to proteolytic digestion. This component carries, with certain common receptors most obviously displayed in the reaction to ρ antiserum, the differential receptors of the variants and includes the polysaccharide hapten $C\beta$ or $C\delta$. It may be the R or ρ antigen proper, but the somatic agglutinating

apparatus of the variants presents other antigenic components, probably common to the R and ρ forms, which retain some antigenicity *in vivo* long after their reactivity *in vitro* has been destroyed by heat. Since they appear to be totally in activity by heat. inactivated by proteolytic enzymes they are probably of protein nature. Possibly they are combined with the proteolysis-resisting component in a single complex.

Heat-stable somatic protein antigen of V. cholerae. P. B. White (J. Path. Bact., 1940, 51, 449-451).—The technique used for extraction of this antigen is detailed.

Bacterial metabolism. CV. Effects of ozone on certain bacteria and their respective phages. CVI. "Prezone" of certain bacteriophages. A. I. Kendall and A. W. Walker (J. Infect. Dis., 1936, 58, 204-214, 215-224).-CV. The lytic and "lysogenic" phages of Staphylococcus are less scienter to Other the other the start of resistant to O3 than the corresponding phages for Esch. coli; the reverse holds for the bacteria, which are more resistant than their respective phages. Certain sol. org. substances increase the resistance of both phage and bacteria.

CIV. Lack of lysis at higher concns., shown by some phages, may be augmented by mild oxidation brought about by an alien organism in presence of NaNO2.

Сн. Авз. (р) М. Effect of bile on the bacteriophage phenomenon. M Appelbaum and M. Patterson (J. Infect. Dis., 1936, 58, 195-203).—Phage inhibition by ox or human bile is variable and in general less than that exerted by blood or serum. After intravenous injection, bacteriophage was not recovered from the bile or urine of patients without biliary infection. In rabbits injected intravenously, *coli* phage was recovered in blood and bile when *B. coli* had previously been injected; injection of both bacilli and phage is necessary. In typhoid carriers submitting to cholecystectomy, intravenously in-jected bacteriophage was recovered in the bile and gallbladder wall. In the urines of these patients, which were negative for typhoid bacilli, none of the injected phage could be recovered. Сн. Abs. (р)

Virus and vital organisation. J. Grainger (Nature, 1940, 1946, 539-541).-Evidence that suggests virus is a living organism, since it exhibits a type of independent, autonomous movement through its host, and shows further independence in its temp. relationships, is discussed. L. S. T.

Living vaccinia virus. K. B. Eisenberg-Merling (J. Path. Bact., 1940, 51, 391-400) .- Prolonged ultramicroscopical observations on vaccinia virus in the corneal cells of the rabbit confirm the existence of a life-cycle. The virus forms colonies and shows multiplication with dead cells or cell debris as a source of energy. Inoculation with material from such specimens reproduced the typical lesion, in which the virus was again demonstrated. (29 photomicrographs.)

C. J. C. B. Behaviour of vaccinia virus inoculated intranasally into mice. D. Lush (J. Path. Bact., 1940, 51, 451-454).-The Lister lapine strain of vaccinia virus (dermal) failed to multiply in the lungs in the Mill Hill strain of mice. Attempts to passage this strain by intranasal inoculation failed, and the antibody titre of the serum 21 days after inoculation was С. Ј. С. В. very low.

Virus of psittacosis. F. R. Heilman (Proc. Staff Mayo Clin., H. H. K. 1940, 15, 662-664).

Is paralysis of fowls, as manifested by iritis, transmitted through the egg? C. F. McClary and C. W. Upp (*Poultry Sci.*, 1939, 18, 210-219).—The possibility of transmission of the disease via the egg is established. Dipping eggs in aq. Cl2 did not affect hatchability. A. G. P.

Sulphur distribution in tobacco mosaic virus protein. A. F. Ross (J. Biol. Chem., 1940, 136, 119-129).—Purified virus protein contains 0.17-0.20% of S, almost all of which can be accounted for as cysteine; it does not contain methionine. P. G. M.

Action of electrolytes on solutions of tobacco mosaic virus nucleoprotein. R. J. Best (Austral. J. Exp. Biol., 1940, 18, 307-312) .- The crit. coagulation concns. of a no. of electrolytes for aq. solutions of pure tobacco mosaic virus nucleo-protein were determined at $p_{\rm H}$ 7.0 and 30°. The virus is pptd. in the form of paracryst. needles and fibres which retain their infectivity. The pptg. power of cations runs parallel with their valency; the nature of the anion has a marked effect on the pptg, power, a lyotropic series being evident. Salicylates behave anomalously and denature the D. M. N. virus

Natural immunity of venomous species and its mechanism. Phisalix (Bull. Acad. méd. Paris, 1938, 119, 464-474):--A lecture. M. K.

Change in composition of serum-protein of cattle caused by hyperimmunisation against rinderpest. M. Umezu and M. Takematsu (Rep. Inst. Sci. Res. Manchoukuo, 1940, 4, 247-259) .- In the serum-protein of bulls hyperimmunised to rinderpest, the albumin content decreases, and the total globulin content increases, during the course of hyperimmunisation. The changes in the contents of pseudoglobulin I and II are not large, but the euglobulin content increases very greatly. The albumin: globulin ratio in normal serum is approx. 1 whilst that in hyperimmunised serum is approx. 0.4. W. McC.

Theory of the structure and process of formation of antibodies. L. Pauling (J. Amer. Chem. Soc., 1940, 62, 2643-2657) .--- It is considered that only one stable configuration exists for the central part of a globulin polypeptide chain but that many configurations of approx. equal stability are possible for the ends. Antibodies differ from normal serumglobulin only in the manner in which, under the influence of the antigen, the end parts are coiled. Mechanical pictures are outlined of the way in which this influence is exerted and of typical ideal antibody-antigen ppts, and sol. compounds. The antibody contains only two active ends. Deductions from these hypotheses generally agree with experiment, particular reference being made to the heterogeneity of sera, the "bivalency" of antibodies and "multivalency" of antigens, the mol. ratio of antibody-antigen ppts., the use of a single antigen mol. as template for an antibody mol., criteria for antigenic activity, the rate of antibody production, the specificity of antibodies, and the effect of denaturants. Experiments suggested by the hypotheses are outlined.

R. S. C Antigenic relationship of shellfish. L. Tuft and G. I. Blumstein (J. Allergy, 1940, 11, 475-487).-Neutralisation by exhaustion of the passively transferred site and neutralisation in vitro suggest the existence of a common antigen in molluscs. The same procedure points to the existence of a complex mol. with several antigenic fractions in crustacea. All the fractions are present in lobster extract; crab extract does not contain either the lobster or shrimp fraction. Denaturation by heating decreased the activity of the extracts tested as judged by their skin reactions and determination of the total protein contents, but in no way altered the structure of the antigen. This work might explain positive reactions to certain fish extracts in patients who never ate them, such skin reactions being produced by a common antigen in the extract. C, J. C. B.

Substitute antigens in diagnosis of echinococcus disease. H. M. Rose and J. T. Culbertson (J. Amer. Med. Assoc., 1940, 115, 594-598).—Antigens prepared from Cysticercus pisi-formis and Tania tania formis were successfully used to produce diagnostic cutaneous reactions in cases of echinococcus disease. The reactions were greater than those obtained with hydatid fluid. C. A. K.

Cold vaccines. H. S. Diehl, A. B. Baker, and D. W. Cowan (J. Amer. Med. Assoc., 1940, 115, 593-594).—Controlled studies in 180 cold-susceptible students showed no evidence that a mixed bacterial vaccine given subcutaneously had any influence on the frequency of colds. C. A. K.

Chemistry of allergens. III. Solubility behaviour of an active protein picrate from cottonseed. J. R. Spies, H. S. Bernton, and H. Stevens (*J. Amer. Chem. Soc.*, 1940, 62, 2793-2799).—When the picrate of CS-5 (A., 1940, III, 775) is extracted with successive, equal, small amounts of a public Net scatter buffered et at 10 the 90 c of N in the aq. 0.1N-Na acetate, buffered at $p_{\rm H}$ 4.0, the % of N in the extract at first rises and then falls. Addition of pieric acid to the solvent greatly depresses the solubility, and, above a small amount, removes the max. Extraction with successive lots of aq. picric acid (two concns.) and finally with the Na acetate solution fractionates CS-5. The two first portions removed differ from the others and are not homogeneous. They contain picric acid which had been adsorbed on CS-5 and which was responsible for the max. solubility noted above. Purification of CS-5 and a later fraction is described

which gives homogeneous products not showing the max. Biological studies support the above views. Other details of the solubility results are also discussed. R.S.C.

Histaminase for allergy. H. Miller and G. Piness (J. Amer. Med. Assoc., 1940, 114, 1742-1744).—Histaminase was probably ineffective in 42 cases of different types of allergy. C. A. K.

Sensitivity of skin to bee-venom in allergic diseases. E. Traub (Acta paediatr. Stockh., 1939, 27, 177-208).--Intracutaneous tests with bee-venom produces greatly increased skin reactivity in subjects with bronchial asthma. In tuberculosis the response is proportional to the local reaction. Inhibition of the reaction to bee-venom was observed in pneumonia. Scarlet fever shows initial inhibition of the skin reaction; in several cases local disappearance of scarlatinal rash was observed. Skin reactivity was increased in catarrhal jaundice. M. K.

Rust and smut, major causes of respiratory allergy. G. L. Waldbott and M. S. Ascher (Ann. int. Med., 1940, 14, 215-G. L. 224).--Intradermal skin reactions were produced by rust and smut spores and asthmatic attacks were provoked by inhalation of the antigen in hypersensitive patients. A. S.

Fresh and modified pollen extracts. A. Stull, R. A. Cooke, W. B. Sherman, S. Hebald, and S. F. Hampton (J. Allergy, 1940, 11, 439-464) .- Fresh extracts of pollen were modified by formolisation, irradiation with ultra-violet light, heating, acetylation, and alum pptn. and were compared in clinical and experimental studies with fresh and regular extracts. The serological response in hay fever patients treated with acetylated, formolised, and heated extract was less than that in patients treated with regular, fresh, or alum-pptd. extracts. The fresh extract gave the greatest response. Modification of the pollen extracts did not eliminate constitutional reactions. The clinical results were best in the group of hay fever patients treated with fresh extract. Alum-pptd. and formolised extracts gave results comparable with those obtained with regular extract. Heated and acetylated extracts gave the least satisfactory results. The antigenic relationship of the fresh, formolised, and heated extracts was studied by means of the Dale test. The formolised and heated extracts showed a modification of specificity in that they failed to neutralise uteri of pigs sensitised with regular C. J. C. B. extract.

Extracts made from pollens ground in a ball mill. P. H. Langner, jun., and R. A. Kern (*J. Allergy*, 1940, **11**, 488–493).—On the basis of tests by the neutralisation technique, as well as skin tests with serial dilutions, it appears that the protein-N unit is a satisfactory clinical index of antigen content and consequent skin reactivity of a ragweed pollen extract, irrespective of the mode of prep. of the extract, be it from whole pollen or pollen ground at a low or at room temp. from defatted or undefatted pollen, extracted with saline or Coca's solution. C. J. C. B.

Effect of pollen contact on age of onset of hay fever. J. A. Clarke, jun., and H. C. Leopold (*J. Allergy*, 1940, 11, 494—497).—European-born sufferers require the same "incubation period" after the first contact with rag-weed pollen regardless of their age at the time of first contact.

C. J. C. B.

Oral and parenteral pollen therapy. B. B. Alperstein (J. Allergy, 1940, 11, 498-507).—The parenteral method gave a greater % of satisfactory relief as well as a smaller % of complete failures than did the oral method. The experiments with the blood and urine of patients treated orally show that pollen is absorbed through the intestinal tract, and that reagin and allergen coexist in the circulating blood at the same time at the height of treatment. C. J. C. B.

Experimental alimentary allergy and its prevention. J. Bronsfenbrenner, D. M. Hetler, F. M. Love, and J. M. Burnett (J. Allergy, 1940, **11**, 466–474).—In guinea-pigs vitamin-C has no influence on the development of sensitivity or prevention of shock, once the animal is sensitive. An animal fed on a -C-deficient diet develops alterations in the intestinal tract. An animal already sensitised parenterally will, as a result of -C deficiency, develop an increased rate of absorption or absorption capacity from the intestine; therefore it absorbs the antigen more readily and develops shock, resembling anaphylaxis produced by parenteral routes.

C. J. C. B.

Functional bowel disturbance and milk allergy; bedside diagnosis. L. Cardon (Amer, J. digest. Dis. Nutr., 1940, 7, 378-382).—Food allergy, particularly due to milk, is a common cause of functional bowel disturbance and spastic colon. N. F. M.

XXVI.-PLANT PHYSIOLOGY.

Hydrogen-ion effects and accumulation of salt by barley roots as influenced by metabolism. D. R. Hoagland and T. C. Broyer (Amer. J. Bot., 1940, 27, 173-185).—Selective absorption of ions and resulting changes in $p_{\rm H}$ of the nutrient are controlled by the metabolism of roots, their initial salt content, and the nature of the salt. Unbalanced accumulation of anions and cations in the plant induces metabolic changes which in turn effect modifications of the buffer system. of the sap such that the sap- $p_{\rm H}$ tends to remain unchanged. Org. acids are largely concerned in these adjustments. Accumulation of salt by plants probably does not depend on a $p_{\rm H}$ mechanism or on [K] or [OH] gradients between the A. G. P. vacuole and the external medium.

Variation of hydrophilic properties of root and leaves of sugar beet. E. F. Simonova (Kolloid. Shurn., 1939, 5, 749-754).—" Bound " water was determined in plants grown under different conditions. Drought increases the capacity of beet to bind water. J. J. B.

silicates. SiO₂ was essential for the ripening of rice and for the early growth and ripening of barley and wheat. A large proportion of the SiO₂ and Fe₂O₃ of rice plants was absorbed at a later stage than were N, P, K, Ca, Mg, and Mn.

CH. ABS. (p)Physiological ontogeny in the tobacco plant. IV. Drift rhystological ontogeny in the topacco plant. 1V. Drift in nitrogen content of the parts in relation to phosphorus supply and topping. Factors determining ontogenetic changes. R. Watson and A. H. K. Petrie (*Austral. J. Exp. Biol.*, 1940, 18, 313-340).—With high P supply, the abs. N content of the plant was at first greater; the % N on dry wt. basis was also at first higher. Topping generally caused a slight increase in the % N content of the parts. The main process determin-ing the more rapid increase in dry wt. of roots and stem with ing the more rapid increase in dry wt. of roots and stem with treatment is probably more rapid cell division resulting from greater available amounts of P. The increase in leaf area with topping is attributed to increased protein synthesis resulting from the greater amount of N present. Cessation of increase in leaf area is probably due to export of N to leaves higher in the acropetal series. Most of the data recorded can be explained on the assumption that export of N from organs is due to concn. gradients between them and organs more recently formed. (Cf. A., 1940, III, 546.) D. M. N.

Nitrogen nutrition and nicotine synthesis in tobacco. R. F. Dawson (*Bot. Gaz.*, 1938, **120**, 336—346).—The nicotine content of plants receiving N as NH_4^+ exceeded that of NO_3^- fed plants during the early stages of growth. This difference disappeared later, and NH_4^+ fed plants became relatively smaller in dry wt., showed toxic symptoms, and their % nicotine contents were similar to those of plants receiving NO_3 . Growth and % nicotine of plants supplied with urea was comparable with that of plants receiving half the amount of N as NH_4 . The nicotine content of leaves of elastic receiving and the second that of solution plants grown in soil consistently exceeded that of solution-cultured plants. A. G. P.

Metabolism of nicotine hydrochloride in excised tobacco shoots. R. F. Dawson (Amer. J. Bot., 1940, 27, 190-194).--Of the nicotine absorbed by the shoots three quarters was recovered as such from the tissues. In Turkish varieties dried at 80° for analysis the remaining $\frac{1}{2}$ did not appear in any N fractions. In Rosenberg plants prepared for analysis by cold water treatment the remaining 1 of the absorbed nico-tine-N was located in the "undetermined " N fraction. The metabolic products of nicotine are water-sol. and volatile. A. G. P. Nicotine-N is not utilised in protein synthesis.

Transamination in higher plants, F. Cedrangolo and G. Carandante (Boll. Soc. ital. Biol. sperim., 1940, 15, 482-484).—Enzymes catalysing the reactions *l*-aspartic + pyruvic acid \rightleftharpoons oxalacetic acid + *l*-alanine, *l*-aspartic + *a*-ketoglutaric acid \rightleftharpoons oxalacetic + *l*-glutamic acid, and a-ketoglutaric acid + l-alanine \rightleftharpoons l-glutamic + pyruvic acid occur in dialysed extracts of Graminaceæ and, to a greater extent, in those of Leguminosæ. F. O. H.

Nitrogen and carbohydrate metabolism of kidney bean cuttings as affected by treatment with indolylacetic acid. N. W. Stuart (*Bot. Gaz.*, 1938, 100, 298—311).—Immersion of cuttings of kidney bean seedlings in 0.01% aq. indolylacetic acid before planting in sand resulted in rapid swelling of hypocofls, extensive root production, and temporary suppression of top growth. These changes were accompanied by translocation of large amounts of N and carbohydrates from leaves and cotyledons towards the treated hypocofls. The responses were proportional to the length of exposure and concn. of indolylacetic acid used. At the end of the rooting period the total dry wt. of treated cuttings was slightly less than that of controls. A. G. P.

Legume nodule development in relation to available energy supply. F. E. Allison and C. A. Ludwig (J. Amer. Soc. Agron., 1939, 31, 149—158).—A crit. consideration of recently published data supports the hypothesis that nodulation is controlled by the supply of available carbohydrate rather than by the carbohydrate/N ratio. A. G. P.

Respiratory metabolism of carrot tissue. III. Drift of respiratory and fermentation in tissue slices. Respiratory quotient. IV. Oxidative anabolism. J. S. Turner (Austral. J. Exp. Biol., 1940, 18, 273—306).—III. Immediately after cutting, the respiration rate of carrot tissue slices is high (30 mg. CO₂ per 100 g, fresh wt. per hr.) and drifts downwards, reaching a val. near that for uncut carrot (5—6 mg.) in about 200 hr. The low respiration rate can be increased by adding glucose, NO_3' , or methylene-blue to the medium. The R.Q. of slices in aërated water is slightly over 1; wounding and washing have little effect on the val. In low O₂ concest. the R.Q. is much greater than 1. The anaërobic fermentation rate rises with time; on return to aërobic conditions the CO₂ output eventually returns to the normal air value.

IV. When carrot tissue is wounded by slicing, the glycolysis rate is doubled or trebled and respiration rate quintupled. When such wounded tissue is washed under aërobic conditions, the rate of glycolysis falls but rises again on treatment with glucose or nitrate. (Cf. A., 1939, III, 731.) D. M. N.

Carbon dioxide reduction with molecular hydrogen in green alge. H. Gaffron (*Amer. J. Bol.*, 1940, **27**, 273–283).— *Scenedesmus* and *Raphidium* spp. absorb and utilise H_2 , metabolites, O_2 (given in small conc..), and CO_2 being reduced. The photosynthetic quotient (H_2/CO_2) is 2 as in the purple bacteria, and the hydrogenase system acts directly on the intermediate photoperoxide without liberation of free O_2 . The rate of reduction of CO_2 is proportional to light intensity within certain limits and at const. intensity proceeds at const. rate. At high light intensities absorption of H_2 ceases and normal photosynthesis with liberation of O_2 takes place.

A. G. P. Induction period of photosynthesis and light respiration in green algæ. H. Gaffron (Amer. J. Bot., 1940, 27, 204—216). In Scenedesmus and Chlorella kept under anaërobic conditions in darkness for some hours, re-exposure to light, but not to O_2 , results in immediate resumption of photosynthesis at an abnormally high and variable level. Vals. of the assimilatory quotient diverge widely from unity during this period. Evidence is advanced for the occurrence of an oxidation reaction within the assimilatory mechanism.

A: G. P.

Photoperiodism in relation to hormones as factors in floral initiation and development. K. C. Hamner and J. Bonner (Bot. Gaz., 1938, 100, 388–431).—Floral initiation occurs in certain limiting conditions of exposure to light and dark periods. The photoperiodic receptor is the leaf in which the initiating substance is probably formed. The floral initiating substance is not identical with vitamin- B_1 , $-B_2$, or $-B_0$ ascorbic, nicotinic, or pantothenic acids, theelin, theelol, inositol, or indolylacetic acid. A. G. P.

Sexual hormones in Achyla. II. Distance reactions: conclusive evidence for a hormonal co-ordinating mechanism. J. R. Raper (Amer. J. Bot., 1940, 27, 162—173).—Activation of sexual organs in Achyla by apparent diffusion of hormonelike substances from male and female plants is demonstrated. A. G. P.

Penetration of dyes in Vicia faba. D. Pasquini (Atti. Soc. Nat. Mat. Modena, 1937, 68, 65-69; Chem. Zentr., 1938, ii, 3557).—The penetration of dyes (from 0.025% solution) into V. faba shoots has been studied. The dyes are divided into three groups which penetrate easily (acid fuchsin, trypan-red, eosin, erythrosin, methyl-green), with difficulty (methyleneblue, basic fuchsin, chrysoidin), or not at all (neutral-red, Congo-red, acid-violet, Bismarck-brown, benzoazurin). The differences are due to $p_{\rm H}$ variations, oxidation and reduction processes, reactions between the dye and the cell contents, or a sp. toxic action in some cases. A. J. E. W.

Histological responses of cabbage plants grown at different levels of nitrogen nutrition to indolylacetic acid. E. Goldberg (Bot. Gaz., 1938, 100, 347—369).—Application of 3%indolylacetic acid in lanoline to decapitated stems or to undamaged internodes of cabbage plants resulted in rapid root initiation, phloem, rays, and pith being the most responsive tissues. The reaction was less marked in plants receiving deficient than in those receiving generous supplies of N. A. G. P.

Biological action of metals on the development of plants. O. Cocorullo (*Riv. Fis., Mat. Sci. nat.*, 1938, [ii], **12**, 512— 522; *Chem. Zentr.*, 1938, ii, 3409).—*Raphanus sativus* plants grown from seed in containers of wood (controls), glass, Pb, Zn, and Cu reached lengths of 5·31, 7·80, 6·58, 4·32, and 3·36 cm., respectively. A. J. E. W.

Relative nodulation of varieties of Medicago sativa varying in susceptibility to Incerne wilt. J. T. Kroulik and P. L. Gainey (Soil Sci., 1940, 50, 135-140).--Resistance of M. sativa to infection by Rhizobium meliloti and that to Phytomonas insidiosa are unrelated. Highly infective strains of R. meliloti are relatively inefficient in fixing N. Considerable differences in the amount of N fixed occur when an individual variety of lucerne is inoculated with different strains of R. meliloti, and also when different varieties of lucerne are inoculated with the same strain of R. meliloti. A. G. P.

Bearing of decay by Phellinus cryptarum, Karst. and other fungi on destruction of wood by death-watch beetle (Xestobium rufovillosum, de G.). W. G. Campbell and S. A. Bryant (Biochem. J., 1940, 34, 1404—1414).—There is no sp. type of fungoid decay which renders oak sapwood more prone to attack by the death-watch beetle, although decayed wood is its commonest habitat, since the N requirements of Xestobium are greater than the average N content of the wood. The food of the beetle represents only a small proportion of the wood which it disintegrates, and it is reduction in the mechanical strength of wood which predisposes it to attack by the insect. P. G. M.

Geographical distribution of black soil pigment.—See A., 1941, I, 64.

Behaviour of selenium compounds in cereals.—See A., 1941, II, 28.

XXVII.-PLANT CONSTITUENTS.

Distribution of "trace" elements in biological material. A. L. S. Rao (*J. Indian Chem. Soc.*, 1940, **17**, 351–354).—A spectrophotometric analysis of several Indian cereals and green vegetables for Mn, Zn, and Mo is described. J. L. D.

Chemical investigation of Acalypha indica. Isolation of triacetonamine, a glucoside of hydrocyanic acid, and quebrachitol. C. Rimington and G. C. S. Roets (Onderstepoort J. vet. Sci., 1937, 9, 193—201; Chem. Zentr., 1938, ii, 3408).— The dried material contains $3\cdot14\%$ of oxalate, and when macerated in a buffer solution at $p_{\rm H}$ 6.0 it yields $0\cdot2682\%$ of HCN, derived from triacetonamine. The plant also affords quebrachitol. A. J. E. W.

Fatty constituents of California Valencia orange pulp (Citrus aurantium sinensis, L.). M. B. Matlack (J. Org. Chem., 1940, 5, 504—507).—Oleic, linoleic, linolenic, palmitic, and stearic acids are identified in the pulp and locular tissue of the sweet orange. A C_{28} acid probably mixed with a C_{24} acid appears to constitute the so-called "cerotic acid." Glycerol, sitosterol, a phytosterolin, and a hydrocarbon (slightly impure pentacosane) have been isolated. As in the peel, the amount of glycerol is too small to combine with all the acid present whilst the amount of phytosterol is relatively large. Probably a part of the fatty acids is combined with the sterols. The composition of the fatt of the pulp is similar to that of the peel, except that ceryl alcohol is present in the peel but not in the pulp and pentacosane in the pulp but not in the peel. H. W. Cell-wall constituents of soya bean. II. Constituents of seed coat. S. Sasaki and S. To (J. Agric. Chem. Soc. Japan, 1939, 15, 624—628; cf. A., 1939, III, 110).—The seed consists of 85—90% of embryo and 5—10% of seed coat. Data are given for the amounts of pectin, hemicelluloses, crude fibre, a^{+} , β^{-} , and γ -celluloses, crude protein, crude oil, and ash in the seed coat. The latter consists mainly of pectin and cellulose. J. N. A.

Occurrence of xylans in marine algæ. V. C. Barry and T. Dillon (*Nature*, 1940, 146, 620).—The isolation of cryst. xylose from *Rhodymenia palmata* is described. *Dilsea edulis* yields a viscous solution on treatment with dil. HCl, but pptn. with alcohol gives an ethereal sulphate similar to those already found in marine algæ, and not xylose on hydrolysis. Oxidation (HNO₃) of the sulphate yields mucic acid. L. S. T.

Lignin and related compounds. XLIX. Occurrence of the guaiacyl and syringyl groupings in ethanolysis products from various plants. A. S. MacInnes, E. West, J. L. McCarthy, and H. Hibbert (J. Amer. Chem. Soc., 1940, 62, 2803—2806; cf. A., 1939, II, 273; III, 1019; 1940, II, 348).—Ethanolysis of various plant lignins gives products similar to those previously obtained from woods. Lignin of gymnosperms (spruce, redwood, Douglas fir) contains guaiacyl groups, that of angiosperms (monocotyledons: maize stalks, rye; dicotyledons: maple, red oak, jute) contains guaiacyl and syringyl groups, but that of bamboo (a monocotyledon contains only the former. a-Ethoxypropiovanillone is formed in all cases. a-Ethoxypropiosyringone is obtained only from angiosperms (except bamboo). Red oak, maize stalks, and bamboo do not give vanilloyl methyl ketone. Red oak, maize stalks, and maple give a ketone (2:4-dinitrophenylhydrazone, m.p. 194—194-5). R. S. C.

Ultra-violet absorption spectra of lignin and related compounds.—See A., 1941, I, 27.

Substitute for edestin. H. B. Vickery, E. L. Smith, and L. S. Nolan (*Science*, 1940, 92, 317—318).—The globulin of the pumpkin seed (*Cucurbita pepo*) is suggested as a substitute for hemp-seed edestin. All commonly-available cucurbit seeds yield (10%) well-cryst. globulins when the ground seed is extracted with warm 10% NaCl in a hydraulic press, filtered, diluted to 2% NaCl, and cooled slowly to 5°. L. S. T.

Anthocyanin pigment of the Hunt muscadine grape. W. L. Brown (J. Amer. Chem. Soc., 1940, 62, 2808—2810).—Skins of ripe grapes, Vitis rotundifolia, Michx., contain, amongst other substances (including phlobaphens), muscadinin, isolated as hydrochloride, $C_{22}H_{33}O_{17}Cl$, $+2\cdot5H_2O$, sinters at 181° (corr.), m.p. 184° (decomp.), hydrolysed to glucose (2 mols.) and (?) 3'-O-methyldelphinidin. According to colour reactions and distribution ratios, muscadinin is the 3:5-diglucoside of methyldelphinidin. R. S. C.

Colloid chemistry of leaf and flower pigments. Precursors of anthocyanins. R. Robinson and G. M. Robinson (J. Amer. Chem. Soc., 1939, 61, 1605—1606).—Contrary to statements of Bancroft et al. (A., 1939, III, 110), the present authors do not envisage leucoanthocyanins as being always reduced anthocyanins nor as being the sole precursors of anthocyanins. The rôles of colloid association and co-pigments are stressed. R. S. C.

Variable colours of flower petals. G. M. Robinson (J. Amer. Chem. Soc., 1939, 61, 1606—1607).—Colours in flowers due to one anthocyanin are variable according to the concn. of anthocyanin, the ratio of this concn. to that of co-pigments (tannins or flavonols), colloid association (probably with polysaccharides), virtual change of $p_{\rm H}$ due to surface phenomena (diffusion of mobile ions), dyeing of the fibre, or crystlisation of the pigment. The pigments, $p_{\rm H}$, colour changes and their causes are noted for 11 flowers. R. S. C.

Alkaloids of Corydalis nobilis, Pers.-See A., 1941, II, 24.

XXVIII.-APPARATUS AND ANALYTICAL METHODS.

Tattoo punch for numbering rats. C. E. Keeler (*Science*, 1940, 92, 205—206).—Construction and use of a punch are described. E. R. S.

Serial planeography (serioscopy) and serial planigraphy. J. Kaufmann and H. Koster (*Radiology*, 1940, **34**, 626– 629).—A crit. analysis. E. M. J.

Simple distillation apparatus for chemical micro-methods. K. Lang (*Klin. Woch.*, 1939, **18**, 913).—The apparatus described works with a closed system without a vac. and has so far been used for the micro-determination of residual N, urea, acetone, and lactic acid. E. M. J.

Air-driven ultracentrifuge.-See A., 1941, I, 60.

Detection of intravenously injected substances (especially l-3: 4-dihydroxyphenylalanine) inside epithelial cells. Detection of reducing sugar-like substances in skin of man and animals by silver nitrate. F. Schaaf and W. Burckhardt (Arch. Dermat. Syphilis, 165, 157–173). CH. ABS. (ϕ)

Extraction of adenyl compounds from tissues. C. H. Kellaway and E. R. Trethewie (*Austral. J. Exp. Biol.*, 1940, **18**, 265—267).—The vals. obtained for the content of adenyl compounds in rabbit's liver are higher than those of Bennet and Drury owing to more complete extraction. The method of determination of adenyl compounds used by Drury, Lutwak-Mann, and Solandt was more sp. than the earlier method of Drury and Szent-Györgyi. D. M. N.

Determination of glycuronic acid and its conjugated compounds by Tollens' naphthoresorcinol test. W. Mozołowski (*Biochem. J.*, 1940, **34**, 823—828).—The modification of Maughan *et al.* (A., 1939, III, 154) is satisfactory for various derivatives of glycuronic acid provided the sample does not contain more than 0.05 mg. of the acid. The method can be applied to blood and urine if account is taken of interfering substances. J. H. B.

Determination of bilirubin in blood-serum or plasma. A. S. Giordano and D. Eager (*Amer. J. Clin. Path.*, 1936, 6, 286–292).—The Sheard-Sanford photelometer is utilised to match colours obtained in the van der Bergh method with $CoSO_4$ standards. The Ernst-Förster method is similarly applied, the colour of deproteinised serum filtrates being matched against $K_2Cr_2O_7$. CH. ABS. (p)

Volumetric determination of tea tannin in green-leaf and black tea. Alkaline permanganate method. D. N. Barua and E. A. H. Roberts (*Biochem. J.*, 1940, **34**, 1524—1531).— The Tocklai-Lowenthal and alkaline I methods are fairly accurate when applied to unoxidised tannins, but the Stamm alkaline KMnO₄ method, although more tedious, is more accurate for oxidised tannins in fermenting tea, these tannins being completely oxidised to CO₂. P. G. M.

Effect of urea and sodium chloride on the colorimetric determination of organic phosphate by King's method. J. J. Rae and E. V. Eastcott (J. Biol. Chem., 1939, 129, 255-262).—Urea or NaCl (above 0.5M.) invalidates King's method (A., 1932, 786) of determining org. phosphate. Modifications are described to overcome the difficulties. R. S. C.

Determination of phosphorus. R. J. L. Allen (*Biochem. J.*, 1940, **34**, 858-865).—The King-Fiske and Subbarow method (A., 1932, 786) of P determination has been modified to overcome certain defects, *e.g.*, variation of the extinction coeff. with time and temp. A method involving extraction of the blue compound with *iso*butyl alcohol is described for determination of P in coloured or turbid solutions. J. H. B.

Micro-manometric determination of magnesium. C. L. Hoagland (J. Biol. Chem., 1940, 136, 553-558).-Mg (0.03-0.07 mg.; e.g., in whole blood, serum, urine) in absence of Ca and protein (cf. Berg et al., A., 1930, 1546; McCrudden, A., 1911, ii, 1136) is pptd. with 8-hydroxyquinoline and the ppt. is oxidised by the Van Slyke-Folch method. W. McC.

Micro-colorimetric determination of potassium in biological material. P. W. Salit (*J. Biol. Chem.*, 1940, 136, 191–200).— Disadvantages of the procedure of Shohl and Bennett (A., 1928, 1292) are avoided by destroying org. matter (e.g., in 2 c.c. of whole human blood, 5 c.c. of twentyfold diluted urine, or 5 c.c. of suspension obtained by shaking 5 g. of faces with 100 c.c. of water) in a special Ni centrifuge ashing tube at $465\pm10^{\circ}$ in presence of red HgO or Pb₂O₃. In order to prevent occlusion by inorg, matter, K-free gelatin is added, before ignition, to materials which contain very little org. matter. The Ni tube must not come in contact with acids or strong alkalis. W. McC.