The 1943 Title Page is at the end of this number.

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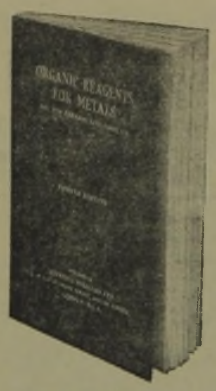

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A., III.—Physiology and Biochemistry (including Anatomy)

DECEMBER, 1943.

BIBL. POLITECHNIKI ŚLĄSKIEJ

I.—GENERAL ANATOMY AND MORPHOLOGY.

Hair direction in mammals; embryogenesis of hair follicles in guinea-pigs. E. C. Colin (*J. Morph.*, 1943, **72**, 191—223).—A study of the origin and early development of the hair follicles in both smooth- and rough-coated guinea-pigs and a survey of the literature on hair direction in mammals. It is concluded that hereditary irregularites in hair direction are caused by genetic factors which alter locally the primitive metabolic relationships and set up new gradients in particular regions and, further, that Lamarckian explanations of the irregularities, such as have been advanced by Kidd and Wood Jones, are untenable. J. D. B.

Endocranial casts and brains of living and fossil amphibia. A. S. Romer and T. Edinger (*J. comp. Neurol.*, 1942, **77**, 355—389).—A description of the endocranial casts of some living amphibia (*Necturus maculosus*, *Cryptobranchus alleghaniensis*, amd *Rana catesbiana*) and a comparison with the endocasts of the permo-carboniferous rhachitomous labyrinthodonts *Edops* and *Eryops*. It is suggested that *Edops* has not departed widely from the general early tetrapod condition. J. D. B.

Behaviour and evolution of species of blind cave fish. C. M. Breder (*Trans. New York Acad. Sci.*, 1943, [II], **5**, 168—176).—A description of *Anoptichthys jordani*, a blind and non-pigmented cave member of the family Characidæ which are a group of fishes normally largely dependent on their eyes. J. D. B.

Ciliary transport in starfish. R. A. Budington (*Biol. Bull.*, 1942, **83**, 438—450).—The external and internal ciliary tracts of *Asterias forbesi* are described. G. P. W.

Effect of various hormones on chemical and physical properties of bone. G. H. Bell and D. P. Cuthbertson (*J. Endocrinol.*, 1943, **3**, 302—309).—Rats injected with a crude pituitary extract with growth-promoting properties had larger and stronger bones than those of rats injected with thymus extract. Heavier and stronger bones were produced by œstradiol injections, longer and heavier bones by parathyroid injections, while thyroid administration produced a reduction in the mineral content of the bones. In no case was there any change in the quality (breaking stress) of the bony material. P. C. W.

Morphological and chemical analysis of ageing human costal cartilage. G. M. Hass (*Arch. Path.*, 1943, **35**, 275—284).—From infancy until the 4th decade of life the amount of chondroitinsulphuric acid in costal cartilage increases in proportion to the increase in the ratio of matrix to cell. In later life, the amount of polysaccharide decreases. Ca is deposited, diffuse yellow pigment appears, and foci of fibrillation develop. By the 8th decade, the amount of chondroitinsulphuric acid has been halved, Ca deposits are prominent, islands of tissue disintegration and osteoid matrix and bone are often present; the yellow pigment (which is neither lipin nor Fe) gives a brown tinge to all cartilage except the white densely calcified areas. The foci of fibrillation are more numerous and widely distributed. C. J. C. B.

Arthrograms of hip joints in children. E. Severin (*Surg. Gynec. Obstet.*, 1941, **72**, 601—604).—Comparison of casts made at autopsy with roentgen pictures. The extent of the cartilaginous acetabulum is determined laterally by means of the limbus horn, medially by the ligamentum transversum. The contrast medium medial to the ligamentum transversum is frequently parted into 2 prongs by the origin of the ligamentum teres. These prongs are enclosed in pouches termed by the author recessus ventralis fossa acetabuli and recessus dorsalis fossæ acetabuli. P. C. W.

Clinical observations on osteopetrosis and myelofibrosis. N. Rosenthal and L. A. Erf (*Arch. intern. Med.*, 1943, **71**, 793—813).—4 cases are described. C. J. C. B.

Synphalangism. A familial malformation. P. Freud and L. B. Slobody (*Amer. J. dis. Child.*, 1943, **65**, 550—557).—Symphalangism is a hereditary aplasia or hypoplasia of the interphalangeal joints. This malformation follows a simple dominant mendelian type of transmission. A representative family tree is described in detail and the literature reviewed. C. J. C. B.

Congenital defect in musculature of the stomach with rupture in newborn infant. P. A. Herbut (*Arch. Path.*, 1943, **36**, 91—94).—A case report. C. J. C. B.

Agenesis of lung in infant. C. T. Olcott and S. W. Dooley (*Amer. J. Dis. Child.*, 1943, **65**, 776—780).—Report of a case and review. C. J. C. B.

Omphalocele with congenital obstruction. H. J. Morrison and R. L. Neville (*Amer. J. Dis. Child.*, 1943, **65**, 781—784).—Report of a case with Meckel's diverticulum. C. J. C. B.

Diaphragmatic hernia. J. E. Bradley and C. D. J. Greiner (*Amer. J. Dis. Child.*, 1943, **66**, 143—149).—A case is reported of the rare type of true congenital diaphragmatic hernia on the right side with a portion of the liver as the only content of the hernial sac. C. J. C. B.

Cranial (combined cerebral and ventricular) volume determination. R. de Montmollin (*Schweiz. med. Wschr.*, 1942, **72**, 1038—1041).—The method is a combination of the technique of Reichardt and of Morel. A. S.

Congenital abnormalities, teratology, and embryology: evidence of primitive man's knowledge as expressed in art and lore in Oceania. I. Brodsky (*Med. J. Austral.*, 1943, I, 417—420). F. S.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Phases of maturation, fertilisation, and early development in man. W. J. Hamilton, J. Barnes, and G. M. Dodds (*J. Obstet. Gynaec.*, 1943, **50**, 241—245).—Descriptions of an unfertilised human ovum recovered from the uterine tube on the 17th day of the menstrual cycle which showed the 2nd maturation spindle; of a fertilised ovum recovered on the 16th day of the cycle; and of an early chorionic vesicle not yet completely implanted in the endometrium. The age of this embryo is calc. to be 10½ days. P. C. W.

Development of trochlear nerve in human fœtus. A. A. Pearson (*J. comp. Neurol.*, 1943, **78**, 29—43).—A detailed account of the development of the trochlear nerve and of the related nuclei of the midbrain in a large series of human embryos. J. D. B.

Functional development of fœtal brain. J. Barcroft and D. H. Barron (*J. comp. Neurol.*, 1942, **77**, 431—454).—A study of the development of respiratory movements together with righting and postural reflexes in the sheep fœtus. The respiratory movements pass through four developmental phases. In the first they are part of the general muscular movement; in the second, they are dependent on the movement of other muscles; in the third, they occur in the absence of other movements, and in the fourth they are inhibited. A study of chronic brain lesions in the fœtus shows that these four stages depend on sp. regions of the brain stem arranged serially along it from behind forwards in the lower part of the hind brain, the region of entrance of the eighth nerve and pons, and the caudal half of the midbrain. In normal development the righting and postural efforts occur in the order: tonic neck reflexes on the legs, head righting, compensatory movements of the eyes, and body righting. Evidence from fœtuses with chronic brain lesions demonstrated that the centres for the tonic neck reflexes on the limbs are in the upper cervical segments and lower medulla, for head righting in the pons, and for body righting in the midbrain. The results are considered to demonstrate that with respect to the aspects of fœtal activity studied the brain develops functionally from behind forwards. J. D. B.

Early development of motor cells and columns in spinal cord of sheep. D. H. Barron (*J. comp. Neurol.*, 1943, **78**, 1—27).—A study, on a series of sheep embryos impregnated with Ag, of the manner and order in which the motor columns of the anterior cervical and brachial segments of the spinal cord arise. Prior to the formation of the mantle layer (21 days) the neuroblasts in the medullary epithelium may be classified into three groups, the accessory cells and the ventral root cells dorsal and ventral to the root exit. These three neuroblast groups subsequently shift outward in the formation of the mantle layer to form the accessory and the ventro-median groups and the lateral mass from which later the ventrolateral and

dorsolateral groups are formed. An hypothesis is advanced relating causally the growth of dendrites from neuroblasts and the initiation of development in indifferent cells, that would provide a mechanism whereby the no. of motor neurones could be adjusted by the peripheral load. The position of the accessory cells in the medullary epithelium of early stages is advanced as evidence for the classification of the accessory nerve as viscero-motor. J. D. B.

Normal development of opossum ovary from birth to maturity and its reactions to sex hormones. C. F. Morgan (*J. Morph.*, 1943, **72**, 27—85).—The opossum gonad is indifferent at birth but has primary cords. It is detectably ovarian in 3—5 days and has intense cortical development between days 5 and 100, well developed follicles without antra from day 44 to past 100 days, and oöcyte nests between days 44 and 125 which undergo changes by degeneration and follicle formation. Ova originate in the primary cords and rhythmically from the germinal epithelium. Granulosa and thecal cells may differentiate from the stromal mesenchyme. Details are given for rete development and of the effects of androgen and œstrogen and gonadotropic hormones on the ovary, at different age periods from birth including juveniles and anœstrous adults. The adult hormones seem to play a doubtful part in gonadal development. Effects of the hormones on the mesonephros are recorded. J. D. B.

Induced triploidy in axolotls. G. Fankhauser and R. R. Humphrey (*Biol. Bull.*, 1942, **83**, 367—374).—Occasional triploids occur among untreated eggs. The proportion of triploids was greatly increased by cooling to 1—3° for 9—24 hr., followed by development at room temp. Many of the triploids were normal in size, appearance, and viability. G. P. W.

Temperature and frog development. J. A. Moore (*Biol. Bull.*, 1942, **83**, 375—388).—The eggs of *Rana catesbiana*, compared with those of other *Rana* species, have an unusually high range of temp. tolerance (from 15° to 32°), and an unusually low rate of development. These consts. are the same in eggs of individuals from New York or from Louisiana (average July temp. 18·2° and 27·7° respectively). The ecological significance of the results, and the relationship between Q_{10} and thermal adaptation, are discussed. G. P. W.

Factors affecting regeneration in *Tubularia*. J. A. Miller (*Biol. Bull.*, 1942, **83**, 416—427). G. P. W.

Crowding and cleavage rate in sea-urchin eggs. W. C. Allee, A. J. Finkel, H. R. Garner, G. Evans, and R. M. Merwin (*Biol. Bull.*, 1942, **83**, 245—259).—*Arbacia* eggs cleave more rapidly when densely crowded. A similar acceleration was produced by alcohol extracts of fertilised eggs; this was not due to echinochrome in the extracts. G. P. W.

Crowding and growth in pond snails. G. S. Forbes and H. E. Crampton (*Biol. Bull.*, 1942, **83**, 283—289).—In *Lymnea palustris*, the rate of growth, and final size attained, are decreased by crowding. G. P. W.

Structure and development of four mutant eyes in *Drosophila*. C. H. Waddington and R. W. Pilkington (*J. Genet.*, 1943, **45**, 44—50).—Facet, lozenge-spectacled, ophthalmopedia, and morula types in *D. melanogaster* are described. Secondary pigment cells are enlarged in facet, causing irregular constriction of the cone cups and bulging of the facets. In lozenge-spectacled the cells of the middle layer do not penetrate between the cells of the outer layer in early pupal life and, later, the retinulæ fail to penetrate the basal layer. In ophthalmopedia that portion of the optic disc forming the eye in the late larva is enlarged and folded abnormally, the folded portion giving rise to a palp of chitin-bearing bristles. The morula eye in structure and development resembles that of the type "split," previously described, except that the cone secretion is normal. W. F. H.

Development of some "leg genes" in *Drosophila*. C. H. Waddington (*J. Genet.*, 1943, **45**, 29—43).—Late larval and pupal development of *D. melanogaster* homozygous for the genes dachs, dachsous, four-jointed, and combgap were studied. The most marked effect of dachs and four-jointed is shortening of the legs. This is seen at the time of pupation and is due to lessening of growth during the larval period. There is also a less marked effect on the wings. Dachsous has a similar but less regular effect on the legs and a more marked effect on the wings. In combgap the legs are distorted and often enlarged. This effect is partly attributable to an overgrowth and disturbance in folding at the end of the larval period and partly to failure of pupal contraction following on mechanical difficulties produced by previous distortions. Dachsous–combgap combination produces highly abnormal legs and malformation of the shoulders. Extreme growth disturbances occur in the combinations dachsous–dachs, dachsous–four-jointed, and dachsous–four-jointed–combgap. W. F. H.

Optomotor responses of some eye mutants of *Drosophila*. H. Kalmus (*J. Genet.*, 1943, **45**, 206—213).—The semi-dominant mutant bar decreases the optomotor response by reducing visual acuity as a consequence of the increased angle between adjoining ommatidia, and by reducing the no. of ommatidia. The decrease in response goes parallel with the reduction in facet no., being best in wild-type flies. Homozygous eyeless flies with facet no. reduced to about half show a moderately decreased optomotor response. Eyeless flies (*D. subobscura*) with less than 12 facets do not show optomotor responses. The mutant bulge in *D. subobscura* does not increase visual acuity or optomotor responses. Facet anomalies due to the genes facet and echinus in *D. melanogaster*, and rough in *D. subobscura*, do not decrease optomotor responses. Slight deficiencies in eye colour have no effect on optomotor responses. W. F. H.

Effect of ionisation distribution on chromosome breakage by *X*-rays. D. G. Catcheside and D. E. Lea (*J. Genet.*, 1943, **45**, 186—196).—The results indicate that only the densely ionising "tails" of the electron tracks are effective in chromosome breakage, and that "tails" have a higher efficiency only where they traverse the chromatid. The probability of survival of chromatid breaks is the same in the pollen-tube nucleus as in the pollen-grain nucleus (*Tradescantia bracteata*). The two chromatids of a chromosome are in contact 24 hr. before metaphase in the pollen-grain nucleus, and they are slightly separated 15 hr. before metaphase in the pollen-tube nucleus. The probability of interchange in the pollen-tube nucleus is reduced by the different method of packing of the chromosomes in a long cylindrical nucleus as compared with the spherical one of the pollen grain. W. F. H.

Cytogenesis of exo- and endo-crine pancreas in chick embryo.—See A., 1943, III, 813.

Choroideremia as inherited condition.—See A., 1943, III, 803.

III.—PHYSICAL ANTHROPOLOGY.

Physical development of negroes. I. Stature. N. Michelson (*Amer. J. phys. Anthrop.*, 1943, [ii], **1**, 191—213).—Negro infants under special dietary showed an increase in stature as compared with corresponding age groups studied 2 decades prior. It is suggested that the increase found is due to environmental factors. In spite of the increase in stature, negro children are smaller than the corresponding age groups of whites of the same generation. It is considered probable that the lack of increase in adult structure of the negro may be due to the want of long-standing environmental improvements. A correlation between rhythm of growth and the onset of puberty in negro females is in conformity with a similar observation made on whites. W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Serous cells in hypophysis. J. L. de Faria (*Rev. Brasil. Biol.*, 1942, **2**, 281—283).—Glandular acini of serous cells were found in a human hypophysis between the posterior lobe and the pars intermedia. I. C.

Lipofuscin distribution in basal ganglia. R. Altschul (*J. comp. Neurol.*, 1943, **78**, 45—57).—The distribution of lipofuscin, as determined by various staining methods, is described for the different elements of the basal ganglia of the human brain and the accuracy of the view that lipofuscin is merely a waste product is questioned. J. D. B.

Venom glands of *Latrodectus mactans* and *geometricus*. J. Porto (*Rev. Soc. argent. Biol.*, 1942, **18**, 346—350).—The poison glands, which are described, are of the merocrine type. I. C.

Rôle of humoral antagonism in heteroplastic transplantation in mammals. M. Harris (*J. exp. Zool.*, 1943, **93**, 131—145).—By tissue culture methods it was shown that serum from rats repeatedly inoculated with a pure strain mouse sarcoma contains factors cytotoxic to cultures of the tumour cells. The cytotoxins are species-sp., directed against all mouse cells, regardless of type. No evidence was found for the existence of cytotoxins sp. for the type of tissue used to produce the serum, or for the strain of mice corresponding to this tissue. Additional evidence indicates that the cytotoxins, while active against heterografts, apparently do not appear in homoplastic transplantation. It is suggested that the cytotoxins are typical antibodies to the extent that they are evoked from the host only when proteins in the cells of the graft are sufficiently foreign to act as antigens. J. D. B.

Quadruple staining method for tissues. S. S. Kalter (*J. Lab. clin. Med.*, 1943, **28**, 995—997). C. J. C. B

Application of freezing-drying technique to retinal biochemistry.—See A., 1943, III, 802.

New method for demonstration of acid-fast organisms in tissue sections. A. A. Krajian (*Amer. J. clin. Path. Tech. Sect.*, 1943, **7**, 45—48).—Frozen sections (7—10 μ.) are transferred to a glass slide, dehydrated, dipped in celloidin and dried, washed in tap water, placed on warming table, and after applying carbol-fuchsin, steamed gently for 3 min. The staining solution is discarded, and the specimens are washed with tap water and arsenic acid–alcohol

applied (1 g. of arsenic acid in 100 c.c. of 60% alcohol) until most of the red colour is removed, then washed in tap water and Loeffler's methylene-blue solution applied for 2 min., washed, and dehydrated with abs. alcohol. "Iso-cresote" (equal parts of abs. alcohol and beechwood cresote) is now applied to remove the excess blue stain from tissue and organisms, followed by blotting, clearing in xylene, and mounting in gum dammar. For paraffin sections, the paraffin is removed with xylene and the xylene with abs. alcohol. C. J. C. B.

Silver staining of nerve axons in paraffin sections. W. Holmes (*Anat. Rec.*, 1943, **86**, 157—187).—Nerve axons in paraffin sections can be stained with $AgNO_3$, provided that the solution is very dil. and buffered to slight alkalinity. Material fixed in an alcohol–formol–acetic acid mixture was stained with 1 in 10,000 $AgNO_3$ at pH 7·8—8·0. By varying the concn. of the Ag solution and its pH the stain can be controlled and adapted to different tissues and different purposes. Variables in fixation and embedding which affect the success of axon stains are discussed. Specificity of the stain is determined during impregnation by the effect of the pH of the solution on the formation of nuclei of reduced Ag in the sections. With subsequent reduction more Ag is deposited in relation to these nuclei. The conditions in the reducing solution do not affect the specificity of the stain. W. F. H.

Significance of streaming in the formation of connective tissue fibres. Permeability of the intestinal epithelium and the tubular epithelium of the kidney.—See A., 1943, III, 657.

V.—BLOOD AND LYMPH.

Blood. F. H. Bethell, C. C. Sturgis, R. A. Hettig, and O. T. Mallery, jun. (*Arch. intern. Med.*, 1943, **72**, 115—134, 260—299).—A review of recent literature. C. J. C. B.

Studies on bone marrow *in vitro*. Cellular pattern and behaviour of explanted bone marrow. M. Rachmilewitz and A. Rosin (*Amer. J. med. Sci.*, 1943, **206**, 17—25).—A method is described which enables bone marrow fragments to survive *in vitro* for a certain period of time with preservation of its sp. organ properties. Maturation and multiplication of white and red cells were observed; maturation of polymorphs *in vitro* was proved by differential cell counts. The period of functional activity of the explanted bone marrow is followed by loss of cellularity and fibroblastic proliferation. (8 photomicrographs.) C. J. C. B.

Biopsy of bone marrow performed by simple instrument. H. Turkel and F. H. Bethell (*J. Lab. clin. Med.*, 1943, **28**, 1246—1251).—An instrument is described which enables a small specimen of marrow to be obtained by trephine without a skin incision. C. J. C. B.

Undescribed type of erythropoiesis observed in human sternal marrow. L. R. Limarzi and S. A. Levinson (*Arch. Path.*, 1943, **36**, 127—143).—The sternal bone marrow of a man of 77 with prostatic obstruction and abscess showed numerous giant erythroblasts. They developed: (*a*) by a series of mitotic divisions of the nucleus without cytoplasmic separation forming a multinucleated cell which split to form erythroblasts which matured to erythrocytes; (*b*) by folding, indentation, lobulation, and constriction of the original single nucleus several independent erythroblast nuclei were produced; (*c*) by amitosis without cytoplasmic division multinucleated normoblastic cells or large tortuous polymorphic nuclei were formed. Some of the latter cells were seen in the process of cytoplasmic fragmentation with or without portions of the nucleus; others formed non-nucleated corpuscles as large as 23—27 μ. diameter by extrusion of the large multilobulated nuclei. Fragmentation of the large red cells occurred in the marrow. (30 photomicrographs.) C. J. C. B.

Changes induced by anæmia in bone-marrow lipins of cats. R. F. Krause (*J. Biol. Chem.*, 1943, **149**, 395—404).—A decrease in total lipin, due to a reduction in neutral fat, and increases in phospholipin, free fatty acid, cholesterol, and cholesterol-free non-saponifiable fractions are observed. No variation occurs in the ratio of free to combined cholesterol, of phospholipin to cholesterol, or of the molar concn. of choline to that of P. No change in I val. or mean mol. wt. of the fatty acids occurs and an inverse relationship between the water and lipin contents of the marrow is observed. Lipæmia after acute hæmorrhage is probably due to transport of lipins to and from the marrow. H. G. R.

Determination of hæmatocrit values in wound shock. M. Reiss (*Brit. Med. J.*, 1943, II, 328—329).—A special centrifuge is described for the quick determination of the hæmatocrit val. in several samples simultaneously. I. C.

Influence of lysolecithin and of incubation on shape, size, and fragility of erythrocytes. W. A. Gillespie (*Quart. J. Exp. Physiol.*, 1943, **32**, 113—120).—Lysolecithin (prepared by the action of cobra venom on lecithin) added to human blood does not increase red cell fragility in hypotonic NaCl solutions although the cells become spherical. Lysolecithin diminishes the fragility of washed cells. The spherical cells produced by lysolecithin differ from the spherocytes of congenital hæmolytic anæmia. After intravenous injection of lysolecithin into a rabbit the red cell fragility is increased for a longer period than the spherocytosis. Plasma constituents, partly alcohol-sol. components but mainly proteins, inhibit the hæmolysis caused by lysolecithin. Complete hæmolysis was observed in fresh oxalated blood by lysolecithin 1 : 300 while a washed red cell suspension was hæmolysed by a concn. of 1 : 1200. The inhibiting action of normal serum was slightly diminished by heating to 100°, while that of lipin-free serum was markedly diminished by heating. A. S.

Pathogenetic mechanisms in hæmolytic anæmias. W. Dameshek and E. B. Miller (*Arch. intern. Med.*, 1943, **72**, 1—17).—The effects on red cells of simple lysins, saponin complex hæmolysins, colloidal silicic acid, and immune hæmolytic serum and agglutinins (concanavalin *A*) were studied in relation to stasis, temporary mechanical trauma, and complement activity. Simple lysins act directly on the red cells, producing either complete hæmolysis or spherocytosis + incomplete hæmolysis. Complex hæmolysins and agglutinins produce sensitisation (actually agglutination) by means of amboceptor and then hæmolysis by means of complement activity or mechanical trauma (shaking with glass beads). C. J. C. B.

Blood volume in chronic anæmia. J. McMichael, E. P. Sharpey-Schafer, P. L. Mollison, and J. M. Vaughan (*Lancet*, 1943, **244**, 637—640).—The total blood vol. was calc. in 22 cases of chronic anæmia by the conc.-corpuscle hæmoglobin method. In some cases, even with normal systolic blood pressure, the blood vol. was markedly reduced, *e.g.*, to 2 l. Simultaneous determinations of blood vol. by the above method, by the conc.-corpuscle–differential-agglutination method, and by the dye method showed close agreement. C. A. K.

Hypochromic anæmia and vitamin-*B* deficiency. C. V. Moore, V. Minnich, R. W. Vilter, and T. D. Spies (*J. Amer. Med. Assoc.*, 1943, **121**, 245—250).—32 patients with hypochromic anæmia also had nicotinic acid deficiency, ariboflavinosis, or peripheral neuritis. Fe therapy alone produced satisfactory reticulocyte response and hæmoglobin regeneration. The addition of brewer's yeast did not enhance the efficacy of Fe administration. C. A. K.

Nutritional iron deficiency anæmia in wartime. II. L. S. P. Davidson, G. M. M. Donaldson, S. T. Lindsay, and J. G. McSorley (*Brit. Med. J.*, 1943, II, 95—97).—Standards of normality of hæmoglobin levels for individuals according to age and sex are discussed and defined, and arbitrary levels below which "clinical anæmia" is said to exist are fixed. "Clinical anæmia" was found in 39% of municipal primary-school children, 5% of private-school children, 12% of adolescent females, 7% of adult females, 24% of pregnant women, and less than 1% of adolescent and adult males. I. C.

Liver deficiency anæmia in case of acute infective hepatitis. J. N. Hill and W. Hausmann (*Brit. Med. J.*, 1943, II, 262—263).—Case report. I. C.

Anæmia in hernia at œsophageal hiatus. W. P. Mulphy and M. W. E. Hay (*Arch. intern. Med.*, 1943, **72**, 58—68).—Anæmia is commonly associated with hiatal hernia; it is usually hypochromic and the result of hæmorrhage arising from ulceration or congestion of the œsophageal or gastric mucosa. C. J. C. B.

Influence of antacids on iron retention by anæmic rat. S. Freeman and A. C. Ivy (*Amer. J. Physiol*, 1942, **137**, 706—709).—$CaCO_3$ and $Al(OH)_3$ reduce Fe retention in the anæmic rat ingesting 0·25 mg. of Fe daily. Mg trisilicate had no effect. Al phosphate did not reduce Fe retention. M. W. G.

Atypical pernicious anæmia of young adults. S. O. Schwartz and H. Legere (*Amer. J. med. Sci.*, 1943, **206**, 1—10).—9 women under 35 years of age with achylia gastrica, typical blood and bone-marrow changes, and sp. response to liver therapy showed wt. loss, fever, jaundice, anæmia, heart murmurs, and hepatomegaly or splenomegaly or both. In none was the diagnosis of pernicious anæmia made until several other diseases had been considered and ruled out. C. J. C. B.

Ineffectiveness of adrenal cortical extracts in standardised hæmorrhagic shock.—See A., 1943, III, 807.

Vitamins and hæmorrhagic states. Effect of vitamin-*K* in new-born infants.—See A., 1943, III, 826.

Production of experimental polycythæmia by adrenaline or posterior pituitary extract. J. E. Davis (*Amer. J. Physiol.*, 1942, **137**, 699—702).—The daily subcutaneous injections of posterior pituitary into normal and splenectomised rabbits (0·5—2·0 units) and to normal dogs (5—10 units) or of adrenaline into normal and splenectomised dogs (0·5—1·5 mg.) and rabbits (0·1—0·3 mg.) increased the erythrocyte count within 9—18 days after injection. It is assumed that this increased erythropoiesis is induced by a local hypoxia of bone marrow. T. F. D.

Polycythæmia with subsequent anæmia. F. Ziady (*Clin. Proc.*, 1943, **2**, 130—132).—A case is reported and discussed. P. C. W.

Phosphate, base, and hæmolysis in stored blood. M. Maizels (*Quart. J. Exp. Physiol.*, 1943, **32**, 143—181).—During the storage of human blood the red cells lose K and gain Na; the total Na + K rises. These changes produce swelling of the cell and increased fragility. The red cell membrane breaks down and spontaneous hæmolysis ensues. Phosphoric esters are hydrolysed; both the easily and not easily hydrolysable fractions of org. phosphate decrease while inorg. PO_4''' increases. Addition of glucose delays most of these changes, including the org. phosphate breakdown. Acids delay hæmolysis, preserve hydrolysable phosphate, but accelerate the breakdown of other org. phosphates; they also delay cation exchange across the cell membrane. Preservatives have different and uncorrelated effects in delaying or accelerating these physical and chemical changes; these latter cannot be used to determine the val. of a substance as a preservative as there is no correlation between them and criteria for cell survival after transfusion. However, rapid spontaneous hæmolysis *in vitro* is associated with poor survival of the remaining unhæmolysed cells after transfusion. Polysaccharides prevent hæmolysis *in vitro* but dextrin does not increase survival after transfusion. Diluents causing rapid disappearance of hydrolysable phosphate are associated with poor survival *in vivo* although persistence of phosphate in stored cells is not necessarily associated with good *in vivo* survival. Citrate adds to the plasma a large amount of non-penetrating anion which tends to limit the swelling of the cells; it also increases the cation concn. and acidity of the plasma, which then exceed those in the cells. Penetration of phosphate from without at 2° takes place much more readily than passage in the reverse direction. There was no correlation at 2° between the rate of hydrolysis of phosphoric esters in stored cells and the speed with which K escapes from the cells. A. S.

Technique of blood tranfusion and intravenous drip transfusion in babies and small infants. M. Esser (*Schweiz. med. Wschr.*, 1943, **72**, 1438—1440). A. S.

Survival of transfused erythrocytes in familial hæmolytic anæmia. J. V. Dacie and P. L. Mollison (*Lancet*, 1943, **244**, 550—552).—Blood from normal donors was given to 6 patients with familial hæmolytic anæmia (acholuric jaundice). In 5 the erythrocytes survived as long as in normal subjects (up to 100—120 days), in 1 case for 60 days (*Rh*-negative individual). Red cells from one of the above cases were destroyed in 14 days before splenectomy and in 19 days after splenectomy, when transfused into normal subjects. The abnormality in this disease resides in the erythrocytes. C. A. K.

Hæmolysins in acute hæmolytic anæmia. H. G. Poncher, H. F. Weir, and I. Davidson (*J. Pediat.*, 1943, **22**, 387—395).—A case of acquired hæmolytic anæmia with normal fragility and marked reticulocytosis is described which did not benefit from splenectomy. The patient's serum contained cold agglutinins of a wide thermal range (0—22°). C. J. C. B.

Lytic agent in human tissue and sera. G. B. Macgraith, G. M. Findlay, and N. H. Martin (*Lancet*, 1943, **244**, 573—575).—Lung, spleen, and liver of man, monkey, or guinea-pig contain a lytic agent for saline suspensions of washed red cells. Human sera inhibit this lysis. The inhibitory activity of serum is reduced in cases of blackwater fever during hæmolytic crises. C. A. K.

Precipitation in stored human serum. P. M. de Burgh and R. N. Lyons (*Med. J. Austral.*, 1943, I, 298—299).—The ppt. consists mainly of altered fibrinogen and can be avoided by removing the fibrinogen from the plasma as completely as possible. Addition of $CaCl_2$ immediately after the plasma is separated should completely remove the fibrinogen since, at that time, the thromboplastin content will be at its highest level and the fibrinogen will not have undergone degenerative changes. F. S.

Method and apparatus for shell freezing and rapid drying of plasma and other products from frozen state by low-temperature water vapour condensation *in vacuo*. M. M. Struma and J. J. McGraw (*J. Lab. clin. Med.*, 1943, **28**, 1140—1155).—The advantages of the apparatus described are: that both pre-freezing in shell from and drying from the frozen state are accomplished by employing the same economical source of low temp.; the apparatus is very simple in operation and almost entirely automatic; the time of drying is considerably shorter than that obtained with other methods and the total cost of operation per unit is very small. C. J. C. B.

Tonicity in glucose–sodium citrate solutions. P. W. Gill (*Med. J. Austral.*, 1943, I, 573—577).—A 2·6% solution of Na H_2 citrate is isotonic with blood. The addition of glucose to blood–citrate mixture delays hæmolysis by enabling the erythrocytes to withstand greater degrees of swelling. F. S.

Hæmolytic disease of newborn (erythroblastosis fœtalis) and its treatment with *Rh*-negative blood. J. D. Gimson (*Brit. Med. J.*, 1943, II, 293—297).—19 consecutive cases of hæmolytic disease of the newborn were treated and investigated with reference to the isoimmunisation theory of causation. 18 of these were transfused Clinical comparison has been attempted between the effectiveness of *Rh*-negative blood free from agglutinins and *Rh*-positive blood. All these patients regained a normal blood picture with at most two *Rh*-negative transfusions. I. C.

***Rh* antibodies in breast milk.** E. Witebsky and A. Heide (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 280—281).—In 2 cases of mothers of children with fatal erythroblastosis, the *Rh* antibody titre of milk in one case was 1 : 16 on the 5th day, when serum gave 1 : 256. In the other case both serum and colostrum gave a titre of 1 : 8 a few hr. after parturition. V. J. W.

Rapid method for obtaining anti-*Rh* serum from guinea-pigs. B. C. McIvor and S. P. Lucia (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 293—294).—Adult guinea-pigs are given 5 intraperitoneal injections of *Rh* red cells at 48-hr. intervals increasing from 1 to 3 c.c. of washed cells. Serum can be obtained on the 2nd day after the last inoculation. V. J. W.

***Rh* factor and its application to obstetric practice.** G. S. Adam (*Med. J. Austral.*, 1943, I, 507—509).—A review. F. S.

Occurrence of *Rh* antigen in the population. E. D. Hoare (*Brit. Med. J.*, 1943, II, 297—298).—84·6% of 1122 subjects were *Rh*-positive and 15·4% *Rh*-negative. 5 cases of erythroblastosis fœtalis are recorded in which fathers and children were *Rh*-positive and mothers *Rh*-negative. I. C.

Determination of blood groups. (*Med. Res. Counc., War Memo. No.* 8, 1943, 19 pp.).—The principles of diagnosis of the *ABO* groups and sub-groups and the *Rh* factor are given. The techniques recommended for grouping and for *Rh* factor tests and the difficulties and sources of error in these techniques are fully explained. The accuracy of the tube method as against the tile method for grouping is emphasised. C. J. C. B.

Rapid method for cross-matching of blood of donor and recipient. C. B. Hudson (*Med. J. Austral.*, 1943, I, 362—363).—Hæmolysed blood is used instead of the recipient's serum or plasma. The blood is hæmolysed by being frozen with ethyl chloride and subsequently thawed. In cross-matching tests with compatible and incompatible erythrocytes there were no discrepancies between the reactions with hæmolysed blood and plasma from 400 subjects. F. S.

Physiological factor in hæmoglobinometry. E. F. McCarthy (*Brit. Med. J.*, 1943, II, 362).—Hæmoglobin in the blood of normal men is subject to a diurnal variation which averages 7% in terms of the Haldane hæmoglobinometer scale. I. C.

Simple, inexpensive, photoelectric hæmoglobinometer. G. H. Bell and E. Guthmann (*J. Sci. Instr.*, 1943, **20**, 145—146).—A simple colorimeter is described which is not affected by variations in the light source or photo-cell characteristics. Its calibration as a hæmoglobinometer is described. A. J. M.

Idiopathic hæmoglobinæmia in cattle. H. C. Smith (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 352—258).—A description of an idiopathic hæmoglobinæmia occurring in cattle in Oklahoma and different from types described in other parts of the U.S.A. E. G. W.

Case of eosinophilic leukæmia. F. Fenner (*Med. J. Austral.*, 1943, II, 7—8).—Gross eosinophilia in a male, age 19, was associated with asthma, enlarged spleen, and no evidence of metazoan infestation. F. S.

Lymphatic participation in cutaneous phenomena. P. D. McMaster (*Harvey Lect.*, 1941—42, *Ser.* 37, 227—268). E. M. J.

Leucotoxic action of benzene.—See A., 1943, III, 835.

Adenylic acid in treatment of agranulocytosis and mucous membrane lesions. S. L. Ruskin (*Amer. J. digest. Dis.*, 1943, **10**, 81—88).—A review of the biochemistry of nucleic acid with special reference to pentose-nucleotide therapy. There are 5 case reports. N. F. M.

Complement in serum of monkeys during infection with *Plasmodium knowlesi*. A. N. Roy and S. Mukerjee (*Ann. Biochem. Exp. Med.*, 1942, **2**, 245—250).—There was a sharp fall in complement in the serum of monkeys during the latter part of acute infection of *P. knowlesi*. P. C. W.

Spontaneous rupture of normal spleen. O. A. Brines (*Arch. Path.*, 1943, **36**, 163—166).—Report of a case and review. C. J. C. B.

Idiopathic hypoprothrombinæmia. A. S. Giordano (*Amer. J. clin. Path.*, 1943, **13**, 285—287).—A family with idiopathic hypoprothrombinæmia is recorded. Vitamin-*K* was without effect. C. J. C. B.

Effect of *p*-dimethylaminoazobenzene on the formation of blood-proteins.—See A., 1943, III, 818.

Incidence and causes of hyperproteinæmia. L. Cardon, D. H. Atlas, M. J. Brunner, E. Aron, and S. L. Teitelman (*Arch. intern. Med.*, 1943, **71**, 377—390).—54 patients with total serum-protein (by the falling-drop method) above 8·5 g.-% were found in the random examination of 4370 sera. Hyperproteinæmia was most frequently associated with hepatic diseases, lymphogranuloma venereum, in certain acute and chronic infections, and extreme dehydration. The Takata–Ara and the formaldehyde-gel tests are

almost invariably positive in hyperproteinæmia and hyperglobulinæmia. The sedimentation rate is increased to extreme degrees in hyperproteinæmia, but no linear correlation exists between total protein or globulin concn. and the rate. No correlation between particular histopathological changes and hyperproteinæmia were demonstrated. C. J. C. B.

Plasma-protein values in infants. E. M. Hickmans, E. Finch, and E. Tonks (*Arch. Dis. Childh.*, 1943, **18**, 96—97).—Premature infants particularly, and normal full-term infants up to 2—3 weeks, have lower plasma-protein vals. than infants from 3 weeks to 1 year. In infants over 3 weeks old, the vals. resemble those from normal adults. C. J. C. B.

Nephelometric method of characterising serum-proteins in heat coagula. C. Wunderly (*Kolloid-Z.*, 1940, **93**, 318—323).—A nephelometric method based on Weltmann's coagulation of serum by heat, which enables very small changes in the colloidal structure of serum to be detected, is described. The effect of NaCl on the coagulation of serum is capable of accurate measurement, and serves as a basis for the determination of NaCl in serum. The effect of concn. of protein was determined at four different dilutions. The protein error was calc. from the ratio of the intensity of scattered light to protein concn. The method can be used to determine the suitability of various buffers for special purposes in protein chemistry. A. J. M.

Effect of plasma-proteins on sedimentation rate of human blood. C. M. Gordon and J. R. Wardley (*Biochem. J.*, 1943, **37**, 393—397).—Nine fractions of normal plasma give different vals. for the sedimentation rate of a 20% vol. of erythrocytes in 3% protein solution during 1 hr., *e.g.*, 100 mm. for fibrinogen and 1·5 mm. for total albumin. Artificial mixtures of these fractions corresponding to pathological plasmas have sedimentation rates similar to those of the natural material. It is concluded that the sedimentation rate is controlled by the inhibition of one fraction by another, and not by the abs. concn. of the constituent proteins. P. G. M.

Influence of heat-treatment on solutions of crystalline horse serum-albumin.—See A., 1943, I, 277.

Protein hydrolysate in regeneration of serum-protein in the hypoproteinæmic rat. D. B. Sabine and H. R. Schmidt (*J. Lab. clin. Med.*, 1943, **28**, 1117—1120).—Rats rendered hypoproteinæmic by dietary restriction recovered on a normal diet, or on the defective diet + hydrolysed protein. C. J. C. B.

Serum-proteins in health and disease. J. P. Peters (*J. Mt. Sinai Hosp.*, 1942, **9**, 127—141).—A review. E. M. J.

Early postoperative reduction of prothrombin in jaundiced and biliary fistula patient with special reference to anæsthesia. J. G. Allen and H. Livingstone (*Anesthesiology*, 1940, **1**, 89—93).—In patients with normal pre-operative prothrombin levels there was no post-operative fall. In patients with prothrombin deficiency before operation which was abolished by administration of methylnaphthaquinone there was a post-operative fall. This fall is attributed to deficiency in vitamin-*K* reserves and not to the operative or anæsthetic procedures. P. C. W.

Extensive generalised thrombo-phlebitis following eclampsia and Cæsarean section [use of heparin]. E. W. Boland and H. M. Rooney (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 356—360).—A case is described with recovery following continuous intravenous injection of heparin for 14 days. P. C. W.

Association of cirrhosis, [splenic anæmia,] thrombopenia, and hæmorrhagic tendency. C. G. Morlock and B. E. Hall (*Arch. intern. Med.*, 1943, **72**, 69—77).—In 80 cases of hepatic cirrhosis thrombopenia was found in 14. Though a hæmorrhagic tendency often occurred regardless of the level of the blood platelets, it was twice as frequent when thrombopenia was associated; in 2 of 14 cases of cirrhosis + thrombopenia no bleeding occurred. In 50 cases of splenic anæmia thrombopenia was commoner than in cirrhosis, and the incidence of bleeding was increased correspondingly especially in cases with low platelet count. C. J. C. B.

Heparin in mesenteric venous thrombosis. J. C. Luke (*Lancet*, 1943, **244**, 552—553).—Successful case report. C. A. K.

Dicumarol [3 : 3′-methylenebis-(4-hydroxycoumarin)] in rats with impaired liver or kidney function. R. K. Richards and R. F. Steggerda (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 358—360).—Daily injections of 0·2—0·5 c.c. of CCl_4 per kg. or removal of both kidneys in rats greatly increased the effect of 2·5 mg. of Dicumarol on prothrombin determined by method of Campbell *et al.* (A., 1941, III, 600). V. J. W.

Surface films formed by plasma and serum of patients with chronic arthritis. C. W. Scull and R. Pemberton (*J. Lab. clin. Med.*, 1943, **28**, 1070—1079).—A semiquant. technique for the production and study of films on the surface of water from small amounts (1 cu. mm.) of blood serum and plasma is described. 1 cu. mm. of normal plasma produced films with areas of 550 sq. cm., whereas the same quantity of plasma from certain severely ill atrophic arthritic patients produced films ranging from 150 to 450 sq. cm. Films produced by plasma from less acutely ill arthritic subjects attained more nearly normal areas. C. J. C. B.

Blood-vitamin-*C* content of pregnant women. W. Neuweiler (*Schweiz. med. Wschr.*, 1942, **72**, 1408—1410; cf. A., 1941, III, 418).—The average blood-ascorbic acid vals. (method of van Eekelen and Emmerie) during the winter of 1937—38 were 0·91 in non-pregnant, 0·73 in pregnant and 0·65 mg.-% in puerperal women; the corresponding vals. in the summer of 1942 were 0·55, 0·46, and 0·36. The vitamin-*C* concn. in breast milk was not lower in 1942 than pre-war. A. S.

Serum-cholesterol level in coronary arteriosclerosis. A. Steiner and B. Domanski (*Arch. intern. Med.*, 1943, **71**, 397—402).—The average serum-cholesterol vals. for individual patients with coronary arteriosclerosis varied from 308 to 499 mg.-%; in controls it was 214—334 mg. In coronary arteriosclerosis the serum vals. had a S.D. of 15·8—38·8, in the control group 3·2—17·5. C. J. C. B.

Blood-histamine in gastric cancer and peptic ulcer. M. B. Shimkin, L. Zon, and C. W. Crigler (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 335—338).—Blood-histamine is normal in both these conditions. V. J. W.

Determination of thiamin in blood. T. E. Friedemann and T. C. Kmieciak (*J. Lab. clin. Med.*, 1943, **28**, 1262—1267).—A modification of Jansen's thiochrome method is described. The blood of 36 human subjects in good health and receiving an adequate diet contained 3·0—11·2 μg.-% (average 5·70). C. J. C. B.

Serum-phosphatase values in children showing retardation in osseous development and low metabolic rates. A. M. Hill and J. E. Webber (*J. Pediat.*, 1943, **22**, 325—328).—20 of 23 children, with marked osseous retardation or low metabolic rates, had serum-phosphatase vals. of 5·6 Bodansky units or less. C. J. C. B.

Blood-amylase [determination]. D. Polowe (*Amer. J. clin. Path.*, 1943, **13**, 288—301).—The subject is reviewed and a simple method of amylase determination described. 0·5 c.c. of plasma or serum is added to 4·5 c.c. of a 3% sol. starch solution, incubated for 30 min. at 37·5°, 0·5 c.c. of this mixture is added to 4·5 c.c. of Benedict's qual. Cu solution, and the whole boiled for 5 min. and centrifuged. A normal control is run in similar fashion and the Cu_2O ppt. which forms as a ring or button (bright orange) is compared in amount with the unknown. C. J. C. B.

Determination of blood-sugar in general practice. P. Jucker (*Schweiz. med. Wschr.*, 1942, **72**, 1281—1283).—Small test-tubes are filled with 0·5 c.c. of a mixture containing NaF 2%, $HgCl_2$ 0·1%, and Na citrate 0·4% and dried. 0·5 c.c. of blood is mixed with the dry salts and blood-sugar determinations can be made the following day. A. S.

Effect of injury to pancreas or liver on amylase and lipidase content of blood. J. H. Roe and N. P. Goldstein (*J. Lab. clin. Med.*, 1943, **28**, 1334—1343).—Ingestion of mecholyl + eserine in cats, with and without pancreatic duct ligation, increased blood-amylase and -lipidase concns. Pancreatectomy initially decreased serum-amylase and -lipidase. $CHCl_3$ poisoning decreased serum-amylase; the triolein- and olive oil splitting enzymes slightly decreased, and the enzymes which split ethyl butyrate, benzyl butyrate, and tributyrin were increased. This suggests the existence of both "esterase" and "lipase" in serum. C. J. C. B.

Determination of lipolytic enzymes of serum. N. P. Goldstein and J. H. Roe (*J. Lab. clin. Med.*, 1943, **28**, 1368—1379).—In comparative studies of ethyl butyrate, tributyrin, benzyl butyrate, triolein, and olive oil as substrate, it was found that tributyrin is split most rapidly by the enzymes of serum. A method for determining serum lipolytic enzymes is described. Using tributyrin as the substrate, the amount of fatty acid liberated in 1 hr. hydrolysis by serum equals that from 24 hr. hydrolysis of olive oil by the same serum. C. J. C. B.

Ultracentrifugation of blood of normal and jaundice-diseased silkworms. M. A. Lauffer (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 330—332).—No differences were found between normal and diseased samples. V. J. W.

VI.—VASCULAR SYSTEM.

Specialised conducting tissue in heart of hedgehog (*Erinaceus europaeus*).—See A., 1943, III, 781.

Acetylcholine actions on invertebrate hearts. C. L. Prosser (*Biol. Bull.*, 1942, **83**, 145—164).—The effect of acetylcholine on the hearts of some crustaceans is described, and the literature on other animals is briefly reviewed. Hearts accelerated by acetylcholine are neurogenic (*Limulus*, insects, many crustaceans, some annelids and tunicates). Hearts inhibited by acetylcholine are myogenic but innervated (adult vertebrates, molluscs, probably *Daphnia*). Hearts unaffected by acetylcholine are probably not innervated (vertebrate and *Limulus* embryos, *Artemia*, *Eubranchipus*). G. P. W.

Drug actions on heart of *Daphnia*. E. R. Baylor (*Biol. Bull.*, 1942, **83**, 165—172).—In its responses to acetylcholine, atropine, eserine, adrenaline, and KCl, the heart of *Daphnia magna* shows more resemblance to that of vertebrates than to that of higher crustacea. G. P. W.

Criteria for differentiating deep Q_3 electrocardiograms from normal and cardiac subjects. M. Mazer and J. A. Reisinger (*Amer. J. med. Sci.*, 1943, **206**, 48—53).—102 e.c.g. with significantly deep Q_3 waves are analysed. When the Q_3 e.c.g. contains abnormal T waves the deep Q_3 is due to organic heart disease. Where the deep Q_3 is the only abnormality its significance cannot be assessed. C. J. C. B.

Variations in initial and final complexes of myocardial electrograms according to direction of stimulus propagation. S. R. Amuchástegui, O. Orías, and A. S. Segura (*Rev. Soc. argent. Biol.*, 1942, **18**, 138—145).—Prismatic and transverse strips taken from the ventricles of dogs were stimulated mechanically. Action currents were registered by electrodes placed at a certain distance in the fluid in which the fragments lay. Orientation of the fast initial complex (R) depended on the direction of the spread of the stimulus. Orientation of the final (T) complex remained unchanged whatever the direction of spread of the stimulus. J. T. L.

Electrocardiographic changes resulting from dilantin medication.—See A., 1943, III, 833.

Multiple cassette changer for angiocardiography. M. M. Schwarzschild (*Radiology*, 1943, **40**, 72—74).—An apparatus consisting of 3 compartments—magazine, exposure compartment, and receiver—and with semi-automatic transfer of 10 × 12-in. cassettes of which 7 can be held is described. The 7 exposures were made in 6 sec. E. M. J.

Magnesium sulphate in paroxysmal tachycardia. L. J. Boyd and D. Scherf (*Amer. J. med. Sci.*, 1943, **206**, 43—48).—The intravenous injection of 10—20 c.c. of 10% $MgSO_4$ solution was beneficial in 3 out of 8 attacks; a 20% solution succeeded in 8 out of 8 attacks. Disturbances of conduction and ventricular extrasystoles appear for a short time after the injection. The rate of the paroxysmal tachycardia frequently diminishes before the tachycardia disappears. C. J. C. B.

Rehabilitation of heart patients. B. Parson-Smith (*Brit. Med. J.*, 1943, II, 298—299). I. C.

Quantitative study of correlation between basophilic degeneration of myocardium and atrophy of thyroid gland. C. E. Fisher and R. M. Mulligan (*Arch. Path.*, 1943, **36**, 206—210).—The no. of muscle fibres affected by basophilic degeneration in an area of myocardium measuring 19·28 sq. mm. is called the basophilic degeneration index. This index for 8 cases of atrophy of the thyroid gland was 40·5 and for 11 selected positive controls 7·7, showing a quant. correlation between basophilic degeneration of the myocardium and atrophy of the thyroid gland. C. J. C. B.

Angina pectoris and the syndrome of peptic ulcer. H. Levy and E. P. Boas (*Arch. intern. Med.*, 1943, **71**, 301—314).—16 cases are described showing relation between the syndromes of angina pectoris and peptic ulcer. It is suggested that neurogenic mechanisms mediated by the vagus nerve are concerned in this association. C. J. C. B.

Tricuspid stenosis. C. F. Garvin (*Arch. intern. Med.*, 1943, **72**, 104—107).—Of 119 consecutive patients who died of rheumatic heart disease and were examined post mortem, 43 showed involvement of the tricuspid valve; in 13 of these the process had advanced to stenosis. C. J. C. B.

Effect of organic nitrates on coronary flow.—See A., 1943, III, 832.

Gallop rhythm; incidence and the influence of age, race, and sex. C. F. Garvin (*Amer. J. med. Sci.*, 1943, **205**, 814—819).—Of 790 consecutive, adult autopsied patients dead of heart disease, 199 had had a gallop rhythm due to auricular contraction or a third heart sound. Gallop rhythm occurred in 23% of cases with hypertensive heart disease and coronary artery disease; cor pulmonale was associated with gallop rhythm in 20% of cases. 10% of patients who died of rheumatic or syphilitic heart disease had gallop rhythm. C. J. C. B.

Clinical significance of loud aortic and apical systolic heart murmurs without diastolic murmurs. E. A. Baker, H. B. Sprague, and P. D. White (*Amer. J. med. Sci.*, 1943, **206**, 31—43).—Of 187 patients with loud systolic murmurs best heard at either the apex or aortic area without diastolic murmurs, 155 were dead 10—21 years after they were first examined. Death was due to heart disease in 122. 74 of all deaths occurred within a year after the first examination; 110 of the deaths occurred within 3 years. C. J. C. B.

Normal cardiovascular silhouette.—See A., 1943, III, 781.

Production of fatty degeneration of heart muscle by a high-fat diet. A. D. T. Govan (*J. Path. Bact.*, 1943, **55**, 351—356).—Changes resembling those of fatty degeneration produced by poisons or anæmia can be induced in the rabbit's heart by high-fat feeding. Positive results are more readily produced in well-nourished than in lean animals. C. J. C. B.

Treatment of angina pectoris with testosterone propionate. M. A. Lesser (*New England J. Med.*, 1943, **228**, 185—188).—21 cases of angina pectoris were given 25 mg. of testosterone propionate by injection every 2nd to 5th day for an average of 11 injections with favourable results. 4 of these examined quantitatively showed marked increase in exercise tolerance and diminution of duration of pain. Subjective preceded objective improvement. E. M. J.

Heart in pulmonary embolism. J. Currens and A. R. Barnes (*Arch. intern. Med.*, 1943, **71**, 325—344).—The size of the heart is unrelated to the incidence of pulmonary embolism. In 30 cases in which pulmonary embolism occurred, acute infarction was present in 5. In 4 of these cases no significant obstruction was found in the coronary arteries, but in the 5th case there was fresh coronary thrombosis. C. J. C. B.

Coronary arteriosclerosis in juveniles. B. Walthard (*Schweiz. med. Wschr.*, 1942, **72**, 1261—1267).—There was no evidence of focal inflammation in 16 post mortems of juvenile stenosing coronary sclerosis. Inflammatory changes in the coronaries are secondary to the sclerotic changes. A. S.

Morphological and functional alterations of coronary circulation. J. T. Wearn (*Harvey Lect.*, 1939—40, *Ser.* 35, 243—270).—A review. E. M. J.

Photoelectric measurement of circulation time. B. Jablons and J. Cohen (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 294—295).—Methylene-blue or Evans' blue is injected into an arm or leg vein, and its arrival at the lobe of the ear is observed by the obstruction caused to light passing through the ear to a photoelectric cell. V. J. W.

Circulation time in infants and young children determined by the fluorescein method. C. M. Witzberger and H. G. Cohen (*J. Pediat.*, 1943, **22**, 726—730).—Circulation time in infants and young children was measured by determining the time between the injection of fluorescein into an arm vein and the appearance of fluorescence in the subject's lips. Circulation time in 51 children (3—13 years of age) averaged 11·5 sec. (range 7·0—16·0) Circulation time in 25 infants (1—24 months of age) averaged 7·0 sec. (range 5·0—9·1). C. J. C. B.

Serial determination of cardiac output (ballistocardiogram) and electrocardiogram in normal men after intravenous administration of purified cardiac glucosides. Hæmatic and organic reactions in standardised and graded histamine shock in dogs.—See A., 1943, III, 833.

Blood flow in extremities affected by anterior poliomyelitis. D. I. Abramson, K. Flachs, J. Freiberg, and I. A. Mirsky (*Arch. intern. Med.*, 1943, **71**, 391—396).—The resting blood flow was measured by the venous occlusion method in 27 subjects with acute or chronic anterior poliomyelitis of 1 extremity. The flow in the paralysed limb was normal or greater. The skin vessels in the affected limb respond with excessive vasoconstriction to exposure to a low environmental temp. The reactive hyperæmia is normal even in atrophied muscles. C. J. C. B.

Cerebral thromboangiitis obliterans. L. Davis and G. Perret (*Quart. Bull. North-West. Univ. Med. Sch.*, 1943, **16**, 267—274).—4 cases are reported. 3 patients presented a slowly progressive history of unilateral sensory and motor disturbances which appeared at irregular intervals and lasted up to several weeks. All 4 cases showed a similar typical picture on operation. The arachnoid membrane was thickened, the subarachnoid space greatly widened, with excess of c.s.f. under pressure. There were cortical areas in various stages of softening and atrophy. The pial vessels were, in parts, completely obliterated. Proximal to the obliterative changes thrombotic masses were found in the vessels. These changes were seen in many distal branches of the middle cerebral artery. There was marked endothelial proliferation to which the thrombus was fixed. A. S.

Intimal changes in medial degeneration of aorta. A. Rottino and R. Poppiti (*Arch. Path.*, 1943, **36**, 201—205).—(3 photomicrographs.) C. J. C. B.

Arteriovenous aneurysm of neck. M. H. Waters (*Brit. Med. J.*, 1943, II, 106).—Case report. I. C.

Technique of intravenous drip transfusion in infants. W. MacCarthy (*Brit. Med. J.*, 1943, II, 36—39).—Description of the technique, and discussion of the possible dangers and complications. I. C.

Transfusion reaction and fatalities due to circulatory overloading. R. Drummond (*Brit. Med. J.*, 1943, II, 319—322).—The dangers of too large or too rapid transfusions in anæmic subjects are discussed and some cases are reported. I. C.

Intravenous infusions in infancy. W. C. Kidney (*Brit. Med. J.*, 1943, II, 106).—Technical note. I. C.

Coarctation of aorta with cerebral aneurysm. J. N. O'Reilly and O. W. Chapman (*Arch. Dis. Childh.*, 1943, **18**, 109—111).—A case report. C. J. C. B.

Capillary permeability in inflammation areas produced by staphylococci. R. H. Rigdon (*Surgery*, 1941, **9**, 436—442).—Trypan-blue

when injected intravenously in rabbits is localised in areas of skin which have been injected within 3 hr. previously with a saline suspension of staphylococci. There is no relation between the localisation and œdema and hydræmia. No localisation occurs when killed staphylococci are injected. P. C. W.

Vasodilator properties of a pancreatic extract. G. K. Moe and E. H. Wood (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 322—326).—A commercial pancreatic extract caused a dilatation of the coronary, cephalic, and femoral arteries of cat and dog lasting 1—5 min. V. J. W.

Traumatic arterial spasm. C. W. Clark (*Brit. Med. J.*, 1943, II, 167).—Case report. Persistent spasm of the femoral, popliteal, posterior tibial, and peroneal arteries following fracture of tibia and fibula led to necrosis of the muscles of the foot. Amputation was followed by recovery. I. C.

Peripheral arterial embolism. H. Agar (*Brit. Med. J.*, 1943, II, 101—103).—Diagnosis, treatment and operative technique are discussed, and 5 cases are reported. I. C.

Adrenal cortical extract and saline solution in treatment of circulatory collapse of experimental venous occlusion. J. E. Bourque, H. O. Haterius, and E. Glassco (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 313—314).—Symptoms of collapse appear 2—8 hr. after venous occlusion in one hind limb. Survival time was increased in 6 out of 18 dogs by subsequent administration of adrenal cortical extract with saline infusion, and in 2 out of 12 by saline alone. Cortical extract alone was ineffective. V. J. W.

Normotension and hypertension in dog. G. E. Wakerlin (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 346—351).—Two clinical methods for determining arterial blood pressure in the dog are described. In the first the needle of a syringe is inserted into the femoral artery and then connected by a 3-way tap with an anaeroid manometer. Less accurate vals. are obtained by using a pneumatic cuff over the upper part of the fore limb and auscultating at the elbow (brachial artery). By the first method the mean arterial pressure in several hundred dogs was 120 mm. Hg (90—150 mm.); by the indirect method (100 dogs) the systolic pressure was 140 mm. (100—180 mm.) and the diastolic 90 mm. (60—120 mm.). E. G. W.

Physiology of renal circulation. H. W. Smith (*Harvey Lect.*, 1939—40, *Ser.* 35, 166—222).—A review. E. M. J.

Malignant hypertension produced by treatment with deoxycorticosterone acetate and sodium chloride. H. Selye, C. E. Hall, and E. M. Rowley (*Canad. Med. Assoc. J.*, 1943, **49**, 88—92).—The nephrosclerosis produced by overdosage with this drug in rats is pronounced if the animals are kept on a high NaCl intake. A pronounced rise in systolic and diastolic blood pressure develops, with marked diuresis with increased excretion of Na and Cl′, proteinuria, and cardiac decompensation. In some instances death occurred from hæmorrhagic lung œdema. The pathological findings are hypertrophy and capsular fibrosis of the renal glomeruli with hyalinisation of their tuft capillaries. Fibrosis, hyalinisation, and necrosis of the arteriolar walls are evident in the kidney (vasa afferentia), pancreas, and adrenal capsule. (6 photomicrographs.) C. J. C. B.

Reactions to pressor substances in normal and toxæmic women. F. J. Browne (*J. Obstet. Gynæc.*, 1943, **50**, 254—259).—The pressor response to the injection of 0·6 ml. of "Tonephin" (post-pituitary extract Bayer) or to the cold-pressor test was determined in normal non-pregnant or pregnant women, and in pregnant women with pre-eclampsia or who had hypertension before the onset of pregnancy. Tests were also carried out during the puerperium. The response of the normal pregnant women was higher than that of the non-pregnant women, while that of the pre-eclamptic and hypertensive women was higher still. The sensitivity was further increased during the puerperium in the normal women and maintained in the pre-eclamptics (for as long as 235 days in 1 case and may be permanent). A sensitising substance present during pregnancy is postulated. P. C. W.

Oxidative destruction of pressor amines. K. A. Oster and S. Soloway (*J. Mt. Sinai Hosp.*, 1942, **9**, 160—163). E. M. J.

Circulation in arterial hypertension. G. W. Pickering (*Brit. Med. J.*, 1943, II, 1—6, 31—34).—A review of investigations on circulation in various forms of hypertension. I. C.

Effects of temporary occlusion of renal circulation in rabbits. R. W. Scarff and C. A. Keele (*Brit. J. exp. Path.*, 1943, **24**, 147—149).—Occlusion of the left renal artery for 90—120 min. after removal of the right kidney produced severe renal damage mainly affecting the upper portions of the secreting tubules. In the first few days there was a rapid rise in blood-urea to 300 mg. per 100 c.c. followed by a rapid rise and death (3 rabbits) or by slow recovery (4 rabbits). There was no rise in blood pressure. F. S.

Production of chronic hypertension in dogs by progressive ligation of arteries supplying the head. H. R. Fishback, F. E. Dutra, and E. T. MacCamy (*J. Lab. clin. Med.*, 1943, **28**, 1187—1194).—Chronic hypertension was produced in dogs by ligation, in series, of the arteries supplying the head. C. J. C. B.

Arteritis [resembling human periarteritis nodosa] in rats with experimental renal hypertension. W. J. Cromartie (*Amer. J. med. Sci.*, 1943, **206**, 66—75).—A form of arteritis similar to that described as occurring spontaneously in rats over 500 days of age occurred commonly in rats under 400 days of age who developed arterial hypertension following the application of a layer of cotton cloth to the surface of 1 or both kidneys. The lesions resemble those of periarteritis nodosa in man. (16 photomicrographs.) C. J. C. B.

Unilateral pyelonephritis and hypertension. I. J. Patton (*Canad. Med. Assoc. J.*, 1943, **48**, 347—348).—A case report. C. J. C. B.

[Nephrectomy in] renal hypertension. B. V. White, R. E. Durkee, and C. Mirabile (*New England J. Med.*, 1943, **228**, 277—283).—A review and report of a case treated successfully. E. M. J.

Hæmorrhagic hypotension and its treatment by intra-arterial and intravenous infusion of blood. K. G. Kohlstaedt and I. H. Page (*Arch. Surg., Chicago*, 1943, **47**, 178—191).—Blood pressure in dogs was reduced to 20—60 mm. of Hg by withdrawing 3—6% body-wt. of blood. When all the blood removed was returned intra-arterially under a pressure of 50 mm. of Hg the dogs recovered. Readministration of 50% of the blood by vein resulted in recovery of 30% of the dogs, while the same amount intra-arterially saved 75%. F. S.

Effect of shock on small blood vessels of ear of rabbit. J. P. Levinson and H. E. Essex (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 361—362).—The arterioles of the rabbit's ear, observed through a transparent cell, go into spasmodic contraction when a state of shock is produced by manipulation of the intestine. If the ear is previously denervated, contraction still occurs but is less complete. V. J. W.

Acrolein [acraldehyde] and shock. Possible relationship of lipin breakdown products to shock associated with burns. G. F. Kamen (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 363—364).—0·1—0·5 ml. of acraldehyde, diluted 10 times with saline solution, was injected subcutaneously, intravenously, or intraperitoneally into dogs, cats, and a rabbit. In every case symptoms of shock resulted, with hæmoconcn. (up to 12% increase of cells), falling blood pressure, pulmonary œdema, and capillary hæmorrhage in visceral mucosa. V. J. W.

Recent advances in study and management of traumatic shock. H. N. Harkins (*Surgery*, 1941, **9**, 231—294, 447—482, 607—655).—A review with 848 references. P. C. W.

VII.—RESPIRATION AND BLOOD GASES.

Growth and development with special reference to domestic animals. LVIII. Resting energy metabolism and pulmonary ventilation in growing horses.—See A., 1943, III, 827.

Physiology of free fall through air: delayed parachute jumps. A. J. Carlson, L. R. Krasno, and A. H. Andrews (*Quart. Bull. North-West. Univ. Med. Sch.*, 1943, **16**, 254—266).—6 free falls from heights of 8400—29,300 ft. were recorded in an experienced parachute jumper. The rate of free fall ranged from an average of 112—158 miles per hr. in jumps from lower altitudes and was about 171 miles per hr. jumping from a height of 31,400 ft. The max. average rate of fall from 31,400 ft., calc. for 4·6 sec. intervals, was 229 miles per hr. Rate and curve of descent were recorded by an anæroid barograph. Heart rate was picked up by chest leads and broadcast to the ground; it was within normal range. There was no change in blood pressure. There was no change in heart rate or blood pressure when normal young adults were recompressed in an altitude chamber at a rate of 1200—1500 in. per hr. During the fall, a very transient "black out" may occur when the rate of fall is suddenly checked by opening the parachute. 3—14 respirations, recorded by a pneumograph, were taken during the various free falls. Auditory acuity is diminished, visual acuity is unaltered when goggles are worn. There is a sense of falling when the eyes are closed; the air pressure on the under-surface of the body is sensed, as is the twisting effect of the slip-stream. Vision materially increases the sense of motion and falling of the body. Nausea and faintness during spins and tumbles occurred only once during a rapid flat spin with the eyes open. The position of the body during a free fall is not fixed, tumbles, twists, and spins occurring freely. The rapid flat spin was the most uncomfortable and the most difficult to break by voluntary movements. During the free fall the human body can be kept nearly vertical, without vertical spinning, by use of an accessory anti-spin parachute. A. S.

Physiology of deep sea diving and aviation [and fat content and composition of body]. A. R. Behnke, jun. (*Harvey Lect.*, 1941—42, *Ser.* 37, 198—226).—A review. E. M. J.

Methods of artificial respiration. D. G. Cordier (*Brit. Med. J.*, 1943, II, 381—383).—A review. I. C.

Respiratory failure in acute poliomyelitis and use of respirator. C. Wesselhoeft (*New England J. Med.*, 1943, **228**, 225—230).—A review. E. M. J.

Cry of the child in utero. I. M. Jackson (*Brit. Med. J.*, 1943, II, 266—267).—Case report and discussion of the mechanism responsible for the occurrence of the phenomenon. I. C.

Technique for obtaining alveolar air. A. D. Marenzi and M. A. Costoya (*Rev. Soc. argent. Biol.*, 1942, **18**, 122—137).—The Henderson-Morris apparatus was used. When tubes of different capacities were used, CO_2 concn. varied inversely with capacity of the tube. Relationship between CO_2 concn. and time of expulsion of alveolar air is expressed by a paraboloid curve, which can be considered as made up of two straight lines. By extrapolation CO_2 concn. at zero time can be determined, which would correspond to the CO_2 concn. of an "instantaneous" expiration. The "effective alveolar air" can be calc. if the duration of the respiratory cycle is known. The curve may be obtained from a single experimental determination by a straight-line equation. The impossibility of comparing CO_2 vals. of "effective alveolar air" and the val. of CO_2 pressure obtained by tonometry is discussed. The advantage of the procedure is that effective alveolar air responds to the physiological respiratory cycle and no special training is necessary; exact control of the sampling time is important. J. T. L.

Approximate analysis of carbon dioxide and oxygen in gas samples. A. Iliff, G. M. Kinsman, R. M. Hill, and R. V. Lewis (*J. Lab. clin. Med.*, 1943, **28**, 1380—1386).—An apparatus (a special calibrated burette) and an easy method for determining CO_2 and O_2 or both in samples of gas are described. The accuracy is up to 0·3%. C. J. C. B.

Simple and sensitive method of determining atmospheric carbon monoxide concentrations. A. Gigon and M. Noverraz (*Schweiz. med. Wschr.*, 1942, **72**, 1356—1358).—A sample of air containing CO is taken; 2 c.c. of a solution of 0·57 g. of hæmoglobin per 100 c.c. are exposed to it in a tonometer and the CO-hæmoglobin content is determined spectrometrically after reduction with alkaline $Na_2S_2O_4$ solution. The method is accurate in determining CO concns. of 1 : 10,000—100,000. A. S.

Seasonal variations in the water content of respiratory tract of man and other mammals. M. E. T. Stevens, A. K. Ronan, and E. M. Boyd (*Canad. Med. Assoc. J.*, 1943, **48**, 337—341).—Estimation at monthly intervals of the water content of the trachea, the alveolar portion of the lung, and the bronchial portion of the lung of 105 albino rats, 115 guinea-pigs, 146 rabbits, 90 cats, 146 white mice, and 11 cases of human autopsy material revealed that drying occurs in one or more of these portions of the respiratory tract over a varying interval during the winter months in south-eastern Ontario. C. J. C. B.

Apparatus for measuring air flow during inspiration.—See A., 1943, III, 855.

Narcosis induced by carbon dioxide at low environmental temperatures. J. H. Barbour and M. H. Seevers (*J. Pharm. Exp. Ther.*, 1943, **78**, 296—303).—Narcosis can be induced and maintained in the rat or dog by sudden exposure at 5° to CO_2 concn. of 5% or more. In this state the rat has a temp. of 16—20°, pulse of 30—100 per min., and respiration of 1—20 per min. Rats are made more susceptible by 3 weeks' exposure to 10% O_2, by fasting, or by depressant drugs. They are made more resistant by repeated narcotisations, by acclimatisation to cold or CO_2, or by thyroid feeding. A similar state is produced in rats by low (10%) or high (4 atm.) O_2 tensions at a temp. of 5°. V. J. W.

Physiological effects at low oxygen tensions of replacing oxygen with carbon dioxide. W. B. Youmans, M. Pennington, H. E. Griswold, jun., and J. A. Gius (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 320—322).—Inhalation of an atm. of 10% O_2 and 2% CO_2 caused an increased respiratory min. vol. as compared with an atm. of 12% O_2 and no CO_2 but heart rates and alveolar O_2 were the same for both. An atm. of 12% O_2 and 2—3% CO_2 caused less cardiac quickening and more respiratory increase with higher alveolar O_2. V. J. W.

Effects of reduced oxygen tension on development of early chick embryos.—See A., 1943, III, 783.

Nitrogen clearance from blood and saliva by oxygen breathing. P. F. Scholander and G. A. Edwards (*Amer. J. Physiol.*, 1942, **137**, 715—716).—N_2 was eliminated rapidly from both finger-blood and saliva (human subjects) during O_2 breathing. 80—90% of N_2 was cleared within 10 min.; the remaining 10—20% was gradually eliminated during the next 50 min. The rate of resaturation of the blood or saliva with N_2 from the air was as rapid as the rate of desaturation. M. W. G.

Apparatus for storage of gas-free solutions for use with the Van Slyke gasometric methods. R. H. Goetz (*J. Lab. clin. Med.*, 1943, **28**, 1168—1170).—A self-sealing apparatus for the storage of gas-free solutions is described in detail. It eliminates the use of rubber parts and glass stopcocks, it can be easily filled, and is simple to make. C. J. C. B.

Mechanism of cardiac dyspnœa. L. Berk (*Clin. Proc.*, 1943, **3**, 133—141).—A review. P. C. W.

Unusual sounds emanating from chest. J. A. Greene (*Arch. intern. Med.*, 1943, **71**, 410—414).—2 cases of interstitial emphysema of the lung and mediastinum, spontaneous in 1 case and following straining in normal labour in the other, are reported. The bubbling, crunching, clicking, and some of the tapping sounds are due to the heart rubbing against emphysematous blebs in interstitial emphysema of the lung and mediastinum. The knocking and tapping metallic sounds are due to the heart striking an emphysematous bleb on the median aspect of a partially collapsed left lung or the diaphragm immediately over a gas bubble in the splenic flexure of the colon, in the presence of left pneumothorax. C. J. C. B.

Treatment of bronchial asthma. L. Unger and A. A. Wolf (*J. Amer. Med. Assoc.*, 1943, **121**, 325—330).—A review. C. A. K.

VIII.—MUSCLE.

Drug actions on crustacean nerve and muscle. C. H. Ellis, C. H. Thienes, and C. A. G. Wiersma (*Biol. Bull.*, 1942, **83**, 334—352).—A wide range of drugs were applied to nerve-muscle preps. of the cheliped of *Cambarus clarkii*. Only the local anæsthetics had actions resembling their actions on vertebrate material. The effects of other drugs were mostly limited to changes in the excitability of the nerve fibre. Peripheral inhibition was little affected even by the most effective drugs. G. P. W.

Wound healing especially muscle and fascia repair. K. S. Chouke and R. W. Whitehead (*Surgery*, 1941, **9**, 195—197).—In dogs and rats cut striated muscle heals by the growth of fibrous connective tissue from the epi-, peri-, and endo-mysium. Fascia unites with fascia in similar fashion when they are closely approximated. The type of suture used (silk or catgut) influenced the results. A firmer union developed between muscle and muscle or fascia and fascia than between muscle and fascia. Union was complete in 8—11 days. P. C. W.

Ætiology of fibrositic nodule. W. S. C. Copeman (*Brit. Med. J.*, 1943, II, 263—264).—In cases of epidemic influenza it was observed that lumbar and other pain was referred from small hypersensitive areas in the muscles. After 2—3 months these painful spots were still present. Myalgic spots which had arisen during influenza were re-activated in one patient by an attack of mumps, in another by the artificial induction of an attack of sandfly fever, and in a third by a common cold. Rheumatic pains are a sequel of many of the exanthemata; it is suggested that myalgic spots which form the basis of the rheumatic syndromes of later life are a legacy from acute infections in earlier years. I. C.

IX.—NERVOUS SYSTEM.

Nerve conduction as an interaction effect in protein chains. O. Schmidt (*Physikal. Z.*, 1943, **44**, 139—150).—Nerve conduction is a special case of energy transference in the protein mol. brought about by resonance-coupled enol groups. It has a definite life period, and is directional. This mechanism gives a simple explanation of some properties of nerve. A. J. M.

Repair of peripheral nerves by grafts of frozen-dried nerve. P. Weiss and A. C. Taylor (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 326—328).—Good results were obtained by joining cut nerves by portions of nerve from the same species which had been cooled to −195° in *iso*pentane immersed in liquid N_2, and then dried in vac. at −40° over P_2O_5. V. J. W.

Influence of stimulation of anterior and posterior roots on activity of proprioceptors of skeletal muscle of frog. G. V. Gerschuni and S. P. Narikaschvili (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **37**, 73—76).—Stimulation of the 8th and 9th anterior or posterior nerve roots or trunk of n. ischiadicus with condenser discharges (50—100 per sec.) causes a fall in frequency and disturbed rhythm in the discharge from proprioceptors in skeletal muscle. When the stimulus is applied to the anterior roots there is an electrotonic spread of current to the posterior roots. The phenomenon depends on the passage of antidromic impulses along the posterior root to the receptor. P. C. W.

Distribution of phosphatase in the spinal cord of chick embryos of one to eight days' incubation.—See A., 1943, III, 783.

Section of spinothalamic tract in medulla with observations on pain pathway. H. G. Schwartz and J. L. O'Leary (*Surgery*, 1941, **9**, 183—193).—A case is reported in which the spinothalamic tract was cut in the medulla to relieve intractable pain. The sensory changes which resulted showed that there was a topical arrangement of the fibres in the tract; fibres from the lower dermatomes occupied a dorso-lateral position and those from the upper segments a ventro-medial one. A lesion of the ventro-lateral path of the descending trigeminal tract was associated with disturbed sensation throughout the area of distribution of the mandibular division of the fifth nerve. P. C. W.

Medullary involvement in tetanus. A. B. Baker (*Amer. J. Path.*, 1943, **19**, 709—717).—The most extensive involvement occurred

within the motor nuclei of the 5th and the dorsal nuclei of the 10th cranial nerves. These nuclei showed alterations in almost every nerve cell, the changes often being irreversible. The rest of the nervous system presented scattered minor changes. (12 photomicrographs.) C. J. C. B.

Trigeminal neuralgia at early age cured by Gasserian alcohol injection. W. Harris (*Brit. Med. J.*, 1943, II, 39).—Case report in a child 4½ years old. I. C.

[Reflex rôle of vagus] common cause of diarrhœa, vomiting, and dehydration in infants. P. W. Leathart (*Brit. Med. J.*, 1943, II, 168).—Mastoiditis is often a cause of diarrhœa, vomiting, and dehydration, the mechanism being a reflex stimulation of the vagus set up by stimuli originating from the tympanic cavity and mastoid antrum and conveyed to the vagal nuclei by the seventh or the ninth nerve. I. C.

Absence of myelinated tracts connecting hypothalamus and hypophysis in white rat. F. Vidal (*Rev. Soc. argent. Biol.*, 1942, **18**, 502—508).—Sections of the hypophyseal and hypothalamic region were stained by Weil's technique for myelinated fibres and Davenport's for non-myelinated fibres. Two myelinated tracts were seen: (1) the supraoptic–hypophyseal tract going from the supraoptic and paraventricular nodes, losing their myelin at the level of the median eminence, and continuing in the hypophyseal stalk to the superior lobe as non-myelinated fibres; a few of these fibres end in the intermediate lobe; (2) from the caudal end a second myelinated tract, arising or ending in the pars mammilaris of the hypothalamus, goes towards the hypophysis, and, after forming an arch of rostral convexity, loses it myelin at the level of the median eminence. No fibres were seen coming from the pars tuberalis to join this bundle. J. T. L.

Effect of hypothalamus on metabolic rate. W. Bloch (*Verh. Ver. Schweiz. Physiol.*, 1942, **21**, 14—17).—The experiments were carried out in a closed chamber, with a margin of error of ±10%. The R.Q. of the intact cats was 0·8; blood-sugar was 80—120 mg.-%. After electrocoagulation of portions (2—2·5 mm. diameter) of the anterior hypothalamic region, marked variations of metabolic raté only occurred where there were marked fluctuation of body temp. The metabolic rate diminished with decreasing body temp. on exposure to cold; similarly an increase occurred on exposure to heat. A. S.

Hypothalamic control of hypophyseal gonadotropic functions in female guinea-pigs. F. L. Dey (*Endocrinol.*, 1943, **33**, 75—82).—28 out of 70 mature female guinea-pigs with experimental lesions in the hypothalamus showed marked gonadal changes. In 19 of these, large bilateral lesions at the caudal end of the optic chiasma were followed by marked follicular development in the ovaries and hypertrophy of internal and external genitalia with permanently open vaginal membranes. These 19 animals apparently did not secrete luteinising hormone. 9 animals, in which most of the median eminence was destroyed, were acyclic and their genitalia atrophic. The remaining 42 animals had normal œstrous cycles after operation; in these various portions of the hypothalamus were destroyed, but in only 2 was the median eminence damaged. Lesions placed directly within the pituitary abolished the sexual cycle only in 2 out of 14 animals; in these 2 the median eminence and neighbouring hypothalamic structures were destroyed as well. G. P.

Effect of anoxia on brain potentials of hyperthyroid animals. M. Kessler and E. Gellhorn (*Amer. J. Physiol.*, 1942, **137**, 703—705).—Administration of thyroxine (0·1—0·2 mg. per 100 g. wt. for 9 days or 0·2 mg. per 100 g. wt. for 4 days) and of thyroid powder (100 mg. per day for 12 days) increased the sensitivity of unanæsthetised rats to 7% O_2 or lowered barometric pressure, as shown by the greater changes in the electroencephalogram (e.e.g.). Thyroid powder was less effective than thyroxine. The e.e.g. of hyperthyroid rats at normal O_2 tension was unchanged. M. W. G.

Control of clonic responses of cerebral cortex. A. Rosenblueth, D. D. Bond, and W. B. Cannon (*Amer. J. Physiol.*, 1942, **137**, 681—694).—Chloralosed rhesus monkeys were used. An analysis was made of the mechanism by which different cortical regions may become coupled during clonic activity and an elucidation is given of the factors which determine the rate of clonus and the reason for the simultaneous abrupt end of the responses in several areas. Single shocks applied to appropriate cortical areas can control the rate of clonic discharges and can prolong the responses beyond their intrinsic duration. Features of the driven clonic responses are described, such as alternation, termination of a series, influence of frequency, pattern, specificity of the controlling connexions. The similarity of the driven to the undriven clonic bursts, some properties of clonically active elements, and background of cortical excitation are discussed. The controlling pathways are subcortical. Afferent nerve impulses can control clonic discharges. M. W. G.

Military psychiatry. C. Hirschberg (*Amer. J. med. Sci.*, 1943, **206**, 112—125).—A summary of some of the literature. C. J. C. B.

Diplopia in narcolepsy.—See A., 1943, III, 804.

Current problems in visual function and visual perception.—See A., 1943, III, 803.

Caffeine-withdrawal headache. R. H. Dreisach and C. Pfeiffer (*J. Lab. clin. Med.*, 1943, **28**, 1212—1219).—In 55% of 38 trials on 22 subjects very severe headache was produced by sudden withdrawal of caffeine (2—12 grains daily). The headache is without scotomas, is slow in onset, central in origin, becoming generalised after 4—6 hr.; it may be accompanied by nausea and vomiting. In migraine subjects the headache differs from their typical migraine headache. The blood studies indicate that a lowered serum-Ca, an elevated serum-P, and possibly an increase in blood vol. accompany the headache. C. J. C. B.

Ætiology of the migraine syndrome. C. Pfeiffer, R. H. Dreisbach, C. C. Roby, and H. G. Glass (*J. Lab. clin. Med.*, 1943, **28**, 1219—1225).—Data are presented which justify separation from the so-called "common headache" of 2 new types, namely, relaxation headache and "caffeine-withdrawal headache." The former is accompanied by a decreased blood vol., and the latter by an increase in the "effective arterial blood vol." No consistent blood-electrolyte changes occur with relaxation or migraine headache. The migraine syndrome is accompanied by relative hæmoconcn. C. J. C. B.

Urea for migraine. J. A. Brown (*Brit. Med. J.*, 1943, II, 201).—Urea (15—20 g. daily) caused a dramatic improvement in a case of severe headache. I. C.

Atrophy of brain following puerperal eclampsia. K. Lowenberg and R. T. Lossman (*Amer. J. Path.*, 1943, **19**, 697—703).—A case report. C. J. C. B.

Treatment of aphonia by intravenous administration of pentothal sodium. L. H. Gold and M. L. Garofalo (*Anesthesiology*, 1940, **1**, 94).—A successful case is reported. P. C. W.

Insulin reaction and cerebral damage that may occur in diabetes. F. D. Murphy and J. Purtell (*Amer. J. digest. Dis.*, 1943, **10**, 103—107).—Irreversible mental changes can follow insulin shock. A new case is reported of a 13-year-old girl who remained unconscious for 4 days in spite of treatment, and who had definite mental retardation thereafter. N. F. M.

Clinical manifestations of Weil's disease with particular reference to meningitis. M. Clapper and G. B. Myers (*Arch. intern. Med.*, 1943, **72**, 18—30).—13 cases of Weil's disease are reported. In 2, both clinical and laboratory evidence of meningitis was observed; in 7 there was an abnormal cellular reaction in the c.s.f. without clinical signs of meningeal irritation; in 1, meningismus was present without pleocytosis of c.s.f. C.s.f. cell counts may reach 1000 or more per cu. mm. Polymorphs predominate early and lymphocytes later. C.s.f.-glucose is unaltered. Yellow discoloration of the c.s.f. is common and it is at least in part due to bilirubin. Marked retention of urea is frequent. Pericarditis, auricular fibrillation, or disturbances of conduction may occur. Plasma-prothrombin although often decreased does not reach levels sufficiently low to account for the hæmorrhagic manifestations. Anasarca, the result of hypoproteinæmia, may develop. C. J. C. B.

Specific gravity of cerebrospinal fluid. W. Etherington-Wilson (*Brit. Med. J.*, 1943, II, 165—167).—The sp. gr. of c.s.f. at normal body temp. is 1·003—1·004, and is very const. Increased sp. gr. is found in cases of raised c.s.f.-glucose or -urea, after intravenous drips of glucose–saline, and after severe vomiting, in severe loss of blood and marked anæmia, in intense jaundice. In many other pathological conditions the sp. gr. did not change. I. C.

Treatment of communicating hydrocephalus. M. G. Peterman (*J. Pediat.*, 1943, **22**, 690—694).—A waxed silk seton is introduced into the subarachnoid space with the proximal end buried under the skin. Additional setons may be introduced whenever indicated. In all of 5 cases there was no mortality and no infection. C. J. C. B.

Congenital hydrocephalus in mouse, a case of spurious pleiotropism.—See A., 1943, III, 784.

Wheat-germ oil [vitamin-*E*] in treatment of congenital non-obstructive hydrocephalus. S. Stone (*J. Pediat.*, 1943, **23**, 194—204).—4 of the children had non-complicated hydrocephalus; 5 had hydrocephalus accompanied by meningoceles. 4 c.c. daily of a mixture of 1 part of wheat-germ oil and 4 parts of vitamin-*B* complex were given. In all the treated patients arrest or slower progress of hydrocephalus occurred. There was less nystagmoid movement of eyes, and improvement in muscle tone and strength. C. J. C. B.

Urinary elimination of phenolsulphonephthalein injected into cerebrospinal cavity in schizophrenia and general paresis. S. Androp, H. E. Ratcliffe, and S. Katzenelbogen (*Amer. J. med. Sci.*, 1943, **206**, 86—89).—In 25 cases of schizophrenia, phenolsulphonephthalein injected into the c.s.f. appeared in the urine in 17—107 min. After 6—7 hr. the total amount excreted was 6—64%. In 9 non-psychotic patients, the time of appearance of phenolsulphonephthalein in the urine was 6—123 min. During 6 hr. the total excretion was 14—70%. C. J. C. B.

Method for determining cerebrospinal fluid-protein by photoelectric colorimeter. A. Cipriani and D. Brophy (*J. Lab. clin. Med.*, 1943, **28**, 1269—1272).—A miniature attachment for the Evelyn photoelectric colorimeter is described which accommodates small Pyrex test tubes. This permits the determination to be carried out on 1 c.c. of c.s.f. C. J. C. B.

Lumbar, ventricular, and cisternal puncture; indications and dangers. W. L. Reid (*Med. J. Austral.*, 1943, I, 311—317). F. S.

Osteomyelitis of spine following lumbar puncture [treated with penicillin]. L. Findlay and F. H. Kemp (*Arch. Dis. Childh.*, 1943, **18**, 102—105).—A report of a case which recovered following penicillin treatment. C. J. C. B.

Skin-histamine and splanchnic nerve stimulation. E. Lambert and S. R. Rosenthal (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 302—304).—Histamine in samples of abdominal skin of dogs is determined by dissolving it out by electrophoresis and applying to guinea-pig uterus *in vitro*. Skin-histamine is increased by application of electrodes to, or stimulation of, the splanchnic nerve. V. J. W.

Vasomotor disturbances in hand after injuries of peripheral nerves. R. L. Richards (*Edinb. Med. J.*, 1943, **50**, 449—468).—Only an abrupt rise in temp. of at least 5° is taken as evidence of reflex vasomotor activity. The area involved is never larger but usually smaller than that of cutaneous analgesia. An initial "warm phase" of vasodilation is followed 6—12 weeks later by a "cold phase" in in which the area assumes the temp. of the environment. Factors responsible for the "cold phase" are not fully understood but include reduced local metabolism, sensitisation of denervated vessels to circulatory adrenaline, and loss of axon reflexes. Such a part (digit) does not respond to changes in body temp. but only to local metabolic needs of tissues. An incompletely denervated digit may show almost normal reflex vasomotor activity, hence such investigations are valuable in determining extent of peripheral nerve injuries. (16 figs.) H. S.

Case of sympathetic heterochromia acquired in adult age.—See A., 1943, III, 800.

Superficial hepatic branches of vagi and their distribution to the extrahepatic biliary tract in certain mammals.—See A., 1943, III, 781.

Influence of sympathetic nervous system on activity of proprioceptors in frog skeletal muscle. A. M. Maruseva (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **37**, 237—240).—If the frequency of impulses in the nerve from stretched frog muscle was high, bathing the sympathetic ganglia in nicotine solution decreased the frequency; if the initial frequency was low there may be an increase in frequency. Control experiments demonstrate that the effect is due to sympathetic nerve stimulation. Experiments in which the same effects were observed in the discharge from a single stretch receptor show that the changes are not due to the mobilisation of more or less receptor units. P. C. W.

Sympathectomy in treatment of cryopathies. E. D. Telford (*Brit. Med. J.*, 1943, II, 360).—Report of two cases. I. C.

X.—SENSE ORGANS.

(A) Results of prefrontal lobectomy on acquired and on acquiring correct conditioned differential responses with auditory, general cutaneous, and optic stimuli. (B) Distribution of cortical potentials resulting from insufflation of vapors into nostrils and stimulation of olfactory bulbs and pyriform lobe. W. F. Allen (*Amer. J. Physiol.*, 1943, **139**, 525—531, 553—555).—(A) Prefrontal lobectomy did not prevent the rapid appearance and perfect performance of certain conditioned differential responses from several different auditory, optic, and general cutaneous stimuli in dogs trained both before and after operation.

(B) Action potentials were recorded from the pyriform lobe following single shock-stimulation of the olfactory bulbs or insufflation of xylol, oil of cloves, asafœtida, or air into the nostrils of dogs from which trigeminal and vagal stimulation had been eliminated. Single shock stimulation of the pyriform lobe evoked potentials from the ventro-lateral portion of the prefrontal area and antidromically from the olfactory bulbs but not from other cortical areas. No spikes were recorded from the three frontal areas following stimulation of olfactory bulbs or from stimulating the pyriform lobe of one dog after areas 8, 9, and 10 had been removed. P. G.

Causes of blindness in children. J. C. Halliday (*Med. J. Austral.*, 1943, **30**, I, 556—557).—Reports of cases including a high incidence of congenital defects of the visual apparatus. P. G.

Rehabilitation of uni-ocular patient. C. G. Schurr (*Brit. J. Ophthal.*, 1943, **27**, 467—469).—An account of the training given at the Royal Sussex County Hospital, in conjunction with the Sussex Eye Hospital, to patients who have lost one eye. Attention is paid to psychological as well as to physiological factors, and loss of depth perception, the greatest handicap, is overcome by a series of graduated exercises. Training starts 2 or 3 days after operation, and continues for 10 or 14 days. J. H. A.

Rare congenital ocular abnormality. G. S. Pendse (*Indian J. Ophthal.*, 1943, **4**, 1—4).—Description of a child born with no eyeballs but a swelling on the inside of each lower lid. These swellings increased in size during the first few weeks of life and, in the absence of any further abnormalities or any pathological examination, a tentative diagnosis of microphthalmia with cysts was made. The family history gave no evidence that the abnormality was inherited. K. T.

Congenital paralysis of lateral rotators of eyes with paralysis of muscles of face. A. M. Hicks (*Arch. Ophthal.*, 1943, **30**, 38—42).—In this condition, which is due to an unknown pathological process involving the brain-stem and is sometimes referred to as Möbius' syndrome, bilateral facial paralysis or paresis is associated with paralysis of all four lateral rotators, abduction often being affected more severely than adduction, so that convergence is usually present in some degree. Four cases showing that incomplete forms of the syndrome may occur are reported. J. H. A.

Neoplasms ond other lesions of the eye induced by ultra-violet radiation in strain *A* mice.—See A., 1943, III, 748.

Absorption of infra-roentgen (Bucky) rays of various qualities by the anterior portions of the eyeball. F. Sagher and E. Sagher (*Arch. Ophthal.*, 1943, **30**, 43—53).—Experiments were made to ascertain the permeability of the anterior parts of the eyeball to infra-roentgen rays. If a vertical beam is applied so that much of it is absorbed by the aqueous only a small proportion (in the rabbit 0·65—3·45%) reaches the lens, whereas if the beam is directed onto the limbus or sclera, 6—18% reaches the iris or ciliary body. Both cornea and sclera show a far greater absorption (lower permeability) than a piece of skin of the same thickness, particularly in the case of the hardest rays. Data obtained in rabbits and in man are tabulated, and therapeutic possibilities are discussed. J. H. A.

Ocular criteria of deficiency of riboflavin. M. K. Gregory (*Brit. Med. J.*, 1943, II, 134—134).—In riboflavin deficiency there is a superficial invasion of the cornea by fine capillaries arising from the apices of the marginal loops. These extend evenly as streamer-like vessels which anastomose to form a series of loops from which more capillaries grow towards the centre. The sign is of a distinctive type in riboflavin deficiency; other pathological conditions which might give similar appearances are mentioned and discussed. I. C.

Corneal transplantation. R. A. Perritt (*Arch. Ophthal.*, 1943, **30**, 14—24).—The author describes the stages by which his work on corneal transplantation, in co-operation with S. R. Gifford, has developed. They discarded Filatov's apron conjunctival flap, and modified Tudor Thomas' technique by making the corneal disc of the recipient and donor eyes similar in size, without bevelling the latter; this avoids curling of the endothelium, which is one of the main causes of subsequent opacities. Castroviejo's trephine is employed and the graft, which before use is preserved in physiological saline at 2—4°, is kept in position by a suture designed by the author and his co-worker. Several factors which affect the prognosis of the operation are reviewed, and 11 case reports are appended. J. H. A.

Standardisation and checking of Schiøtz tonometers. A. Posner (*Arch. Ophthal.*, 1943, **30**, 1—13).—The procedure adopted for the uniform calibrating of Schiøtz tonometers involves the determination of various measurements, including the wts. of the entire tonometer and of the plunger, the amount of friction between the handle and the tonometer proper and between the plunger and the cylinder, the diameter and curvature of both footplate and plunger, and the reading on a standard testing-block; the tonometer is then tested on a rubber membrane connected with a manometer to ascertain whether its readings coincide with those of a specially constructed standard instrument. The history of the tonometer and the reasons for the usual discrepancies which it is hoped to eliminate are discussed at length. J. H. A.

Physiology of aqueous in completely iridectomised eyes. H. G. Scheie, E. Moore, and F. H. Adler (*Arch. Ophthal.*, 1943, **30**, 70—74).—The aqueous contains less urea than the blood, and the iris may be responsible either by acting as a blood-aqueous barrier impermeable to urea or by absorbing this substance from the anterior chamber. It was found possible to remove the iris from cats without causing any apparent permanent damage to the eyes. The iridectomised eyes showed a slightly higher urea content than normal, while the vol. of the anterior chamber and the tension were considerably reduced. The secondary aqueous, which appears after reformation of the anterior chamber, was much poorer in protein in the iridectomised than in normal eyes, probably because the protein is normally derived from the iris vessels. J. H. A.

Significance of distribution ratios of non-electrolytes between plasma and intra-ocular fluid. S. Duke-Elder and H. Davson (*Brit. J. Ophthal.*, 1943, **27**, 431—434).—A criticism of Kinsey and Grant's contention (cf. A., 1942, III, 589) that, since drainage is always taking place from the anterior chamber, the concn. of non-electro-

lytes in blood and aqueous humour can never be equal, on the ground that the maintenance of such a state of non-equilibrium involves the continuous performance of work which cannot be performed in the course of drainage. In the absence of secretory activity, therefore, the concn. differences claimed by Kinsey and Grant are excluded by the second law of thermodynamics. J. H. A.

Heterochromia of iris. L. Hess (*Arch. Ophthal.*, 1943, **30**, 93—104).—There are three types of heterochromia iridis: (1) (simplex) where the difference in colour is an isolated phenomenon; (2) (complicata) where there are, in addition, slight cloudiness of the lens and vitreous and fine ppts in Descemet's membrane in the lighter eye; (3) (sympathica) in which there are signs of a sympathetic nerve lesion and sometimes other congenital ocular abnormalities. 15 cases of the first type, 2 of the second, and 1 of the third are described. Patients with congenital heterochromia of all types show evidence of involvement of the spinal cord or brain or both. In many cases there is a dark complexion and a characteristic formation of the skull. J. H. A.

Unilateral melanosis iridis. R. E. R. Mitton (*Indian J. Ophthal.*, 1943, **4**, 5).—Report of a case. A. GL.

Results of irradiation of malignant melanomas of uveal tract. F. E. Burch and W. E. Camp (*Trans. Amer. Acad. Ophthal. Otol.*, 1943, May–June, 335—353).—The effects of pre- and post-operative irradiation of malignant melanomas, as measured by 5-year survivals, are analysed in terms of histological tumour type (Callender and Wilder) and age of patient. Radiotherapy by itself is valueless, the val. of preoperative irradiation is negligible, but that of postoperative radiation is still *sub judice*. A. GL.

Paradoxic esotropia during cycloplegia. H. S. Sugar (*Arch. Ophthal.*, 1943, **30**, 259—261).—Four cases are reported in which esotropia either appeared or increased in amount under cycloplegia, the reverse of what usually occurs. In each case the dominant eye was hypermetropic, and there was some degree of amblyopia in the other. It is suggested that the blurring of vision during cycloplegia led to attempts to clear the blur by accommodation, which produced an associated convergence. The esotropia could be abolished by placing a pinhole disc or the full cycloplegic correction before the better eye. J. H. A.

Astigmatic accommodation. M. W. Morgan, J. Mohney, and J. M. D. Olmsted (*Arch. Ophthal.*, 1943, **30**, 247—249).—The eyes of a no. of human subjects and of several hundred animals have been refracted under different experimental conditions. Accommodation appears to be reciprocally controlled by the parasympathetic and sympathetic nervous systems. Stimulation of the third nerve makes the eye more myopic, of the cervical sympathetic more hypermetropic, the former usually causing by far the greater dioptric change. In 85% of the cats, sympathetic stimulation gave rise to astigmatism of the direct ("with the rule") variety. It is suggested that the sympathetic system innervates the radial fibres of the ciliary muscle, which on contraction increase the tension on the zonule, thereby flattening the lens, and that their action is most effective in the horizontal meridian. Photographs of the lens and cornea by Fincham's method support this theory by showing that the astigmatism is not due to tilting of the lens or differential flattening of the cornea. J. H. A.

Mineral constituents of sclerosed human lenses. P. W. Sahit (*Arch. Ophthal.*, 1943, **30**, 255—258).—72 human lenses, in different stages of sclerosis, from patients varying between 44 and 87 years of age, were analysed for water content and mineral constituents. The content of water, $Na^{\cdot}$, $Ca^{\cdot\cdot}$, Cl', and probably S'' increased, while the average wt. of the lens and its $K^{\cdot}$ and PO_4''' content decreased, with advancing sclerosis. Mineral constituents were computed on the basis of the total ash, which did not vary with the amount of sclerotic change. J. H. A.

Spectral properties of visual receptors of cat. R. Granit (*Acta Physiol. Scand.*, 1942, **5**, 219—229).—The spectral sensitivity of the cat retina, in both the light- and dark-adapted state, was investigated by the micro-electrode technique. The sensitivity curve of the dark-adapted eye corresponded to the absorption curve of visual purple. When the eye was light-adapted, about 36% of the elements tested gave a broad sensitivity curve of the photopic dominator type with its max. at λ 560 mμ. This curve sometimes showed a hump at 520 mμ., indicating the presence of elements with a max. sensitivity at this λ combined in varying proportions with the dominators. These elements are probably the same as those found in rats and guinea-pigs with a sensitivity curve corresponding to an abnormally narrow visual purple absorption curve. The results from cat eyes suggested that back reflexion from the tapetum probably plays a part in determining the sensitivity to yellow and green $\lambda\lambda$. The colour vision of the cat is discussed in the light of the results. K. T.

"Red" and "green" receptors in retina of *Tropidonotus*. R. Granit (*Acta Physiol. Scand.*, 1942, **5**, 108—113).—The spectral sensitivity of the retina of the snake, *Tropidonotus natrix*, was investigated, using the micro-electrode technique. A broad dominator band with its max. at λ 560 mμ., as well as red and green elements of the modulator type with max. sensitivities at 600 mμ. and around 520 mμ. respectively, were found. It was sometimes possible to obtain an isolated response from a red element but the presence of a green element had always to be deduced from its effect on a mixed curve. The results suggested that the red and green elements are connected in varying nos. to the ganglion cell from which the micro-electrode picks up the response and that the proportion of each type of element so connected determines the sensitivity curve of any given ganglion cell. It would appear that although ganglion cells may be connected to red elements only, they are very rarely or never connected to green elements only. If the proportion of red to green elements connected to one ganglion is right their responses combine to give the dominator curve. K. T.

Achromatopsia: report of three cases. S. D. Lewis and J. Mandelbaum (*Arch. Ophthal.*, 1943, **30**, 225—231).—Three siblings with complete colour-blindness together with diminished visual acuity, central scotomas, ocular nystagmus, and photophobia are described. Visibility curves determined for two of these subjects were characteristic of those found in scotopia, with max. brightness in the green region of the spectrum. Nevertheless, the dark-adaptation test showed in each case two distinct curves, though it had been expected that the first curve, attributed to cone-adaptation, would be absent. It is suggested that such patients may have two types of rod-cells, in one of which the visual purple regenerates more rapidly than in the other, or that the peripheral retina may contain a few functioning cone-cells, yet not enough to effect the visibility curve. J. H. A.

Tristimulus specification of the Munsell "Book of Colour" from spectrophotometric measurements. K. L. Kelly, K. S. Gibson, and D. Nickerson (*J. Opt. Soc. Amer.*, 1943, **33**, 355—375). K. J. W. C.

Trichromatic specifications for intermediate and special colours of the Munsell system. W. C. Granville, D. Nickerson, and C. E. Foss (*J. Opt. Soc. Amer.*, 1943, **33**, 376—384). K. J. W. C.

Final report of the U.S.A. sub-committee on the spacing of the Munsell colours. S. M. Newhall, D. Nickerson, and D. B. Judd (*J. Opt. Soc. Amer.*, 1943, **33**, 385—418). K. J. W. C.

Psychological colour solid. D. Nickerson and S. M. Newhall (*J. Opt. Soc. Amer.*, 1943, **33**, 419—422).—Sections are given for the construction of a colour-solid for normal matching and accurate matching (instrumental) conditions based on the Munsell "Book of Colour" and Adams' plots of chromatic val. K. J. W. C.

Night vision in the army. A. Lister and J. W. Bishop (*Brit. Med. J.*, 1943, II, 325—327).—The brightness figures of the Army night-vision test are given, with a qualifying remark on the colour of the light of the adaptometers. The test is one of form sense, but the min. light necessary for the discrimination of a simple form is in the region of the abs. light threshold. The results of 10,333 tests in subjects between 18 and 55 years are recorded. With advancing age there is a downward trend of scotopic vision. I. C.

Method for determining fading away of after-images. G. G. Jaure (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 569—571).—A method for determining the visual after-image produced after rest and after fatigue is described. The work is based on Lazarev's theory of retinal after-images, which is discussed. P. G.

Effect of strychnine on intensity discrimination in human eye. S. V. Kravkov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **37**, 144—145).—Twelve persons were subjected to tests designed to ascertain the min. illumination required by the dark-adapted eye for recognising a grey square object against a dark background of given contrast val., after administration of strychnine. Subcutaneous injection of 1 c.c. of a 0·1% solution causes an appreciable heightening of the contrast sensitivity of central vision which lasts 2 or 3 days; the same effect can be produced by 0·7-mg. pills, starting 4 hr. after administration and lasting for 24 hr. One subject took 17 pills in 22 days, and no injurious effects were noted. J. H. A.

Detection and significance of melanophore-expanding substance in urine and blood with special reference to retinitis pigmentosa. J. R. Mutch and D. Mackay (*Brit. J. Ophthal.*, 1943, **27**, 434—449).—The various techniques for the assay of *B*-hormone, which are thought to be not completely sp., are described. In a series of blood tests, only 3 out of 9 retinitis pigmentosa patients gave definitely positive results, and so did 2 out of 7 normal "controls." In the rabbit *B*-hormone injected intravenously disappears very rapidly from the circulation; it is suggested that secretion from the pituitary may be intermittent and the blood-level of the hormone constantly changing. J. H. A.

Angiomatosis retinæ. P. M. Lewis (*Trans. Amer. Acad. Opthhal. Otolaryngol.*, 1943, 354—363).—Report of a moderately advanced case in which the progress of the condition was arrested by diathermy. In the discussion eight further cases were reported, in four of which

the condition was either arrested or improved by diathermy. Two others were treated by *X*-radiation, receiving doses of 1202 r. and 1800 r. respectively. Some improvement was obtained in both. K. T.

Intraocular hæmorrhages in choline deficiency. J. G. Bellows and H. Chinn (*Arch. Ophthal.*, 1943, **30**, 105—109).—Weaning rats 21—28 days old were fed on a choline-poor diet. The survivors showed, in addition to changes in the kidneys, liver, spleen, and lungs, described by Engel and Salmon (cf. A., 1942, III, 760), hæmorrhages in the eyes, most commonly in the retrolental space, but sometimes in the ciliary processes and anterior chamber. The possibility of a relationship between an inadequate amount of available choline and the various retinopathies in man is discussed. J. H. A.

Positive scotoma in lead poisoning. R. de Montmollin (*Schweiz. med. Wschr.*, 1942, **72**, 1284—1285).—Several cases are reported. A. S.

Association between aniseikonia and anomalous binocular space perception. K. N. Ogle (*Arch. Ophthal.*, 1943, **30**, 54—64).—In order to determine the precise relationship between aniseikonia and incorrect binocular spatial localisation, a no. of routine aniseikonic patients were examined not only with the standard eikonometer but also with the space eikonometer and "leaf room," two devices which primarily depend on stereopsis for their results. The anomalous binocular space perception to which the aniseikonic patient is subject was not apparent in ordinary surroundings but only in the absence of strong clues from perspective or known form; it, as well as the aniseikonia, can be cor. by the appropriate size lenses. The standard eikonometer, therefore, does determine actual image size differences, and not the amount of anisophoria, as had been suggested, because measurements on this instrument involve differential movements of the eyes if fusion is to be maintained during its use. J. H. A.

Fields of vision in cases of tumour of Rathke's pouch. H. P. Wagener and J. G. Love (*Arch. Ophthal.*, 1943, **29**, 873—887).—Loss of central vision in one or both eyes is found very frequently and the defects may be either homonymous or bitemporal. Roentgenograms of the head are normal in 24% of cases. Relatively successful results from operation were obtained in 12 out of 17 cases. A. Gl.

Structural changes in external geniculate body of rat following removal of eyes. R. R. Chace (*Arch. Ophthal.*, 1943, **30**, 75—86).—Macroscopic and histological examinations of the lower visual pathway and centres of over 30 animals were made. Removal of one eye at birth was found to causes degeneration of the corresponding optic nerve and tract, and a hypoplastic development of the external geniculate body, as revealed by an abnormally low cell count. The same operation in an adult animal leads to atrophy of the optic nerve, but the chiasma, tract, and external geniculate body show no gross or microscopical changes. Rats born with microphthalmic eyes have no optic nerves, chiasmas, or tracts, and the external geniculate bodies are markedly hypoplastic. J. H. A.

Visuometer co-ordination in newt (*Triturus viridescens*) after regeneration of optic nerve. R. W. Sperry (*J. comp. Neurol.*, 1943, **79**, 33—57).—It is known that normal vision with spatial localisation may be recovered in adult urodele amphibia after regeneration of the optic nerve. To decide whether this recovery is due to selective synaptic termination of the optic fibres or to a functional reorganisation of higher centres, experiments were made in which either the optic nerve was cut or the optic nerve was cut and the eyeball rotated antedorsally 180° on its optic axis. In 51 out of 70 animals vision was restored even when the retinal field had been rotated 180°. It is concluded that the central reflex relations are established in an orderly manner by the growth process itself without the aid of functional adoption. The mechanism by which optic fibre specificity influences the re-establishment of functional relations in the visual centres can be explained either on the basis of the resonance principle or on the hypothesis that formation of central synaptic associations is regulated by the development of an inductive effect from the periphery. P. G.

Application of sound absorption to factory noise problems. H. J. Sabine and R. A. Wilson (*J. Acoust. Soc. Amer.*, 1943, **15**, 27—31).—Large scale employment of women in industry has shown the need of cutting down the noise caused by machinery in order to get maximal output and to prevent absenteeism. The importance of the ceiling height and the use of sound-absorbing material is discussed. P. G.

Direct observations of acoustic oscillations of human ear. H. J. Kobrak (*J. Acoust. Soc. Amer.*, 1943, **15**, 54—56).—A method of direct observation of the eardrum is described. The method was developed in accordance with 4 principles: (1) proper exposure of the anatomical structure; (2) proper illumination; (3) proper magnification; (4) the use of stroboscopic illumination to make the very rapid oscillations visible. P. G.

Blast perforation of ear-drums. G. W. Palmer (*Brit. Med. J.*, 1943, II, 233).—The antero-inferior quadrant is the commonest site of injury. Infection is to be expected in 35—40% of cases. Deafness is of the middle-ear type, superimposed on a temporary nerve-deafness. Subsequent damage to hearing is not marked. I. C.

Is threshold audiogram sufficient for determining hearing capacity? E. P. Fowler (*J. Acoust. Soc. Amer.*, 1943, **15**, 57—60).—Clinical cases are discussed in which the air-conduction threshold audiogram is not sufficient for determining hearing capacity. P. G.

Estimation of percentage of compensable hearing defects. W. E. Groves (*Arch. Otolaryngol.*, 1943, **38**, 152—155).—A description of the procedure for determining the % loss of ability to hear and understand speech recommended by the Committee of Consultants on Audiometers and Hearing Aids of the Council on Physical Therapy of the American Medical Association. K. T.

Acoustic sound filtration and hearing aids. F. M. Grossman (*Arch. Otolaryngol.*, 1943, **38**, 101—112).—Because of their differential sensitivity, persons with perceptive (nerve) deafness need to have low tones reduced in intensity as compared with high ones if they are to hear speech comfortably. Although the amplifiers of electrical hearing aids are designed to attenuate low tones while transmitting high tones with the greatest possible fidelity, the design of ear mould with which such amplifiers are used attenuates the high frequencies. It was found experimentally that the widest and shortest possible ear mould should be used for these cases since the more closely the final apparatus approximates to the external meatus the less attenuation of high tones will there be. In patients with otosclerosis, on the other hand, more force is required to move the ossicles at low frequencies than at high, therefore the high tones should be attenuated relative to the low ones and the ear mould should be long and narrow. K. T.

Response of labyrinthine apparatus to electrical stimulation. E. A. Spiegel and N. P. Scala (*Arch. Otolaryngol.*, 1943, **38**, 131—138).—(1) The site of action of the primary response of the labyrinthine pathway to electrical stimulation must be the peripheral neurone of the vestibular nerve since destruction of the inner ear does not abolish the response while cutting the nerve removes the nystagmus reaction to a current flowing transversely between the ears but does not affect the dilatation of the pupil etc. (2) It was found that contralateral turning of the head can be elicited by faradic stimulation if the electrodes are applied closely enough to the vestibular nerve. If the external or middle ear is stimulated the current spreads to other nerves, producing reflex effects which mask the vestibular response. It is probably for this reason that it has been thought that faradic stimulation cannot excite the labyrinthine apparatus. It was, however, found to be impossible to elicit nystagmus by faradic stimulation probably because the inertia of the neuromuscular mechanism responsible for such rapid movements of the eyes is too high. (3) Experiments in which bilateral stimulation of the vestibular nerve, first by two anodes and then by two cathodes (the other, diffuse, electrode being placed on the abdomen), showed that anodic stimulation, while not affecting the excitability of the semicircular canals, does depress the tonic impulses from the labyrinth to the central nervous system. This depressor action of the anode may produce an imbalance between the two vestibular nuclei sufficient to account for the deviation of the head and eyeballs, the falling reaction and the slow component of the nystagmus being directed towards the anode. K. T.

Investigation and treatment of "Ménière's" disease. T. E. Cawthorne and C. S. Hallpike (*Proc. Roy. Soc. Med.*, 1943, **36**, 533—546).—No other neurological abnormalities were found in patients suffering from Ménière's disease. The technique, results, and significance of the caloric tests (two on each ear with water at 30° and 44°) are discussed. Cases may be treated either with a combination of hyoscine (1/600 grain) and hyoscyamine (1/150 grain) or surgically by opening the endolymphatic space of the external canal, with the aid of a binocular dissecting microscope. The results of both treatments are discussed. P. G.

Histamine in treatment of Ménière's syndrome. J. J. Rainey (*J. Amer. Med. Assoc.*, 1943, **122**, 850—852).—It was found that histamine given intravenously and subcutaneously is of major importance in relieving symptoms of patients suffering from Ménière's disease. P. G.

Olfactory discrimination after destruction of anterior thalamic nuclei. K. S. Lashley and R. W. Sperry (*Amer. J. Physiol.*, 1943, **139**, 446—450).—In view of the anatomical connexions of the anterior thalamic nuclei (correlation of olfactory with general somatic reactions) the authors tested the olfactory discrimination of rats after interruption of the cortical radiations of the anterior thalamic nuclei. Discrimination between the odours of oil of wintergreen and of bread and milk was not disturbed by total bilateral degeneration of the anterodorsal, anteroventral, and anteromedial nuclei. Removal of the olfactory bulbs permanently abolished the discrimination, showing that this was based on olfactory and not trigeminal stimulation. P. G.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Embryological development and physiology of endocrine organs of common fowl (*Gallus domesticus*).—See A., 1943, III, 782.

Neurogenic theory concerning effects of iodine on goitre. S. Brock (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 344—349).—Discussion. P. C. W.

Persistence and recurrence of toxic goitre following subtotal thyroidectomy. W. O. Thompson and F. W. Preston (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 365—366).—An analysis of 294 cases. Thyrotoxicosis recurred in 2·4% of 82 patients with toxic adenoma and in 17·5% of 212 cases of exophthalmic goitre. P. C. W.

Hyperthyroid crisis. J. K. McGregor (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 367—370). P. C. W.

Experimental alteration of thyroid function in cattle. J. F. Bullard and F. N. Andrews (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 376—381).—Thyroidectomy was carried out on 12 steers. Rate of body wt. gain was increased for 4—6 weeks after operation and then decreased; the latter is explained by hyperplasia and hypertrophy of surviving thyroid tissue. Symptoms of thyroid deficiency were seen in 2 animals and were relieved by feeding desiccated thyroid. E. G. W.

Fixation of radioactive iodine by rabbit thyroid. A. Lein (*Endocrinol.*, 1943, **32**, 429—432).—35 μg. of stable I, labelled with ^{131}I, was injected intravenously into mature male rabbits. During the first 10 min. after injection a rapid increase of labelled I occurs in the acetone-sol. (inorg.) I fraction of the thyroid; later ^{131}I decreases in this fraction. ^{131}I can also be detected in the acetone-insol. (org.) I fraction of the thyroid within 5 min. after injection; the amount of organically bound ^{131}I then rapidly increases, being at the end of 12 hr. 4—5 times the amount initially fixed by the thyroid. The accumulation of ^{131}I in the lungs was also high, although less than in the thyroid. G. P.

Determination of rate of thyroid hormone secretion at various environmental temperatures. E. W. Dempsey and E. B. Astwood (*Endocrinol.*, 1943, **32**, 509—518).—Certain "antithyroid" compounds prevent the formation of the active hormone of the thyroid and subsequently the gland undergoes hyperplasia as the result of stimulation by pituitary thyrotropic hormone (cf. *ibid.*, 188, 210). The maintenance of normal thyroid wt. by the administration of thyroxine to rats simultaneously treated with the "antithyroid" drug 2-thiouracil was used as the basis of assaying thyroid hormone. The enlargement of the thyroid in response to thiouracil treatment was less at 35° than at 5°. The thyroxine requirement to maintain the normal thyroid wt. of young male rats treated with thiouracil and kept at 35° was 1·7 μg., at 25° 5·2 μg., and at 1° 9·5 μg. per day. These vals. are equiv. to the amount of hormone produced by the normal thyroid under these conditions. Treatment with thiouracil for 9—12 days resulted in a 16% fall, and treatment for 2—3 months in a 53% fall, of the basal metabolic rate of the rats. The thyroxine requirement to maintain the basal metabolic rate at normal levels was 5—10 μg. per day. G. P.

Hormonal factors of chemical temperature regulation and two hitherto unknown hormones of thyroid gland. G. Mansfeld (*Schweiz. med. Wschr.*, 1942, **72**, 1267—1273).—On exposure to cold thyroxine is liberated from the thyroid which releases from the anterior lobe of the pituitary a substance which increases oxidation in resting rabbit muscle. Two oxidation-inhibitory substances are liberated from the thyroid of rabbits on exposure to heat, thermothyrin-*A* (acid-sol.) and -*B* (acid-insol); thermothyrin-*A* was also isolated from serum of animals exposed to heat. The thermothyrins are antagonistic to thyroxine, lower the basal metabolic rate in intact animals on injection, and increase the formation of glycogen. A. S.

Relationship of thyroid to polyuria of experimental diabetes insipidus. C. E. Radcliffe (*Endocrinol.*, 1943, **32**, 415—421).—Oral administration of thyroxine or desiccated thyroid to cats with experimental diabetes insipidus increased the urinary output; NaCl output first increased and then decreased; the decrease persisted for at least a week after administration of thyroxine was discontinued. Thyroid feeding had no effect on urine output of normal cats, but had the same effect on NaCl output as in cats with diabetes insipidus. After thyroidectomy the urinary output of cats with diabetes insipidus decreased, but was still 3—4 times that of normal cats. Feeding thyroid to thyroidectomised cats with diabetes insipidus increased the diuresis, caused NaCl retention, and produced both in normal cats and in cats with diabetes insipidus a 12% rise of daily urinary N excretion. G. P.

Influence of hyperthyroidism on urinary excretion of thiamin and riboflavin. B. Sure and Z. W. Ford, jun. (*Endocrinol.*, 1943, **32**, 433—436).—Subcutaneous injection of 0·5—1 mg. of thyroxine per day for 17—21 days to adult albino rats, kept on a synthetic diet supplemented daily with thiamin, riboflavin, and pyridoxine (20 μg. of each), choline chloride 6 mg., and Ca pantothenate 200 μg., increased the excretion of riboflavin in the urine. The thyroxine treatment also produced large losses of body wt. and of riboflavin from many of the organs. Thiamin excretion was not influenced by thyroxine. G. P.

Hippuric acid [liver] test in thyrotoxicosis. H. R. G. Poate, R. J. Bartholomew, and T. E. Wilson (*Med. J. Austral.*, 1943, I, 481—490).—183 hippuric acid tests were made on 133 patients with diseases of the thyroid gland. Patients with toxic adenomatous goitres showed greater impairment of the conjugating and detoxicating function of the liver than patients with acute thyrotoxicosis. In 9 fatal cases of thyrotoxicosis the results of the hippuric acid test were not proportional to the changes in hepatic structure. F. S.

Recovery of crystalline thyroxine from iodinated casein.—See A., 1943, II, 402.

Distribution of goitrogenic substances in vegetables and susceptibility of animals. F. Blum (*Schweiz. med. Wschr.*, 1942, **72**, 1301—1305, 1329—1333).—Vegetables of the *Brassica* family, *Soja hispida*, various members of *Phaseolus* and *Vicia*, *Arachis*, and *Beta rapa* are strumigenic. Goitrous thyroids were observed in rats, rabbits, guinea-pigs, goats, sheep, pigs, dogs, and geese. A. S.

Hyperparathyroidism. H. S. Chapman (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 386—397).—A case is reported in detail. P. C. W.

Serum-phosphatase activity in hyperparathyroidism. N. C. Klenshoj and G. F. Koepf (*J. Clin. Endocrinol.*, 1943, **3**, 351—352).—High serum-phosphatase activity was demonstrated in an 18-year-old girl with hyperparathyroidism. Following removal of a parathyroid adenoma the serum-phosphatase reverted to normal. P. C. W.

Calcification of bone marrow in toxic hyperparathyroidism. R. D. Moore (*Arch. Path.*, 1943, **36**, 51—57).—In young rats injected with toxic doses of parathyroid U.S.P. the deposits of $Ca_3(PO_4)_2$ in the bone marrow were associated with similar deposits in other organs. The salt ppts. were accompanied by focal degeneration of the tissues involved, and no calcification of tissues otherwise normal was observed. The localisation of the deposits appears to be induced by focal changes incident to cell degeneration in association with systemic hypercalcæmia and hyperphosphatæmia. (8 photomicrographs.) C. J. C. B.

Cytology of normal parathyroid gland in relation to its secretory activity. C. L. Foster (*J. Endocrinol.*, 1943, **3**, 244—253).—The mouse parathyroid consists only of chief cells up to the age of 10 days. These cells have compact Golgi bodies applied peruke-like to the nucleus and cytoplasm with little affinity for stain. Later dark cells with basophil cytoplasm and clear cells with non-stainable cytoplasm, and transitional cells between these two, appear. There is evidence of a secretory cycle in which the dark cells are transformed into clear cells passing through the transitional stages mentioned. Senescent clear cells are described. Progressive change in the nucleoli with increasing age is described. At the age of 45 weeks the gland is adult and the uniform cell arrangement of the juvenile gland has given place to a lobular arrangement. P. C. W.

Preparation of active fraction of pineal gland. E. Fischer (*Endocrinol.*, 1943, **33**, 116—117).—A detailed description of the prep. of a biologically active substance from pineal glands, which in 3-μg. dose inhibits the opening of the vaginal membrane of 22-day immature mice. The activity was destroyed by heating a 0·005% solution of the substance at 100° for 30 min. G. P.

Regeneration of involuted thymus after adrenalectomy. C. Grégoire (*J. Morph.*, 1943, **72**, 239—261).—A study of the regeneration of the thymus following acute involution caused by *X*-ray injury in rats deprived of their adrenals. The changes accompanying regeneration of the lymphoid elements of the organ are essentially the same in both control and adrenalectomised animals except that, in the latter, complete regeneration is achieved sooner. J. D. B.

Surgical risks in diabetes; pre- and post-operative treatment. G. R. Constam (*Schweiz. med. Wschr.*, 1942, **72**, 1289—1292).—A lecture. A. S.

Insulin resistance due to infection in diabetes mellitus. J. A. Greene and G. F. Keohen (*J. Amer. Med. Assoc.*, 1943, **121**, 173—176).—Insulin resistance of varying degree occurred in 14 of 24 diabetics with infections. The increased resistance was not closely related to the degree of pyrexia, as was also shown by injections of typhoid vaccine and by artificial pyrexia induced in a heating chamber. Repeated injections of histamine did not increase resistance to insulin. C. A. K.

Insulin in severe diabetic coma. C. C. Bailey (*J. Amer. Med. Assoc.*, 1943, **121**, 255—256).—1820 units of insulin were given to a case of severe diabetic coma in 7 hr. The blood-sugar rose to 1232 mg.-% and the CO_2-combining power of the blood was 7 vol.-%. The patient recovered. C. A. K.

Globin zinc insulin: some experiments. R. D. Lawrence (*Brit. Med. J.*, 1943, II, 103—104).—The new prep. (ox globulin, insulin, + traces of Zn) has no advantages over sol. insulin or protamine Zn insulin. I. C.

Clinical experience with mixtures of protamine zinc and unmodified insulins. A. G. Hildebrand and E. H. Rynearson (*Arch. intern. Med.*, 1943, **72**, 37—45).—Mixtures of protamine Zn insulin and unmodified insulin well controlled the blood-sugar of diabetic patients for 24 hr. following their injection. Except after breakfast, post-prandial elevations of blood-sugar were min. Ratios of protamine Zn insulin to unmodified insulin of 1 : 1 to 1 : 5 gave best control. Injection of the 2 types of insulins at separate sites were less satisfactory than their injection together. C. J. C. B.

Effect of chronic insulin injections on reproduction in white rats. H. W. Ferrill (*Endocrinol.*, 1943, **32**, 449—450).—Insulin injected daily in doses of 20—40 units per kg. has no effect on reproduction in the white rat, in one or in 5 succeeding generations. G. P.

Unusual cases of hyperinsulism and hypoglycæmia. I. Extra-pancreatic islet adenoma as a cause of hyperinsulism and hypoglycæmia. E. Holman, D. A. Wood, and A. Stockton (*Arch. Surg., Chicago*, 1943, **47**, 165—177. F. S.

Necrosis of islets of Langerhans produced experimentally [by alloxan]. J. S. Dunn, J. Kirkpatrick, N. G. B. McLetchie, and S. V. Telfer (*J. Path. Bact.*, 1943, **55**, 245—257).—Alloxan, administered intravenously to rabbits, produces selective necrosis of the islets of Langerhans accompanied by an initial hyperglycæmia and subsequent hypoglycæmia, which may become intense and fatal. The body temp. falls to very low levels. The lesion is attributed to excessive stimulation and functional overactivity of the islet tissue. (10 photomicrographs.) C. J. C. B.

Adrenal cortex and electrolyte behaviour. R. F. Loeb (*Harvey Lect.*, 1941—42, *Ser.* 37, 100—128).—A review. E. M. J.

Holocrine secretion from adrenals. L. Volfenzon (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 644—647).—In the adrenals of the normal rat lipoid particles were most prominent in the zona fasciculata. Stages were traced from cells with almost no lipin to cells in which the lipoid droplets had coalesced and took up almost the whole of the cytoplasm. This process paralleled cell degeneration and the nuclei of the cells with coalesced fat droplets were pyknotic. In the hypertrophied adrenals in rats in which one adrenal had been removed these processes were more pronounced; evidence was obtained of release of the lipoid material into the capillaries by the breakdown of the lipin-containing cells showing that holocrine secretion was occurring. P. C. W.

Ovarian and placental function in Addison's disease. L. T. Samuels, G. T. Evans, and J. L. McKelvey (*Endocrinol.*, 1943, **32**, 422—428).—In 2 non-pregnant women suffering from Addison's disease œstrogen excretion, while low, showed the normal double peak; Na pregnanediol glycuronidate appeared in the urine during the latter half of the menstrual cycle. The excretion of 17-ketosteroids was very low. In one pregnant woman with Addison's disease the excretion of œstrogen and Na pregnanediol glycuronidate showed the progressive increase characteristic of normal pregnancy. The excretion of these compounds began to drop just before parturition and returned to normal non-pregnant levels after. The excretion of 17-ketosteroids in the pregnant woman remained very low until the 6th month of pregnancy, then rose to 11—15 mg. per day, and it fell to the original low level immediately after the birth of the child. G. P.

Adrenal cortical hypertrophy. J. Tepperman, F. L. Engel, and C. N. H. Long (*Endocrinol.*, 1943, **32**, 373—402).—A review. In many of the conditions producing adrenal cortical hypertrophy there is a common factor, *e.g.*, an increase of endogenous or exogenous protein catabolism. G. P.

Effect of high-protein diets on size and activity of adrenal cortex in albino rat. J. Tepperman, F. L. Engel, and C. N. Long (*Endocrinol.*, 1943, **32**, 403—409).—Young male rats (60 g. wt.) fed on raw ground beef (protein 55% and fat 40%) or a synthetic high-protein diet (casein 78%) for 4—7 weeks showed a 40—50% increase in adrenal size compared with control rats fed on Purina fox-chow (24% of protein). Both high-protein diets were practically free from carbohydrate. Rats (100 g. wt.) on a diet containing 60% of casein and 20% of carbohydrate also developed hypertrophy of the adrenal cortex. The hypertrophied cortices were depleted of lipins. Saline extract of anterior pituitary greatly increased the size of the adrenals of both chow- and meat-fed rats over that achieved by diet alone. G. P.

Effect of diet in rats on adrenal weights and on survival following adrenalectomy. D. J. Ingle, G. B. Ginther, and J. Nezamis (*Endocrinol.*, 1943, **32**, 410—414).—High-protein (67·5%), or high-carbohydrate (77·6%), or high-fat (81·5%) diets were given for 7, 14, and 28 days to rats weighing 180 g. The observed differences in adrenal wts. and periods of survival after adrenalectomy were without significance. G. P.

Constituents of adrenal cortex and related substances. 11-*epi*-Corticosterone acetate and two isomeric anhydrocorticosterone acetates.—See A., 1943, II, 376.

Comparison of influence of some crystalline hormones of adrenal cortex on deposition of glycogen in liver. R. M. Reinecke and E. C. Kendall (*Endocrinol.*, 1943, **32**, 505—508).—The effect of 5 cryst. steroids from the adrenal cortex, of deoxycorticosterone acetate, and of a whole extract of adrenal cortex on the deposition of glycogen in the liver of fasted rats was determined (cf. A., 1943, III, 39). Deoxycorticosterone acetate, 17-hydroxy-11-dehydro-3 : 4 : 5-tetrahydro-(3-β-hydroxy)corticosterone, and 11-dehydro-3 : 4 : 5-tetrahydro-(3-β-hydroxy)corticosterone (which have no unsaturated ketone group in ring A) were without effect. 11-Dehydrocorticosterone, corticosterone, and 17-hydroxy-11-dehydrocorticosterone promoted the deposition of glycogen in the liver. The combined wts. of these three steroids that can be isolated in cryst. form from an amount of whole adrenal extract giving the same effect as 0·1 mg. of either steroid is 0·03 mg. G. P.

Ability of adrenal cortical hormones, prolactin, and thyroxine to sustain weight of body and viscera of hypophysectomised pigeons. R. A. Miller and O. Riddle (*Endocrinol.*, 1943, **32**, 463—474).—Extract of adrenal cortex, or deoxycorticosterone acetate (DCA), partly prevented the loss of body wt. and of organ wts. of white Carneau pigeons after hypophysectomy. 1 mg. of DCA and 1 Riddle–Bates unit of prolactin per day injected together for 10 days maintained the preoperative body wts.; also animals thus treated had heavier livers and longer but lighter intestines than the non-hypophysectomised birds; the pancreas retained on this treatment 70% of its normal wt. 5—10 μg. of thyroxine added to the above combination increased the wt. of pancreas by a further 20%, but failed to induce additional gains in body wt. DCA and prolactin given separately were less effective than when given together. G. P.

Changes in cell permeability to potassium and water due to adrenal gland. V. H. Cicardo (*Rev. Soc. argent. Biol.*, 1942, **18**, 79—87).—The hind quarters of toads (*Bufo arenarum*) were perfused (Loewen–Trendelenburg technique), using K-free Ringer's solution for 1 hr. The perfusate was collected from the abdominal vein and K determined (Marenzi–Gerschman method). The K concn. of the perfusate from adrenalectomised toads was 1·06 mg. per 100 g. initial wt. of toad; in the controls it was 0·62 mg. Considerable œdema developed in the adrenalectomised animals. Injection of 2—3 mg. of deoxycorticosterone for 1—3 days into normal animals reduced the liberation of K in these conditions; when treatment was prolonged for 4—8 days more K was liberated than in normal controls. J. T. L.

Effects of adrenal and thyroid hormones on water exchange in hypophysectomised rats. M. Schweizer, A. Ehrenberg, and R. Gaunt (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 349—352).—After post-operative diabetes insipidus has subsided, 1 mg. daily of deoxycorticosterone acetate raises water exchange but not to diabetic level. Cortical extract is without effect. Thyroid feeding which restores O_2 uptake to normal increases slightly the water intake but not urine output. Thyroxine has no effect. Administration of deoxycorticosterone decreases the toxic effect of thyroid. V. J. W.

[Action of adrenal cortex on] sodium retention in opossum. D. E. Smith, L. A. Lewis, and F. A. Hartman (*Endocrinol.*, 1943, **32**, 437—442).—Whole adrenal cortical extract injected into normal female opossums caused moderate retention of Na in some animals; this was less than the retention produced in dogs. The Na factor of adrenal cortex likewise had little effect. Deoxycorticosterone acetate caused retention of Na and K during the first 24 hr., followed by diuresis and an increased excretion of Na, K, and Cl′. G. P.

Increased salt and water intake of normal rats treated with deoxycorticosterone acetate. K. K. Rice and C. P. Richter (*Endocrinol.*, 1943, **33**, 106—115).—8 normal male rats, given free access to a salt-poor diet, a 3% NaCl solution, a 1% KCl solution, and tap water, showed a 7-fold increase in appetite for the NaCl when injected with 2—4 mg. of deoxycorticosterone acetate (DCA) daily. 4 rats on a salt-poor diet and tap water showed no increased thirst when treated with DCA but showed a 3-fold increase in fluid intake when the tap water was replaced by 1% NaCl. 4 rats given access to tap water and to food containing 5% of added NaCl showed a 50% increase in water intake when injected with 2·5 mg. of DCA daily. The primary effect of DCA in normal rats is increased salt need; the polydipsia is a consequence of high salt intake. G. P.

Oxygen consumption of skin and hair growth after adrenalectomy in white rat. E. O. Butcher (*Endocrinol.*, 1943, **32**, 493—496).—The O_2 consumption of the skin of under-fed adrenalectomised rats increased by 14% 46 hr. and by 39% 66 hr. after adrenalectomy (Fenn respirometer; Ringer's phosphate solution at 37·5°). 72 hr. and 96 hr. after the operation the O_2 consumption of the skin was the same as at 66 hr. The increased O_2 consumption preceded the increased rate of hair growth after adrenalectomy. G. P.

Rôle of adrenal cortex in preventing hypoglycæmic convulsions. V. Arnett, M. Kessler, and E. Gellhorn (*Amer. J. Physiol.*, 1942, **137**, 653—657).—Insulin (0·2 unit per kg.) injected intraperitoneally into adreno-demedullated and adrenalectomised rats produced similar

hypoglycæmic effects. Coma, convulsions, and disappearance of α and appearance of δ potentials in the electroencephalogram occurred frequently in the adrenalectomised and rarely in the adreno-demedullated rats after insulin. T. F. D.

Metabolic changes in patient with Addison's disease following onset of diabetes mellitus. G. W. Thorn and M. Clinton (*J. Clin. Endocrinol.*, 1943, **3**, 335—344).—The onset of diabetes mellitus in a case of Addison's disease was characterised by anorexia, wt. loss, fall in blood pressure, and increased requirement of deoxycorticosterone acetate. Insulin therapy caused muscular weakness due to K depletion. The diabetes could be regulated with small doses of insulin. Insulin withdrawal was followed by an increase in blood-sugar and in N, Na, and K excretion, though there was no ketonuria if enough deoxycorticosterone was given to prevent dehydration. Administration of 33 mg. of 11-dehydro-17-hydroxycorticosterone caused a rise in blood-sugar and increased excretion of glucose, N, P, Na, and Cl, with ketonuria and a lowering of non-protein R.Q. The results are discussed. P. C. W.

Adrenocortical-like tissue in ovaries of the adrenalectomised ground squirrel (*Citellus tridecemlineatus*). R. A. Groat (*Endocrinol.*, 1943, **32**, 488—492).—Cells resembling those of adrenal cortex appear invariably in the ovaries of the female ground squirrel as early as 3 days after adrenalectomy. They develop from fibroblasts and undifferentiated cells in the medulla of the ovary and in the mesovarium near the hilus. 3—4 weeks after the operation the no. of these cells largely increased and they extended into the cortex of the ovary. Adrenocortical-like cells were not found in the ovaries of hypophysectomised and adrenalectomised squirrels 3—9 days after adrenalectomy. Several months after adrenalectomy ground squirrels survived a 14 days' fast, like normal animals. G. P.

Rôle of adrenal cortex and anterior pituitary gland in induced secondary shock symptoms. M. Reiss, L. D. MacLeod, and Y. M. L. Golla (*J. Endocrinol.*, 1943, **3**, 292—301).—Shock-like symptoms were produced in rats by intraperitoneal injection of hypertonic glucose. The sensitivity of rats to such treatment was increased following adrenalectomy or hypophysectomy. Corticotrophin and deoxycorticosterone increased the resistance of adrenalectomised, hypophysectomised, or normal rats to hypertonic glucose injections. Following a series of such injections in normal rats some resistance was acquired. This was not so in hypophysectomised rats. P. C. W.

Cytology of pituitary in developing and adult *Triturus viridescens*. —See A., 1943, III, 784.

Comparative anatomy and pharmacology of pituitary gland. E. M. K. Geiling (*Harvey Lect.*, 1941—42, *Ser.* 37, 269—312).—A review. E. M. J.

Structure of human anterior pituitary gland after administration of œstrogenic hormone. C. Spark (*J. Clin. Endocrinol.*, 1943, **3**, 367—374).—14 patients with advanced chronic diseases were injected with œstrone (2—26 mg.) during 1—25 days, or with œstradiol benzoate (7—44 mg.) during 9—294 days. At autopsy 1—83 days after the last injection the pituitary glands were examined cytologically. The 3 patients receiving œstradiol benzoate and 1 of those receiving œstrone showed marked hyperplasia of the chromophil cells, with cytological changes similar to those produced by œstrogens in animals. P. C. W.

Diagnosis and treatment of anterior pituitary disturbances. M. G. Wohl (*West J. Surg. Obstet. Gynec.*, 1941, **49**, 309—317). P. C. W.

Diabetes insipidus and Simmonds' disease following encephalitis. E. Glanzmann and C. Wegelin (*Schweiz. med. Wschr.*, 1942, **72**, 1401—1408).—A case of Simmonds' disease and diabetes insipidus in a boy of 12 years is reported. There was a cyst of 1·6 cm. diameter which had destroyed the optic chiasm, infundibulum, and anterior hypothalamic nuclei, particularly the supra-optic nucleus and the tuber cinereum. A. S.

Growth and metabolism of young hypophysectomised rats fed by stomach tube. L. T. Samuels, R. M. Reinecke, and K. L. Bauman (*Endocrinol.*, 1943, **33**, 87—95).—60—100-g. hypophysectomised rats, fed by stomach tube, showed the following differences from controls: less gain in body wt.; very small increase in skeletal growth and in N storage; greater urinary N output and depot fat storage; decreased total metabolism; more N and less fat in the liver. Absorption from the intestine was unchanged. G. P.

Pituitary hypothyroidism with impaired renal function. G. E. Beaumont and J. D. Robertson (*Brit. Med. J.*, 1943, II, 356—357).—A case of renal impairment with diminished urea clearance and water elimination, urine of low sp. gr., hypothyroidism, normal blood-cholesterol, cachexia, adrenocortical insufficiency, hypogonadism, and decreased diabetogenic activity. Treatment with NaCl and hormones of the thyroid, gonads, and adrenals brought about a marked improvement and restored the renal function to normal. I. C.

Weight and thyrotropic hormone content of anterior pituitary of swine. H. D. Elijah and C. W. Turner (*Univ. Missouri Agric. Exp. Stat.* 1942, *Res. Bull.* 357, 27 pp.).—Hog hypophyses weigh 25 mg. at birth, 250 mg. at 6 months, and 800 mg. at maturity. The pituitary wt./body wt. ratio decreases with increasing body wt., the decrease being rapid up to 65 lb. body wt. and slower later. Gilts and barrows had heavier pituitaries than boars. The longer rangier type of hogs had heavier pituitaries per unit body wt. than those of shorter, thicker types. The thyrotropin content of the pituitary was assayed by the increase in thyroid wt. in baby chicks. In female swine the content increased from 44 to 70 chick units during the increase in wt. from 31 to 300 lb., and decreased to 33 units per g. during further growth up to 520 lb. Boars and gilts had similar thyrotropin content per g. of anterior pituitary, while gilts had higher content than barrows. During the rapid growth period the concn. of thyrotropin was increasing, and was 27% higher in rapidly growing pigs than in slow growing ones. The correlation between rapid growth and high thyrotropin content is discussed. P. C. W.

Adrenocorticotropic hormone. C. H. Li, H. M. Evans, and M. E. Simpson (*J. Biol. Chem.*, 1943, **149**, 413—424).—The filtrate obtained by treating the fresh anterior pituitary gland with acid acetone (80%) is pptd. with acetone. The dried powder is extracted with 0·1M-Na_2HPO_4 and the active principle pptd. by 50%-saturation with $(NH_4)_2SO_4$. After dialysis, the lactogenic hormone is pptd. by 6%-saturation with NaCl at pH 3·0. The adrenocorticotropic hormone is pptd. by increasing the concn. of NaCl to 50%-saturation and purified by acetone–aq. NH_3 and fractionation with $(NH_4)_2SO_4$. The material is finally heat-treated and fractionated with NaCl. The mol. wt. of the hormone is approx. 20,000 and the isoelectric point pH 4·7. It is very stable at 100° at pH 7·5 and in 0·1M-HCl but not in 0·1M-NaOH. The activity is destroyed by trichloroacetic acid and tryptic digestion but is stable to peptic digestion. Carbohydrate, P, and cysteine are absent. H. G. R.

Preparation and properties of pituitary adrenotropic hormone. G. Sayers, A. White, and C. N. H. Long (*J. Biol. Chem.*, 1943, **149**, 425—435).—The isolation from hog pituitary gland of a pure hormone specifically stimulating the adrenal cortex is described. "Crude prolactin" is first prepared (see A., 1942, III, 747) and subjected to (*a*) fractional pptn. by adjustment of pH in steps and addition of acetone, (*b*) treatment with conc. aq. NH_3 to destroy pressor principles, (*c*) dialysis and pptn. at pH 4·7. The prep. appears to be a single protein, with isoelectric point at pH 4·7—4·8 and mol. wt. about 20,000. 5 mg. of the hormone completely restore adrenal wt. in the hypophysectomised rat, and 5 μg. daily produce a definitely measurable adrenal-stimulating effect. The hormone had no growth-stimulating, gonadotropic, thyrotropic, or lactogenic activity. E. C. W.

Antagonism of pituitary adrenocorticotropic hormone to growth hormone in hypophysectomised rats. W. Marx, M. E. Simpson, C. H. Li, and H. M. Evans (*Endocrinol.*, 1943, **33**, 102—105).—The action of pituitary growth hormone in the hypophysectomised rat is inhibited by simultaneously administered adrenocorticotropic hormone. G. P.

Rôle of anterior pituitary in maintenance of normal blood-sugar levels and local mobilisation of liver-glycogen. R. C. de Bodo, H. I. Bloch, and I. Slater (*Amer. J. Physiol.*, 1942, **137**, 671—680).—The post-absorptive blood-sugar of dogs falls to a subnormal level within 2 days following hypophysectomy and during subsequent weeks fluctuates around this lower level but never returns to normal. Such dogs had liver-glycogen concns. which if present in non-hypophysectomised animals would have been sufficient to maintain normal blood-sugar levels. There is thus in the absence of the pituitary an inability to maintain normal blood-sugar levels and an impairment of ability to mobilise liver-glycogen by secreted adrenaline or by other agents capable of mobilising it in the non-hypophysectomised animal. T. F. D.

Pituitary diabetes in cat: recovery following phloridzin treatment. F. D. Lukens, F. C. Dohan, and M. W. Wolcott (*Endocrinol.*, 1943, **32**, 475—487).—Partly depancreatised cats, made diabetic with anterior pituitary extract, recovered from the diabetes if treated with 0·1—0·4 g. per day of phloridzin within the first 3 months of the diabetes; the normal histological appearances of the islets of Langerhans were also restored. Phloridzin given simultaneously with anterior pituitary extract prevented the injury to the islets, and abolished hyperglycæmia without inhibiting gluconeogenesis, ketogenesis, or thyrotropic activity. After 3 months of diabetes, when atrophy of the islets of Langerhans had ensued, there was no recovery after phloridzin treatment. It is suggested that phloridzin produces its beneficial effect by lowering the blood-sugar level. G. P.

Nature of pituitary factor stimulating mammary duct growth. J. J. Trentin, A. A. Lewis, A. J. Bergman, and C. W. Turner (*Endocrinol.*, 1943, **33**, 67—74).—The nature of the pituitary factor stimulating mammary duct growth in the male mouse was re-investigated. Previous work suggested that this factor was lipoid in nature. The factor has now been recovered from the protein fraction of pituitary extracts (cf. Lewis and Turner; A., 1939, III, 379). G. P.

Intermediate lobe pituitary hormone. F. W. Landgreeb, E. Reid, and H. Waring (*Quart. J. Exp. Physiol.*, 1943, **32**, 121—141).—Modifications of a previously described method for obtaining a high yield of a potent prep. of melanophore-expanding hormone are explained and the properties of the new extracts are compared with those of Stehle's extract (A., 1926, 1030). Potent melanophore-expanding preps. do not exert hyperglycæmic or anti-insulin effects. No melanophore hormone was found in the blood or urine of untreated rabbits. Aq. extracts of normal rabbit liver contain a melanophore-expanding factor which was indistinguishable from the pituitary melanophore hormone. A. S.

Response of isolated muscle strips from upper and lower segments of human full-term pregnant uterus to pitocin and pitressin. C. S. Russell (*J. Obstet. Gynaec.*, 1943, **50**, 287—298).—Strips of the upper and lower segments of the human uterus were removed during Cæsarean section at or shortly before term. The isolated strips from the lower segment were uniformly more sensitive to the posterior pituitary extracts than those from the upper segment. Pitressin was 25 times as powerful a stimulant as pitocin. P. C. W.

[Pituitary] melanotropic hormone and vitiligo. J. C. M. Fournier, J. M. Cervino, and O. Conti (*J. Clin. Endocrinol.*, 1943, **3**, 353—356).—8 of 11 cases of vitiligo were successfully treated with melanotropic hormone given locally or systemically (in 1 case by feeding fresh bovine hypophyses). P. C. W.

XII.—REPRODUCTION.

Morphological and physicochemical differentiation in various layers of avian albumin. A. L. Romanoff (*Food Res.*, 1943, **8**, 286—291).—The albumin of the new-laid avian egg is differentiated into 4 layers and the dry matter, total N, *d*, and *n* progressively increase in val. from the outermost to the innermost layer. Little variation in pH occurs but the audio- and high-frequency conductivities are greater in the middle-dense than in the outer and middle thin layers of ov- and pheasant-albumin. Heat-coagulation points of chicken eggs are 61·5°, 61°, and 60·3° for the outer, middle thick, and middle thin layers. H. G. R.

Factors affecting permeability of birds' eggshell. A. L. Romanoff (*Food Res.*, 1943, **8**, 212—223).—The permeability of the shell is less to O_2 and greater to N_2, CO_2, and H_2 than to air, is higher in large (*e.g.*, goose) than in small eggs (*e.g.*, grouse or quail), and is const. among the eggs of any one hen. It bears no relationship to breaking strength or thickness, is lower in the presence of the inner membrane, and has a direct relationship with the amount of retained water in the pores. The blunt end is more permeable than the sharp end; the permeability of the former increases and that of the latter decreases during the laying cycle. The permeability increases with embryonic development more rapidly at the blunt than at the sharp end. It increases with age at high R.H. and $[CO_2]$ and decreases at low R.H. and high $[CO_2]$. H. G. R.

Carbohydrate metabolism and acid formation in fertilisation of sea-urchin ova. O. Lindberg (*Arkiv Kemi, Min., Geol.*, 1943, **16**, **A**, No. 15, 20 pp.).—The metabolism of carbohydrate, which occurs on fertilisation of sea-urchin ova by freezing and thawing or treatment with hypertonic solutions, proceeds by oxidative decarboxylation and intermediate phosphorylation, with formation of acids other than lactic and pyruvic acids. It is unaffected by NaF and only slightly inhibited by iodoacetate, but is completely inhibited by phloridzin. A phosphate ester, which stimulates carbohydrate metabolism and occurs also in ox brain, is present. Treatment of a suspension of ova with hexose 6-phosphate simulates fertilisation and gives rise to the same acid formation, which is inhibited by phosphogluconic acid. P. G. M.

Reproductive cycle in male skinks. A. E. Reynolds (*J. Morph.*, 1943, **72**, 331—377).—A description of the normal seasonal reproductive cycle in the male *Eumeces fasciatus* together with observations on the effects of castration and hormone administration. The literature on the cycle in other lacertids is summarised. J. D. B.

Action of pervitin on female reproductive system.—See A., 1943, III, 832.

Gynæcologic and obstetric endocrinology. J. P. Greenhill and S. C. Freed (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 318—330). P. C. W.

Effect of sex hormones on serum- and muscle-electrolyte of rats. H. C. Miller (*Endocrinol.*, 1943, **32**, 443—448).—Œstradiol benzoate and testosterone propionate, injected over a period of several months, decreased K content of muscle of rats. No changes were found in serum-electrolytes. G. P.

Failure to induce ovulation in constant-œstrus guinea-pigs. F. L. Dey (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 312—313).—Guinea-pigs in const. œstrus as a result of hypothalamic lesions (A., 1941, III, 988) do not ovulate when injected with $CuSO_4$ or acetylcholine, but do so with luteinising hormone. V. J. W.

Relation of *B*-vitamins to ovarian function during experimental hyperthyroidism. V. A. Drill, R. Overman, and J. H. Leathem (*Endocrinol.*, 1943, **32**, 327—333).—Rats receiving a synthetic diet, a small supplement of yeast, and 100 mg. of thyroid per day rapidly lost wt. although they took the same amount of food as controls, and after 10—17 days entered continuous diœstrus. The ovaries and pituitaries of the thyroid-fed rats were smaller and the former contained only small atretic follicles and corpora lutea. Administration of adequate amounts of *B*-vitamins to thyroid-fed rats increased their food intake, prevented the loss of wt., and maintained normal œstrous cycles and ovarian and pituitary structure. G. P.

Association of hydrothorax with ovarian fibroma (Meigs' syndrome). W. W. Herrick, T. L. Tyson, and B. P. Watson (*Arch. intern. Med.*, 1943, **71**, 370—376).—Report of a case and a review. Removal of the fibroma resulted in complete and permanent cure of the hydrothorax. C. J. C. B.

Heterotopic endometriosis. E. A. Pearson (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 398—401).—2 cases are reported. P. C. W.

Physiological and pathological significance of duration of gestation in mare. J. W. Britton and C. E. Howell (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 427—432).—Analysis of the breeding records of 100 mares, covering 407 breeding years, showed that the two main factors affecting the duration of gestation were nutrition during the latter half of pregnancy and disease of the genital tract. E. G. W.

Rapid test for pregnancy gonadotropins on basis of induced ovulation in mice. H. O. Burdick, H. Watson, V. Ciampa, and T. Ciampa (*Endocrinol.*, 1943, **33**, 1—15).—Ovulation was induced in mice within 24 hr. after a single injection of chorionic gonadotropin or pregnant mares' serum. The min. ovulating dose (MOD) is the amount of hormone which produces ovulation in 50% of test animals within 24 hr. Ovulation was ascertained by examination of the tubal ampullæ with the binocular dissecting microscope. The MOD of chorionic gonadotropin in mature diœstrous mice was 1 i.u., in pregnant mice 0·7 i.u. Using immature mice weighing over 12 g. the MOD of chorionic gonadotropin was 2·5 i.u., of pregnant mares' serum 10 i.u. Ovulation was induced only in a few immature mice weighing less than 12 g. with either chorionic gonadotropin or pregnant mares' serum; the wt. rather than the age of the immature mice was important in this respect. G. P.

Nausea and vomiting of pregnancy. M. B. Hall (*Amer. J. med. Sci.*, 1943, **205**, 869—875).—A review. C. J. C. B.

Treatment of imminent and habitual abortion with corpus luteum hormone and vitamin-*E*. F. Ludwig (*Schweiz. med. Wschr.*, 1942, **72**, 1431—1433).—Satisfactory results in cases of imminent or habitual abortion were obtained with a combined progesterone and vitamin-*E* therapy. A. S.

Pseudopregnancy involution and regeneration of thymus. F. Klein (*Schweiz. med. Wschr.*, 1942, **72**, 1300—1301).—Administration of prolan or pregnancy urine (2. c.c.) for 4—6 weeks produces marked atrophy of the thymus in guinea-pigs; this effect was more pronounced in female than in male animals; the female thymus contained many "infiltration cells," probably histiocytes, packed with lipoid granules. The phenomenon was not observed in castrated female or male animals. A. S.

Pseudocyesis simulated in male. W. Blyth (*Brit. Med. J.*, 1943, II, 137).—Case report; treatment by suggestion resulted in improvement. I. C.

Diagnosis and treatment of sterility. W. M. Silbernagel and R. S. Fidler (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 371—375).—An analysis of 125 cases in which gonadoptropic therapy or *X*-irradiation of the pituitary or ovary resulted in 72% becoming pregnant and 54% delivered full-term babies. Diagnosis of the cause of sterility was based on endometrial biopsy for determination of ovarian function and the glucose tolerance curve method of Exton and Rose (*Amer. J. clin. Path.*, 1934, **4**, 381) for determining pituitary function. P. C. W.

Urinary excretion of œstrogens following injection of pro-œstrogens in guinea-pig. C. W. Emmens (*J. Endocrinol.*, 1943, **3**, 316—322).—The ratio of the subcutaneously and intravaginally effective doses (S/L ratio) of urinary œstrogenic material following the injection of œstrone, diethylstilbœstrol, and β-phenyl-α-ethylstilbœstrol is high, but lower than that of the injected compounds, probably due to impurities in the extracts delaying the absorption from subcutaneous injection sites. The S/L ratio of urinary extract following the injection of œstradiol was higher than that of œstradiol but lower than that of the probable excretion products œstrone and œstriol. The S/L ratio of urinary extracts obtained after the injection of pro-œstrogens was intermediate between that of pro-œstrogens and that of true œstrogens. The true œstrogenic nature of the excreted products was demonstrated by assays in mice in which the vagina was artificially separated into two sacs. P. C. W.

Rate of absorption of esters of œstrone and œstradiol as determined by feather tests. A. S. Parkes (*J. Endocrinol.*, 1943, **3**, 288—291).

The duration of action of 8 esters of œstrone and 4 esters of œstradiol was assessed by measuring the time during which they feminise the ventral feathers of Brown Leghorn capons following a single injection. The duration of action was increased by increasing the no. of C atoms in the acid chain. The results are attributed to delay in absorption from the injection site. P. C. W.

Reaction of the uterine epithelium of rat to œstrogenic stimulation. E. S. Horning (*J. Endocrinol.*, 1943, **3**, 260—267).—The Golgi apparatus of the uterine epithelial cells in the diœstrous rat forms a compact mass of osmiophil substances at the apical pole of the nuclei. During pro-œstrus and œstrus the cells enlarge and the Golgi body hypertrophies and forms a network. Similar changes are produced by subcutaneous implantation of œstrogen pellets, the max. stimulation being obtained 7—8 days after implantation. Removal of the œstrogenic stimulus causes return of the epithelial cells and the Golgi apparatus to the normal diœstrous condition. P. C. W.

Comparative action of stilbœstrol and œstrone on body growth and weight and gonadotropin content of hypophysis. F. E. Emery (*J. Endocrinol.*, 1943, **3**, 254—259).—Stilbœstrol was more active than œstrone in reducing body growth of rats. The two compounds produced similar increases in pituitary wt. The gonadotropin content of the hypophysis in rats castrated 8 weeks previously was reduced by 0·1 mg. of stilbœstrol daily but not by the same dose of œstrone; both substances in daily doses of 1 mg. abolished the gonadotropic activity of the hypophysis in such rats. The increase in gonadotropin content of the pituitary following castration was not inhibited by 0·1 mg. of either compound injected daily. Such amounts are 5—7 times the normal daily secretion of the ovaries. P. C. W.

Effects of œstrone on ovary of mouse. W. S. Bullough (*J. Endocrinol.*, 1943, **3**, 235—243).—Female mice were injected with 1—5 doses of 25 μg. of œstrone intraperitoneally in the vicinity of the ovaries at 12-hr. intervals starting on the 1st day of diœstrus. The max. no. of mitoses in the germinal epithelium of mice killed in diœstrus 9½ hr. after the injection of 0·1 mg. of colchicine was 49. When colchicine was given to the œstrone-injected mice the no. of mitoses was greatly increased (65—1818 per ovary). The growth of the ovarian follicles was reduced and the largest follicles showed necrosis. There were no changes in the corpora lutea or interstitial cells. P. C. W.

Œstrogenic action of cafesterol. H. Hauptmann, J. França, and L. B. Lacerda (*Anais Assoc. Quím. Brasil*, 1943, **2**, 29—36).—Neither crude nor pure cafesterol has any œstrogenic action on castrated rats or camondongas. The sterol structure is queried. F. R. G.

Action of steroid hormones on mouse kidney.—See A., 1943, III, 815.

Variables affecting biological assay of œstrogens. L. I. Pugsley and C. A. Morrell (*Endocrinol.*, 1943, **33**, 48—61).—Statistical methods of Bliss were used in analysing the variables affecting biological assay of œstrogens. The slope of the dosage–response curve was const. when methods of injection and of taking vaginal smears were kept const. The slope of the dosage–response curve was increased and limits of error of assay decreased by increasing the no. of injections from 1 to 6. RD_{50} (the dose producing response in 50% of the rats) of rats injected fortnightly was within the same range as in rats receiving the first injection, while rats injected at weekly intervals showed lower RD_{50}. Using the same injection treatment, the slope of the dosage–response curve for œstradiol monobenzoate was the same as that for œstrone. Giving 2 equal injections of œstrone and using 5000 rats the composite slope of the regression line was 6·00 with a standard error of 0·231; giving 4 equal injections and using 2500 rats the composite slope was 8·25 with a standard error of 0·340. G. P.

Experimental simulation of gestational changes in vagina of mouse. R. D. Schick (*J. Morph.*, 1943, **73**, 143—175).—Details are recorded of the effects of theelin, whole follicular fluid (hog), progesterone, and fresh luteal tissue (hog) on the vaginæ of virgin mice. Evidence of co-operative activity between theelin and progesterone in effecting epithelial hyperplasia was observed. Data are also presented for the effects on the vagina of placental tissue (mouse), antuitrin-*S*, glutathione, and testosterone propionate. J. D. B.

Changes in whole vagina of mouse during œstrus and pregnancy. R. D. Schick (*J. Morph.*, 1943, **72**, 305—329).—A detailed description of the histological changes in the pregnant vagina of the white mouse. The changes may be conveniently divided into (1) early gestational (provoked by copulation whether fertile or sterile and occurring in both pseudopregnancy and pregnancy) and (2) late gestational. J. D. B.

Cyclical changes in skin of mouse during œstrous cycle. H. F. Bullough (*J. Endocrinol.*, 1943, **3**, 280—287).—The mitotic activity of the mouse epidermis (measured followed colchicine injections) varied throughout the œstrous cycle. Max. activity occurred during pro-œstrus and min. activity during the 1st day of diœstrus. During pro-œstrus and early œstrus the mitotic activity varies directly with the no. of maturing follicles in the ovary and with the mitotic activity of the uterus. There is also a fluctuation in the thickness of the epidermis which is greatest in early œstrus and least on the 1st day of diœstrus. The thickness of the dermis shows great individual variation, but there is an apparent increase in the thickness of the fatty layer during œstrus. P. C. W.

Occurrence of premature ovulation in fowl following administration of progesterone. R. M. Fraps and A. Dury (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 346—349).—First follicles of clutch sequences are caused to ovulate 6 hr. prematurely by 0·5 mg. intravenously or 1 mg. subcutaneously of progesterone. Other follicles ovulate 7 hr. prematurely after 0·5 mg. subcutaneously, but intravenous doses have no effect on them. V. J. W.

Progesterone in postpartum psychosis. H. J. Schmidt (*J. Amer. Med. Assoc.*, 1943, **121**, 190—192).—Postpartum psychosis in a woman of 21 was successfully treated by 10 mg. of progesterone daily for several days before each menstrual period (when the symptoms usually appeared). C. A. K.

Ruptured Graafian follicle and corpus luteum cysts with intraperitoneal hæmorrhage. T. R. Hofman (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 331—339).—An analysis of 55 cases. P. C. W.

Galatorrhœa and corpus luteum. C. Müller (*Schweiz. med. Wschr.*, 1942, **72**, 1433—1434).—A non-pregnant woman suffered from amenorrhœa and severe galactorrhœa. Follicle or corpus luteum hormone, or administration of stilbene preps., was without effect. Extirpation of a persistent corpus luteum cured the condition. A. S.

Effectiveness of blood and hæmin for augmentation of pituitary gonadotropic extracts in the male. R. K. Meyer, W. H. McShan, and L. E. Casida (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 78—80).—Hæmin augments the gonadotropic action of pituitary extract in the immature male as has already been shown in the female rat, but has no augmenting effect in the male chick or pigeon. V. J. W.

Hypophyseal function and ovarian ligature. E. Fels (*Rev. Soc. argent. Biol.*, 1942, **18**, 286—293).—The ovaries were tied off in white rats and 6—7 months later, when typical castration changes occur in the hypophysis, the rats which showed prolonged or permanent œstrus were united in parabiosis with normal females. The ovaries of the normal partner showed the same changes as when parabiosis is made with a castrate, except that luteinisation was more marked. In these conditions therefore the luteinising hormone is secreted in larger quantities than the follicle-stimulating hormone. J. T. L.

Metabolism of gonado-stimulators in blood and urine of pregnant women. B. M. Zavadovski (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **37**, 281—284).—Placental blood from 3 cases of abortion or miscarriage at 3½—5 months and from 22 cases at normal parturition showed a high content of luteinising and follicle-stimulating gonadotropin (60,000—80,000 m.u. per l.) and a low œstrogen content (2000 m.u. per l.) when the fœtus was male and the reverse conditions (8000 m.u. of gonadotropin and 60,000 m.u. of œstrogen per l.) when the fœtus was female. The results are discussed with reference to a theory of gonadotropin metabolism in the body. P. C. W.

Breast hypertrophy in male. J. W. Maliniac (*J. Clin. Endocrinol.*, 1943, **3**, 364—366).—Two cases are reported. P. C. W.

Postmortem examination in cases of suspected rape. O. J. Pollak (*Amer. J. clin. Path.*, 1943, **13**, 309—314).—A review. C. J. C. B.

Effect of differences in light and temperature on size of combs on White Leghorns. W. F. Lamoreux (*Endocrinol.*, 1943, **32**, 497—504).—Irradiation with ultra-violet light has little effect on comb growth of White Leghorn males. The size of the comb of cockerels was the same whether exposed to artificial light for 3¾ hr. or 14¼ hr. per day. Cockerels kept at 36° F. had smaller combs than those kept at 85° F.; birds kept for alternate 12 hr. at 36° and 85° F. had combs of intermediate size between that observed on cockerels kept at 36° and 85° F. G. P.

Respiration of silver fox sperm. D. W. Bishop (*Biol. Bull.*, 1942, **83**, 353—362).—O_2 uptake averaged 19 cu. mm. per 10^8 sperm per hr., at 37—38°. G. P. W.

Effect of thyroxine and dinitrophenol on sperm metabolism.—See A., 1943, III, 827.

Parasitic castration of hermit crabs. E. G. Reinhard (*Biol. Bull.*, 1942, **83**, 401—415).—The parasite *Peltogaster paguri* produces a brood of 10,000—28,000 larvæ every 30—40 days. Its average size is proportional to that of the host. In female hermit crabs, it causes complete degeneration of the gonads but no appreciable change in secondary sex characters. In males, it does not cause castration. G. P. W.

Chick-embryo diluter versus phosphates–egg yolk buffer in artificial insemination of cows: preliminary report. L. D. Lichty (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 99—101).—Experiments on the semen of 2 bulls suggest that chick embryo diluent is better than PO_4''' buffer. E. G. W.

Respiratory responses of normal and castrated goldfish to teleost and mammalian hormones. A. D. Hasler and R. K. Meyer (*J. exp.*

Zool., 1942, **91**, 391—404).—Intraperitoneal injections of carp pituitary induce spawning in goldfish and produce a mean increase in the O_2 consumption of 36%. The luteinising fraction of sheep pituitary and thyroxine have no such effect. As metabolism of castrated fish is not increased by injections of carp pituitary it is concluded that the O_2 consumption accelerating effect observed in normal fish is the result of stimulation of the gonad and not of the tissues in general. A dropping Hg electrode method was used for determination of dissolved O_2. J. D. B.

Influence of pregneninolone and pregnenolone on spermatogenesis in hypophysectomised adult rats. J. H. Leathem and B. J. Brent (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 341—343).—Pregnenolone maintains spermatogenesis for at least 20 days following hypophysectomy, but does not modify wt. loss of seminal vesicles. Pregneninolone did not maintain spermatogenesis. V. J. W.

Testosterone propionate pellet implantation in gynæcological disorders. R. B. Greenblatt (*J. Amer. Med. Assoc.*, 1943, **121**, 17—24).—The clinical results of implantation of 100 mg. of testosterone propionate in women with various gynæcological disorders are reviewed. Uterine bleeding was frequently reduced, uterine fibroids diminished in size, menopausal symptoms were often relieved, dysmenorrhœa was often improved, and a lost libido was frequently restored to normal. There were no significant blood changes. Endometrial biopsies showed that doses of testosterone propionate up to 400 mg. do not interfere with the development of progestational endometrium. Large doses may produce œstrogenic vaginal smears. No masculinising effects were seen in the series. Most patients became stronger and improved in general health. C. A. K.

***D*-Homoandrostane derivatives, a group of highly active androgens.**—See A., 1943, II, 375.

Effects of large doses of androgen on testis in the ground squirrel, *Citellus tridecemlineatus*. L. J. Wells (*Endocrinol.*, 1943, **32**, 455—462).—Injections of testosterone (0·5—15·0 mg. per day) or testosterone propionate (0·05—20·0 mg. per day) for 18—20 days given to ground squirrels shortly before the peak of the annual sexual cycle, or while the animals were immature, reduced the size of testes. The seminiferous tubules and spermatogenesis were not affected but the interstitial cells were severely damaged and reduced in no. In immature animals the formation of spermatozoa was not prevented. G. P.

Androgens and experimental menstruation in monkey (*Macaca mulatta*). F. L. Hisaw (*Endocrinol.*, 1943, **33**, 39—47).—Testosterone and testosterone propionate have a weak progesterone-like action on the genital tract of castrated and intact immature female monkeys. In the inhibition of œstrogen-withdrawal bleeding 1 mg. of progesterone per day is equiv. to 2 mg. of testosterone propionate. For the pptn. of bleeding during treatment with 1000 i.u. of œstrogen per day, one injection of 1 mg. of progesterone is as effective as 9 mg. of testosterone propionate per day for 5 days. While 1 mg. of progesterone per day given alone, or smaller doses given together with œstrogen, produce progestational endometrium, 10 mg. of testosterone per day given alone or in combination with œstrogen had no such effect. Testosterone propionate also had a progesterone-like effect on the sexual skin. G. P.

Male pubescence. W. A. Schonfield (*J. Amer. Med. Assoc.*, 1943, **121**, 177—182).—A review. C. A. K.

Excretion of sex hormones in abnormalities of puberty. I. T. Nathanson and J. C. Aub (*J. Clin. Endocrinol.*, 1943, **3**, 321—330).—An analysis of the urinary excretion of 17-keto-steroids, œstrogens, and gonadotrophin in 8 children with signs of precocious puberty, in 14 with retarded growth and sexual development, and in 9 with adiposo-genital dystrophy. Excretion of all three factors was slightly raised in the first group and lowered in the 2nd group. In the 3rd group there was no excretion of gonadotrophin in untreated cases, while 17-keto-steroid excretion was low in the males and œstrogen excretion low in the females. P. C. W.

Testosterone in treatment of prostatism and benign prostatic hypertrophy. E. L. Touriel (*West. J. Surg. Obstet. Gynec.*, 1941, **49**, 354—355).—Four cases of prostatism improved when treated with testosterone propionate (25 mg. intra-muscularly twice weekly and 4—8 mg. percutaneously twice daily for 6 months). P. C. W.

Function of mammalian epididymis.—See A., 1943, III, 785.

XIII.—DIGESTIVE SYSTEM.

Effect of quinones on acid formation in saliva. W. D. Armstrong and J. W. Knutson (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 307—310).—A no. of quinones inhibit acid formation in mixtures of saliva and glucose. 1 : 4-Naphthaquinone is the most effective and superior to 2-methyl-1 : 4-naphaquinone, so that there is no correlation with vitamin-*K* activity. V. J. W.

Vomiting sickness in Jamaica. A. A. Wright (*Brit. Med. J.*, 1943, II, 392).—This seasonal abdominal affection is common in Jamaica during autumn and winter, especially among the poorer classes; the ætiology is unknown. I. C.

Effect of oil of peppermint, dehydrocholic acid, and disodium phosphate on gastric emptying in dogs. J. C. Stickney (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 274—275).—No change was produced by any of these substances. V. J. W.

Pepsin inactivation in ulcer therapy. A. M. Gill and C. A. Keele (*Brit. Med. J.*, 1943, II, 194—196).—Milk administered 2-hourly or hourly or by continuous drip is most effective in inhibiting the secretion or neutralising gastric HCl. Of the antacids, the decreasing order of efficiency in doses of 2 g. is: $CaCO_3$, $MgCO_3$, $Mg_3(PO_4)_2$, $Ca_3(PO_4)_2$, $Mg_2Si_3O_8$. Collodial $Al(OH)_3$ is probably little inferior to $CaCO_3$ or $MgCO_3$. I. C.

Prolapsed gastric mucosa, roentgenologic demonstration of ulcer crater in prolapsed polypoid mucosa. A. Melamed and R. I. Hiller (*Amer. J. digest. Dis.*, 1943, **10**, 93—95).—A case report. N. F. M.

Gastric acidity in pulmonary tuberculosis. A. L. Kruger (*Amer. J. digest. Dis.*, 1943, **10**, 111—113).—73 out of 325 patients with pulmonary tuberculosis had achlorhydria after an alcohol meal. The acidity fell off with fever and with the advance of the disease, but was not related to anæmia or to the development of intestinal lesions. N. F. M.

Association of gastrointestinal allergy with cœliac syndrome. C. F. McKhann, S. Spector, and E. R. Meserve (*J. Pediat.*, 1943, **22**, 362—372).—A report of 6 cases. C. J. C. B.

Psycho-somatic background of peptic ulcer. A. Winkelstein and L. Rothschild (*Amer. J. digest. Dis.*, 1943, **10**, 99—102).—Psychiatric examination of 33 young adults with peptic ulcer revealed chronic frustration and inward direction of repressed strong emotional stimuli with strong masochistic and sadistic tendencies. Peptic ulcer may be a psycho-somatic disease. N. F. M.

Gastroscopy in diagnosis of gastric disease. M. Paulson (*Amer. J. med. Sci.*, 1943, **205**, 792—798).—A review. C. J. C. B.

Nervous stomach. O. S. Jones (*Amer. J. digest. Dis.*, 1943, **10**, 102—103). N. F. M.

Diagnosis of large gastric ulcers and implications as to treatment. F. Steigmann (*Amer. J. digest. Dis.*, 1943, **10**, 88—93).—All large gastric ulcers should be excised, because of their poor healing power and the increased chances of malignancy. The only certain criterion of non-malignancy in such cases is histological. N. F. M.

Constitutional aspects of peptic ulcer. J. Kanevsky (*Amer. J. med. Sci.*, 1943, **206**, 90—111).—A review. C. J. C. B.

Value of sodium chloride in prevention of alkalosis during "Sippy" treatment with calcium carbonate. J. B. Kirsner and W. L. Palmer (*Arch. intern. Med.*, 1943, **71**, 415—421).—Administration of 3—10 g. daily of NaCl during "Sippy" treatment with $CaCO_3$ decreased the incidence of alkalosis from 30 to 10%. C. J. C. B.

***In situ* effects of antacids in duodenal ulcer.** J. E. Berk, M. E. Rehfuss, and J. E. Thomas (*Arch. intern. Med.*, 1943, **72**, 46—57).—A specially constructed double lumen tube was employed and a procedure followed which allowed fluoroscopic control. Material was simultaneously aspirated from the pyloric antrum and the duodenal cap every 10 min. Specimens were collected for ½ hr. in the fasting state and for 2 hr. after an Ewald meal, 30 min. post-prandial. Each patient was given by mouth either 15 c.c. of a dil. (1 : 1) $Al(OH)_3$ gel prep. or 10 grains of $NaHCO_3$ + 30 grains of $CaCO_3$ in 15 c.c. of water. The antacid in patients with duodenal ulcer reduced the acidity of the contents of the first part of the duodenum to some extent for a short time; it may be followed by an increase. C. J. C. B.

Resorption of ethyl alcohol from stomach and intestine of rat.—See A., 1943, III, 833.

Chemical and enzymic studies of the duodenal contents of infants. L. Kajdi and W. C. Davison (*J. Pediat.*, 1943, **23**, 204—214).—The mean vals. for the sp. gr., surface tension, bile acids, pH, trypsin, amylase, and the rate of flow of the duodenal contents of 9 infants with normal digestion, 1 suffering from sprue, and 1 from diarrhœa are tabulated. The diarrhœal patient had a marked reduction of duodenal trypsin and amylase. In the others the surface tension of the duodenal contents was stable in spite of variations in the rate of flow and the concn. of enzymes and bile acids. C. J. C. B.

Determination of amylase, proteinase, and lipase in duodenal contents. A. H. Free and V. C. Myers (*J. Lab. clin. Med.*, 1943, **28**, 1387—1391).—The determination of amylase is based on the measurement of the amount of reducing sugar formed when diluted duodenal contents are incubated with a solution of sol. starch. Proteinase is determined by incubating diluted duodenal contents with a solution of casein and then determining the amount of non-protein-N formed or the amount of material which reacts with the phenol reagent. Lipase is determined by incubating duodenal contents with tributyrin and then titrating the amount of acid liberated. C. J. C. B.

Jejunal diverticula; clinical symptomatology and case report. A. C. van Ravenswaag and G. W. Winn (*Amer. J. digest. Dis.*, 1943, **10**, 108—111). N. F. M.

Congenital atresia of pancreatic duct system as cause of meconium ileus. W. Kaufmann and D. B. Chamberlin (*Amer. J. Dis. Child.*, 1943, **66**, 55—67).—Crit. review with a report of 1 case. C. J. C. B.

Pathology of pancreatic islets. G. Gomori (*Arch. Path.*, 1943, **36**, 217—225).—A crit. review. C. J. C. B.

Pancreatic encephalopathy. L. A. Lurie and S. Levy (*Amer. J. Dis. Child.*, 1943, **66**, 49—54).—Review with report of a case. C. J. C. B.

Intestinal phosphatase. Excretion of phosphatase in fæces.—See A., 1943, III, 844.

Incidence of intestinal parasites in a tropical area of Brazil. J. R. Cançado (*Amer. J. digest. Dis.*, 1943, **10**, 98).—Examination on 2500 patients showed infestation by *E. coli* in 25%, *E. histolytica* in 11%, *Giardia* in 10%, and *C. mesnili* in 6%. Helminths were encountered as follows: *T. trichiura* 21%, *Ascaris lumbricoides* 20%, *N. americanus* 15%, *S. sterconalis* 9%, and *S. mansoni* 4%. N. F. M.

Hydrogen-ion concentration during digestion in *Amœba*. S. O. Mast (*Biol. Bull.*, 1942, **83**, 173—204).—The food vacuoles pass through an acid phase (pH 5·6) followed by an alkaline phase (pH 7·3). The pH of the cytoplasm is 7·4. The acid phase is due to changes in the ingested organisms, not to acid secretion. The subsequent alkalinity is due to diffusion, not to base secretion. The acidity does not cause the death of the food organisms. There is also a shrinking, followed by a swelling, of the vacuole, due to changes in osmotic pressure. G. P. W.

Digestion of fat in protozoa. C. G. Wilber (*Biol. Bull.*, 1942, **83**, 320—325).—When *Pelomyxa* is fed on *Colpidium*, the fatty acid in the food vacuoles disappears and globules of mixed fat and fatty acid appear in the cytoplasm. Droplets of olive oil, injected into *Pelomyxa*, slowly decrease in size and globules of fat and fatty acid appear elsewhere in the cytoplasm. G. P. W.

Culture of, and cellulose digestion by, a cattle ciliate. R. E. Hungate (*Biol. Bull.*, 1942, **83**, 303—319).—A technique is described by which *Eudiplodinium neglectum* from the rumen of cows was cultured for 22 months. Correct osmotic pressure is important; O_2 is toxic. An extract of the protozoa digested cellulose to glucose, with optimum pH at 5·0. G. P. W.

XIV.—LIVER AND BILE.

Intravenous hippuric acid test of hepatic function in infectious diseases of children. J. Meneghello and M. Drinberg (*Amer. J. Dis. Child.*, 1943, **66**, 103—113).—For 16 normal children, 0·9 g. was the min. hippuric acid content of urine eliminated 1 hr. after the injection of 2 g. of Na benzoate. The liver was abnormal by this test in 80% of 22 patients with scarlet fever, in 91% of 12 patients with diphtheria, in 27% of 33 patients with typhoid, in all 6 patients with lobar pneumonia, and all of 5 patients with tuberculous meningitis (these patients showed the lowest excretion of all). Hepatic function was normal in whooping cough, typhus, and acute infections of the upper respiratory tract. C. J. C. B.

Interhormonal relations [on liver-glycogen]. See A., 1943, III, 734.

Action of liver-enzymes on amino-acids.—See A., 1943, III, 768.

Degradation of cystine by normal liver but not by transplanted hepatomas. Hydrogen-ion concentration of normal liver and hepatic tumours.—See A., 1943, III, 749.

Economic and nutritional importance of bovine hepatic disturbances. L. D. Frederick (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 338—345).—A review of disease conditions which cause condemnation of ox livers in the U.S. and result in a loss of over 2½ million dollars annually. E. G. W.

Liver failure following operation in hyperthyroidism.—See A., 1943, III, 734.

Genesis of peptic ulcer in dogs after ligating common bile ducts.—See A., 1943, III, 743.

Cardiovascular action of bile salt with regard to inhibition of choline-esterase.—See A., 1943, III, 718.

Output of bile pigment by infants and children [relation to blood destruction]. See A., 1943, III, 710.

XV.—KIDNEY AND URINE.

Studies of kidney function and urinary extravasation. V. D. Lespinasse and V. Lespinasse (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, **17**, 127—131). A. S.

Investigation of renal function with new nomographic method for determination of urea clearance. M. C. Davis (*Med. J. Austral.*, 1943, I, 267—279).—The urea clearance test is reliable and accurate and in many cases provides the only guide to renal damage. F. S.

Renal biopsy studies correlated with renal clearance observations in hypertensive patients treated by radical sympathectomy. J. H. Talbott, B. Castleman, R. H. Smithwick, R. S. Melville, and L. J. Pecora (*J. clin. Invest.*, 1943, **22**, 387—394).—Renal clearances on 20 patients with essential hypertension showed a significant correlation with the microscopic appearance of their respective renal tissues removed for biopsy at the time of sympathectomy, *i.e.*, the more severe the renal vascular disease, the more reduced were the glomerular filtration rate and the renal blood flow. In grade 0 and I renal vascular disease, the renal clearances were normal or very slightly reduced. Only in grade IV renal vascular disease was renal blood flow seriously reduced. Bilateral radical lumbo-dorsal splanchnicectomy had little effect on renal clearance, when measured in the horizontal position. Although glomerular filtration was reduced in the immediate postoperative period by about 20%, within a year it returned to and continued to maintain its pre-operative level. Renal plasma flow was unchanged. The patients did not benefit from the operation. C. J. C. B.

Morphological changes in human kidney following prolonged administration of alkali. J. B. Kirsner, W. L. Palmer, and E. Humphreys (*Arch. Path.*, 1943, **35**, 207—225).—The long-continued administration of alkali in man with or without alkalosis leads to no anatomical change in the kidneys attributable to alkali. C. J. C. B.

Improvements in calculation of renal resistance to blood flow. Charts for osmotic pressure and viscosity of blood.—See A., 1943, III, 719.

Two cases of renal failure following abortion. P. Dingle (*J. Obstet. Gynaec.*, 1943, **50**, 246—253).—2 cases are described in which oliguria and azotæmia followed abortion. A 3rd patient showed a rise in blood-urea and shock-like conditions following retention of the placenta owing to severe contraction of the uterine muscle following oxytocin. The conditions are ascribed to release of toxin from the damaged placenta. P. C. W.

Physiology of chronic nephritis. J. M. Hayman (*Med. J. Austral.*, 1943, I, 291—293).—A review. F. S.

Prophylactic treatment of experimental renal hypertension with renin. Renal hypertension and adrenalectomy in rats. Renin determination in blood of dogs during renal ischæmia.—See A., 1943, III, 720.

Urine of freshwater fishes. C. Haywood and M. J. Clapp (*Biol. Bull.*, 1942, **83**, 363—366).—The f.p. of the urine averaged −0·94° in *Catostomus commersonii* and −0·25° in *Ameiurus nebulosus*. Urine flow is considerably faster in the latter species. G. P. W.

Cholesterol content of urine in patients with cancer. M. Bruger and S. B. Ehrlich (*Arch. intern. Med.*, 1943, **72**, 108—114).—The 24-hr. urinary cholesterol in 26 normal subjects was 0·27—3·88 mg. (mean 1·69±0·85). In 28 patients with disorders other than cancer, the mean excretion was 2·01 mg., but most vals. fell within the normal range. In 8 of 32 patients with cancer, urinary cholesterol was significantly elevated; the highest val. was 47·8 mg. in a patient with rectal adenocarcinoma. The mean for this group was 6·09 mg. No correlation was observed between the sedimentation rate, the plasma-cholesterol content, and the degree of cholesteroluria. Hypercholesteroluria occurs independently of proteinuria. C. J. C. B.

Pentosuria associated with diabetes mellitus. M. H. Edelman and M. Reiner (*Arch. intern. Med.*, 1943, **72**, 31—36).—2 cases of essential pentosuria are described. The coexistence of diabetes mellitus with essential pentosuria was discovered in 1 but the 2 diseases are distinct unrelated entities. C. J. C. B.

Hippuric acid excretion test in pregnancy. L. Sloman (*Med. J. Austral.*, 1943, I, 293—298).—177 pregnant and 70 puerperal women were tested for ability to excrete hippuric acid after ingestion of 4 g. of Na benzoate. The excretion rate was normal up to 3 months, decreased, but within the normal range, at 3—6 months, and further decreased below the normal range at 6—9 months pregnancy. The excretion rate rose to normal by the 8th day of the puerperium. F. S.

Simple specific test for occult blood in urine. H. Zwarenstein (*Clin. Proc.*, 1943, **2**, 125—129).—When 1 drop of uncentrifuged urine and 1 drop of a mixture of equal parts of glacial acetic acid and 3% H_2O_2 are added to a piece of filter-paper impregnated with *o*-tolidine a diffuse blue speckling develops when there is more than 1 red cell per cu. mm. If the urine is boiled or treated with acid–H_2O_2 solution the reaction is abolished or reduced. The presence of I or Br in the urine gives atypical positive reactions which are unaffected by boiling or H_2O_2 treatment. Excess of ascorbic acid decreases the sensitivity of the test. P. C. W.

Determination of mandelic acid in urine. J. H. Phillips, V. H. Wallingford, and A. Q. Butler (*J. Lab. clin. Med.*, 1943, **28**, 1272—

1280).—The procedure is based on the extraction of the acid with ether, conversion into the Na salt, and pptn. as Cd mandelate. A semimicro- and macro-procedure are given and 2 methods of extraction are described. The methods are accurate and require no special equipment or reagents. Several determinations may be carried out simultaneously. C. J. C. B.

Determination of *N*-methyl derivatives of nicotinic acid in urine. H. P. Sarett (*J. Biol. Chem.*, 1943, **150**, 159—164).—After a preliminary hydrolysis with aq. NaOH to convert nicotinmethylamide into trigonelline, the urine is cleared and decolorised with $Pb(NO_3)_2$ and hydrolysed with alcoholic NaOH. The solution is then made just alkaline and the depth of colour developed with benzidine reagent is read in a photoelectric colorimeter. Urea and glucose interfere only in very high concn. Pyridine compounds with unmethylated ring-N give no colour. E. C. W.

Rapid microanalytical method for lead in urine. S. Kaye (*J. Lab. clin. Med.*, 1943, **28**, 1171—1174).—The method is based on the total pptn. of Pb by the addition of aq. NH_3 to urine. Pb phosphate is easily filtered out with the Ca and Mg phosphates. This ppt. is dissolved with hot dil. HNO_3 and is heated to oxidise org. material. Citric acid is added to keep the phosphates in solution during later neutralisation, and KCN is added to form complex ions with interfering metals. When the pH is adjusted at 9—10, Pb is extracted with dithizone to separate it from extraneous salts and interfering substances. Pb is then split from the dithizone and titrated with standardised dithizone. Under the above conditions only Bi, Sn, Tl, and Pb react with dithizone. To remove the interference of Bi and Sn, these are previously extracted with dithizone while the solution is still acidic. Pb is not extracted in this acid solution. Tl, as a source of interference, has not been removed but its occurrence is unlikely. C. J. C. B.

Determination of atebrin and sodium dehydro*iso*androsterone sulphate in urine.—See A., 1943, III, 780.

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

Seasonal variations in physiological variables. M. A. Wenger (*J. Lab. clin. Med.*, 1943, **28**, 1101—1108).—Systolic blood pressure and palmar skin conductance (palmar sweating) in children are lower during the summer. C. J. C. B.

Removal of inorganic phosphorus from phosphate solutions by rat bone. W. R. Todd (*Arch. Biochem.*, 1943, **1**, 269—372).—Minced rat bone (20—60-day) removed PO_4''' from M./45 buffer (pH 7·2). This occurred after heating the bone at 100° for 30 min., and there was no increase of PO_4''' by heating the final substrate with dil. H_2SO_4. The disappearance of PO_4''' is not due to enzyme action, and is probably due to interchange of PO_4''' and carbonate or citrate in the bone. E. R. S.

Human skin as a conductor of 60-cycle alternating current of high intensity, studied on "electro-shock" patients. H. Loewenbach and J. E. Morgan (*J. Lab. clin. Med.*, 1943, **28**, 1195—1198).—The reactions of the living human skin as a conductor of 60-cycle a.c. up to 1000 ma. showed that when 50—120 v. were given for 0·1—0·14 sec., the impedance drops instantaneously to 270—120 ohms regardless of the original impedance, provided this is kept at or below 2000 ohms. Under these circumstances there is no further change of the impedance during the time of current flow. When the current is broken, the impedance (to 20 μv.) rises suddenly 80—150 ohms, depending on the "shock" tension applied; it then increases over a period of many sec., approaching the original val. asymptotically. The skin of human corpses reacts similarly to that of living individuals, but the impedance drop is less the longer the interval between the time of death and of examination. C. J. C. B.

Antibacterial action of lactic acid and volatile fatty acids of sweat. O. Bergeim and T. Cornbleet (*Amer. J. med. Sci.*, 1943, **205**, 785—792).—The lactic acid of sweat has a bactericidal action in concns. giving a pH of 5·3 or lower. The volatile fatty acids of sweat are formed by bacterial action on the lactic acid and are more effective at pH 5·3—6·2. C. J. C. B.

Marine products. XIV. Astrol. W. Bergmann and H. A. Stansbury, jun. (*J. Org. Chem.*, 1943, **8**, 283—284).—Astrol (Kossel *et al.*, A., 1915, i, 741) is identical with batyl alcohol. H. W.

Biology of sea mussel (*Mytilus californianus*). II. Nutrition, metabolism, growth, and calcium deposition. D. L. Fox and W. R. Coe (*J. exp. Zool.*, 1943, **93**, 205—249). J. D. B.

Excretion of ethyl-*p*-benzoquinone by flour beetle. P. Alexander and D. H. R. Barton (*Biochem. J.*, 1943, **37**, 463—465).—The main content of the volatile excretion of *Tribolium castaneum* and *T. confusum* is ethylquinone, characterised by its ultra-violet absorption spectrum. This compound is the cause of the pink colour of "conditioned" flour, due to interaction with amino-compounds (*e.g.*, protein) in flour. Absorption spectra data are given for methyl-, ethyl-, and thymo-quinones, and *p*-benzoquinone. P. G. M.

Life cycle of *Daphnia magna*. B. G. Anderson and J. C. Jenkins (*Biol. Bull.*, 1942, **83**, 260—272).—Observations are described on duration of life, no. and duration of instars, no. of young, and duration of brooding periods. G. P. W.

XVII.—TUMOURS.

Lung tumours following intraperitoneal injection of 1 : 2 : 5 : 6-dibenzanthracene into young mice of three strains. C. J. Lynch (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 368—371).—From the % of mice that developed tumours, and from the no. of nodules per mouse, it is calc. that susceptibility is inherited and that at least 3 genes are involved. V. J. W.

Multiple mesenteric sarcomata in rats following ingestion of heated lard. P. R. Peacock and S. Beck (*Brit. J. exp. Path.*, 1943, **24**, 143—146).—Rats fed 5—7 g. weekly of lard previously heated to 220° or 350° developed multiple mesenteric sarcomata in 4 out of 71 animals surviving more than 300 days. These tumours were induced by a carcinogen acting on the mesoblastic tissues encountered in the process of absorption of the heated lard. F. S.

Localisation of experimental tumours in scars and healing wounds. B. D. Pullinger (*J. Path. Bact.*, 1943, **55**, 301—309).—Attempts to localise tumours deliberately at chosen sites by a combination of chemical and traumatic means were successful in 22 of 40 mice. 21 tumours were papillomas or carcinomas; 1 was a sarcoma and was transplantable. The skin of the mice was treated beforehand with pure carcinogenic compounds. Deep excisions of skin inside tattooed sites in tumour-free areas were made when the first papillomas had begun to appear. Painting was then stopped. The interval between excision and the appearance of a tumour varied from 17 days to 9 months. C. J. C. B.

The skin tunnel. A. Plaut and A. C. Kohn-Speyer (*Cancer Res.*, 1943, **3**, 176).—A technique is described for making a skin tunnel on the backs of mice. The skin pockets formed can be used for studies of prolonged action of carcinogens on the skin. F. L. W.

Metabolism of 3 : 4-benzpyrene in mice and rats. I. Isolation of a hydroxy- and a quinone derivative, and their biological significance. I. Berenblum and R. Schoental. **II. Identification of the isolated products as 8-hydroxy-3 : 4-benzpyrene and 3 : 4-benzpyrene-5 : 8-quinone.** I. Berenblum, D. Crowfoot, E. R. Holiday, and R. Schoental (*Cancer Res.*, 1943, **3**, 145—150, 151—158).—I. Extraction of the fæces of mice and rats injected with 3 : 4-benzpyrene intraperitoneally yielded two products: (1) a fluorescent phenolic derivative identical with the "BPX" of Chalmers and Crowfoot (cf. A., 1942, III, 251); (2) a product apparently identical with 3 : 4-benzpyrene-5 : 8-quinone. The greater part of the hydrocarbon lost from the body appears in the form of these two derivatives. The quinone is non-carcinogenic. The metabolic phenol (probably the 8-hydroxy-derivative) induced a sarcoma in one of ten mice. While these derivatives probably play no part in the carcinogenic action of the hydrocarbon it is suggested that they may be concerned in its other biological activities (*e.g.*, inhibition of tumour growth and œstrogenic action).

II. Crystallographic, fluorescence, and absorption spectra studies of derivatives of 3 : 4-benzpyrene and of the products isolated from mouse and rat fæces led to the identification of the metabolic quinone as 3 : 4-benzpyrene-5 : 8-quinone. It is concluded that the phenolic metabolite ("BPX") is identical with 8-hydroxy-3 : 4-benzpyrene. F. L. W.

Effect of 2 : 7-dihydroxynaphthalene on tumour incidence and growth of the mammary gland in mice of the line *A* albino and *C3H* strains. E. E. Jones (*Cancer Res.*, 1943, **3**, 168—172).—Subcutaneous injections of 2 : 7-dihydroxynaphthalene did not influence either the incidence or the age of appearance of progynon-*B*-induced mammary gland tumours in castrate line *A* albino or normal *C3H* male mice. Scrotal hernias caused a high mortality in normal line *A* males but did not occur in castrates. Scrotal hernias were less frequent and less severe in normal *C3H* males. The dihydroxynaphthalene stimulated duct growth but did not produce complete lobule-alveolar development. It inhibits œstrus or prolongs diœstrus in young normal females but has no effect on breeding or the formation of spontaneous tumours in normal female mice. No inhibition of growth of spontaneous tumours was obtained on subcutaneous injection of the dihydroxynaphthalene. F. L. W.

Effect of sodium pentobarbital, *p*-dichlorobenzene, amyl acetate, and sovasol on induced resistance to transplanted leukæmia of the rat. J. B. Murphy and E. Sturm (*Cancer Res.*, 1943, **3**, 173—175).—The repeated administration of any one of the four toxic agents, Na pentobarbital, *p*-dichlorobenzene, amyl acetate, or sovasol, modifies induced resistance to transplanted leukæmia in rats. The resistant state was induced by the injection of homologous living normal cells 12—14 days before the leukæmia inoculation. Over 80% of rats receiving such treatment proved resistant to the transplanted leukæmia while only 16·5% of untreated rats were refractory. Potentially resistant rats exposed to the toxic agents showed a sus-

ceptibility to inoculation of from 57·5% to 83·5%. The four toxic agents also have leukæmia-inciting properties. F. L. W.

Presence in various grains of factors inhibiting tumour growth. R. Lewisohn, D. Laszlo, C. Leuchtenberger, R. Leuchtenberger, and Z. Dische (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 269—272).—Aq. extracts of rice, pearl barley, or soya bean increased the therapeutic action of intravenous yeast extracts on mice with sarcoma 180. The extracts are given intravenously or the grains given by mouth. V. J. W.

Treatment of spontaneous breast cancers in mice with pearl barley. R. Lewisohn, C. Leuchtenberger, R. Leuchtenberger, D. Laszlo, and Z. Dische (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 272—273).—100 g. of barley is extracted with acidified water, boiled, and pptd. with an equal vol. of alcohol. After filtration it is conc. to 30 c.c. and filtered. When this filtrate was injected intravenously, and the mice were also given pearl barley in the diet, mammary cancers rapidly disappeared in half the animals. V. J. W.

Action of bacterial toxins on tumours. IV. Distribution of tumour-hæmorrhage agents among bacterial species. S. H. Hutner and P. A. Zahl (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 364—368).—The power of causing hæmorrhage into implanted mouse tumours (sarcoma 180) is present in nearly all Gram-negative organisms and is absent in Gram-positives. V. J. W.

Glycerophosphatases of rat liver cancer produced by feeding *p*-dimethylaminoazobenzene. H. Q. Woodard (*Cancer Res.*, 1943, **3**, 159—163).—The alkaline β-glycerophosphatase activity of the liver cancer produced in rats by the feeding of *p*-dimethylaminoazobenzene is ten times that of normal rat liver. The enzyme can be demonstrated in the endothelial cells of the sinuses of the liver cancers and in the nuclei of the tumour cells. The storage of radioactive P in liver cancer is the same as that in normal liver 48 and 96 hr. after injection of the isotope. Neither the acid nor the alkaline glycerophosphatase is inhibited by dimethyl-*p*-phenylenediamine. F. L. W.

Metabolism of Yale carcinoma. M. Belkin and K. G. Stern (*Cancer Res.*, 1943, **3**, 164—167).—The Yale carcinoma (a transplantable adenocarcinoma of the mammary gland that arose in a male mouse treated with œstrogen) has Q_{O_2} of −2 in air and −7 in 100% O_2. The aerobic glycolysis is 7 and the anaerobic glycolysis 16. The R.Q. is 0·80 and the Meyerhof quotient 1·4—2·2. The tumour exhibits a definite Pasteur effect. F. L. W.

Specific precipitin antiserums for the protein of cancer tissue. I. II. Application of *in vivo* absorption. L. S. Mann and W. H. Welker (*Cancer Res.*, 1943, **3**, 193—195, 196—197).—I. 42% of the sera of 109 rabbits injected with cancer tissue fixed on $Al(OH)_3$ cream reacted with autolysates of cancer tissue with which they were prepared but only 11% were potent. About half the animal sera were free from blood-protein antibodies at the end of 6 months. The blood serum-protein antibodies disappeared from the sera after 2—18 months. The precipitins for cancer tissue-proteins persisted for little more than 2 months after the sera were free from precipitins to blood serum-proteins.

II. By injection of rabbits with human tissues (carcinoma of breast, colon, kidney, and stomach and normal kidney tissue) fixed on $Al(OH)_3$ cream sp. antisera for tissue-proteins were produced. The % of sera obtained by this technique is small. Only a few weeks are necessary for the production of the sp. antisera. F. L. W.

Heterotransplantation of human pseudomyxoma peritonei into mice and rats. B. Zondek, F. Mandl, F. Sulman, A. Brezezinski, and H. G. Tietz (*Cancer Res.*, 1943, **3**, 198—205).—Pseudomucinous cystadenoma ovarii in the human subject was transplanted into mice and, with less success, into rats. Grafts showed definite growth after the lapse of 3 months provided the implantation was carried out intraperitoneally in the neighbourhood of the kidney. In the second mouse passage these transplants grew less vigorously and in the third not at all. F. L. W.

Nature of resistance of inbred line of fowls to development of Rous no. 1 sarcoma. J. G. Carr (*Brit. J. exp. Path.*, 1943, **24**, 127—132).—A line of fowls, made resistant to Rous no. 1 sarcoma by selection, was also resistant to other fowl tumours. The resistance was directed against developing tumours and was not due to serum antibodies. F. S.

Cytoplasmic changes in Rous sarcoma cells cultivated *in vitro*. L. Doljanski and E. Tenenbaum (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 267—269).—Histological changes are described, and indicate a progressive degeneration. (2 photomicrographs.) V. J. W.

Metabolic studies in patients with cancer of the gastrointestinal tract. XVII. Conjugation of phenols. J. C. Abels, G. T. Pack, and C. P. Rhoads (*Cancer Res.*, 1943, **3**, 177—179).—Patients with gastrointestinal cancer have a decreased capacity to synthesise or conjugate glycuronic acid. Nevertheless their ability to esterify phenols remains unimpaired. 30·2% of the excreted phenols was esterified in the cancer cases as compared with 31·4% in normal controls. The glycuronate excretions were 207·25 mg. per day and 462·2 mg. per day respectively. F. L. W.

Œstrogen and 17-ketosteroid excretion in patients with breast carcinoma. H. C. Taylor, F. E. Mecke, and G. H. Twombly (*Cancer Res.*, 1943, **3**, 180—192).—The spontaneous excretion of total œstrogens and 17-ketosteroids is not abnormal in breast cancer. When œstrone, testosterone propionate, and progesterone are injected into women, definite alterations occur in the rates of œstrogen and 17-ketosteroid excretion in the urine and in the duration of the menstrual cycle. The exact alteration depends to a considerable extent on the time of the cycle at which the hormone is administered. One patient with cancer appeared consistently more susceptible to a shortening of the cycle than did one normal control. F. L. W.

Sesame oil tumours. A. H. Conrad, A. H. Conrad, jun., and R. S. Weiss (*J. Amer. Med. Assoc.*, 1943, **121**, 237—240).—Œstrogen in sesame oil produced tumours at the sites of injection in a woman of 35. There was little or no fibrous encapsulation and there were numerous phagocytes containing oil droplets. Oil injections should not be given into the arms. C. A. K.

Failure of H11 to inhibit growth of tumours in mice. W. E. Gye, R. J. Ludford, and H. Barlow (*Brit. Med. J.*, 1943, II, 65—67).—Urine extracts obtained by fractional pptn. with Cu salts (H11 and 80K) daily injected in mice did not affect the growth of grafted carcinoma or sarcoma in comparison with control animals. I. C.

Effect of injections of H11 on growth of mouse tumours. D. L. Woodhouse (*Brit. Med. J.*, 1943, II, 231—232).—In 54 mice bearing grafted dibenzanthracene sarcomas, carcinoma 63, or induced benzpyrene skin epitheliomas, no inhibitory effect on the tumour growth was found after prolonged injections of the urine prep. H11 or similar extracts. Two sarcomas removed from mice after such injections were successfully grafted into other animals, and histological examinations of treated tumours showed no difference from control material. I. C.

Use of H11 in carcinoma. H. A. Kidd (*Brit. Med. J.*, 1943, II, 67—69).—Interim report on a research from which no conclusions can yet be drawn. I. C.

Treatment of prostatic carcinoma by œstradiol and diethylstilbœstrol. G. H. Duncan (*Brit. Med. J.*, 1943, II, 137).—Report of three cases which showed improvement. I. C.

Clinical and pathological properties of malignancy. J. R. Goodall (*J. Obstet. Gynaec.*, 1943, **50**, 271—277).—Theoretical discussion with descriptions of illustrative cases. P. C. W.

Disease in American negro. I. Melanoma. W. A. D. Anderson (*Surgery*, 1941, **9**, 425—432).—10 cases are reported. The incidence was ¼ that among white Americans. P. C. W.

Metastases in skull from carcinoma of thyroid. O. Turner and W. J. German (*Surgery*, 1941, **9**, 403—414).—Two cases are described and discussed. P. C. W.

Surgical treatment of bronchial carcinoma. R. C. Brock (*Brit. Med. J.*, 1943, II, 257—259).—Review of results obtained with surgical treatment. I. C.

Carcinoma which simulated sarcoma. S. M. Brooks (*Arch. Path.*, 1943, **36**, 144—157).—The microscopic features of 110 tumours that had been proved to be carcinoma simulating sarcoma were studied. The tumours came from the skin, lip, oral cavity, nasopharynx, larynx, lung, gastrointestinal tract, genito-urinary tract, and thyroid gland and were all very malignant. (6 photomicrographs.) C. J. C. B.

Congenital pulmonary cysts. C. C. Fischer, T. Tropea, jun., and C. P. Bailey (*J. Pediat.*, 1943, **23**, 219—223).—Report of an infant treated by lobectomy with recovery. C. J. C. B.

Adenoacanthoma of pyloric end of stomach. D. A. Wood (*Arch. Path.*, 1943, **36**, 177—189).—2 cases of adenoacanthoma of the pyloric end of the stomach are reported. In both cases the metastases in lymph nodes contained squamous cell as well as glandular components. 19 cases of squamous cell carcinoma of the stomach reported in the literature are also reviewed. (2 photomicrographs.) C. J. C. B.

Malignant tumours in persons with cirrhosis of liver. S. Pelle (*Amer. J. med. Sci.*, 1943, **205**, 798—807).—In necropsy records of 6596 persons over 20 years of age, cirrhosis of the liver was found in 9% and malignant tumours in 17%. About 30% of cirrhosis were classified as "early." Compared with non-cirrhotics, persons with cirrhosis are more commonly affected with intrahepatic tumours and (to a smaller extent) with tumours of the extrahepatic bile passages and pancreas. Furthermore, male cirrhotics showed an increased ratio of malignant tumours of the mouth, pharynx, larynx, and œsophagus. Cirrhotics have a much lower ratio of malignant tumours of all other organs taken together. C. J. C. B.

Chondrosarcoma of bone. L. Lichtenstein and H. L. Jaffe (*Amer. J. Path.*, 1943, **19**, 553—574).—A general review based on 15 cases. (26 photomicrographs.) C. J. C. B.

Retroperitoneal teratoid tumours [in infancy and childhood]. E. E. Arnheim (*J. Mt. Sinai Hosp.*, 1943, **10**, 355—364).—Review and case report. E. M. J.

Two cases of interstitial-cell tumours of human testis. G. M. Bonser and L. M. Hawksley (*J. Path. Bact.*, 1943, **55**, 295—299).—(4 photomicrographs.) C. J. C. B.

Primary carcinoma of pancreas in an infant aged 7 months. B. D. Corner (*Arch. Dis. Childh.*, 1943, **18**, 106—108).—A case report. C. J. C. B.

Tumours of sweat glands. O. Gates, S. Warren, and W. N. Warvi (*Amer. J. Path.*, 1943, **19**, 591—632).—A crit. review. C. J. C. B.

Sclerosing hemangiomas. R. E. Gross and S. B. Wolbach (*Amer. J. Path.*, 1943, **19**, 533—552).—A discussion of 67 tumours. There is a great variation in the prominence of fibrosis, vascular obliteration, and lipoid phagocytic activity in sclerosing hæmangiomas. When connective tissue proliferation is advanced, the lesion is firm, greyish, and has the gross appearance of a fibroma or neurofibroma; microscopically, the angiomatous nature of the specimen may be obscured. When phagocytosis of lipin is marked, the gross specimen may have a yellowish colour and the microscopic findings resemble cutaneous xanthomas, but the condition has no relationship to the generalised lipoid disturbances. When much pigment accumulates the lesion is brown and resembles a melanoma, but the microscopic appearance of the pigment and the positive reaction for Fe differentiate it from melanin. (11 photomicrographs.) C. J. C. B.

Adrenaline and related substances in human arterial walls and kidneys. Adrenal carcinoma and its hormonal diagnosis.—See A., 1943, III, 807.

Pleural effusion associated with ovarian fibroma (Meigs' syndrome).—See A., 1943, III, 810.

Glioma of retina.—See A., 1943, III, 802.

Multiple primary malignant neoplasms.—See A., 1943, III, 803.

Case of adrenal carcinoma and its hormone diagnosis.—See A., 1943, III, 807.

Urinary steroids from breast cancer patients.—See A., 1943, III, 811.

XVIII.—ANIMAL NUTRITION.

Supplementary feeding in industry. H. W. Haggard (*J. Ind. Hyg.*, 1942, **24**, 332—335).—A general discussion of the types of experiment that are possible. In the experiment described a large group of individuals was given a supplement of the foods most likely to be deficient, viz., vitamins, the main minerals except Na, and defatted milk powder. The supplement was given daily for 2 months and subjective and objective signs were compared with the previous 2 months and with a control group. The experimental group showed improvement, as assessed by decreased absenteeism, increase in production, and diminished spoilage of work. Questionnaires indicated that about half the experimental group slept better and had better appetites. E. M. K.

Anæmias of malnutrition.—See A., 1943, III, 711.

Dietetic value of products of sour milk. S. Orla-Jensen (*Int. Rev. Agric.*, 1943, **34**, T, 98—101).—The different types of bacteria which develop in various preps. of sour milk are considered in relation to their influence on the dietetic val. of the products. R. H. H.

Vegetable milk substitute: taro. F. B. Feingold (*J. Allergy*, 1943, **13**, 488—493).—A low-cost recipe based on taro (Poyo meal) is described as a milk substitute for use in the diets of milk-sensitive children. C. J. C. B.

Goats' milk and human milk. Determination of iron in milk.—See B., 1943, III, 271.

Composition of some wild leaves, barks, and roots for use as foodstuffs during famine time [in China].—See B., 1943, III, 273.

Constancy of chemical composition of serum-proteins regenerated on various dietary regimes.—See A., 1943, III, 714.

Cataract in rats fed a low-protein diet.—See A., 1943, III, 732.

Nutritive value of cotton, peanut, and soya-bean seeds. T. F. Zucker and L. Zucker (*Ind. Eng. Chem.*, 1943, **35**, 868—872).—Soya-bean is superior to both cottonseed and peanut flour as a protein supplement, whereas cottonseed is a better source of the vitamin-*B* complex. The nicotinic acid content of peanut flour (200 μg. per g.) is high. H. G. R.

Immunological and toxic properties of casein digest as prepared for parenteral administration. H. C. Hopps and J. A. Campbell (*J. Lab. clin. Med.*, 1943, **28**, 1203—1211).—The 2 preps. of casein hydrolysate tested are non-antigenic. Reactions of normal smooth muscle strips to casein digests indicate the presence of some histamine-like substances, peptones, or tyramine, which may explain the frequently observed reactions of flushing, sensation of warmth, and nausea in patients given casein hydrolysate by vein. The hydrolysates do not lower blood-pH if liver function is normal. Post-mortem studies of 17 individuals who had received casein digest parenterally did not show toxic changes. C. J. C. B.

Biochemical lesion of lysine deficiency in man. A. A. Albanese, L. E. Holt, jun., J. E. Frankston, C. N. Kajdi, J. E. Brumback, jun., and D. M. Wangerin (*Proc. Soc. Exp. Biol. Med.*, 1943, **52**, 209—211).—In subjects on a lysine-deficient diet (A., 1943, III, 662) there was a marked increase in urinary org. acid (Van Slyke and Palmer) with an absence of lactone bodies. The increase was accompanied by feelings of nausea and vertigo and hypersensitiveness to metallic sounds. V. J. W.

Lysine deficiency in young rats. H. A. Harris, A. Neuberger, and F. Sanger (*Biochem. J.*, 1943, **37**, 508—513).—Lysine deficiency in young rats is accompanied by cessation of growth and hypoproteinæmia. The no. of red cells and the amount of hæmoglobin per unit vol. of blood are decreased, due to retarded development of the hæmatopoietic system rather than anæmia. A considerable decrease in subcutaneous fat, wastage of muscle, and reduction of calcification in the bones are observed. The epiphyseal cartilage in the long bones is barely visible and a reduction in the no. of chondroblasts in the first zone of proliferating cartilage occurs. The trabeculæ of calcified matrix in the zone of calcified cartilage are heavier and the mitotic figures in the testes are reduced. These symptoms are essentially the same as those due to general underfeeding and are due to a general inhibition of protein formation with reduced growth of some organs at the expense of others. H. G. R.

Availability of acetyl derivatives of lysine for growth. A. Neuberger and F. Sanger (*Biochem. J.*, 1943, **37**, 515—518).—ε-N-*Acetyl-lysine*, m.p. 249—253° (decomp.), $[\alpha]_D$ +3·4±0·2°, is prepared by direct acetylation of the Cu complex of lysine. ε-*N*-Carbobenzyloxylysine is obtained by treating the Cu complex with benzyl chloroformate. On acetylation and removal of the carbobenzyloxy-group by catalytic hydrogenation it affords α-N-*acetyl-l-lysine*, m.p. 250 (decomp.), $[\alpha]_D$ +4·7°. ε-*N*-Acetyl-*l*-lysine, but not α-*N*-acetyl-*l*-lysine, is available for the growth of rats on a lysine-deficient diet. H. G. R.

Growth-promoting activity of betaine in the chick. H. J. Almquist and C. R. Grau (*J. Biol. Chem.*, 1943, **149**, 575—576).—Betaine may increase the growth of chicks on a diet deficient in choline and low in S-containing amino-acids. R. L. E.

Relative taste potency of some basic food constituents and their competitive and compensatory action. F. W. Fabian and H. B. Blum (*Food Res.*, 1943, **8**, 179—193).—Intensity of sourness of acids decreases in the order HCl, lactic, malic, tartaric, acetic, citric. Sourness is reduced by NaCl and sugars, particularly in the cases of lactic, malic, and tartaric acids, and could not be correlated with changes in PO_4''' buffer titrations or in pH. The intensity of sweetness of sugars decreases in the order fructose, sucrose, glucose, maltose, lactose. The sweetness of all sugars is increased by NaCl and that of sucrose decreased by HCl and acetic acid but increased by other acids. The sweetness of fructose is reduced by acids excepting HCl and citric, where no change is observed, and that of glucose is unaffected by acids excepting HCl and acetic, which cause a reduction. Saltiness of NaCl is reduced by sugars and increased by acids except HCl, which has no effect. The sensitivity to taste of NaCl exceeds that of $CaCl_2$ but the potency of taste is the reverse; both the anion and cation are probably concerned. The buffer titration method compares favourably with the threshold taste method for determining the sourness of acids except in the case of tartaric acid. H. G. R.

Effect of national wheatmeal on absorption of calcium. H. A. Krebs and K. Mellanby (*Biochem. J.*, 1943, **37**, 466—468).—In all cases in which adult male subjects are kept on a diet containing a predominance of wheatmeal bread of 85% extraction, there is an adverse effect on Ca balance. The average Ca loss is 0·11 g. against 0·023 g. with white flour regime, thus supporting the policy of addition of Ca to national wheatmeal. P. G. M.

Enzootic ataxia and copper deficiency of sheep in Western Australia. H. W. Bennetts and A. B. Beck (*Counc. Sci. Ind. Res. Australia Bull.*, 1942, No. 147, 52 pp.)—Clinical and pathological characteristics of enzootic ataxia due to Cu deficiency are described. Treatment of ewes, lambs, or pasture with Cu arrests or cures the disorder. Other beneficial effects of Cu on ewes and lambs are noted. A. G. P.

Vitamins.

Multivitamin prophylaxis and therapy in respiratory diseases of aged. L. L. Kay (*Amer. J. digest. Dis.*, 1943, **10**, 96—98).—Administration of vitamin-*A* (9000 units), -B_1 (200 units), riboflavin (100 μg.), -*C* (500 units), and -*D* (900 units) to 25 persons over 70 years of age produced improvement in general well-being and less respiratory infections. N. F. M.

Pathologic anatomy of human nervous system in avitaminosis.—See A., 1943, III, 726.

Improvement of colour vision by vitamin intake. Vitamin-*A* and dark adaptation.—See A., 1943, III, 733.

Vitamin-*A* and detoxication of monobromobenzene. F. L. Haley and G. S. Samuelson (*J. Lab. clin. Med.*, 1943, **28**, 1079—1082).—In rats, vitamin-*A* is not associated with the detoxication of monobromobenzene, although -*A*-deficient animals have a lowered resistance to this toxic agent. C. J. C. B.

New *A*-avitaminotic syndrome in young rats. A. Jung and M. Ritter (*Verh. Ver. Schweiz. Physiol.*, 1942, **21**, 6—7).—The animals (8—14 days old) showed xerophthalmia, spastic paresis of forelimbs, later of the hindlimbs, and hydrocephalus. The symptoms disappeared (apart from the hydrocephalus) on addition of vitamin-*A* to the diet. A. S.

Vitamin-*A* in swordfish (*Xiphius gladius*) and tuna (*Thunnus thynnus*).—See B., 1943, III, 274.

Effect of vitamin-*B* on the growth of fibroblasts. E. Paterson and M. V. Thompson (*Biochem. J.*, 1943, **27**, 501—505).—Brain extract from pigeons suffering from beri-beri contains substances which promote satisfactory growth of fibroblasts *in vitro*, though the growth is significantly less than that obtained when extracts of normal pigeon brain are used. Growth on a medium deficient in vitamin-*B* is improved by the addition of yeast extract deficient in -B_1 and biotin and the addition of -B_1 does not increase growth whether the medium is or is not deficient in -*B* complex. It is concluded that the -*B* complex or one of its components (probably not -B_1) has a sp. effect on growth of fibroblasts. H. G. R.

Thermal decomposition of aneurin and cocarboxylase at varying hydrogen-ion concentration. R. G. Booth (*Biochem. J.*, 1943, **37**, 518—522).—Destruction of aneurin at 100° is a thermal effect and not oxidative and is decreased as the acidity of the solution is increased. There is less destruction in PO_4''' than in phthalate buffer at the same pH, and PO_4''' exerts a protective effect. Cocarboxylase is very much more stable than aneurin at the same pH. Cu (2 p.p.m.) catalyses destruction of aneurin whereas Fe, Al, Zn, and Sn have no effect. H. G. R.

Electroencephalograms of thiamin-deficient pigeons.—See A., 1943, III, 727.

Alcoholic fermentation with *Rhizopus suinus*. Inhibition of growth by aneurin.—See A., 1943, III, 771.

Fate of the vitamin-B_1 of barley in barley mills. H. Fink and F. Just (*J. pr. Chem.*, 1943, [ii], **162**, 113—120).—The vitamin-B_1, protein, and ash of barley pass mostly into parts not fit for human consumption. Five grades of pearl barley contained 100—115 μg. of -B_1 per 100 g. The original barley contained 359 μg. The cattle food (44·9% of the whole) contains 720 μg. per 100 g., 78% of all the -B_1. R. S. C.

Relationship between riboflavin intake and thiamin excretion in man. C. T. Klopp, J. C. Abels, and C. P. Rhoads (*Amer. J. med. Sci.*, 1943, **205**, 852—857).—The administration of thiamin in man is often followed by transitory increased excretion of riboflavin in the urine without clinical or chemical evidence of riboflavin deficiency. C. J. C. B.

Nutritive requirements of mealworm larvæ. H. E. Martin and L. Hare (*Biol. Bull.*, 1942, **83**, 428—437).—*Tenebrio molitor* larvæ require thiamin, riboflavin, pyridoxine, nicotinic acid, and pantothenic acid. Their use for the biological assay of these substances is suggested. Vitamins-*A*, -*D*, -*C*, -*E*, and -*K* and choline have no effect. G. P. W.

Growth rate and number of spontaneous mammary carcinomas and riboflavin concentration of liver, muscles, and tumour of *C3H* mice as influenced by dietary riboflavin.—See A., 1943, III, 749.

Relation of riboflavin to eye. Riboflavin and riboflavin adenine dinucleotide in ox ocular tissue.—See A., 1943, III, 729.

Synthesis of riboflavin by yeast.—See A., 1943, III, 770.

Biological significance of nicotinic acid. C. A. Elvehjem (*Harvey Lect.*, 1939—40, *Ser.* 35, 71—90).—A review. E. M. J.

Nicotinic acid content of blood in diseases. I. Anæmia. B. D. Kochhar (*Ann. Biochem. Exp. Med.*, 1942, **2**, 211—220).—30 anæmic cases were examined. Decreased cell vol. was accompanied by a decrease in blood-nicotinic acid and an increase in the concn. in the cells. Blood-nicotinic acid bore no relation to the type or severity of the anæmia. P. C. W.

Pseudopyridoxine and certain fungi.—See A., 1943, III, 771.

Resolution of *dl*-pantothenic acid with cinchonidine.—See A., 1943, II, 355.

Biological method for estimation of pantothenic acid with rats, in which wheat germ is included in the basal diet. J. D. S. Bacon and G. N. Jenkins (*Biochem. J.*, 1943, **37**, 492—497).—The synthetic diet is supplemented with vitamin-B_1, -B_6, -B_2, inositol, choline, nicotinic acid, cod-liver oil, and wheat germ; the increase in growth rate on adding pantothenic acid is proportional to the log of the dose. The optimum daily dose of Ca *d*-pantothenate for young rats (40—150 g.) is 50—100 μg. Wheat germ supplies additional, unidentified factors necessary for the growth of rats and is deficient in pantothenic acid. H. G. R.

Detoxication by *p*-aminobenzoic acid of certain quinquevalent arsenical drugs given in massive doses to rats.—See A., 1943, III, 764.

Biotin and growth of *Fusarium avenaceum*.—See A., 1943, III, 771.

Relationship between ascorbic acid and glutathione *in vivo*. F. T. G. Prunty and C. C. N. Vass (*Biochem. J.*, 1943, **37**, 506—508).—The concn. of glutathione in the red blood corpuscles varies inversely as that of the plasma-ascorbic acid. The ratio of the fall of glutathione in the corpuscles to the rise of plasma-ascorbic acid is 10 : 1. The long "latent period" of scurvy on a scorbutic diet is probably due to reduced glutathione in the tissues tending to counterbalance the functional diminution consequent on the lack of ascorbic acid. H. G. R.

Vitamin-*C* intakes in a small ship. C. C. Ungley (*Lancet*, 1943, **244**, 578—579).—The average daily intake of ascorbic acid in 11 seamen serving in a trawler-minesweeper was 16 mg. in the 1st week and 30 mg. in the 2nd week of observation. There were no clinical signs of scurvy though plasma-ascorbic acid vals. were low (0·1—0·4 mg. per 100 c.c.). C. A. K.

Activity of blood-serum-esterase under different conditions of vitamin-*C* nutrition. B. Ghosh (*Ann. Biochem. Exp. Med.*, 1942, **2**, 233—236).—There are wide individual variations in serum-esterase activity in guinea-pigs depending on the saturation of the body with ascorbic acid. Saturated pigs had high and deficient pigs low serum-esterase activity. Addition of ascorbic acid did not increase the esterase activity of normal serum *in vitro*. P. C. W.

Complement activity and vitamin-*C*. E. Kodicek and B. Traub (*Biochem. J.*, 1943, **37**, 456—460).—There is no significant change in complement in guinea-pigs on different levels of vitamin-*C* intake. This finding is not modified by additional intake of other essential factors present in cabbage. P. G. M.

Vitamin-*C* subnutrition in gingivo-stomatitis. F. Stuhl (*Lancet*, 1943, **244**, 640—642).—Vitamin-*C* subnutrition was present in 46 of 74 soldiers with gingivitis. Administration of -*C* relieved general symptoms and in conjunction with local treatment cured the gingivitis. C. A. K.

Syringadenitis suppurativa tropicalis (a complication of lichen tropicus) [relation to vitamin-*C*]. F. Reiss (*J. Lab. clin. Med.*, 1943, **28**, 1082—1092).—An inflammatory and suppurative disorder of the eccrine sweat glands occurring in Chinese patients is described under the name syringadenitis suppurativa tropicalis. The inflammatory involvement and infection of the sweat glands are furthered by an excessive loss of vitamin-*C* and altered carbohydrate metabolism. Treatment consists in the use of appropriate topical applications and -*C* internally. C. J. C. B.

Erythropoiesis in scurvy.—See A., 1943, III, 711.

Rôle of ascorbic acid in secretion of intraocular fluid.—See A., 1943, III, 731.

Significance of plasma-ascorbic acid levels in Nebraska children.—See A., 1943, III, 715.

Inhibition of urease activity by ascorbic acid.—See A., 1943, III, 769.

Effect of narcotics on the excretion of free and combined ascorbic acid. B. Ghosh (*Ann. Biochem. Exp. Med.*, 1942, **2**, 221—228).—Chloretone, paraldehyde, phenobarbital, amidopyrine, urethane, and bromobenzene administered to rats or guinea-pigs increased the urinary output of free ascorbic acid. In the guinea-pig there was depletion of tissue-ascorbic acid, particularly in the adrenals, liver, and kidney; in the rat there was an increase in tissue-ascorbic acid. Feeding rats with 20 mg. of chloretone per day produced a 400% increase in the urinary free ascorbic acid, disappearance of combined ascorbic acid in the urine, and an increased concn. of tissue-ascorbic acid, showing that the treatment causes increased ascorbic acid synthesis. The urinary excretion of combined ascorbic acid in the rat is confirmed even after the feeding of org. compounds (camphor, nicotine, phenol, menthol, or chloral hydrate). P. C. W.

Effect of administration of thyroid, 2 : 4-dinitrophenol, and insulin on ascorbic acid metabolism. B. Ghosh (*Ann. Biochem. Exp. Med.*, 1942, **2**, 229—232).—The urinary excretion of free ascorbic acid was decreased in guinea-pigs fed 65 mg. of desiccated thyroid or 2 mg. of 2 : 4-dinitrophenol; the excretion of combined ascorbic acid was increased. Injection of 2 units of insulin produced an increase in the excretion of both forms. A decrease in tissue-ascorbic acid, more than could be accounted for by increased excretion, was observed in all cases. P. C. W.

Ascorbic acid and histamine content of rabbit's blood during anaphylactic shock.—See A., 1943, III, 778.

Action of ascorbic acid oxidase on reductone.—See A., 1943, III, 768.

Ascorbic acid content of cow's milk during four successive lactation periods. A. D. Holmes, F. Tripp, E. A. Woelffer, and G. H. Satterfield (*Food Res.*, 1943, **8**, 237—242).—The ability of a Guernsey cow to produce milk rich in ascorbic acid did not diminish with advancing years or successive lactations. The daily vol. of milk, the ascorbic acid content, and the total daily ascorbic acid production during the 3rd, 4th, 5th, and 6th lactation periods were 7·79, 16·94, 11, 19·73 l., 26·93, 22·10, 21·78, 21·89 mg. per l., and 214, 372, 239, 432 mg. per l., the stages of lactation being the 14th—19th, 1st—6th, 5th—9th, and 2nd—6th months, respectively. H. G. R.

Protein–ascorbic acid complex in carrots. F. DeEds (*Food Res.*, 1943, **8**, 275—279).—The presence of a protein–ascorbic acid complex in carrots has been demonstrated by the liberation of approx. 2 mg. of ascorbic acid per 100 g. of fresh carrots by HPO_3 hydrolysis or tryptic digestion after extraction of free ascorbic acid by HPO_3. Max. liberation in the tryptic digestion occurs in 60 min., after which the val. begins to decrease. H. G. R.

Vitamin-*C* content of Italian tomatoes and tomato produce. H. M. Rauen (*Schweiz. med. Wschr.*, 1942, **72**, 987—991).—The vitamin-*C* contents of various types of fresh tomatoes, tomato preserves, and concentrates are reviewed. A. S.

Ascorbic acid value of the Indian gooseberry. Relation of ascorbic acid concentration in juice of Florida grapefruit to variety, rootstock, and position of fruit on tree. Concentrated swede juice as source of vitamin-*C*. Use of rose-hips as source of vitamin-*C*. Factors affecting the vitamin-*C* content of canned fruit and vegetables.—See B., 1943, III, 273, 274.

Determination of ascorbic acid in preparations containing iron and ammonium citrate.—See B., 1943, III, 277.

Prevention of rickets with single massive doses of vitamin-*D*. I. J. Wolf (*J. Pediat.*, 1943, **22**, 396—417).—62 infants aged 3—5 months were given 600,000 U.S.P. units of an electrically activated prep. of ergosterol (ertron) divided in 2 oral doses in precooked cereal and milk. At the onset, 18 showed milk rickets which healed during the period of observation of 2—7 months after treatment, and remained healed. 44 other infants were followed for 2—7 months after the single massive dose of vitamin-*D* and showed no evidence of rickets during this period. C. J. C. B.

Safety of large doses of vitamin-*D* in prevention and treatment of rickets in infancy. I. J. Wolf (*J. Pediat.*, 1943, **22**, 707—717).—A review and case report. In this case, metastatic calcification of the kidney tubules was produced experimentally in an infant aged 3 months, weighing 7½ lb. when given about 85,000 U.S.P. units of vitamin-*D* per kg. daily for 12 consecutive days. C. J. C. B.

Myocardium in avitaminosis-*E* in guinea-pig.—See A., 1943, III, 718.

Chemical determination of tocopherols in liver and muscle; tocopherol in urine and fæces. L. R. Hines and H. A. Mattill (*J. Biol. Chem.*, 1943, **149**, 549—554).—More accurate results are obtained by the Fe–2 : 2′-dipyridyl method after treatment of the fatty extract with 85% H_2SO_4, followed by 1% KOH and passage through two columns of florisil; most of the cholesterol is removed. The livers of rats on diets high, normal, and low in vitamin-*E* contained 43·3, 22·1, and 22·6, and of rabbits 86·8, 9·2, and 9·4 mg. per kg. respectively. No tocopherol was found in the urine, and no tocopherylquinone in the muscle, liver, or urine of animals on high-*E* diets, though some tocopherol was found in the fæces. Simple extraction of the tissues with org. solvents may give low results. R. L. E.

Oral and parenteral use of vitamin-*K*-active substances in hypoprothrombinæmia. J. D. Stewart (*Surgery*, 1941, **9**, 212—219).—In studies of 30 patients 2-methyl-1 : 4-naphthaquinone or its dipropionyl or $NaHSO_3$ derivatives exhibited vitamin-*K* activity in doses of 1—4 mg. orally or parenterally daily. No toxic symptoms were observed with doses as high as 20 mg. given intravenously. The prothrombin response appears within 24 hr. but does not persist for longer than 7 days after stopping treatment. Severe liver damage or chronic sepsis may make the patient refractory. The oral effectiveness of the compounds was increased by taking deoxycholic acid or bile salts. P. C. W.

Oral administration of synthetic vitamin-*K*. E. R. Anderson, J. E. Karabin, H. L. Udesky, and L. Seed (*Surgery*, 1941, **9**, 361—371).—22 of 23 patients responded satisfactorily to the oral administration of vitamin-*K*. A patient who only showed a 5% increase in clotting activity was in the terminal stages of cancer. The recommended dosage is 2 g. of bile salts daily with an initial dose of 6 mg. of -*K* with a maintenance dose of 3—6 mg. daily A marked response occurs within ½—1 hr. In surgery of the biliary tract the prothrombin activity was lowest on the 4th—7th post-operative day. P. C. W.

Effect of vitamin-*K* on hypoprothrombinæmia induced by Dicumerol in man. Prophylaxis of hypoprothrombinæmia of newborn infants with vitamin-*K*.—See A., 1943, III, 713.

Vitamin-*P* content of Kweichow vegetables and fruits. T. Y. Lo (*J. Chinese Chem. Soc.*, 1942, **9**, 196—203)—83 species were examined by the method of Lorenz and Arnold (A., 1943, III, 191). *Zizyphus vulgaris*, Lam., var. *inermis*, Bge., and *Rosa multiflora*, Thunb., contained 33·58 and 29·09 mg. of vitamin-*P* per g. respectively. F. R. G.

Vitamin-*P* content of Chinese red and green peppers. T. Y. Lo and M. C. Chang (*J. Chinese Chem. Soc.*, 1942, **9**, 204—209).—Of 76 varieties examined by the method of Lorenz and Arnold (A., 1943, III, 191) six were richer in vitamin-*P* than was *Capsicum annuum*. There is a rapid increase in -*P* coincident with the change from green to red. F. R. G.

See also Section XIX, Metabolism.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Comparative accuracy of closed-circuit bedside method and open-circuit chamber procedure for determination of basal metabolism. R. C. Lewis and A. M. Duval (*J. Lab. clin. Med.*, 1943, **28**, 1238—1245).—Good correlation between the results obtained by the 2 methods was found for children and adults. C. J. C. B.

Effect of change of altitude on basal metabolism in man.—See A., 1943, III, 722.

Convergence function in relation to basal metabolism.—See A., 1943, III, 729.

Metabolic effects of potassium, temperature, methylene-blue, and *p*-phenylenediamine on infant and adult brain.—See A., 1943, III, 726.

Effect of diathermy on brain metabolism: changes produced on sugar, lactic acid, and pH of arterial and venous blood of the brain in paretic patients.—See A., 1943, III, 726.

Inhibition of sperm respiration and glycolysis and reversibility of effects of metabolic inhibitors.—See A., 1943, III, 742, 743.

Nitrogen equilibrium and regeneration of serum-protein following intravenous use of amino-acids. W. J. Messinger (*Arch. intern. Med.*, 1943, **71**, 91—103).—Amino-acid solutions prepared by acid hydrolysis of casein, fortified with 1% of tryptophan, intravenously administered in sufficient quantities maintained positive N balance in 1 case. In certain patients intravenous injections of amino-acids are followed by increases in serum-proteins. Solutions of amino-acids given intravenously help intractable anorexia. C. J. C. B.

Utilisation of methyl groups of choline in biological synthesis of methionine. S. Simmonds, M. Cohn, J. P. Chandler, and V. du Vigneaud (*J. Biol. Chem.*, 1943, **149**, 519—525).—On feeding choline containing D in the methyl group to rats on a diet devoid of S-containing amino-acids, or together with homocystine or methionine, D appears in the methyl group of the tissue-methionine. R. L. E.

Canine cystinuria. Urinary excretion of cystine following administration of homocystine, homocysteine, and some derivatives of cystine and cysteine. W. C. Hess and M. X. Sullivan (*J. Biol. Chem.*, 1943, **149**, 543—548).—Feeding 5 compounds with other groups attached to the S, S and N, or N of cysteine to cystinuric dogs caused no increased excretion of cystine. Homocysteine and glycylcysteine caused 13—19% and 27% increase respectively, compared with equiv. amounts of cysteine. No mixed disulphides were found. Homocystine and homocysteine were not excreted unchanged. R. L. E.

Action of amino-acids and proteins on liver-fat deposition. H. J. Channon, G. T. Mills, and A. P. Platt (*Biochem. J.*, 1943, **37**, 483—492).—Tryptophan, and possibly tyrosine, possesses a slight lipotropic action on fat- and cholesterol-fatty livers. Glutamic acid is effective only on cholesterol-fatty livers. A lipotropic factor of caseinogen can be conc. in the butyl alcohol-sol. amino-acid fraction, and further purified by Cu-salt fractionation. Experiments with gelatin yield conflicting results. P. G. M.

Investigation of the metabolism of fats with deuterium as indicator. II. Formation of oleic acid from carbohydrates. K. Bernhard and F. Bullet (*Helv. Chim. Acta.*, 1943, **26**, 1185—1189; cf. A., 1943, III, 260).—In rats fed on a diet rich in carbohydrates, the regeneration of depot fatty acids occurs in a half-period of about nine days. One of every two firmly bound H atoms of the freshly formed, saturated fatty acids is derived from the body-water, in harmony with the results of analogous experiments on mice. Oleic acid, previously brominated and isolated as derivative of *p*-aminoazobenzene, contains only about 40% of the D content of palmitic or stearic acid. It is not formed in the same manner as the saturated acids. Only about one fifth of the H atoms of oleic acid are derived from the body-water. The synthesis of the acid may involve larger units than those used for the fatty acids. H. W.

Management of obesity with emphasis on appetite control. N. H. Colton, H. I. Segal, A. Steinberg, F. R. Schechter, and N. Pastor (*Amer. J. med. Sci.*, 1943, **206**, 75—85).—In 300 cases of obesity treated by dietary restriction and appetite control by *d*-amphetamine, or amphetamine and propadrine hydrochloride, the wt. loss on an average was 2 lb. per week. C. J. C. B.

Biological conversion of cholesterol into cholic acid. K. Bloch, B. N. Berg, and D. Rittenberg (*J. Biol. Chem.*, 1943, **149**, 511—517).—3 days after intravenous injection of deuterocholesterol into dogs the cholesterol of the liver (2·0), lungs (0·71), spleen (0·46), and heart (0·39), contains more D than that of other organs and blood (0·2—0·33%). No D appears in the cholesterol of brain and spinal cord. Cholic acid in the urine had the same concn. of D as the cholesterol of blood and bile, which probably supplies at least ⅔ of the cholic acid. R. L. E.

Mechanism of coprosterol formation *in vivo*. I. Cholestenone as intermediate. O. Rosenheim and T. A. Webster (*Biochem. J.*, 1943, **37**, 513—514).—Cholestenone has been identified in the fæces of the dog and rat after feeding brain substance. Traces of a substance absorbing at 2380 A. have been found in brain but it was not possible to characterise it as cholestenone. H. G. R.

Dimeric glyceraldehyde αγ-diphosphate.—See A., 1943, II, 353.

Xanthomatosis: Hand-Schueller-Christian type. J. H. Currens and W. C. Popp (*Amer. J. med. Sci.*, 1943, **205**, 780—785).—Report of a case aged 29 with pulmonary fibrosis. C. J. C. B.

Properties of amyloid deposits occurring in several species under diverse conditions. G. M. Hass, R. Huntington, and N. Krumdieck (*Arch. Path.*, 1943, **35**, 226—241).—Amyloid disease developed more readily in rabbits than in horses or in man. The most effective method in rabbits was to inject tuberculin into animals with active bovine tuberculosis. The most effective method in horses was to inject tetanus toxin. Splenic amyloid was most voluminous in rabbits, hepatic amyloid in man. Renal amyloid was more abundant in rabbits than in man and was never found in horses. The solubility of different amyloid matrices varied. All were sol. at pH 11—12. The solubilities were const. in a given species and did not vary with the age or the quantity of amyloid or the intensity of the I reaction. All amyloid deposits gave similar aniline dye reactions. C. J. C. B.

Utilisation of lactose by the fasting white rat. M. A. Coryell and A. A. Christman (*J. Biol. Chem.*, 1943, **150**, 143—154).—Lactose (20% solution) was administered by stomach tube to fasted white rats. 32, 59, and 73% was hydrolysed after 1, 2, and 3 hr. respectively. The resulting glucose was absorbed as fast as formed, but the galactose was absorbed somewhat more slowly. The liver-glycogen deposited was approx. equiv. to ⅓ of the total absorbed sugar; lactose appears to be a relatively good glycogen former. Blood-sugar determinations showed a comparatively small rise after lactose administration, consistent with the slow rate of hydrolysis and consequent absorption. E. C. W.

Blood-amylase activity in disease of carbohydrate metabolism and in non-diabetic pancreatic disease.—See A., 1943, III, 714.

Intermediary metabolism in diabetes mellitus. W. C. Stadie (*Harvey Lect.*, 1941—42, *Ser.* 37, 129—167).—A review. E. M. J.

Diabetes mellitus association with hirsutism and unusual insulin resistance. R. L. Pullen and W. A. Sodeman (*J. Clin. Endocrinol.*, 1943, **3**, 345—350).—A case is reported. P. C. W.

Intermediate stages in metabolic conversion of benzpyrene into 8-hydroxybenzpyrene in mice. F. Weigert and J. C. Mottram (*Biochem. J.*, 1943, **37**, 497—501).—Fluorescence chromatography of fresh extracts of organs of mice treated with benzpyrene indicates that the hydrocarbon is not oxidised directly to 8-hydroxybenzpyrene but passes through three intermediate stages. The first stage alone is connected with carcinogenesis since it alone occurs in the living cell while the later stages are connected with removal of the hydrocarbon from the body. H. G. R.

Metabolism of mononitroparaffins. II. Metabolic products of nitroethane.—See A., 1943, III, 761.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Penicillin and propamidine in burns. A. M. Clark, L. Colebrook, T. Gibson, and M. L. Thomson (*Lancet*, 1943, **244**, 605—609).—Penicillin cream (100—150 Oxford units per g.) was applied to 54 burns in various stages of healing. In 41 cases (76%) hæmolytic streptococci disappeared within 5 days. In 7 cases the organisms were sulphonamide-insensitive but responded to penicillin. Staphylococci also disappeared rapidly in many cases. Healing was usually rapid and there were no toxic effects. 0·1% propamidine cream was applied in 34 similar burns and hæmolytic streptococci disappeared in 21 cases (62%); in 8 cases, however, they persisted, 3 responding promptly to penicillin. Healing was generally good and no toxic effects were observed. *B. coli*, *B. proteus*, and *Ps. pyocyanea* when present were not affected by either drug. Both drugs were superior to local application of sulphonamides. C. A. K.

Penicillin in suppurative disease of lungs. F. G. Blake and B. Craige (*Yale J. Biol. Med.*, 1943, **15**, 507—516).—Two cases of staphylococcal and one case of hæmolytic streptococcal suppurative disease of the lung were successfully treated with intravenous and intramuscular penicillin. F. S.

Pharmacology and toxicology of sulphonamides. E. P. Pick (*J. Mt. Sinai Hosp.*, 1943, **10**, 343—354).—A review. E. M. J.

Fate of sulphonamides and *p*-aminobenzoic acid in cold-blooded animals. R. B. Failey, R. C. Anderson, F. G. Henderson, and K. D. Chen (*J. Pharm. Exp. Ther.*, 1943, **78**, 366—371).—The conjugation of 4 sulphonamides and of *p*-aminobenzoic acid in the blood stream was studied following their injection into the lymph sacs of 5 species of frog or toad, and in the turtle. P. C. W.

Chemotherapy of pneumococcal infections. H. Zeuner (*Zentr. Bakt.*, 1943, I, **150**, 116—123).—Mice were infected intranasally with pneumococci and injected subcutaneously daily with 0·2 c.c. of a solution of quinine 2 mg., antipyrin 2 mg., KI 0·4 mg., and pyridium 0·002 mg. in 50 g. of water. This treatment compared favourably with prontosil and neo-uliron. F. S.

Comparative *in-vitro* effect of various sulphonamides on *V. choleræ*. J. F. Sadusk and E. Oswald (*Amer. J. trop. Med.*, 1943, **23**, 275—279).—In a synthetic, inhibitor-free medium sulphathiazole had the greatest bacteriostatic effect on *V. choleræ*, and was followed by sulphadiazine, sulphaguanidine, and sulphanilamide, in order of decreasing efficiency. F. S.

Susceptibility of *Shigella paradysenteriæ* to sodium sulphathiazole and sulphaguanidine *in vitro*. M. L. Cooper and H. M. Keller (*J. Pediat.*, 1943, **22**, 418—425).—Na sulphathiazole was more bacteriostatic and bactericidal for Flexner strains of *S. paradysenteriæ* than for Sonne strains and less bactericidal for *E. typhosa* and *S. paratyphi*. It was also more bactericidal than sulphaguanidine for the strains tested. C. J. C. B.

Oral administration of sulphadiazine at onset of acute respiratory illnesses. M. Siegel (*Amer. J. Dis. Child.*, 1943, **66**, 114—120).—The illnesses were milder and of shorter duration in the drug-treated group of 82 than in the untreated group of 90. In some infections, however, the disease appeared to be unaffected by the treatment and, in 2 instances, lobar pneumonia was detected on the 3rd day of treatment and was the cause of death in 1. C. J. C. B.

Intensive therapy in staphylococcal septicæmia. A. K. Brown (*Edinb. Med. J.*, 1943, **50**, 469—473).—An account of a case treated with sulphathiazole (50 g.), anti-staphylococcal serum (85,000 units), and immuno-transfusion (1 pint). H. S.

Comparison of sulphanilamide and acetylated derivative of 4 : 4′-diaminodiphenyl sulphone hydrochloride in treatment of experimental β-hæmolytic streptococcus pericarditis in rabbit. R. J. Lebowich (*Arch. Path.*, 1943, **35**, 253—254).—An acetylated derivative of 4 : 4′-diaminodiphenyl sulphone hydrochloride cured a proportion of rabbits with experimental β-hæmolytic streptococcus pericarditis; sulphanilamide was ineffective. 49 of 50 rabbits whose treatment was started 12 hr. after production of the pericarditis were cured. The compound has a low toxicity. (6 photomicrographs.) C. J. C. B.

Sulphonamides in Pfeiffer's bacillus meningitis. J. N. P. Davies (*Lancet*, 1943, **244**, 553—556).—16 of 20 cases of Pfeiffer's bacillus meningitis died after treatment with sulphanilamide, sulphapyridine, or sulphathiazole and the 4 recoveries were not considered due to the drugs. C. A. K.

Sulphapyridine in Pfeiffer's bacillus meningitis. R. A. Moir (*Lancet*, 1943, **244**, 556—557).—2 out of 4 cases of Pfeiffer's bacillus meningitis recovered after treatment with sulphapyridine. C. A. K.

Sulphamethazine in pneumococcal meningitis. R. P. Walsh (*Lancet*, 1943, **244**, 649—650).—Successful case report. C. A. K.

Sulphonamides in impetigo contagiosa. J. W. Bigger and G. A. Hodgson (*Lancet*, 1943, **244**, 544—547).—The ætiology of impetigo contagiosa was studied in 130 cases and most cases were attributed to *Staph. pyogenes* and not to *Strep. pyogenes*. Local application of sulphanilamide or sulphapyridine had little effect on the course of the disease. C. A. K.

Sulphonamides in impetigo contagiosa. H. L. Sheehan and A. G. Fergusson (*Lancet*, 1943, **244**, 547—550).—Bacteriological studies in 97 cases of impetigo contagiosa showed that *Staph. aureus* was present in nearly all early lesions and that *Strep. hæmolyticus* was only a late contaminant. Inoculation of human skin with blister fluid or with *Staph. aureus* was sometimes successful in reproducing the disease. Sulphathiazole paste cured most cases in 5 days. Sulphanilamide was ineffective. C. A. K.

Sulphonamides and streptococcal infection of muscle. J. D. MacLennan (*Lancet*, 1943, **244**, 582—584).—Sulphonamides, given locally and by mouth, were effective in treatment of muscle wounds infected with aërobic and anaërobic streptococci. C. A. K.

Bacillary dysentery: results of treatment with sulphaguanidine. R. F. West (*Med. J. Austral.*, 1943, I, 344—347).—74 cases were treated with sulphaguanidine (0·05 g. per kg. every 4 hr.) and 23 cases with saline therapy. In the sulphaguanidine group the days after which stools and sigmoidal appearances became normal were 8·5 and 11·4 respectively, whereas in the saline group they were 15·2 and 19·2. F. S.

Prophylatic use of sulphanilylguanidine in dysentery outbreak. P. F. Lucchesi and N. Gildersleeve (*J. Pediat.*, 1943, **22**, 319—324).—45 patients intimately exposed to the disease were given a prophylactic course of sulphanilylguanidine (0·05 g. per kg. 4-hourly); none developed dysentery. 48 patients less intimately exposed were not given a prophylactic course; 4 developed dysentery. 29 children with bacillary dysentery recovered promptly with sulphanilylguanidine. C. J. C. B.

Influence of promin, starch, and heptaldehyde on experimental leprosy in rats. L. V. Cowdry and C. Ruangsiri (*Arch. Path.*, 1941, **32**, 632—640).—Repeated subcutaneous injections of promin (0·2—0·5 c.c. of 40% solution daily) in a small series of leprous rats did not modify the course of development of the nodules, but the survival time of the treated animals was longer than in controls, and at the end of the experiment the treated animals were in better condition. Some nodules healed temporarily after intranodular injections of starch (0·1—0·2 c.c. of 1% corn starch at 4—7-day intervals), but so also did some untreated nodules. Intranodular injections of heptaldehyde (0·1—0·05 c.c.) into areas previously inoculated with bacilli before sufficient time had elapsed for nodule development were not beneficial. C. J. C. B.

Studies on 2-sulphanilamido-4-methylpyrimidine (sulphamerazine, sulphamethyldiazine) in man. J. K. Clark, H. F. Flippin, and F. D. Murphy (*Amer. J. med. Sci.*, 1943, **205**, 846—851).—Sulphamerazine was given to 200 unselected patients, suffering from acute bacterial infections. Toxic reactions possibly due to the drug appeared in 30. Gross hæmaturia was observed in a single case receiving routine sulphamerazine treatment and in 1 additional case receiving massive intravenous therapy. No case of peripheral neuritis was seen, although 2 patients developed transient mental symptoms. C. J. C. B.

Case of sulphonamide myopia with investigation of its pathogenesis. Ætiology of sulphonamide myopia.—See A., 1943, III, 801.

Agranulocytosis following sulphapyridine therapy. B. A. Baker and F. Fenner (*Med. J. Austral.*, 1943, I, 347—348).—A case of agranulocytosis following the administration of about 50 g. of sulphapyridine in 15 days is described. Blood and bone marrow findings suggested that the defect was a hypoplasia of the marrow rather than an interference with the maturation of the myeloid cells. F. S.

Sulphapyridine anuria. (A) A. L. Kerr. (B) W. Thompson. (C) W. A. Flynn (*Lancet*, 1943, **244**, 646—649).—10 cases are reported. C. A. K.

Effect of continued sulphanilamide ingestion on acid–base equilibrium of dog. A. H. Free, D. E. Bowman, and D. F. Davies (*J. Lab. clin. Med.*, 1943, **28**, 1117).—In dogs during continued ingestion of sulphanilamide to maintain therapeutic blood concns., serum-HCO_3' falls but there is no change in serum-pH. Administration of Na citrate prevents the decrease in serum-HCO_3'. A low-salt diet had no effect. Single massive toxic doses of sulphanilamide did not affect blood-pH but caused a loss of water from the blood. C. J. C. B.

Febrile reactions resulting from re-administration of sulphadiazine. T. R. Talbot, jun., and J. D. Adcock (*Amer. J. med. Sci.*, 1943, **205**, 841—845).—6 of 37 patients had a febrile reaction to sulphadiazine; 3 had a febrile reaction to both the first and second courses and 3 to the second course. Febrile reactions to a second administration of sulphadiazine were less frequent and less severe than those reported for sulphathiazole but were often accompanied by delirium, chill, and a maculopapular rash. C. J. C. B.

Toxic effects of promin on erythrocytes of guinea-pigs. G. M. Higgins (*Amer. J. med. Sci.*, 1943, **205**, 834—841).—Promin exerts a direct toxic effect on the erythrocytes as shown by the presence of abnormal hæmoglobin pigments in the cells and changes in the surface membranes; in fresh "cover slip" preps. many cells are crenated. Damaged erythrocytes are removed from the blood stream by the spleen. Anæmia is induced, the spleen is greatly enlarged, and the reticulocyte % elevated. Promin did not permanently damage the bone marrow. Regeneration of erythrocytes proceeded during continuous administration of large amounts of the drug. C. J. C. B.

Erythrocyte aplasia following sulphathiazole. A. M. Strauss (*Amer. J. clin. Path.*, 1943, **13**, 249—252).—A case of toxic reaction to a total of 11 g. of sulphathiazole over 4 days is reported involving the skin and the hæmatopoietic system. Marked peripheral anæmia and eosinophilia were present. The bone marrow showed almost complete selective aplasia of the erythropoietic marrow elements. After removal of the drug the symptoms subsided and the bone marrow returned to normal. The patient made a slow but steady recovery. C. J. C. B.

Chemical constitution and anti-plasmodic action. V, VI.—See A., 1943, II, 385, 387.

Pharmacological actions of certain aromatic diamidines possessing trypanocidal activity. R. Wien (*Ann. trop. Med. Parasit.*, 1943, **37**, 1—18).—The $L.D._{50}$ of the dihydrochlorides of 4 : 4′-diamidinodiphenyl ether, 4 : 4′-diamidinostilbene, 4 : 4′-diamidino-α-γ-diphenoxypropane, and 4 : 4′-diamidino-αε-diphenoxypentane by intravenous injection in mice were 0·05, 0·03, 0·04, and 0·03 mg. per g. respectively. These comparative vals. agreed with the effects on blood pressure in the cat and on isolated rabbit intestine. Fall in blood pressure was mainly by peripheral dilatation, was only partially antagonised by atropine, and was reduced by a previous injection of Ca. The diamidines had an ergotoxine-like action and reduced the action of adrenaline on blood pressure, uterus, and perfused blood vessels of the rabbit's ear and cat's hind limb. Isolated intestine and uterus were stimulated in high concns.; these effects were not abolished by atropine. F. S.

Metabolic effects produced by certain aromatic diamidines. R. Wien, W. Freeman, and N. M. Scotcher (*Ann. trop. Med. Parasit.*, 1943, **37**, 19—33).—Three of these compounds (see preceding abstract) produced hyperglycæmia in rabbits but only in doses approaching the toxic level, the diphenyl ether having the least effect. Only the diphenoxypentane (propamidine) produced a subsequent hypoglycæmic condition. In adrenalectomised rabbits the hyperglycæmia produced by the stilbene was reduced and the hypoglycæmia produced by the diphenoxypentane was accentuated. In rabbits there was an increase in blood-urea and -non-protein N. In dogs and rabbits serum-Ca and -K were reduced. In guinea-pigs there were no gross changes in red- or white-cell counts. F. S.

Cases of Sudan kala-azar treated with aromatic diamidines. R. Kirk and N. H. Sati (*Ann. trop. Med. Parasit.*, 1943, **37**, 34—37).—The final results of treatment after 2½—3 years in 43 cases are reviewed. There were no relapses and no deaths which might be attributable to a cumulative or delayed toxic effect of the drug. F. S.

Plasmoquine resistance in *Plasmodium knowlesi*. J. D. Fulton and W. Yorke (*Ann. trop. Med. Parasit.*, 1943, **37**, 41—47; cf. A., 1943, III, 51).—That *Pl. knowlesi* can easily be made resistant to plasmoquine in *Macacus rhesus* was confirmed. Resistance persisted during 5 months while the strain was maintained in a monkey in a chronic state as the result of treatment with a small dose of atebrin. F. S.

Toxicity and therapeutic action of certain aromatic diamidines after exposure to light. J. D. Fulton (*Ann. trop. Med. Parasit.*, 1943, **37**, 48—59; cf. A., 1943, III, 265).—Exposure to light increased the toxicity of 4 : 4′-diamidinostilbene (stilbamidine) and its monoethyl derivative, but not that of 4 : 4′-diamidino-αε-diphenoxypentane, 4 : 4′-diamidino-αβ-diphenylethane, or 4 : 4′-diamidino-αβ-dimethylstilbene. Therapeutic activity was unaltered. The biological alteration in stilbamidine was accompanied by saturation of the ethylenic linking in the aliphatic chain and with production of a more sol. compound which contained O. F. S.

Spectroscopic examination of aromatic diamidines before and after exposure to light. T. W. Goodwin (*Ann. trop. Med. Parasit.*, 1943, **37**, 59—65).—The two compounds affected by light (see preceding abstract) underwent considerable photochemical alteration with a shift in the position of their absorption bands from about 310 mμ. (characteristic of two benzene nuclei conjugated together by a double linking) to 260 mμ. (characteristic of a saturated compound). F. S.

Relationship between bacteriostatic activity and normal reduction potentials of substituted quinones. J. E. Page and F. A. Robinson (*Brit. J. exp. Path.*, 1943, **24**, 89—95).—The half-wave potentials of the vitamin-*K* analogues, phthiocol, phthiocol methyl ether, and 2 : 3-dimethyl-1 : 4-naphthaquinone, were −0·34, −0·32, and −0·25 v. respectively at pH 6·24. There was no simple relationship between the reduction potentials, E_0', of 20 substituted quinones and their bacteriostatic activities against *B. coli*, but the E_0' of all the quinones markedly active against *Staph. aureus* fell between −0·10 and +0·15 v., optimal activity being associated with E_0' +0·03 v. There was no similar relationship between E_0' and activity against *Staph. aureus* in 18 commercial oxidation–reduction indicators, citrinin, and penicillic acid. F. S.

Mode of action of quinine and quinidine.—See A., 1943, II, 398.

Synthesis in the series of cinchona alkaloids.—See A., 1943, II, 398.

Reduction of 2 : 4 : 6-trinitrotoluene by animal tissue *in vitro*. B. B. Westfall (*J. Pharm. Exp. Ther.*, 1943, **78**, 386—393).—Extract of animal tissue reduces *s*-trinitrotoluene *in vitro*. Some of the resulting product behaves as a diazotisable amino-compound. The reducing power was largely destroyed by heating at 80° for 10 min. It was decreased in anaërobic conditions and largely inhibited by oxygenation. The reducing effect was partly removed by washing, restored by addition of succinate, and discharged again by malonate. An enzyme is postulated and discussed. P. C. W.

Acridine antiseptics. D. S. Russell and M. A. Falconer (*Lancet*, 1943, **244**, 580—581).—1/1000 solutions in isotonic saline at pH 6·2 of 5-aminoacridine hydrochloride, 2 : 7-diaminoacridine, and proflavine sulphate were almost non-irritant to the brain of rabbits. The powder form of all these drugs was highly destructive to brain, muscle, and other tissues. C. A. K.

Necrotic gingivitis [treatment; relation to vitamin-*C* deficiency]. B. S. Kent (*Lancet*, 1943, **244**, 642).—In 70 cases of necrotic gingivitis

in service personnel, ulceration due to vitamin-*C* deficiency was distinguished from that of Vincent's infection, though the latter may be added to the former. Treatment included ascorbic acid administration (300—600 mg. daily) and, in Vincent's infection, local application of I + $AgNO_3$, or mapharsen. C. A. K.

Use of iodised mineral oil for bovine mastitis. D. A. Sanders (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 86—89).—Mastitis in cows was treated during the dry period by injection into the udder of 300—500 ml. of a 1/1250 solution of I in mineral oil. Treatment may be repeated at 24-hr. intervals. E. G. W.

Conjugation *in vitro* of phenol by guinea-pig liver. F. Bernheim and M. L. C. Bernheim (*J. Pharm. Exp. Ther.*, 1943, **78**, 394—399).—Phenol disappears when added to guinea-pig liver slices incubated in Ringer–bicarbonate solution in 95% O_2 with 5% CO_2. 20—30% is conjugated. Thermolabile enzymes are responsible for the disappearance and conjugation. Neither process occurs anaerobically. No conjugation occurs in the absence of SO_4''. Cystine or methionine cannot act as SO_4'' source under the experimental conditions. M./300 cocaine hydrochloride inhibits the disappearance of phenol but not its conjugation. P. C. W.

Influence of low concentrations of cocaine on metabolism of phenol. C. Torda (*J. Pharm. Exp. Ther.*, 1943, **78**, 336—339).—Continuous infusion of phenol in anæsthetised cats produces a gradual rise of free and conjugated phenol in the blood and urine. When the urinary excretion rate reaches a max. there is a sudden rise in the conjugated phenol content of the blood. Infusion of cocaine together with phenol inhibits the conjugation process, and the conjugated phenol contents of blood and urine are decreased. The results indirectly support the view that adrenaline is inactivated by esterification of the phenol ring. P. C. W.

Effect of cocaine on inactivation of adrenaline and sympathin. C. Torda (*J. Pharm. Exp. Ther.*, 1943, **78**, 331—335).—Adrenaline solutions were perfused through the Lawen–Trendelenburg frog prep. or the rabbit's ear or leg, before and after treatment with cocaine. The perfusate obtained after the use of cocaine showed greater adrenaline activity, as did a perfusate of the rabbit's ear obtained during stimulation of the ganglionic fibres from the superior cervical ganglion when cocaine was present. It is concluded that cocaine interferes with the activation of adrenaline and sympathin. P. C. W.

Reversal of action of autonomic drugs. L. Asher and N. Scheinfinkel (*Verh. Ver. Schweiz. Physiol.*, 1941, **18**, 14—15).—Acetylcholine (10^{-7}—10^{-8}) produces relaxation of the dorsal muscle of the leech, if the muscle was previously treated for 10 min. with cholic acids (0·025—0·05%), octyl alcohol (0·01—0·1%), or lecithin, increased rate and force of contractions of the atropinised frog's heart, and relaxation of the frog's lung. The substances reverse the action of adrenaline on the frog's stomach to an increase in motility and that on the frog's lung to relaxation. A. S.

Effect of amidopyrine on intestinal motility. L. J. Notkin and D. R. Webster (*Rev. Canad. Biol.*, 1942, **1**, 660—674).—Amidopyrine, tested in concns. of 1 : 2500—10,000 on the longitudinal and circular muscle layers of isolated segments of guinea-pigs' and rabbits' duodenum and colon, produced relaxation of one or both layers, slowing of the rate and diminution of the amplitude of contractions, or, with larger concns., complete abolition of rhythmic activity. Amidopyrine is a powerful spasmolytic, counteracting the effect of eserine. The drug effect was easily reversible by changing the bath medium. If introduced into an isolated duodenal or jejunal loop in dogs or cats, the drug (0·5—4%) causes immediate relaxation; saline washing of the loop abolishes the effect. Intravenous or intra-arterial injections (50—400 mg.) had only transient effects. Intra-intestinal administration of amidopyrine antagonised the effect of previous or subsequent intravenous injection of eserine. Amidopyrine also abolished jejunal spasm produced by pilocarpine. A. S.

Use of new ephedrine-like drug in hay fever and asthma. A. J. Friedman and A. E. Cohen (*Northw. Med.*, 1943, **42**, 138—140).—Daily doses of 0·13 g. of methamine (*l*-β-methylethylamino-α-phenylpropanol hydrochloride) were as effective as similar doses of ephedrine in 15 cases of hay fever and asthma. There was much less associated nervousness and no palpitations. Including a series of 31 cases, improvement was obtained in 11 of 23 cases of bronchial asthma and in 14 of 23 cases of hay fever. E. M. J.

Use of furmethide in comparison with other miotics for treatment of glaucoma.—See A., 1943, III, 801.

Action of riddelline. P. N. Harris, R. C. Anderson, and K. K. Chen (*J. Pharm. Exp. Ther.*, 1943, **78**, 372—374).—Riddelline (an alkaloid derived from *Senecio riddellii*) produces central necrosis of the liver, ascites, or hydrothorax, and pulmonary œdema when injected intravenously into mice. Necrosis of the cortical lymphocytes in the thymus may also be produced. The $L.D._{50}$ was 105 mg. per kg. Riddelline inhibits the isolated rabbit intestine and stimulates the isolated guinea-pig uterus. It has a depressor action in pithed or anæsthetised cats. P. C. W.

New therapeutic agents of the quinoline series. I. Monopyridylquinolines.—See A., 1943, II, 391.

Pharmacology of *Xanthium*. J. C. Krantz, jun., C. J. Carr, and F. K. Bell (*J. Amer. Pharm. Assoc.*, 1943, **32**, 244—247).—Aq. extracts of the burrs of *X. spinosum* contain a depressor substance (shown to be choline or a precursor); no alkaloid or glucoside could be detected. No toxic effects were observed after ingestion by men or monkeys. The use of the extract in the treatment of arthralgia is discussed. F. O. H.

Elimination of injectio digitalis U.S.P. XII. M. L. Pabst and G. F. Cartland (*J. Amer. Pharm. Assoc.*, 1943, **32**, 231—234).—The average elimination (within 14 days) of injectio digitalis U.S.P. XII, solution digilanid N.N.R., and tincture of digitalis U.S.P. XII, after intravenous injection of approx. 75% of the lethal dose into cats, was 72, 79, and 56%, respectively, of the initial dose. Purified glucosidal preps. from *Digitalis purpurea* and *D. lanata* had similar rates of elimination, but had effects of shorter duration than those due to the crude tincture. F. O. H.

Helleborin, glycoside of *Helleborus niger* root.—See A., 1943, II, 356.

Eradication of sheep ticks, *Melophagus ovinus*, by one dipping in dilute derris–water or cube–water dips. N. G. Cobbett and C. E. Smith (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 6—10).—Single dipping of sheep with derris powder (5% rotenone) or cube powder, 6 oz. per 100 gals. of water of either prep., effectively eradicated the common sheep tick; no toxic effects were seen. E. G. W.

Effect of varying doses of a commercial phenothiazine on lambs. W. D. McNally (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 170—175).—Repeated doses (12·5 g.) of commercial phenothiazine, given to lambs at intervals greater than 2 weeks, were without ill effect. Dosing at shorter intervals caused renal lesions. E. G. W.

Hexachloroethane for controlling common liver fluke, *Fasciola hepatica*, in cattle. O. W. Olsen (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 433—436).—209 cattle showing fluke eggs in the fæces were drenched with commercial hexachloroethane (a suspension of 500 g. of hexachloroethane, 50 g. of bentonite, and 750 ml. of water). A single dose of 20 ml. of the suspension resulted in fæces which were negative for fluke eggs 2—3 weeks later in 91%; no toxic effects were seen. E. G. W.

Absorption of quinine sulphate and quinine dihydrochloride from isolated intestinal loops of dogs. J. C. Andrews and C. E. Anderson (*J. Pharm. Exp. Ther.*, 1943, **78**, 346—351).—Quinine dihydrochloride is absorbed 5—6 times as rapidly as quinine sulphate from isolated loops of dog intestine. The solubility of quinine sulphate in NaCl solutions increases up to NaCl concns. of 2—4%, and decreases with higher concns. The amount of quinine present in the blood and excreted in the urine during 48-hr. experiments only accounts for 25% of that absorbed from the intestinal loop; in 2-hr. experiments only 2—5% of the absorbed quinine can be accounted for. P. C. W.

Absorption rates of insulin, globin insulin, and protamine zinc insulin labelled with radioactive iodine. L. Reiner, E. H. Lang, J. W. Irvine, W. Peacock, and R. D. Evans (*J. Pharm. Exp. Ther.*, 1943, **78**, 352—356).—Diazotised radioactive iodoaniline was coupled to insulin so that the rate of absorption of the latter could be measured by the decrease of radioactivity at subcutaneous injection sites. Differences in absorption rate were related to differences in intensity of hypoglycæmic action. The rates of absorption of insulin, globin insulin with Zn, and protamine Zn insulin decreased in that order. P. C. W.

Phenolphthalein tolerance in childhood. M. L. Blatt, F. Steigmann, and J. M. Dyniewicz (*J. Pediat.*, 1943, **22**, 719—725).—No harm is done by doses of phenolphthalein many times greater than that recommended by the U.S.P. and National Formulary as a laxative for children. C. J. C. B.

Treatment of standardised and graded histamine shock in dogs with solutions of methylcellulose and *S*-methyl*iso*thiourea sulphate. W. C. Hueper and C. T. Ichniowski (*J. Pharm. Exp. Ther.*, 1943, **78**, 282—295).—Shock was induced by subcutaneous injection of histamine in an oily vehicle. Survival times and survival rates were increased by intravenous injections of *S*-methyl*iso*thiourea dissolved in methylcellulose solution. Best results were given by 0·075% methylcellulose (viscosity 4000 centipoises) containing 0·1% of *S*-methyl*iso*thiourea. V. J. W.

Local anæsthetic properties of ephedrine hydrochloride. F. H. Schultz (*Anesthesiology*, 1940, **1**, 69—71).—5% ephedrine hydrochloride is capable of blocking the sciatic nerve in frogs. The min. dose for spinal anæsthesia is 100 μg. per g. in frogs. 0·1% ephedrine produces anæsthesia in man when injected intracutaneously. P. C. W.

Effects of anæsthetic agents on muscular contraction. E. G. Gross and S. C. Cullen (*J. Pharm. Exp. Ther.*, 1943, **78**, 358—365).—The contraction of the gastrocnemius muscle produced by intra-arterial injection of acetylcholine or electric stimulation of the nerve is less in dogs anæsthetised with ether, tribromoethanol, or Na pentothal than in those anæsthetised with *cyclo*propane or

ethylene. Prostigmine potentiates the contractions in the dogs anæsthetised with *cyclo*propane or ether. The differences are not abolished by severing the nerve supply to the muscle. It is suggested that ether, tribromoethanol, and Na pentothal have a curare-form action. Ether is the most active. P. C. W.

Effect of anæsthesia on lymph flow (local procaine, ether, pentobarbital sodium). H. Polderman, J. D. McCarrell, and H. K. Beecher (*J. Pharm. Exp. Ther.*, 1943, **78**, 400—406).—The lymph flow in dogs anæsthetised with pentobarbital Na was 50% lower, and in etherised dogs 50% greater, than in dogs with local anæsthesia only. The increase and decrease are associated with increases and decreases in hæmatocrit and plasma-protein vals. It is suggested that barbiturate causes a shift of fluid from the tissues to the blood stream, and ether causes the reverse process. The protein concn. of lymph collected under barbiturate anæsthesia is higher than in that collected under ether. The results are discussed. P. C. W.

Changes in velocity of the blood flow during spinal anæsthesia. E. A. Doud and E. A. Rovenstine (*Anesthesiology*, 1940, **1**, 82—88).—The circulation time was determined by a modified Kohler method (*Wien. Arch. inn. Med.*, 1930, **19**, 1) in normal patients and during spinal anæsthesia (procaine, nupercaine, or intracaine). Spinal anæsthesia above T 6 prolonged the circulation time whether this was normal or prolonged before anæsthesia. Sensory anæsthesia below this level had little effect. Ephedrine restores the normal circulation time during high spinal anæsthesia. The effects are attributed to decreases in cardiac output. P. C. W.

***cyclo*Propane anæsthesia.** A. E. Guedel (*Anesthesiology*, 1940, **1**, 13—25).—Discussion and analysis of results of 8000 anæsthesias. P. C. W.

Abdominal relaxation with combined regional and *cyclo*propane anæsthesia. C. F. McCuskey (*Anesthesiology*, 1940, **1**, 26—30).—Abdominal relaxation may be obtained by combining subarachnoid or peridural block with procaine and/or pontocaine and light *cyclo*propane anæsthesia. P. C. W.

***cyclo*Propane–air–oxygen anæsthesia.** H. B. Haas, J. H. Hibshman, and F. T. Romberger (*Anesthesiology*, 1940, **1**, 31—39).—The range of inflammability in N_2–O_2–*cyclo*propane mixtures is indicated graphically; all mixtures with less than 2% of *cyclo*propane or 11% of O_2 are safe. The optimal gas mixture is about 80% N_2, 7% O_2, and 13% *cyclo*propane. A method of administering *cyclo*propane–air–O_2, which reduces the explosion hazard, is described. P. C. W.

Convulsions during anæsthesia. Experimental analysis of rôle of hyperthermia and respiratory acidosis. W. H. Cassels, T. J. Becker, and M. H. Seevers (*Anesthesiology*, 1940, **1**, 56—68).—Rats and dogs were exposed to ether anæsthesia, a temp. of 35—40°, or to 15% CO_2. Muscle twitching was produced by a combination of ether and 15% CO_2 but not by any of the other treatments singly or in pairs. Etherised rats exposed to high environmental temp. were highly sensitive to the convulsive action of concns. of CO_2 below 10%. Similar results were recorded in dogs. The results are discussed in relation to clinical anæsthetic convulsions. P. C. W.

Rôle of liver and kidneys from standpoint of the anæsthetist. L. H. Mousel and J. S. Lundy (*Anesthesiology*, 1940, **1**, 40—55).—Review of the effects of common anæsthetics on liver and kidneys. P. C. W.

Comparative toxicity of chloral alcoholate and chloral hydrate. W. L. Adams (*J. Pharm. Exp. Ther.*, 1943, **78**, 340—345).—The qual. responses of rats to the administration of 4% aq. solutions of the 2 compounds by stomach tube were the same, but chloral hydrate was about 10% more active. Limited observations on rabbits, cats, and dogs showed cats to be more susceptible than the other species. P. C. W.

New aspects of morphine action: influence of prostigmine methosulphate on excretion. D. Slaughter, C. R. Treadwell, and J. W. Gales (*J. Lab. clin. Med.*, 1943, **28**, 1199—1202).—Prostigmine methosulphate in suitable doses decreases the total urinary excretion of morphine in accustomed and non-accustomed dogs, and causes an increase in relative amount of combined morphine in the urine. This increase is greater in non-accustomed dogs than in accustomed dogs. C. J. C. B.

Inactivation of choline-esterase by morphine, dilaudid, codeine, and desomorphine. C. I. Wright and J. C. Sabine (*J. Pharm. Exp. Ther.*, 1943, **78**, 375—385).—Morphine, codeine, dilaudid, and desomorphine inhibit the activity of choline-esterase from human, dog, or rabbit serum, or human or rabbit brain. The degree of inhibition varies with the source of the enzyme, which may account for the selective action of the drug on physiological systems. The affinity of the alkaloids for the enzyme in human serum is as great as (dilaudid), or greater (codeine, morphine, and desomorphine) than, the affinity of the enzyme for acetylcholine. P. C. W.

Blood pressure and respiratory changes produced by strychnine convulsions. B. E. Abreu and R. A. Woodbury (*J. Pharm. Exp. Ther.*, 1943, **78**, 321—330).—Convulsant doses of strychnine injected intravenously into unanæsthetised dogs and cats produce no alterations in blood pressure until the nervous or muscular component of the convulsion is present. During convulsions there is initial passive rise in pressure caused by increases in intra-abdominal and muscular pressure. There is also over-activity of the sympathetic and parasympathetic nerves causing vasoconstriction and cardiac slowing. Vasodilatation follows the skeletal muscular activity. Asphyxia is the chief cause of respiratory depression in strychnine convulsions. P. C. W.

Effect and mechanism of amphetamine sulphate on weight reduction. R. H. Kunstadter and H. Necheles (*Amer. J. med. Sci.*, 1943, **205**, 820—825).—In obese children, the drug caused increased activity and mental and physical responses; they followed their diet with greater ease. Gastric hunger motility is depressed. C. J. C. B.

Amphetamine in veterinary practice. A. H. Craige, jun. (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 28—34).—The min. excitant dose of amphetamine sulphate for normal dogs was 1—2 mg. per kg.: this dose is recommended for mild depression. The min. lethal dose was 5 mg. per kg. For treatment of crit. depression caused by phenobarbital anæsthesia in dogs the optimal dose is 4—4·5 mg. per kg. E. G. W.

Oxygen under pressure in carbon monoxide poisoning. Effect on dogs and guinea-pigs. E. End and C. W. Long (*J. Ind. Hyg.*, 1942, **24**, 302—306).—Following exposure to CO, blood was taken from guinea-pigs by cardiac puncture and from dogs by the jugular vein, and the rate of removal of CO was compared during different methods of treatment. O_2 under a pressure of 3 atm. caused rapid recovery, and the CO was eliminated from the blood more rapidly than during inhalation of air, O_2 under normal pressure, or O_2 and CO_2, the difference being most marked in the early stages. E. M. K.

Effect of massive quantities of sodium bicarbonate on acid–base equilibrium and on renal function. J. B. Kirsner and W. L. Palmer (*Ann. int. Med.*, 1943, **18**, 100—104).—A patient suffering from gastric ulcer received within 20 months 400 g. of $Al(OH)_3$, 881 g. of $CaCO_3$, and 30,414 g. of $NaHCO_3$ without marked alteration of the acid–base equilibrium or decrease of renal urea clearance. A. S.

Effects of constant intravenous injections of potassium chloride into normal conscious dogs. H. M. Schamp (*Endocrinol.*, 1941, **29**, 459—466).—A rubber tube, tied in the jugular vein, was brought out to the back of the neck. Through this 6 c.c. per hr. of 6—8% KCl was continuously injected. The dogs died in 2—12 days but showed no symptoms of adrenal insufficiency. V. J. W.

Tattooing with mercury sulphide for intractable anogenital pruritus [and leukoplakia kraurosis]. R. Turell (*J. Mt. Sinai Hosp.*, 1942, **9**, 147—153).—Report of 5 cases. E. M. J.

Immediate death following intravenous mercurial diuretics. H. Evans and K. M. A. Perry (*Lancet*, 1943, **244**, 576—578).—6 cases are reported, 4 with nephritis and 2 with heart disease. C. A. K.

Idiosyncrasy to mercury preparations in childhood. H. Gibel and B. Kramer (*Amer. J. dis. Child.*, 1943, **66**, 155—159).—Report of 2 cases of erythematous reactions to 5% ammoniated Hg ointment and $HgCl_2$ solution (1 : 4000). C. J. C. B.

Coloured reflex from anterior capsule of lens occurring in mercurialism.—See A., 1943, III, 801.

Positive potentials due to aniline and antagonistic action of ammonia. W. J. V. Osterhout (*J. Cell. Comp. Physiol.*, 1941, **18**, 129—134).—Application of aniline to *Valonia* causes a large positive potential resembling that previously described for guaiacol (*Physiol. Abs.*, 1936, **21**, 719; 1937, **22**, 884), so that the effect of the latter is not due to its acid character. It also resembles guaiacol in decreasing the mobility of K ions whilst increasing that of $Na^{\cdot}$. V. J. W.

Response of laboratory animals to monomeric styrene. H. C. Spencer, D. D. Irish, E. M. Adams, and V. K. Rowe (*J. Ind. Hyg.*, 1942, **24**, 295—301).—Single exposures of rats and guinea-pigs to the vapour caused irritation of eyes and nose with concn. of 6·0 mg. per l. or more, accompanied by muscular weakness and inco-ordination, tremor, and unconsciousness, increasing in severity with the concn. Immediate deaths during exposure to high concn. were due to action on the central nervous system, while delayed deaths were due to pneumonia following lung irritation. Repeated 7—8-hr. exposures at a concn. of 6 mg. per l. were tolerated without evidence of toxic reaction by rats, rabbits, and monkeys; there were no changes in the blood picture. Oral administration in olive oil to rats showed the 100% lethal dose to be 8·0 g. per kg., while 100% survived 1·6 g. per kg. Repeated oral doses caused fatal irritation of œsophagus and stomach. Tests on rabbits showed the compound to have an action on the skin similar to that of toluene and benzene. E. M. K.

Chemical nature of compounds that inhibit function of thyroid gland.—See A., 1943, III, 806.

Biological assay of tincture of aconite. J. O. Hoppe and C. E. F. Mollett (*J. Amer. Pharm. Assoc.*, 1943, **32**, 215—217).—The intraperitoneal $L.D._{50}$ is determined in mice. Accurate and uniform

results are claimed, the error being approx. 1% even when as few as 12 mice are used, providing the appropriate statistical calculation is applied. F. O. H.

[Pharmacology of] marihuana. R. Adams (*Harvey Lect.*, 1941—42, *Ser.* 37, 168—197). E. M. J.

Determination of amino-acids in cobra (*Naja naja*) neurotoxin. B. N. Ghosh and D. K. Chaudhuri (*J. Indian Chem. Soc.*, 1943, **20**, 22—24).—A highly toxic substance, neurotoxin-*R* (arginine 28·5, histidine 7·3, lysine 5·2% as N/total N), was isolated from the crude venom. J. H. Ba.

Bee venom in treatment of chronic arthritis. J. L. Hollander (*Amer. J. med. Sci.*, 1941, **201**, 796—801).—42 patients with chronic arthritis were treated with an injectable solution of bee venom. 8 patients were improved. Of these 2 cases of rheumatoid arthritis and one of fibrositis were markedly better. The no. of treatments varied from 6 to 32 over periods ranging from 4 weeks to a year. The length of treatment and total dosage showed no apparent correlation with degree of improvement. 3 of 17 control patients given foreign protein injections showed lasting improvement. C. J. C. B.

Rat as suitable animal for study of prolonged medication. R. C. Anderson, F. G. Henderson, and K. K. Chen (*J. Amer. Pharm. Assoc.*, 1943, **32**, 204—208).—The effects on growth and condition of the liver and kidney following prolonged administration of various drugs are described and discussed with reference to the rat as a suitable test animal for pharmacological studies. F. O. H.

Production of cysts following intramuscular injection of vegetable oils. R. C. Page, and E. J. de Beer (*Amer. J. med. Sci.*, 1943, **205**, 812—814).—Cysts generally resulted from the intramuscular injection of corn oil, cottonseed oil, olive oil, sesame oil, and peanut oil and oil–ether solutions in rats. The cysts did not change in no. or size with time. C. J. C. B.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Fatigue and effort syndrome.—See A., 1943, III, 725.

Measurements of concentrations of air-borne dusts. T. Bedford and C. G. Warner (*J. Ind. Hyg.*, 1942, **24**, 315—321).—The mass concn. could not be predicted from particle counts made with the thermal precipitator, because the particles in the dust cloud were not uniform in either size or composition. If the composition of the dust is uniform and its sp. gr. known the mass can be calc. from particle counts and size distribution, assuming that all particles are spherical. The particle count showed a high correlation with the mass concn. if particles larger than 5 μ. were excluded from the estimation of mass concn., and particles smaller than 1 μ. were excluded from the count. E. M. K.

Measurement of industrial lead exposures by air analysis. J. Buxell (*J. Ind. Hyg.*, 1943, **25**, 35—37).—A discussion of sampling and analytical methods in relation to the purpose for which the information is required. E. M. K.

Measurement of industrial lead exposure by determination of stippling of erythrocytes. L. W. Sanders (*J. Ind. Hyg.*, 1943, **25**, 38—46).—Details of the method of making and staining blood films for the stippled-cell count are described. Stippled cells were present in all the groups examined; amongst 2231 petroleum-refinery workers, the mean was 370 stippled cells, in a group of medical students 416, and amongst primitive Mexicans 960 stippled cells per 10^6 erythrocytes, whilst a group of brass-foundry workers with proved Pb absorption gave a mean val. of 480. Even amongst men ill from Pb absorption, 61% had stippled-cell counts within normal limits. It is concluded that mean group findings in excess of 1000 stippled cells per 10^6 erythrocytes, or an individual finding of more than 5000, indicate increased Pb absorption. E. M. K.

Measurement of industrial lead exposure by analysis of blood and excreta of workmen. J. Cholak and K. Bambach (*J. Ind. Hyg.*, 1943, **25**, 47—54).—The dithizone and spectrographic methods were used, with special precautions to keep the laboratory free of dust, and using only stainless steel and Pyrex glass. In normal persons with no occupational Pb exposure, the mean Pb concns. were: blood 0·030 mg.-%, urine 0·027 mg. per l., fæces 0·27 mg. per 24 hr. The Pb content of urine or blood served as a better criterion of exposure than that of the fæces. Analytical data from workmen may be used to determine the character of exposure in a factory. E. M. K.

Industrial lead poisoning as clinical syndrome. W. F. Ashe (*J. Ind. Hyg.*, 1943, **25**, 55—59).—A study of 30 cases with complete records of exposure, clinical signs, and chemical tests showed that abdominal pain and loss of appetite were the commonest symptoms, and that the onset was usually sudden although often repeated. The commonest physical signs were Pb line, extensor weakness of wrists, and malnutrition. Cases differing from this picture resulted from rapid absorption of large quantities of Pb, when the patient may have an abdominal crisis, or from very long continued absorption of small quantities, when the onset is so insidious that poisoning is far advanced before it is recognised. E. M. K.

Health of lead-exposed storage-battery workers. W. C. Dreessen (*J. Ind. Hyg.*, 1943, **25**, 60—70).—Amongst 766 men, all fit to work, 168 showed abnormal Pb absorption, and 9 incipient plumbism; these were grouped together as early plumbism. Pallor, tremor, and blue line were the commonest signs. Incidence of early plumbism increased with increasing exposure, reaching 50% with exposures of over 3 mg. per 10 cu. m. Albuminuria was twice as frequent in the affected as in the unaffected group, but there was no relation between exposure and blood pressure or hypertensive cardiovascular disease. The average Pb content of blood and of urine increased with exposure, as did average counts of reticulocytes, stippled cells, and polychromatophil cells. E. M. K.

Effects of continued exposure to vapour of volatile solvents. E. M. Killick and R. S. F. Schilling (*J. Ind. Hyg.*, 1942, **24**, 307—314).—Blood examinations were carried out on 33 men employed in a paint factory where one case of solvent poisoning had been reported; the only marked deviation from normal was a diminution in polymorphonuclear cells, with a corresponding relative increase in lymphocytes. This change seemed to be associated with exposure to mixed vapours, of which the most important were toluene and xylene. Symptoms of slight narcosis were frequent, but the time lost through sickness was very nearly the same as in a control group of unexposed workers. E. M. K.

Poisoning by chlorinated naphthalene.—See A., 1943, III, 766.

Health hazards in fur industry. H. Heimann (*J. Ind. Hyg.*, 1942, **24**, 322—331).—From a medical study of 694 workers it was concluded that affections of the skin and finger nails are frequent; dermatosis occurred among workers handling dyed furs, and almost all cases reacted positively to a patch test with *p*-phenylenediamine. The incidence of bronchial asthma was higher than in other industries, and complaints of dryness of the throat were common. There was no evidence that pulmonary tuberculosis was more frequent than among the general population. E. M. K.

XXII.—RADIATIONS.

Effects of radiation on organs of special sense eudrocrine glands, skin, striated muscle, germ plasm, and embryo. S. Warren (*Arch. Path.*, 1943, **35**, 304—323, 340—353).—A general review. C. J. C. B.

Effects of radiation on bone, cartilage, and teeth. O. Gates (*Arch. Path.*, 1943, **35**, 323—340).—A general review. C. J. C. B.

Recovery from radiation effects. F. Ellinger (*Radiology*, 1943, **40**, 62—71).—A review. E. M. J.

Influence of Roentgen ray treatment of hypophysis and reproductive systems of ground squirrel and rat. See A., 1943, III, 736.

Tumour induction by ultra-violet radiation.—See A., 1943, III, 748.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Diffusion of dyes in ethylene glycol gels. F. C. Brown and E. E. Reid (*J. Lab. clin. Med.*, 1943, **28**, 1093—1101).—Diffusion of dyes in a gel closely duplicates diffusion in tissues. Measurements were made on the diffusion of various dyes into a 5% gel of 80% ethylene glycol buffered at pH 5·5 and pH 7·65, using a photometer to determine the distance of penetration of definite concns. of the dye. Differences in diffusion distances of a carefully purified sample and of a commercial sample were negligible when the actual dye content of the 2 samples was the same. C. J. C. B.

Colloid osmotic pressure of mixtures of protein and thymus-nucleate. J. P. Greenstein (*J. Biol. Chem.*, 1943, **150**, 107—112).—The colloid osmotic pressure of mixtures of horse serum or of horse serum-albumin with Na thymus-nucleate in presence of NaCl is the same as that of the protein alone, although Na thymus-nucleate in absence of protein has a measurable osmotic activity. The protein thus appears to suppress the dissociation of the thymus-nucleate, probably by causing aggregation of the particles. E. C. W.

Enzymic fission of the nucleic acid from tobacco mosaic virus. G. Schramm (*Ber.*, 1941, **74**, [*B*], 532—536).—Fission of the virus with a nucleotidase from calf intestinal mucosa does not occur using the conditions recommended by Klein (A., 1932, 776), but is complete when the procedure of Bredereck *et al.* (A., 1939, III, 871) is used. For each mol. of PO_4 liberated 1·5—2 equivs. of acid are produced; the PO_4 groups in the virus are thus tertiary. The nucleic acid-free protein of the virus resembles the virus in sedimentation const., migration in an electric field (this may be due to the absorption of PO_4 ions), cryst. form, and serological tests but is practically inactive towards *Nicotiana glutinosa*. H. B.

Fractionation of normal serum-proteins by electrophoretic and sodium sulphate methods.—See A., 1943, III, 714.

Effect of citrate on rotation of molybdate complexes of malate, citramalate, and *iso*citrate.—See A., 1943, II, 350.

XXIV.—ENZYMES.

Diagnosis of wound infection by bacterial enzymes.—See A., 1943, III, 773.

Chemistry of tumours. VII. Special place of *d*-glutamic acid in experiments with *d*-amino-acid oxidase.—See A., 1943, III, 749.

Equilibrium relations of *d*-amino-acid oxidase, flavin adenine nucleotide, and amino-acids from kinetic data. W. C. Stadie and J. A. Zapp, jun. (*J. Biol. Chem.*, 1943, **150**, 165—183).—The velocity of oxidation of *d*-alanine in presence of *d*-amino-acid oxidase and its co-enzyme flavin adenine nucleotide was determined, first with varying co-enzyme concn., other factors being held const., and then with varying substrate concn. and pH, enzyme and co-enzyme concns. being const. The data agree with a theory based on the assumption of an enzyme–co-enzyme–substrate complex, to the concn. of which the velocity of oxidation is proportional, *i.e.*, an extension of the Michaelis–Menten theory of enzyme action for the special case in which no co-enzyme is needed. E. C. W.

Inhibitors of the enzymic oxidation of unsaturated fatty acids. H. Sullmann (*Helv. Chim. Acta.*, 1943, **26**, 1114—1124).—The oxidation of linolenic acid, linoleic acid, and lecithin by lipoxidase from the seeds of Leguminosæ is restricted by substances which are classed as antioxidants on the basis of their behaviour in other oxidation reactions. Marked to medium activity is shown by pyrocatechol, quinol, *p*-aminophenol, α- and β-naphthol, dihydroxyphenylalanine, adrenaline, and tocopherol; a less pronounced effect is exercised by phloroglucinol, resorcinol, and ascorbic acid. Whereas most of these compounds also restrict the autoxidation of unsaturated fatty acids, phloroglucinol and ascorbic acid accelerate the autoxidation of linolenic acid. Enzymic oxidation is also restricted by NaCN, NaN_3, and Na_2S, which are usually regarded as heavy-metal poisons. $Na_4P_2O_7$ does not exert a marked restriction. The substances are not inhibitors of the autoxidation of unsaturated fatty acids. H. W.

α-Ketoglutaric dehydrogenase of heart extracts. S. Ochoa (*J. Biol. Chem.*, 1943, **149**, 577—578).—The oxidation of α-ketoglutarate to succinate by dialysed extracts of cat's heart requires the addition of PO_4''' and muscle-adenylic acid or adenosine triphosphate. AsO_4''' and yeast-adenylic acid or adenosine are ineffective. The PO_4''' esterified during this oxidation is 1·2—1·7 mols. per atom of O consumed, equal to the ratio (considered very high) for the oxidation of pyruvate. R. L. E.

Lipoxidase in legume seeds.—See A., 1943, III, 778.

Cytochrome *c* in normal and neoplastic mammalian epithelium, and its correlation with body mass. O. Rosenthal and D. L. Drabkin (*J. Biol. Chem.*, 1943, **150**, 131—141).—Cytochrome *c* was determined (for method cf. A., 1943, III, 840) in normal epithelial tissues of several mammalian species and in neoplastic tissues in the rat and man. The protein-bound P was also determined, as an approx. index of cellularity, and the cytochrome *c* content of the tissues was calc. both per unit dry wt. and per unit wt. of protein-bound P. It was inversely correlated (for a given kind of tissue) with body wt. for the species examined, except for rat and man. Normal epithelial rat tissues fell into two groups, of "high" and "low" cytochrome *c* content. Rat tumours were low in cytochrome *c* but no lower than in the "low" group of normal tissues. The cytochrome *c* content of kidney cortex was unusually high in the rat and very low in man. A low cytochrome *c* content is not exclusively characteristic of malignant neoplasms. E. C. W.

[Blood-]carbonic anhydrase in newborn infants.—See A., 1943, III, 715.

Removal of canavanine from jack bean urease. R. M. Archibald and P. B. Hamilton (*J. Biol. Chem.*, 1943, **150**, 155—158).—Urease prepared from jack beans by acetone pptn. contains 7—8% of canavanine, from which it should be freed before it is used for arginine determinations or for removing urea from biological materials. This is achieved by dialysing a conc. aq. solution at 0°, first against water and then 6 times against 0·001M-PO_4''' solution at pH 6·5. The urease solution is then frozen and dried in vac. while frozen. 50% of the original urease is lost; the activity of the remainder is of the same order as that of the original material. E. C. W.

Irradiated benzpyrene and inhibition of urease activity. G. C. Mueller and H. P. Rusch (*Cancer Res.*, 1943, **3**, 113—116).—Benzpyrene was dissolved in an aq. solution of caffeine and its effect on the activity of a urease system determined. Freshly prepared solutions were relatively non-toxic, but irradiation of the hydrocarbon solution with ultra-violet light produced at least two types of substance which inhibited urease. One of these agents only appeared after long irradiation and was presumably derived from the hydrocarbon. The second inhibitor was H_2O_2. F. L. W.

Choline-esterase. III. Specific tests for true choline-esterase and pseudo-choline-esterase. B. Mendel, D. B. Mundell, and H. Rudney (*Biochem. J.*, 1943, **37**, 473—476).—Acetyl-β-methylcholine is hydrolysed by true but not pseudo-choline-esterase, whilst benzoylcholine is hydrolysed only by pseudo-choline-esterase. The sp. methods described are based on these facts. P. G. M.

Choline-esterase and behaviour in *Amblystoma*.—See A., 1943, III, 707.

Serum-choline-esterase and pathological conditions.—See A., 1943, III, 715.

Cardiovascular action of bile salt with regard to inhibition of choline-esterase.—See A., 1943, III, 718.

Action of pentamethylenetetrazole on choline-esterase activity of the spinal cord of *Bufo gay*.—See A., 1943, III, 724.

Choline-esterase and mono-amine oxidase in human brain.—See A., 1943, III, 726.

Enzymic production of levan. S. Hestrin, S. Avineri-Shapiro, and M. Aschner (*Biochem. J.*, 1943, **37**, 450—456).—*B. subtilis*, *B. asterosporus* (Meyer), and a non-spore-bearing organism, *Aërobacter levanicum*, produce levan from sucrose and raffinose. The enzyme responsible, levansucrase, is obtained cell-free from *A. levanicum* as a dry powder by alcoholic pptn. or freezing–drying, and the activity of its solutions is unaltered by keeping at 30° for 2 days, but is completely destroyed by heating at 100° for 5 min. The polysaccharide obtained from sucrose is N-free and non-reducing; it is completely hydrolysed to fructose only, by heating at 95° for 1 hr. with 0·5% oxalic acid. From *B. subtilis*, the enzyme is exocellular, but from the other organisms it is endocellular. P. G. M.

Blood-amylase activity in disease of carbohydrate metabolism and in non-diabetic pancreatic disease.—See A., 1943, III, 714.

Potassium and other ions in phosphorylation of the adenylic system. P. D. Boyer, H. A. Lardy, and P. H. Phillips (*J. Biol. Chem.*, 1943, **149**, 529—541).—$K^{\cdot}$ accelerates the transfer of PO_4''' from 3-phosphoglycerate to creatine by homogenised muscle tissue or dialysed muscle extracts, by accelerating the transfer of PO_4''' from 2-phosphopyruvate to the adenylic system; $K^{\cdot}$ and either $Mg^{\cdot\cdot}$ or $Mn^{\cdot\cdot}$ are essential for this transfer. $Ca^{\cdot\cdot}$ is antagonistic to $K^{\cdot}$, which may be replaced by $NH_4^{\cdot}$ in *in vitro* experiments. Adenosine triphosphate is a more effective supplement for this transfer than adenylic acid. Oxidation of phosphopyruvate may occur in the absence of $K^{\cdot}$, but the normally associated phosphorylation of creatine does not. $Ca^{\cdot\cdot}$ inhibits the transfer of PO_4''' from 2-phosphopyruvate to the adenylic system, and oxalate inhibits the accelerating effect of $K^{\cdot}$. $K^{\cdot}$ in high concn. inhibits adenosine triphosphatase, but this and the opposite effect of $Ca^{\cdot\cdot}$ are not the direct cause of their effects on phosphorylation. $Na^{\cdot}$ and PO_4''' in high concn. inhibit the transfer of PO_4''' from 3-phosphoglycerate to creatine. R. L. E.

Phosphorylase in calcifying cartilage.—See A., 1943, III, 705.

Effect of adrenal gland on phosphorylation of glycogen in muscle. III. Kinetics of phosphorolysis with muscle pulp in normal and adrenalectomised animals.—See A., 1943, III, 723.

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

Enzymic degradation of starch. Structure of starch molecules.—See A., 1943, II, 357.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Phosphate uptake of yeast. L. J. Mullins (*Biol. Bull.*, 1942, **83**, 326—333).—Experiments with radioactive P showed that the transfer of PO_4''' from the external solution into the yeast cell is dependent almost entirely on the carbohydrate metabolism of the cell. The presence or absence of O_2 is not very important. G. P. W.

Synthesis of riboflavin by lactose-fermenting yeasts. M. Rogosa (*J. Bact.*, 1943, **45**, 459—460).—All of 114 strains synthesised riboflavin, the yield in 12 representative organisms being 0·6—0·11 μg. per ml. of culture. F. S.

Modification of yeast-growth assay method for biotin.—See A., 1943, III, 754.

Antibacterial substances produced by micro-organisms, with special reference to those produced by moulds. N. Atkinson (*Med. J. Austral.*, 1943, I, 359—362).—Of 39 moulds tested, 16, all penicillia, possessed antibacterial activity. 10 of the active moulds were active against *Staph. aureus*, *Strep. viridans*, and *C. diphtheriæ* but not against *Bact. coli* and *Bact. typhosum*; the remaining 6, mainly derived from fruit, were active against all these organisms. F. S.

Antibacterial products formed by moulds. I. Aspergillic acid, product of strain of *Aspergillus flavus*. E. C. White and J. H. Hill (*J. Bact.*, 1943, **45**, 433—442).—From cultures of the mould in tryptone solutions a cryst. amphoteric substance, *aspergillic acid*, $C_{12}H_{20}O_2N_2$, was isolated. The substance is active against certain Gram-negative as well as Gram-positive bacteria. It is of relatively high toxicity and has no protective action against mouse infections with hæmolytic streptococci or pneumococci. F. S.

***Aspergillus flavus*. I. Biological properties of crude and purified aspergillic acid.** H. Jones, G. Rake, and D. M. Hamre (*J. Bact.*,

1943, **45**, 461—469).—The addition of 2% of dark brown sugar to a medium consisting of NaCl 0·5% and tryptone 2% increased the yield of cryst. aspergillic acid from 250 to 400 mg. per l. of culture. The interference of aspergillic acid with the bioluminescence of *Photobacterium fischeri* was used as a test of activity, whereby results were read within 30 min. Aspergillic acid was very active against Gram-positive cocci and less active against the anaërobes of gas gangrene and the Gram-negative bacilli. F. S.

Helvolic acid, an antibiotic produced by *Aspergillus fumigatus*, mut. *helvola*, Yuill. E. Chain, H. W. Florey, M. A. Jennings, and T. I. Williams (*Brit. J. exp. Path.*, 1943, **24**, 108—119).—The antibiotic is adsorbed from the culture medium on C and eluted with 80% acetone. It is transferred to $CHCl_3$ and purified by chromatographic adsorption on MgO and elution with water. It is obtained cryst. from aq. acetone. *Helvolic acid*, $C_{32}H_{44}O_8$, m.p. 212°, $[\alpha]_D^{20}$ −49·4° (3·5% in $CHCl_3$), −47·3° (2·1% in water as Na salt) (*methyl* ester, m.p. 261°), is sol. in org. solvents except light petroleum but insol. in water. It is active against Gram-positive, inactive against Gram-negative organisms; the activity is unaffected by 100° for 15 min. in 2N-acid or at pH 7—10. The max. tolerated dose is 5 mg. intravenously and 20 mg. per os by a 20-g. mouse. Life was prolonged by treatment of mice injected with *Staph. aureus* and *Strep. pyogenes*, but repeated doses damaged the liver. F. S.

Crystallography of helvolic acid and methyl ester of helvolic acid. D. M. Crowfoot and B. W. Low (*Brit. J. exp. Path.*, 1943, **24**, 120).—The two substances are very similar crystallographically. F. S.

Flavicin, an antibacterial substance produced by an *Aspergillus flavus*. Absorption, excretion, and distribution of penicillin. Administration of penicillin.—See A., 1943, III, 758.

Penicillin. C. C. Lucas (*Canad. Chem.*, 1943, **27**, 529—534, 547).—A review.

Fungi tolerant to extreme acidity and high concentrations of copper sulphate. R. L. Starkey and S. A. Waksman (*J. Bact.*, 1943, **45**, 509—519).—A strain of *Acontium velatum*, Morgan, and a green fungus belonging to the Dematiaceæ were isolated from acid solutions (pH 0·2—0·7) containing 4% of $CuSO_4$. Both grew well in a synthetic medium of pH 0·3—1·0 and showed growth at pH 0·1. The green fungus grew at pH 0. The most acid medium supporting growth was equiv. to 2·5N-H_2SO_4. The fungi developed well in saturated aq. $CuSO_4$ at pH 2·0—0·3 but grew better in the absence of Cu. This tolerance to acidity and Cu is the highest recorded for any living organism. F. S.

Androtermone of *Chlamydomonas eugametos*; *l*-4-hydroxy-2 : 6 : 6-trimethyl-Δ^1-tetrahydrobenzaldehyde.—See A., 1943, II, 369.

Statistical methods and control in bacteriology. C. Eisenhart and P. W. Wilson (*Bact. Rev.*, 1943, **7**, 57). F. S.

Effect of solid surfaces on bacterial activity. C. E. ZoBell (*J. Bact.*, 1943, **46**, 39—56).—In dil. nutrient solutions such as sea-water bacterial growth is encouraged by the presence of solid surfaces since org. matter is conc. by adsorption and many sea-water bacteria grow exclusively or preferentially attached to a solid surface. Surfaces also retard the diffusion of exoenzymes and hydrolysates away from the bacterial cell, thereby promoting the assimilation of nutrients which must be hydrolysed extracellularly before ingestion. F. S.

Dynamics of air-borne infection. W. F. Wells and M. W. Wells (*Amer. J. med. Sci.*, 1943, **206**, 11—17).—Epidemic spread of contagion depends on deficiency of air supplied per susceptible person. Data from school studies show that a tenfold increase in winter ventilation or its equiv. by ultra-violet irradiation controls the epidemic spread of air-borne contagion. C. J. C. B.

Phosphatase reaction as aid to identification of micro-organisms using phenolphthalein phosphate as substrate. J. Bray and E. J. King (*J. Path. Bact.*, 1943, **55**, 315—320).—A new colour test for the demonstration of phosphatase production by growing organisms is described. The test may be of val. in differentiating between members of certain genera. C. J. C. B.

Spectrochemical analysis of vegetative cells and spores of bacteria. H. R. Curran, B. C. Brunstetter, and A. T. Myers (*J. Bact.*, 1943, **45**, 485—494).—In 12 aërobic species spores were materially higher in Ca and lower in K than the corresponding vegetative cells. Vegetative cells were higher in P and somewhat lower in Cu and Mn than spores. High concns. of Ca were associated with enhanced tolerance to heat. F. S.

Iron media for cultivation of anaërobic bacteria in air. N. J. Hayward and A. A. Miles (*Lancet*, 1943, **244**, 645—646).—Description of technique. C. A. K.

Complete culture medium prepared from human red cells. F. G. Jones (*J. Bact.*, 1943, **45**, 575—576).—1000 ml. of erythrocytes and 500 ml. of distilled water are autoclaved at 15 lb. for 5 min. The paste is macerated and taken up in 1500 ml. of distilled water and 0·14% Na_2CO_3 4·2 g., 0·6% pancreatin U.S.P. 18·0 g., and $CHCl_3$ 50 c.c. are added. After incubation at 37° for 24 hr., with occasional shaking, 4500 ml. of distilled water are added and the mixture is boiled for 10 min. It is then filtered and adjusted to the desired pH after adding 0·5% NaCl. The medium is then autoclaved. F. S.

Assembly for use in testing of cultures of *Rhizobia*. L. T. Leonard (*J. Bact.*, 1943, **45**, 523—525).—The method depends on the self-irrigation of disinfected sand mixtures through capillary action, with solutions so acid as to preclude the survival of any of the common nodule bacteria. This protective acid nutrient is neutralised when in contact with the Ca in the sand and carried further into the mixture, making a favourable artificial substratum for the growing of some plants under artificial conditions. F. S.

Chemotherapy by blocking bacterial nutrients.—See A., 1943, III, 761.

Evaluation of antiseptics and other anti-infectious agents.—See A., 1943, III, 761.

Action of wetting agents on micro-organisms. II. Synergistic effect of synthetic wetting agents on germicidal action of halogenated phenols.—See A., 1943, III, 762.

Bacterial utilisation of low concentrations of organic matter. C. E. ZoBell and C. W. Grant (*J. Bact.*, 1943, **45**, 555—564).—Marine heterotrophic bacteria multiplied in mineral solutions containing only 0·1 mg. per l. of peptone or glucose but there was no clouding of the media at org. concns. of less than 10—100 mg. per l. In concns. of less than 10 mg. per l. multiplication and O_2 consumption were proportional to the concn. of the substrate. Concns. of glucose, glycerol, ethanol, lactate, succinate, starch, and asparagine from 0·25 to 5 mg. per l. were quantitatively utilised in 16—30 days at 22°; 60—70% was oxidised and 30—40% was converted into bacterial protoplasm. 70 different pure cultures of marine bacteria utilised glucose although very few produced acid. F. S.

Rate of destruction of an *Achromobacter* species by freezing. J. S. Kiser (*Food Res.*, 1943, **8**, 323—326).—During the first 300 hr. of freezing at −28° the rate of destruction is proportional to the no. of viable organisms, but no such relationship exists for subsequent periods up to 1200 hr. Total sterilisation does not always develop. H. G. R.

Effect of different oxygen concentrations on the rate of respiration of *Azobacter* in relation to the energy involved in nitrogen fixation and assimilation. J. M. Fife (*J. Agric. Res.*, 1943, **66**, 421—440).—While fixing N in an atm. of less than 2% O_2 *Azobacter* showed a R.Q. well above unity. At all concns. of O_2 above 2% heat produced was equal to that calc. except at 78% O_2, where it was 57% of that calc. from the CO_2 evolved. The rate of respiration of *Azobacter* while assimilating $NH_4^{\cdot}$ was proportional to the concn. of O_2 from 5 to 80%. With above 5% O_2 heat production equalled that calc., and below 5% O_2 intramol. respiration increased as the partial pressure of O_2 decreased until at 0·1% O_2 the R.Q. reached 3·54. During assimilation of NO_3' the rate of respiration was directly proportional to the O_2 concn. from 10 to 100% and below 10% O_2 intramol. respiration was considerable, the R.Q. reaching 5·0 at 1% O_2 The first product of N fixation probably results from union of N_2 with O_2. F. S.

***Azotobacter chroococcum* and its relationship to accessory growth factors.** L. W. Jones and J. E. Greaves (*Soil Sci.*, 1943, **55**, 393—404).—Of numerous food accessory factors examined none was found essential to growth of *A. chroococcum*. The organism synthesises biotin, inositol, nicotinic and pantothenic acids, pyridoxine, riboflavin, and thiamin. These compounds appear to enter into the synthesis of bacterial enzymes. A. G. P.

Nitrogen fixation by *Azotobacter* as influenced by molybdenum and vanadium. C. K. Horner, D. Burk, F. E. Allison, and M. S. Sherman (*J. Agric. Res.*, 1942, **65**, 173—193).—Fixation of N by *A. chroococcum*, *A. vinelandii*, and *A. agile* was increased 2—30-fold by optimum additions of Mo or V to the culture media. Max. fixation was approx. the same for all strains tested. The quantity of N fixed per unit of carbohydrate consumed was increased 2—3-fold by Mo or V in the case of *A. chroococcum* and to a smaller extent in that of other species. Sugars (2%) used in the prep. of culture media provided up to 0·001 p.p.m. of Mo or V in the media. These impurities were partially removed by filtration through C or by recrystallisation of the sugars from alcohol. Max. effects of V in the cultures were 50—80% of those of Mo. The optimum concn. was approx. the same for both metals. Max. growth of and max. fixation of N by *A. chroococcum* occurred only in presence of optimum concns. of Mo and Fe. Mn had little effect in presence or absence of Mo. W acted as a partial substitute for Mo. Mo or V is essential for N fixation by *Azotobacter* species. A. G. P.

Characteristics of some soil cytophagas. H. W. Fuller and A. G. Norman (*J. Bact.*, 1943, **45**, 565—572).—Three new species of soil cytophaga exhibited a greater degree of physiological versatility than the species hitherto described. None attacked cellulose but all utilised a wide range of C sources. F. S.

Growth of thermophilic anaërobes in Brewer's medium. F. M. Clark (*Food Res.*, 1943, **8**, 327—336).—Liver infusion media are more suitable for the growth of thermophilic anaërobes than is

thioglycollate medium, which retards growth and gas production unless the organisms are present in considerable nos. The addition of liver infusion or liver particles to Brewer's medium enhances the growth of these organisms, which develop best at pH 6·8, but the medium is still less satisfactory than liver infusion. H. G. R.

Intestinal flora of guinea-pig. H. G. Crecelius and L. F. Rettger (*J. Bact.*, 1943, **56**, 1—13). F. S.

Effect of concentration of dyes on differentiation of enteric bacteria on eosin–methylene-blue agar. M. Levine (*J. Bact.*, 1943, **45**, 471—475).—Certain recent preps. of methylene-blue contain about 50% more dye than the old Grübler product. Adjustment is necessary to avoid inhibition of growth and the development of atypical paratyphoid–dysentery colonies by excess dye. The ratio of methylene-blue (actual dye) to eosin should be approx. 1 to 6 and the pH should not be greater than 7·4. F. S.

Metabolism of coliform bacilli in distilled water. J. W. Bigger and J. H. Nelson (*J. Path. Bact.*, 1943, **55**, 321—327).—A coliform bacillus (*Bact. E*) grows in distilled water containing a very small amount of $(NH_4)_2CO_3$ whether the atm. supplied is air or air deprived of NH_3 and CO_2. The addition of $NaHCO_3$ permits the coliform bacillus to grow in distilled water + talc in the presence of air deprived of its naturally-occurring CO_2. Growth occurs in distilled water + talc + a solution of CO_2 in the presence of air deprived of its naturally-occurring CO_2, or with a solution of NH_3 in the presence of air deprived of its naturally-occurring NH_3 or with a solution of CO_2 + a solution of NH_3 in the presence of air deprived of its naturally-occurring CO_2 and NH_3. These results prove that the nutritive materials utilised by coliform bacilli growing in distilled water + talc are CO_2 and NH_3 dissolved in the water from the atm. C. J. C. B.

Biochemical characters of pigmented coliform bacteria. J. R. Gililland and R. H. Vaughn (*J. Bact.*, 1943, **45**, 499—507).—Pigment was produced by 12 of 15 chromogenic coliform organisms at 19° but not at 30° or 37°. The remaining 3 produced pigment equally well at 19° and 37°. The anaerobic glucose metabolism of these organisms was similar to that of corresponding achromogenic coliform organisms. F. S.

Anaerobic culture tube for determining CO_2/H_2 ratios of coliform bacteria. R. H. McBee and M. L. Speck (*J. Bact.*, 1943, **46**, 89—97). F. S.

Agglutinating properties of *Escherichia coli*: agglutination of erythrocytes, leucocytes, thrombocytes, spermatozoa, spores of moulds, and pollen by strains of *E. coli*. L. Rosenthal (*J. Bact.*, 1943, **45**, 545—550).—Of 70 strains of *Bact. coli*, 24 had agglutinating properties against some or all of these cellular elements. These agglutinins more closely resembled the phytoagglutinins than the hæmagglutinating bacteria of Thomsen, leucagglutinating toxins, or basic dyes. F. S.

Increased resistance of *Aerobacter aerogenes* to sodium pentachlorophenoxide. B. F. Shema and J. W. Appling (*J. Bact.*, 1943, **45**, 573—574).—Of 3 cultures of *Bact. aerogenes* rendered resistant to Na pentachlorophenoxide *in vitro* two no longer formed gas from arabinose and rhamnose respectively, two became methyl-red-positive, and all gave a doubtful positive Vosges–Proskauer reaction. In all three the bacterial cells became larger. F. S.

Seasonal variation in incidence of *Br. abortus* in raw milk. E. R. Jones (*J. Path. Bact.*, 1943, **55**, 357—362).—In 2 series of "raw" milks examined (Liverpool 1933—34, Kent 1939—40) the no. found to be infected with *Br. abortus* was max. about January and min. in August. *Br. abortus* was recovered from 15·3% of milks in the Liverpool series and from 14·4% in the Kent series. C. J. C. B.

Formation of tyrothricin in submerged cultures of *Bacillus brevis*. J. L. Stokes and C. R. Woodward (*J. Bact.*, 1943, **46**, 83—88).—Tyrothricin is synthesised by *B. brevis* in shallow stationary cultures of complex nitrogenous media but not in aerated submerged cultures of such media. Tyrothricin is formed in both submerged and stationary cultures in a synthetic medium consisting of glucose, inorg. salts, and asparagine. It is suggested that in submerged cultures of complex nitrogenous media the formation of tyrothricin may be prevented by replacement of characteristic amino-acids in tyrothricin by other amino-acids. F. S.

Dissimilation of glucose by *Chætomium funicola*, Cke. II. Influence of modifications in composition of Czapek–Dox medium on rate of glucose dissimilation. G. Semeniuk (*Iowa State Coll. J. Sci.*, 1942, **16**, 337—348; cf. A., 1941, III, 926).—The effects of varying the concn. of glucose, the initial pH, the concn. of KH_2PO_4, and the inorg. source of N are recorded. Rate of dissimilation increases proportionately as concn. of glucose increases from 2·8 to 13·5%. Growth of the organism is inhibited by inorg. N salts which render the medium acid and favoured by those which render it alkaline. W. McC.

Ecological relations of *Pseudomonas aëruginosa* to *Clostridium botulinum* type C. E. R. Quortrup and R. L. Sudheimer (*J. Bact.*, 1943, **45**, 551—554).—In nutrient broth cultures of *Ps. pyocyanea* all traces of detectable O_2 disappeared within 4½—5 hr. and the pH began to rise at 10 hr., reaching a max. of 9·0 and attaining optimum conditions for growth of *Cl. botulinum* in 24—48 hr. Botulinum toxin was produced by using common marsh vegetation as a medium and inoculating with *Ps. pyocyanea* and *Cl. botulinum*. F. S.

Rapid identification of *Cl. welchii* by Nagler tests in plate cultures. N. J. Hayward (*J. Path. Bact.*, 1943, **55**, 285—293).—On a nutrient agar medium containing 20% of human serum, colonies of toxigenic *Cl. welchii* produce in 24 hr. marked zones of opacity due to the Nagler reaction, which is neutralised specifically by *welchii* antitoxin. Only 1 of 116 strains of *Cl. welchii* failed to give a Nagler reaction in overnight plate culture. Some streptococci and a few aerobic and anaerobic spore-bearers also give zones of opacity, the formation of which is not inhibited by antitoxin. *Cl. sordellii* and *Cl. bifermentans* give zones specifically neutralised by *welchii* antitoxin, but these reactions are usually feeble. These two organisms are readily distinguishable from *Cl. welchii* by the presence of spores in stained smears of the 24-hr. colonies and by their inability to ferment lactose. The Nagler plate yields 10% more positive results than blood agar plates and is recommended for the routine examination of wound and puerperal swabs from patients with suspected anaerobic infections. C. J. C. B.

Nonspecificity of serum-opacity test for *Clostridium welchii*. L. A. Weed and S. Minton, jun. (*J. Lab. clin. Med.*, 1943, **28**, 1251—1253).—The serum-opacity (Nagler) reaction for the identification of *Cl. welchii* may be prevented by heterologous antitoxins. The reaction is produced by many common aerobes and anaerobes and these reactions may likewise be prevented by the use of non-sp. antitoxins. The reaction should not be used for the identification of *Cl. welchii*. C. J. C. B.

Fixation of foreign material in inflamed tissue, with special reference to action of *Cl. welchii* toxin and antitoxin. A. A. Miles and E. M. Miles (*Brit. J. exp. Path.*, 1943, **24**, 95—107).—Exudate derived from the circulation accumulates in the intercellular spaces of rabbit muscle or skin inflamed by *Cl. welchii* toxin, and is retained there mainly because of the quant. inadequacy of existing lymphatic drainage. If antitoxin is introduced into the circulation in the early stages, the accumulating exudate will be rich in antitoxin; in the later stages antitoxin passes only slowly into the lesion, by reason of the already accumulated exudate, thus accounting for the relative inefficacy of antitoxin in later stages of *Cl. welchii* infection. F. S.

Protective properties of alpha antitoxin and theta antihæmolysin occurring in *Cl. welchii* type *A* antiserum. D. G. Evans (*Brit. J. exp. Path.*, 1943, **24**, 81—88).—*Cl. welchii* type *A* antiserum with a high content of α-antitoxin and only a trace of θ-antihæmolysin was highly effective in protecting guinea-pigs against infection whereas a serum with a high content of θ-antihæmolysin and a trace of α-antitoxin was ineffective. The protective action of α-antitoxin was reduced when it was injected along with normal horse serum probably by reduction in the rate of absorption owing to the presence of non-sp. proteins. F. S.

Toxin production by three types of *Cl. diphtheriæ*. K. Zinnemann (*J. Path. Bact.*, 1943, **55**, 275—283).—In cultures grown for 24 hr. in a low-temp. broth medium containing excess of Fe the average amount of toxin constituting min. reacting dose (M.R.D.) for the guinea-pig was for *gravis* strains 1·7 times, for *intermedius* strains 3·0 times, and for *mitis* strains 4·1 times that for a standard P.W. 8 strain. C. J. C. B.

Antigens from *Bact. dysenteriæ*, Shiga, and their antisera in protective tests against the living organisms. D. Steabben (*J. Hygiene*, 1943, **43**, 83—95).—Washed formol-killed smooth bacilli kill mice only in massive doses, suggesting death from protein shock; no protection is afforded by antibacterial sera. Antibacterial sera prepared by immunisation with the smooth antigen protect against infection with the living smooth bacilli but not against pure toxin. Purely antitoxic sera are of no val. against the living smooth bacilli. Only sera from formol- or acetone-killed rough bacilli protect against the living rough bacilli. The Shiga bacillus contains two distinct antigens, since the protective vals. of the corresponding antisera are sharply defined. The neurotoxin is a separate entity unrelated to smooth "endotoxin," since it has been derived from a completely rough strain. Although the smooth somatic antigen gives rise to a highly protective antiserum, it has not been shown to be a sp. toxin. J. H. B.

Improved method of transportation of material from gonococcal infections. L. R. Peizer and G. L. Steffen (*J. Lab. clin. Med.*, 1943, **28**, 1121—1126).—The streaking of gonococcal pus directly on to enriched solid medium containing 0·05—0·03% of cysteine saves 100% of the positives when kept at room temp. up to 10 hr. and about 98% when left at room temp. from 20 to 24 hr. before incubating. In specimens kept in broth at 22° for 6 hr. 10% of positives are lost and for 10 hr. 26% of positives are lost. On plasma hæmoglobin agar none are lost up to 10 hr. When specimens are kept 20 hr. at 22° 52% of positives are lost in broth, 11% on plasma hæmoglobin agar, and only about 2% on plasma hæmoglobin agar with cysteine. Transportation on solid medium is safer at 22° than at 6°. Some cultures (8·7%) are destroyed at refrigerator temp. when exposed to it longer than 10 hr. C. J. C. B.

Growth factor for *Lactobacillus casei*. E. L. R. Stokstad (*J. Biol. Chem.*, 1943, **149**, 573—574; cf. A., 1942, III, 269).—The norite eluate factors prepared from liver and yeast are different. Their ultra-violet absorption spectra and their potency for *L. casei* are the same, but the liver factor is twice as active as the yeast factor for *Streptococcus lactis* R. R. L. E.

Active immunisation of dogs against leptospirosis by formolised leptospira antigen. J. E. Alicata (*J. Amer. Vet. Med. Assoc.*, 1943, **102**, 472—473).—Formolised leptospiral cultures (*L. icterohæmorrhagiæ* and *L. canicola*) may be of val. in protecting dogs from infection. E. G. W.

Bactericidal action of normal and immune sera for the meningococcus. L. Thomas and J. H. Dingle (*J. clin. Invest.*, 1943, **22**, 375—385).—Differences in the general susceptibility of strains of group I meningococci were associated with differences in the behaviour of these organisms in the bactericidal test with immune sera. Susceptible strains were killed, while resistant strains survived, in the presence of human complement. Resistant strains were killed in the presence of rabbit complement or human defibrinated blood. The injection of small quantities of sp. antiserum in rabbits produced an increase in bactericidal property. Larger doses caused inhibition of killing. In some instances, this may have been due to the anticomplementary action of conc. antiserum; in others, complement was not affected. The injection of conc. antiserum in 2 human subjects enhanced bactericidal action in defibrinated blood, for the resistant strain, and diminished the bactericidal action of serum and defibrinated blood, for the susceptible strain. No alteration of complement was observed. C. J. C. B.

Effects produced by extracts of *H. pertussis* on blood-sugar of rabbits. D. G. Evans (*J. Path. Bact.*, 1943, **55**, 269—275).—The hyperglycæmia which follows intravenous injection into rabbits of the toxic or detoxified extract of *H. pertussis* does not take place with rabbits immune to the bacterial antigen of *H. pertussis*. The hyperglycæmia is probably induced by the heat-stable bacterial antigen present in the extracts. The hypoglycæmia which follows the hyperglycæmia when the toxic extract is given is due directly to the heat-labile pertussis toxin; the extract does not produce hypoglycæmia when injected into rabbits having circulating pertussis antitoxin and which are immune to the lethal and necrotising action of the toxin. When rabbits having no immunity to pertussis toxin are injected with the toxic extract of *H. pertussis* the death which follows is not a direct result of hypoglycæmia. By the repeated administration of glucose solution to rabbits receiving the extract it was possible to maintain the blood-sugar concn. above the convulsive level, but the rabbits died in the same time as the controls without showing convulsions at the time of death. C. J. C. B.

Clinical results with use of agglutinogen from phase I *Hæmophilus pertussis* as skin test for susceptibility to whooping cough. H. M. Felton and E. W. Flosdorf (*J. Pediat.*, 1943, **22**, 259—264).—The test satisfactorily classified 776 immune and susceptible individuals according to their histories, both of disease incidence and of vaccination. The agglutinogen in single skin test doses also increased the titre of individuals with existing immunity or partial immunity to pertussis. Repeated doses produce a reversal of the test and a titre in those with no initial immunity. C. J. C. B.

Agglutinative reaction for *Hæmophilus pertussis*. I. Persistence of agglutinins after vaccine. II. Relation to clinical immunity. J. J. Miller, jun., R. J. Silverberg, T. M. Saito, and J. B. Humber (*J. Pediat.*, 1943, **22**, 637—651).—215 children aged 6—36 months were given a total dose of 80 billion *H. pertussis* within 1 month. Agglutinins were demonstrated in the sera of all but 5. The titres attained in 2—4 months after vaccination remained const. thereafter. The "plateau" of antibody concn. did not fall up to 6 years after vaccination. Older children developed lower "plateaux" even when the initial dose of vaccine was increased. Revaccination after 1 year or more increased the agglutinin titres, which were thereafter maintained at high levels for at least 3 years. 79 indoor exposures to whooping cough, 24 of which were familial, occurred among 554 children. 10 cases of pertussis (6 from familial exposures) resulted. Among the 69 individuals who escaped, the last agglutinative titre prior to exposure was 0—1 : 2560. 46 had titres of 1 : 320 or higher. Among the 10 individuals who were attacked with pertussis, the pre-exposure titres were 0—1 : 160. Whereas immunity may exist in the absence of demonstrable agglutinins, susceptibility does not occur in the presence of agglutinins in high titre. C. J. C. B.

Whooping cough vaccines. J. H. Lapin (*J. Pediat.*, 1943, **22**, 452—458).—Living suspensions, suspensions sensitised by the addition of immune serum, and alum-pptd. vaccines gave no serological advantage but produced more severe reactions than ordinary whooping cough vaccines. A vaccine sensitised by immune serum gives less severe reactions but its antigenicity may be delayed or impaired. C. J. C. B.

Optimum and limiting temperatures for growth of plague bacillus in broth. Optimum and limiting hydrogen-ion concentrations for growth of plague bacillus in broth. S. S. Sokhey and M. K. Habbu (*J. Bact.*, 1943, **46**, 25—32, 33—37).—The limiting temp. were −2° and 45° with optimum growth at 27—28°. At 28° the limiting pH vals. were 5·0 and 9·6 with optimum growth at 7·2—7·6. F. S.

Pneumococcic pneumonia: selection and control of serum and chemotherapy by sputum examination. A. W. Frisch, A. E. Price, and G. B. Myers (*Amer. J. med. Sci.*, 1943, **205**, 771—780).—The initial and subsequent examination of sputum for pneumococcocus can be effectively utilised as a method for the selection and control of therapy in pneumococcal pneumonia. C. J. C. B.

Significance of gross character of sputum in prognosis of pneumococcic pneumonia. A. W. Frisch, A. E. Price, and G. B. Myers (*J. Lab. clin. Med.*, 1943, **28**, 1231—1237). C. J. C. B.

Microscopic observation of collodion particles as indicators of type-specific pneumococcic immune reactions. M. Burger (*J. Lab. clin. Med.*, 1943, **28**, 1138—1139).—A microscopic method of observing collodion particle agglutination is described. In higher dilutions of pneumococcus sp. sol. substance the method gives positive results; negative results are obtained by macroscopic examination either of the same tests or of ordinary pptn. tests. C. J. C. B.

Serological specificity of an auto-antibody in atypical pneumonia. J. C. Turner and F. B. Jackson (*Brit. J. exp. Path.*, 1943, **24**, 121—126).—The cold agglutinin developing during the course of atypical pneumonia has the properties of auto-antibody, and reacts equally with erythrocytes of all four major human blood groups. When isolated by absorption the auto-agglutinin has a limited action on the erythrocytes of lower animals, having appreciable effect on rabbit cells only, suggesting the existence of a heterogenetic antigen shared by man and rabbit. F. S.

***B*-vitamin requirements of *Propionibacteria*.** R. C. Thompson (*J. Bact.*, 1943, **46**, 99—104).—All of 5 *Propionibacteria* required pantothenic acid and 4 required biotin. Nicotinic acid, riboflavin, pyridoxine, inositol, and folic acid had no effect. Thiamin or *p*-aminobenzoic acid or both were essential for the repeated subculture of some strains. F. S.

Simple artificial medium for pigment production by genus *Serratia*. B. T. Dewey and C. F. Poe (*J. Bact.*, 1943, **45**, 495—498).—The elements essential to pigment production are Mg, PO_4, SO_4, and an org. source of N; Zn and Fe are not essential. Max. pigmentation is produced on the following medium: asparagine 5 g., K_2HPO_4 1 g., K_2SO_4 1 g., $MgCl_2$ 0·1 g., $(NH_4)_2$ H citrate 1 g., distilled water 1 l. adjusted to pH 6·5. F. S.

Improved method for isolation of mannitol-fermenting shigellæ. O. Felsenfeld (*J. Lab. clin. Med.*, 1943, **28**, 1255—1257).—From the selective media those of Leifson and of Wilson and Blair, from the non-selective plates those of MacConkey and of Teague, proved to be satisfactory. Wilson and Blair's new plate is not superior to other media but it is easy to prepare, is selective, and deserves to be added to the series of routine plates. C. J. C. B.

Morphological life cycle of staphylococcus-like organism and modification of cycle. V. Burke, H. Swartz, and K. S. Klise (*J. Bact.*, 1943, **45**, 415—430).—This organism has an alternating morphological life cycle, appearing as a *Staphylococcus* in one stage and as a *Flavobacterium* in the other. The relative importance of hereditary and environmental factors on this type of variation are discussed. F. S.

Comparison of the Dolman kitten test, the Stone cultural screen test, and the Slocum–Linden agglutination test for enterotoxic staphylococci. V. Burke and A. M. Kaplan (*Food Res.*, 1943, **8**, 243—248).—The kitten test gives variable results and should not be relied on solely for detection of enterotoxic staphylococci but the Stone and Slocum–Linden tests give approx. the same agreement. Of 19 strains isolated from food suspected of causing staphylococcus poisoning 6 were positive by the kitten test, 8 by the Stone cultural test, and 8 by the agglutination test whereas application of all three tests gave 15 positives. H. G. R.

Method for determination of staphylococcal antitoxin and anticapsular agglutinin using capillary blood. J. A. Lichty, jun., and C. P. Katsampes (*J. Lab. clin. Med.*, 1943, **28**, 1258—1261).—A method is described for the simultaneous titration of staphylococcal antitoxin and anticapsular agglutinin using 0·05 c.c. of capillary blood. A comparison of this method with the standard procedure for the titration of each antibody in venous serum shows an agreement satisfactory for serological methods. C. J. C. B.

Nutrition of *Streptococcus salivarius*. K. L. Smiley, C. F. Niven, and J. M. Sherman (*J. Bact.*, 1943, **45**, 445—454).—The simplest effective chemically-defined medium contained inorg. salts, glucose, Na thioglycollate, glutamic acid, leucine, arginine, *iso*leucine, lysine, methionine, tyrosine, riboflavin, nicotinic acid, pantothenic acid, biotin, thiamin, and uracil. No other streptococci, except a few of the *viridans* group, would grow in this medium. Growth was delayed or absent if the glucose was not autoclaved, due to the absence of a degradation product of glucose which could be replaced by pyruvic acid or to a smaller extent by acetaldehyde. F. S.

Pneumonia due to *Streptococcus viridans*. S. Solomon and M. Karlkstein (*Amer. J. med. Sci.*, 1943, **205**, 765—770).—An analysis

of 5 cases shows: a prolonged severe course with a high mortality rate; severe pleuritic reaction with serous effusion; failure of response to chemotherapy. C. J. C. B.

Conditions contributing to streptococcal virulence. I. Intra-phasic contrasted with inter-phasic variation. P. Hadley and V. Wetzel (*J. Bact.*, 1943, **45**, 529—544).—A smooth-phase α-hæmolytic streptococcus was transformed to rough phase *in vitro*. By 38 serial, intraperitoneal mouse passages in 114 days the M.L.D. of the rough organism was reduced from 0·7 ml. to 0·000,001 ml. of culture. During the first 11 passages the organisms were transformed from rough into smooth and the M.L.D. was reduced to 0·005 ml., approx. the virulence of the isolated smooth phase. The total increase in virulence during transformation was therefore 140 times whereas that occurring during the smooth phase was 5000 times. Potential virulence was therefore determined by the dissociative phase and actual virulence was determined by environmental influences. F. S.

Agglutination test for the serological diagnosis of syphilis. F. M. Berger (*J. Path. Bact.*, 1943, **55**, 363—371).—An agglutination test for the serological diagnosis of syphilis is described. Suspensions of collodion particles treated with diluted Kahn antigen and subsequently washed were used as antigen. 2452 sera were examined by the Wassermann, Kahn, and agglutination tests. Of 362 known syphilitic sera all were positive by the agglutination test as compared with 66 and 67% positive in the Kahn and Wassermann tests respectively. The % of non-sp. reactions with the agglutination test was no greater than with other widely used tests of lower sensitivity. C. J. C. B.

Incidence of syphilis in autopsies on adults. P. D. Rosahn and B. Black-Schaffer (*Arch. intern. Med.*, 1943, **72**, 78—90).—A crit. review of the incidence of syphilitic infection in adults as determined by autopsy is given. The frequency among persons over 20 years of age was 2·6—29·5%. The average for 17 different reports was 8·8%. C. J. C. B.

Tetanus in immunised subject. H. B. Norman (*Lancet*, 1943, **244**, 557—558).—Case report, with recovery. C. A. K.

Tetanus toxoid and its use for active immunisation. D. T. Fraser, D. L. MacLean, M. D. Orr, H. C. Plummer, and F. O. Wishart (*Amer. J. Publ. Health*, 1943, **33**, 1107—1114).—By using a medium of veal infusion and hog stomach autolysate, tetanus toxoid of high titre was obtained. The response in antitoxin in persons given 3 doses of tetanus toxoid was better than with 2 doses; 68% of the 3-dose group (54 persons) had at least 0·1 unit of antitoxin per c.c. of serum 70 days after the last dose as compared with 23% of 61 persons in the 2-dose group. A combined tetanus toxoid and typhoid vaccine (T.A.B.T.), given in 3 × 1-c.c. doses 3 weeks apart, stimulated the production of at least 0·02 unit of antitoxin in 99% of 79 persons and at least 0·1 unit in 87%. Of 186 given a repeat dose of 0·5 c.c. of T.A.B.T. 92% produced more than 0·1 unit of an antitoxin. In general the antitoxin response to a repeat dose was less in those with low levels of antitoxin than in those with higher levels while the antitoxin response was greater in persons 1 year after the repeat dose than 1 year after the primary inoculations. C. J. C. B.

Response to stimulating injection of tetanus toxoid. L. A. Yeazell and W. C. Deamer (*Amer. J. Dis. Child.*, 1943, **66**, 132—142).—In all but 2 of 100 children given basic immunity 17—42 months previously by the use of 3 injections of 1 c.c. of diphtheria + tetanus toxoid, alum-pptd., there was a satisfactory level of tetanus antitoxin obtained 1 week after a stimulating injection of toxoid. These 2 children showed at least a tenfold rise in antitoxin level, to over 0·01 and 0·03 U.S.P. unit respectively. Even without a stimulating injection many of the infants and children in this study had presumptive protective levels up to 3 years after basic immunisation. C. J. C. B.

Bacterial morphology as shown by electron microscope. V. *Treponema pallidum*, *T. macrodentium*, and *T. microdentium*. S. Mudd, K. Polevitzky, and T. F. Anderson (*J. Bact.*, 1943, **46**, 15—24).—A delicate cell-wall or perplast encloses the inner protoplasm of treponemata. Flagellæ, often in groups of four, are present along the sides or near the ends of *T. pallidum* and *T. macrodentium*. Irregularly spheroidal, dense bodies, 150—500 mμ. in diameter, are frequently attached to the spirochætal cell-wall. They are probably asexual reproductive bodies. (8 electron micrographs.) F. S.

Chemistry of lipins of tubercle bacillus. R. J. Anderson (*Yale J. Biol. Med.*, 1943, **15**, 311—345).—A review. F. S.

Slide culture method for tubercle bacilli. K. S. Rosenberg (*Lancet*, 1943, **244**, 615—616).—A slide culture method showed the presence of tubercle bacilli in 1 week in 14 of 105 sputa negative on direct smears. C. A. K.

Nature of activity of sulphonamides for tubercle bacillus.—See A., 1943, III, 758.

Control of diseases of cattle inimical to man: tuberculosis (*Proc. Roy. Soc. Med.*, 1942, **35**, 469—482).—A discussion by T. Balling, S. R. Gloyne, and others. W. J. G.

"Visible tuberculin patch test." M. Grozin (*Amer. J. Dis. Child.*, 1943, **66**, 126—131).—3 incomplete circles are cut on a strip of adhesive plaster, forming flaps or lids, with the lower poles acting as hinges. The outer lids are treated with tuberculin. The middle lid, without tuberculin, acts as a control. The entire strip is applied to the skin. The areas of reaction are observed by lifting the lids. C. J. C. B.

Vaccinating properties of avirulent dissociates of five different strains of tubercle bacilli. W. Steenken and L. U. Gardner (*Yale J. Biol. Med.*, 1943, **15**, 393—402).—The avirulent dissociates were capable of inducing in guinea-pigs an appreciable degree of immunity against re-infection with virulent strains. F. S.

Bacterial reduction of tetrathionate. M. R. Pollock and R. Knox (*Biochem. J.*, 1943, **37**, 476—481).—The quant. reduction of $Na_2S_4O_6$ to $Na_2S_2O_3$ by washed suspensions of *B. paratyphosum* B can be followed by iodometric titration with concns. of not less than 0·002M-$Na_2S_4O_6$. The reaction is linear almost to the end. H_2S is produced, but only after all $Na_2S_4O_6$ has been reduced to $Na_2S_2O_3$. O_2 has an inhibiting effect on the latter reaction, which takes place only in the presence of certain intestinal bacteria. The place of $Na_2S_4O_6$ reduction, by the "tetrathionase" system of bacteria, in the natural cycle of synthesis and splitting of S compounds is discussed. P. G. M.

Media for typhoid blood cultures. T. C. Grubb (*J. Lab. clin. Med.*, 1943, **28**, 1132—1137).—*p*-Bromocinnamic acid incorporated in Conradi's medium to inhibit the growth of contaminating staphylococci showed a selective inhibitory action against staphylococci but also inhibited a small no. of typhoid bacilli; it was therefore considered unsatisfactory for the culture of blood clots from suspected cases of typhoid fever. A simple broth containing Na deoxycholate inhibited staphylococci without any bacteriostatic effect on typhoid bacillus. C. J. C. B.

(A) **Preparation and properties of a specific polysaccharide from *Bact. typhosum* Ty_2.** G. G. Freeman. (B) **Examination in the ultracentrifuge.** J. St. L. Philpot (*Biochem. J.*, 1942, **36**, 340—355, 355—356).—(A) The extraction and purification of an *O*-sp. polysaccharide from the bacterial cells or isolated antigenic complex of *Bact. typhosum* Ty_2 is described. The polysaccharide has $[\alpha]_D^{15}$ +114—115°, $[\alpha]_{5461}^{16}$ +135°, contains N 0·2—0·4%, P 0·4—0·9%, and yields 83% of reducing sugars on acid hydrolysis. It is free from ketose, pentose, and uronic acid residues, but affords *d*-glucose 40%, *d*-mannose 21%, and *d*-galactose 17% on hydrolysis. It ppts. to high dilution with *Bact. typhosum O*-antiserum but not with Vi-antiserum. Elimination of the acetyl groups (3% present) does not influence the limit of pptn. with *O*-antiserum.

(B) The polysaccharide has a min. mol. wt. of 10,000, *i.e.*, it contains about 60 anhydrohexose units. J. H. B.

Immunisation against epidemic influenza with living virus. F. M. Burnet. **Experimental immunisation of volunteers against influenza virus *B*.** D. R. Bull and F. M. Burnet. **Intranasal vaccination of humans with living attenuated influenza virus strains.** J. Mawson and C. Swan (*Med. J. Austral.*, 1943, I, 385—389, 389—394, 394—399). F. S.

Bacteriophagy in developing chick embryo. T. L. Rakieten and M. L. Rakieten (*J. Bact.*, 1943, **45**, 477—484).—The introduction of one dose of sp. bacteriophage on the chorio-allantoic membrane of 10-day-old embryos infected with *Bact. flexneri* reduced mortality from 38/39 to 12/44. Survival of the treated embryos was related to proliferation of the bacteriophage. F. S.

Electron microscope studies of bacterial viruses. S. E. Luria, M. Delbrück, and T. F. Anderson (*J. Bact.*, 1943, **46**, 57—67).—Three of four bacteriophages showed sperm-shaped particles, consisting of a head and a tail. Each of two phages acting on the same strain of *Bact. coli* produced lysis of the host with liberation of phage particles of the infecting type. (18 electron micrographs.) F. S.

Permeability of blood–brain barrier to neurotropic viruses.—See A., 1943, III, 728.

Turbidity of suspensions of virus-proteins with varying acidity.—See A., 1943, III, 768.

Western equine encephalomyelitis in infants. H. Medovy (*J. Pediat.*, 1943, **22**, 308—318).—Report of 17 cases with 12 complete recoveries and with sequelæ. C. J. C. B.

Delayed production of poliomyelitis antibodies. J. A. Toomey (*Amer. J. Dis. Child.*, 1943, **66**, 121—125).—The production of neutralising antibodies in the horse immunised with "fortified" antigen (poliomyelitis virus and paratyphoid–colon bacillus filtrate) was not immediate; the first horse sera obtained acted as accelerators of poliomyelitis virus. After a horse began to show neutralising antibodies, its serum could be kept in a state of high titre by frequent injections of "fortified" poliomyelitis virus, and there were no accelerating factors. C. J. C. B.

Contractures of skeletal muscle in epidemic infantile poliomyelitis.—See A., 1943, III, 723.

[Serological] factors conditioning resistance to epidemic influenza. T. Francis, jun. (*Harvey Lect.*, 1941—42, *Ser.* 37, 69—99).—A review. E. M. J.

Biochemical studies on virus and inclusion bodies of silkworm jaundice. R. W. Glaser and W. M. Stanley (*J. Exp. Med.*, 1943, **77**, 451—465).—The virus of silkworm jaundice is stable only between pH 5 and 9. Polyhedral bodies retain virus activity after exposure to pH 2 as the virus is protected within these bodies; this view is further supported by experiments with antiformin-formalin and with 1% Na dodecyl sulphate. Free jaundice virus is inactivated by 36% urea, 36% guanidine, or 1% Na dodecyl sulphate. A purified prep., active at a concn. of 10^{-12} g. per c.c., consisting mainly of a nucleoprotein component, was obtained from polyhedra-free blood of jaundiced silkworms; it had a sedimentation const. of 17*S*, a particle diameter of 10 mμ., and mol. wt. 300,000. A component with a sedimentation const. of 16*S* was demonstrated in the blood of normal worms. Inoculation of normal blood, however, does not produce jaundice. A. S.

Experimental mumps: transmission of disease to monkeys: attempts to propagate the virus in developing hens' eggs. C. Swan and J. Mawson (*Med. J. Austral.*, 1943, I, 411—416).—The virus of mumps was isolated from the pooled saliva of 4 patients suffering from mumps, and from the c.s.f. of a patient suffering from mumps meningo-encephalitis. Both strains were transmitted through 3 passages in monkeys. Attempts to cultivate the virus in eggs were inconclusive. F. S.

Typhus: modified Breinl method for staining rickettsiæ and other inclusions. J. W. Fielding (*Med. J. Austral.*, 1943, I, 435—437).—This differential staining method is applicable to smears and sections of animal and arthropod material. F. S.

Employment of rickettsial vaccine for antigen diagnostic complement-fixation test. F. H. K. Reynolds and M. Pollard (*Amer. J. trop. Med.*, 1943, **23**, 321—323).—A commercially-prepared typhus vaccine was successfully used as antigen in a diagnostic complement-fixation test but failed to induce complement-fixing antibodies in man when administered as a prophylactic measure. F. S.

Jaundice following yellow-fever immunisation. G. M. Findlay and N. H. Martin (*Lancet*, 1943, **244**, 678—680).—Nasal washings in 0·9% NaCl solution were taken from 3 patients in the preicteric or early icteric stages of jaundice following yellow-fever immunisation, and instilled intranasally in 3 volunteers who developed jaundice after 28, 30, and 50 days respectively. A virus infection is suggested. C. A. K.

Antigenic properties of crystalline hæmolysin. S. S. De (*Ann. Biochem. Exp. Med.*, 1942, **2**, 237—244).—Cryst. hæmolysin is irreversibly destroyed by short ultra-violet irradiation. Oxidised hæmolysin produces antibody against active cryst. hæmolysin, but irradiated hæmolysin does not. Thiol groupings probably enter into the antigenic specificity of the enzyme. Hæmolysin from 2 varieties (mono- and bino-cellate) of *Naja tripudians* venom are more closely related to each other than to the hæmolysin from *Bungarus fasciatus* venom. P. C. W.

Antigenic properties of hyaluronic acid. J. H. Humphrey (*Biochem. J.*, 1943, **37**, 460—463).—The p-*nitrobenzyl ether* of hyaluronic acid, prepared from the acid and *p*-nitrobenzyl bromide in aq. NaOH at 100°, contains N 4·65, glucosamine 38·5%, and has $[\alpha]_D^{20}$ −58° (calc. for mononitrobenzyl derivative, N 5·25, glucosamine 33·6%). The p-*aminobenzyl ether* is prepared from this by reduction at 50° with $Na_2S_2O_4$ at pH 7; two preps. have glucosamine : N ratio 8·1, 8·4, $[\alpha]_D^{20}$ −65°, −40° (theoretical glucosamine : N ratio for monoaminobenzyl ether, 6·4). The *compounds* resulting from coupling of the diazotised aminobenzyl ether with horse-serum-albumin and whole rabbit-serum-protein are unable to cause antibody formation in rabbits. They resemble chondroitinsulphuric acid and glycogen in this respect. P. G. M.

Electrical procedure for the repurification concentration of antitoxin. E. Cardone (*J. Lab. clin. Med.*, 1943, **28**, 1126—1131).—An electrical process is described which makes possible the repurification of deteriorated antitoxin material. The reduction of vol. is by isoelectric pptn. of the proteins, thus eliminating the use of saturated salts. The degree of increase in potency per unit of N is 15—80%. C. J. C. B.

Vacuum-dried human sera in prevention and treatment of common communicable diseases. A. C. McGuinness, J. Stokes, jun., and J. G. Armstrong (*Amer. J. med. Sci.*, 1943, **205**, 826—833).—Human sera dried in vac. from the frozen state were used with success in passive immunisation against measles, scarlet fever, whooping cough, and mumps and in the treatment of scarlet fever and whooping cough. C. J. C. B.

Mixed immunisation in infancy and childhood. J. H. Lapin (*J. Pediat.*, 1943, **22**, 439—451).—Of 50 children, 10 were injected with pertussis vaccine, fluid diphtheria toxoid, and alum-pptd. toxoid. While reactions were few, this produced the lowest diphtheria antitoxic titre (0·07 unit per c.c.) and next to the lowest tetanus antitoxic titre (0·13 unit per c.c.). Another 10 children were given 3 injections of alum-pptd. combined diphtheria toxoid and pertussis vaccine, followed by 2 injections of alum-pptd. tetanus toxoid. This resulted in a higher diphtheria antitoxin val. (0·27 unit per c.c.) and severe febrile and inflammatory reactions with 1 alum abscess. Another 10 children were given 3 injections of pertussis vaccine and concurrently (or simultaneously) 2 injections of alum-pptd. diphtheria–tetanus toxoid. This resulted in a fair diphtheria antitoxin val. (0·23 unit per c.c.) and tetanus val. of 0·27 unit per c.c. with some febrile reactions but no abscesses. Another 10 children were given alum-pptd. pertussis vaccine, diphtheria and tetanus toxoids, combined in 3 injections. This resulted in high diphtheria antitoxin (0·47 unit per c.c.) and tetanus antitoxin (0·41 unit per c.c.) but febrile and inflammatory reactions were severe and 1 abscess resulted. The last 10 children were given 3 injections of pertussis vaccine followed by 2 injections of alum-pptd. combined diphtheria–tetanus toxoids. This resulted in the highest antitoxin of any group (0·63 unit for diphtheria and 0·49 unit for tetanus). The febrile and inflammatory reactions were mild and no abscesses resulted. C. J. C. B.

Active sensitisation in human beings with trichina antigen. B. Baron and M. Brunner (*J. Allergy*, 1942, **13**, 459—466).—Marked hypersensitisation developed after 3—5 sensitising injections in 6 of 18 patients. 10 of 18 patients showed sensitivity by the 9th test dose. A common antigen exists in ascaris and trichina antigens and is stronger in the ascaris than in the trichina extract, even though the trichina antigen transfers better on trichina sera. C. J. C. B.

Ferritin. IV. Occurrence and immunological properties.—See A., 1943, III, 712.

Inhalant sensitisation and shock in guinea-pigs under controlled atmospheric conditions. Histamine, histaminase, and acetylcholine as possible preventives. L. J. Courtright, S. H. Hurwitz, and A. B. Courtright (*J. Allergy*, 1942, **13**, 444—457).—Histamine or acetylcholine injected before, during, and after sensitisation did not prevent clinical or lethal anaphylactic shock. Histamine injections in large doses, given just prior to each exposure of the animals to the sensitising allergen and just before subsequent shock exposure, delayed the appearance and reduced the violence of clinical symptoms of anaphylaxis in a few animals. Histaminase solution given intranasally during inhalation sensitisation and shock augmented the symptoms. C. J. C. B.

Histaminase in treatment of allergy in children. M. M. Peshkin, H. G. Rapaport, W. Messer, I. Feuer, A. Sicular, and A. Berger (*J. Pediat.*, 1943, **22**, 426—431).—48 allergic children (30 boys and 18 girls) aged 3—16 years, suffering with various allergic disorders, were given orally 50 units of histaminase daily for 2—20 weeks without benefit. C. J. C. B.

Skin reactions. Quantitative studies of wheaing. H. A. Abramson, M. G. Engel, and H. H. Gettner (*J. Allergy*, 1942, **13**, 431—443).—The method makes use of the projection of the image of the displacement of square pencil leads on photographic paper against the actual base line of the wheal. By enlarging this image under standard conditions and cutting out and weighing the elevations, a measure of the whealing vol. as represented by the elevated (contour) areas is obtained. C. J. C. B.

Experimental reproduction of gastric allergy in human beings with controlled observations on the mucosa. H. M. Pollard, A. Arbor, and G. J. Stuart (*J. Allergy*, 1942, **13**, 467—473).—Using sp. oral antigens changes were produced in the stomachs of patients who gave a history suggestive of gastrointestinal allergy. The characteristics were: hyperæmia, lumpy or nodular appearance, œdema and thickening of the rugal folds with diminished peristalsis, and greyish mucous clinging to the mucosa. These changes involve mainly the lower ⅓ of the stomach. C. J. C. B.

Bacillary and tuberculin allergy and their relation to specific tuberculosis immunity. H. J. Corper (*Yale J. Biol. Med.*, 1943, **15**, 373—391).—Tuberculin immunisation (or desensitisation) of sp. immune (vaccinated with viable avirulent tubercle bacilli) or sp. tuberculo-allergic hypersensitive (caused by heat-killed bacilli inmineral oil) guinea-pigs had no effect on the course of infection following intracutaneous injection of virulent human tubercle bacilli. F. S.

Distribution and pollination times of important hay fever-producing plants in United States. P. M. Gottlieb and E. Urbach (*J. Lab. clin. Med.*, 1943, **28**, 1053—1064).—The United States was divided into 9 zones, on botanical considerations. The plants which most commonly produce hay fever, their pollination times, and their relative importance are given in 9 pollination calendars, 1 for each zone. C. J. C. B.

Apparatus for determining the pollen content of air and notes on pollen survey methods. R. C. Hawes, W. S. Small, and H. Miller (*J. Allergy*, 1942, **13**, 474—487).—The apparatus is described in detail. The Scheppegrell–Cocke formula for calculating air pollen concn. from the results of gravity slide experiments is approx. correct. No consistent diurnal changes in pollen counts could be detected. Rain quickly and completely freed the air from pollen. C. J. C. B.

XXVI.—PLANT PHYSIOLOGY.

Developmental physiology of the grass seedlings. I. Inhibition of the mesocotl of *Avena sativa* by continuous exposure to light of low intensity. R. L. Weintraub and E. D. McAlister (*Smithsonian*

Misc. Coll., 1942, **101**, No. 17, 10 pp.).—The inhibition of growth of the mesocotl is measured for a no. of narrow bands of light λ at varying intensities. At low intensities inhibition is proportional to log intensity. Relative inhibition–λ curves show a well-defined max. at approx. 6600 A. and indications of a secondary max. at 6200 A. A. G. P.

Effect of moisture fluctuations on viability of seeds in storage.—See B., 1943, III, 264.

Experimental separation of oxygen liberation from carbon dioxide fixation in photosynthesis by *Chlorella*. C. S. Fan, J. F. Stauffer, and W. W. Umbreit (*J. Gen. Physiol.*, 1943, **27**, 15—28).—With intact cells of *Chlorella pyrenoidosa* suspended in saline, O_2 was obtained in the absence of CO_2 by the reduction of $FePO_4$ and other Fe^{III} salts, acetaldehyde, benzaldehyde, parabanic acid, nitrourea, and Na_2CO_3 (the last being a source of CO_2). Benzaldehyde was studied in detail, and its reduction did not involve the production of CO_2. F. S.

Thiamin in crown gall as measured with *Phycomyces* assay. B. W. Henry, A. J. Riker, and B. M. Duggar (*J. Agric. Res.*, 1943, **67**, 89—110).—The materials and method used are described. Optimum growth of *Phycomyces*, in all concns. of cryst. thiamin or plant extract, was obtained by incubating for 7 days at 23°. Thiamin concn. was higher in crown gall than in stem tissues of control or inoculated plants (tomato, sunflower, and marigold). Treatment with cryst. thiamin in lanolin failed to stimulate the plant to larger gall production. Minute galls produced by a partly attenuated culture of *Phytomonas tumefaciens* contained as high a concn. of thiamin as did large galls. Thiamin alone has no causal influence on crown gall initiation or development. R. H. H.

XXVII.—PLANT CONSTITUENTS.

Chemical determination of minute amounts of boron in plants.—See B., 1943, III, 264.

Chemical micro-determination of twelve elements in plant tissue. Systematic procedure. R. Q. Parks, S. L. Hood, C. Hurwitz, and G. H. Ellis (*Ind. Eng. Chem.* [*Anal.*], 1943, **15**, 527—533).—A 5- to 10-g. sample of dried plant material is digested with HNO_3 and $HClO_4$, and treated with HF to remove SiO_2; the residue is dissolved in dil. HCl and the Ca, Mg, K, Na, P, S, Fe, Zn, Cu, Mn, Mo, and Co are determined systematically by modifications of established methods, chiefly colorimetric. Details of procedures and test data on referee samples and on turnip greens are recorded. L. S. T.

Occurrence and significance of oxaloacetic acid in green plants. A. I. Virtanen, A. A. Arhimo, J. Sundman, and L. Jännes (*J. pr. Chem.*, 1943, [ii], **162**, 71—90).—*l*-Aspartic acid is a "fundamental" amino-acid for leguminous plants, *i.e.*, is a primary product yielding other amino-acids by exchange of NH_2 with α-keto-acids. It is not formed by addition of NH_3 to fumaric acid, since no enzyme catalysing this reaction occurs in bacteria or root nodules of leguminous plants. It is probably derived from oxaloacetic acid and hydroxylamine, the resultant oximino-acid being subsequently reduced. Oxaloacetic acid is determined in plant extracts by measuring manometrically the CO_2 evolved in the reaction, $CO_2H{\cdot}CO{\cdot}CH_2{\cdot}CO_2H + NH_2Ph \rightarrow AcCO{\cdot}NHPh + H_2O + CO_2$; by interaction with aniline, acetoacetic acid gives CO_2 more slowly but it does not occur in leguminous plants; ascorbic and dehydroascorbic acid yield no CO_2. The oxaloacetic acid in plants is destroyed during normal prep. of the extract; this is prevented by adding sufficient 2N-NaOH to give finally pH approx. 13. The acid is destroyed in 48 hr. at room temp., in about 2 hr. at 37°, or instantaneously on boiling, so that the extract must be prepared and analysed to a rapid time-schedule. The oxaloacetic acid content of peas or red clover is much greater after illumination and falls to nil after keeping for 48 hr. in the dark and is greatest during rapid growth; peas contain approx. half as much of the acid as does red clover, which contains up to 94 μg. per g. after 8 hr. illumination. The acid is also present in Timothy grass, but not in barley or oats. Direct determination of oxaloacetic acid in plant extracts by the method of Szent-Györgyi and Straub (A., 1937, III, 59) is impossible as fumaric acid gives a similar colour; if the former acid is decarboxylated at pH 2·5 (3 hr. at 37°), the latter may be determined; the difference between readings before and after decarboxylation corresponds to the oxaloacetic acid present; results agree approx. with those obtained manometrically. Determination of oxaloacetic acid by interaction with 2 : 4-dinitrophenylhydrazine, reduction of the pptd. hydrazone by Na amalgam, and estimation of the aspartic acid failed owing to the reduction giving only 40—80% yields. α-Ketoglutaric acid in plants is determined by pptn. of the 2 : 4-dinitrophenylhydrazone and oxidation thereof by $KMnO_4$ to succinic acid; blue lucerne and red clover contain 44—60 μg. of this acid per g. R. S. C.

Amino-acid content and proteolytic activity of the rice kernel. T. Y. Lo and C. H. Wu (*J. Chinese Chem. Soc.*, 1942, **9**, 183—189).—Eight varieties of rice meal show considerable variation in amino-acid content and proteolytic activity. The variations cannot be correlated with total N. F. R. G.

Agave [sugar content].—See B., 1943, III, 269.

Carbohydrates of the Ebenezer onion. E. Bennett (*Food Res.*, 1943, **8**, 273—274).—The bulb contains ash 4·54, N 1·98, pectic compounds 4·45, hemicelluloses 1·88, furfuraldehyde 1·40, sol. sugars 64·23, reducing sugars 11·34, and non-reducing sugars 52·89% on dry wt. The chief non-reducing sugar is sucrose and when hydrolysed may yield together with the reducing sugars a mixture constituting 65% of the dry matter of which ⅔ is *d*-fructose. H. G. R.

Constituents of *Artemisia tridentata* (American sage brush). II. C. R. Kinney and J. Sugihara (*J. Org. Chem.*, 1943, **8**, 290—294; cf. A., 1942, II, 27).—Sage brush is an excellent fodder for animals, particularly in winter, because of its high glyceride fat content. The available carbohydrates are also high and the protein and ash are adequate. Tannins are present in insufficient amounts to be a source of tanning material. The bitter taste of sage is largely due to the presence of a glucoside. Sage brush contains small quantities of alkaloids but neither quinine nor santonin could be detected. Nothing definite is known about the physiological effects of this material. H. W.

Endosperm content of wheat.—See B., 1943, III, 270.

Constitution of calycopterin, yellow colouring matter of the leaves of *Calycopteris floribunda*.—See A., 1943, II, 381.

Constituents of *Ampelopsis meliæfolia*, Kudo (Haku-Tya).—See A., 1943, II, 380.

Beech bark (*Fagus sylvatica*).—See A., 1943, II, 402.

Active principles of bark of *Aegle mamelos*, Correa.—See A., 1943, II, 401.

Alkaloid in *Eclipta alba*.—See A., 1943, II, 398.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

New method for localisation of foreign bodies. V. V. Bourke (*Radiology*, 1943, **40**, 56—61).—A ruled screen and calipers to embrace the affected part, giving the depth of the foreign body direct after roentgen visualisation, are described. E. M. J.

Control of expansion and contraction of rubber casts. C. D. Clarke and F. M. Stiner (*J. Lab. clin. Med.*, 1943, **28**, 1286—1292).—The expansion is accomplished by soaking the vulcanised rubber pattern in benzene until it has expanded to a degree slightly above that desired. It is then allowed to shrink to assume correct but enlarged proportions. The pattern is used for plaster moulding for the final rubber prosthesis or cast. Expansion and contraction are also governed by the amount of filler (clay) in the rubber. The more filler, the greater is the contraction. Less expansion takes place if the cast is filled. C. J. C. B.

Electrophoretic analysis and constitution of native fluids. A. Tiselius (*Harvey Lect.*, 1939—40, *Ser.* 35, 37—70).—A review. E. M. J.

Determination of $L.D._{50}$ and its sampling error in bio-assay. III. E. B. Wilson and J. Worcester (*Proc. Nat. Acad. Sci.*, 1943, **29**, 257—262; cf. A., 1943, III, 615).—Mathematical treatment. F. S.

Colorimetric determination of amino-nitrogen in blood.—See A., 1943, III, 716.

Determination of amino-acids by the solubility-product method.—See A., 1943, II, 403.

Determination of *p*-aminobenzoic acid, conjugated *p*-aminobenzoic acid, *p*-nitrobenzoic acid, dihydroxyacetone, oxalate, uric acid, amines, and bromine in blood.—See A., 1943, III, 716.

Micro-application of Fujita and Iwatake's method of determining blood-sugar. Micro-diffusion methods: blood-glucose. Simplification of iodometric titration in blood-sugar determination by ferricyanide method.—See A., 1943, III, 715.

***o*-Phenanthroline ferrous complex as indicator in the ceric sulphate titration of blood-sugar.** D. A. MacFadyen and D. D. Van Slyke (*J. Biol. Chem.*, 1943, **149**, 527).—*o*-Phenanthroline, as a Fe^{II} complex, may be used as indicator in the titration of ferrocyanide by $Ce(SO_4)_2$ (cf. Miller and Van Slyke, A., 1936, 1166). R. L. E.

Colorimetric determination of total, free, and ester cholesterol in tissue extracts. G. Popják (*Biochem. J.*, 1943, **37**, 468—470).—The modified method described retains the advantages of Kelsey's method, while avoiding some of the disadvantages (*e.g.*, contamination of the cholesterol by substances that affect colour development with Liebermann–Burchard reagents). Cholesterol is pptd. with alcoholic digitonin in acid solution (HCl) at room temp. Decomp. of the digitonide is effected by Kelsey's method (A., 1939, II, 134). P. G. M.

Rapid and simple technique for determination of gelatin. M. Janota (*J. Lab. clin. Med.*, 1943, **28**, 1281—1285).—Addition of 95% alcohol (but not of 5% trichloroacetic acid) pptd. gelatin from solution, the non-protein constituents remaining in the supernatant fluid after centrifugation. C. J. C. B.

Detection of native protein with pH indicators.—See A., 1943, II, 404.

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415	5*	*For* "the more negative is the H on" *read* "the more negative is the SO_2 of."
416	2	*The value for* pK_a *should be* 6·7, *not* 6·1±0·3.

* From bottom.

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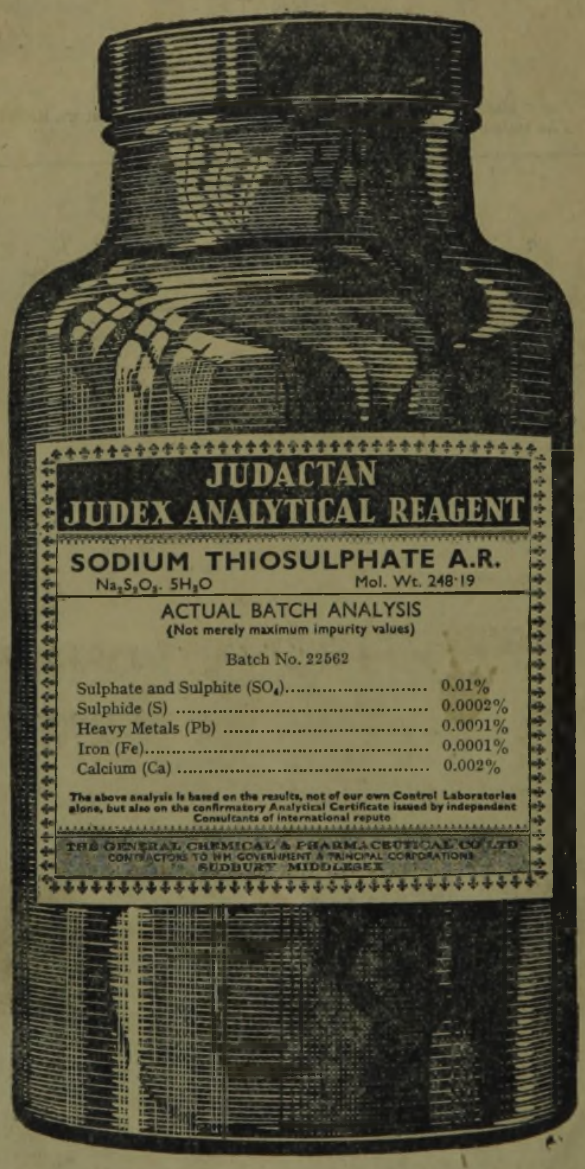

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