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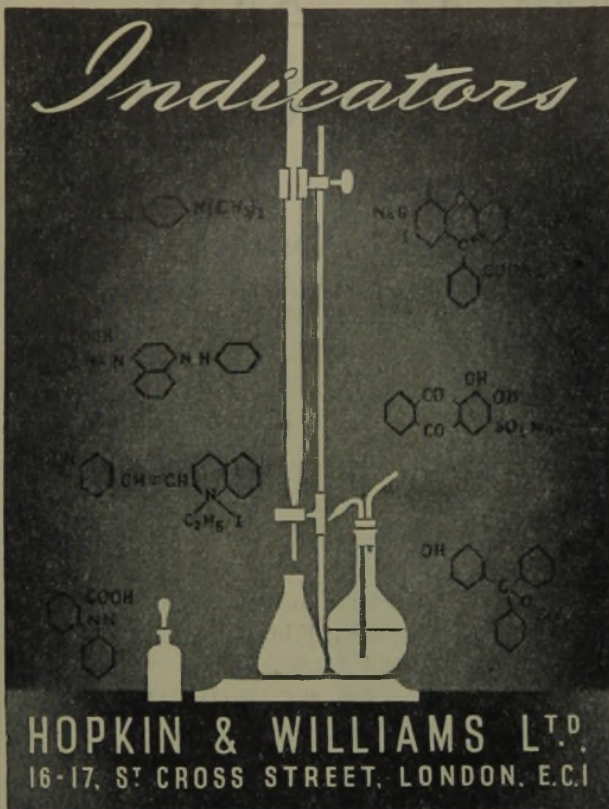
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A., III.—Physiology and Biochemistry (including Anatomy)

APRIL, 1943.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Variations in ossification of bones of hand. J. F. Brailsford (*J. Anat.*, 1943, **77**, 170—175).—Ossification of the bones of the hand is described in 1000 apparently healthy normal children. In 89 of these there were abnormal ossifications of the metacarpal bones. The radiological findings in developmental irregularities and pathological conditions are discussed in relation to these abnormalities. W. J. H.

Complete common paraseptal cartilage in primate. E. Fawcett (*J. Anat.*, 1943, **77**, 176—178).—A description is given of a reconstruction model of the nasal capsule of *Mycetes semiculus*. A complete common paraseptal cartilage is found. W. J. H.

Os epipyramis or epitriquetrum. R. L. de C. H. Saunders (*Anat. Rec.*, 1942, **84**, 17—22).—A bilateral os epitriquetrum, composed of cartilage with a core of cancellous bone, was found in a male, aged 70 years. The bilateral symmetry excludes fracture, renders metaplasia possible but improbable, and favours the theory of a congenital origin. W. F. H.

Growth of deer antlers. I. G. B. Wislocki (*Amer. J. Anat.*, 1942, **71**, 371—415).—The histogenesis and morphology of the antlers of the Virginia deer with special reference to seasonal renewal, growth, and decline are given. Ossification of antlers occurs by intramembranous bone formation, by osteoblasts which arise from undifferentiated cells of the germinal cap and the marrow spaces. Vascularisation is almost entirely by vessels derived from the vascular layer of the skin. The presence of arteriovenous anastomoses of the vessels of the velvet is postulated. W. F. H.

Bismuth lines of long bones in relation to linear growth. L. A. Russin, H. E. Stadler, and P. C. Jeans (*J. Pediatr.*, 1942, **21**, 211—213).—Lines of increased radiographic density occur in the metaphyses of growing bones as a result of Bi medication, but not in bones where growth has ceased as indicated by a fused epiphysis. Though the metaphyseal changes represent abnormalities of bone growth, they apparently do not retard growth in length. C. J. C. B.

Value of X-ray examination [of bones] in diagnosis of endocrine diseases. P. J. Connor and F. J. Maier (*Radiology*, 1942, **39**, 283—287). E. M. J.

Vitallium nails in fractures of hip. C. S. Venable and W. G. Stuck (*Surg. Gynec. Obstet.*, 1940, **70**, 964—968).—Electrolytic corrosion of nails made of the usual materials, and their adverse effects when used in bone surgery, are described. Good results are reported in 20 cases treated with vitallium nails. Vitallium is an alloy of Co 65, Cr 30, and Mo 5%; it is electrolytically passive. P. C. W.

Formation of "ganglia" and cysts of menisci of knee. E. S. J. King (*Surg. Gynec. Obstet.*, 1940, **70**, 150—156).—The tissue cells of "ganglia" and cysts of the menisci contain droplets of mucinoid material resembling products of cellular activity more than products of cellular degeneration. The Golgi apparatus of these cells is hypertrophied and complex in structure. Since some forms of physiological secretion result in the disappearance of cells and the mucinoid material is the result of secretion, the ganglia and cysts of the menisci are regarded as abnormal new joint spaces and not fundamentally as degeneration processes. P. C. W.

Subcutaneous dorsal digital bursitis. N. J. Howard (*Surgery*, 1939, **5**, 939—941).—27 cases are discussed. P. C. W.

Changes in size and contour of thorax during first postnatal week. J. L. Goodman (*Amer. J. Dis. Child.*, 1942, **64**, 674—679).—In 68 newborn infants both width and depth of the chest decreased during the first 3 days. During the latter half of the first week, the transverse diameter did not change while the antero-posterior diameter increased. At the end of the week neither dimension had fully recovered its initial loss. C. J. C. B.

Right-sided aortic arch. A. R. Bloom and J. Rosenzweig (*Radiology*, 1942, **39**, 337—340).—Case report. E. M. J.

Postcaval ureter. F. O. Harbach (*N.Y. Sta. J. Med.*, 1940, **40**, 800—802).—Report of a case found at operation, being the 23rd in the literature. E. M. J.

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Infra-red photography of abdominal wall. E. Wayburn (*Amer. J. digest. Dis.*, 1942, **9**, 392—394).—4 illustrative photographs and record of results in 107 cases. The method frequently reveals evidence of collateral circulation not otherwise obtainable. N. F. M.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Morphological study of testicular descent. N. R. Wyndham (*J. Anat.*, 1943, **77**, 179—188).—A description is given of the structures associated with the descent of the testis in embryos ranging from 12 mm. to 27 cm. crown-rump length. The testis is never found far from the groin. Between the 20- and 50-mm. stages it shows a preliminary ascent. It doubles its size between 12 and 20 cm. Its final descent is rapid and occurs between the 23- and 24-cm. stages. The gubernaculum develops in the substance of the plica inguinalis and it contains striated and unstriated muscle and is very vascular. The flimsy attachment of the gubernaculum to the scrotum is an obstacle to its exerting much traction on the testis. The processus vaginalis can be seen at the 42-mm. stage. W. J. H.

Later stages of cleavage and formation of primary germ layers in Monotremata. T. T. Flynn and J. P. Hill (*Proc. Zool. Soc. London*, 1942, **A**, **111**, 233—253).—The study of 40 eggs of *Echidna* and 2 pairs of twin eggs of *Ornithorhynchus* has led to the conclusion that there is a fundamental agreement in the mode of formation of the primary germ layers in the monotremes and marsupials. In each the formative region of the blastocyst wall is unilaminar and composed of two types of cells, prospective ectoderm and primitive endoderm. These cells, in each of these primitive mammalian orders, not only possess precisely the same potencies but also much the same cytological characters. It is considered that the details of the formation of the primary germ layers in the two orders afford striking proof of the close phylogenetic relationship of the Ornithodelphian and Didelphian stocks. J. D. B.

Physiological development of thyroid gland of albino rat. A. R. Hall and H. W. Kaan (*Anat. Rec.*, 1942, **84**, 221—239).—Colloid material of the active type (staining blue with Mallory's triple stain) appears at 16 days' gestation. 18 days marks the threshold of thyroid activity as indicated by a standard reaction of frog tadpoles to the injection of measured quantities of glands. There is no correlation between thyroid vol. and size during gestation. There is good correlation between colloid vol. and size. W. F. H.

Reversibility in orientation of chick embryo and question of situs inversus viscerum. E. Mayer (*Anat. Rec.*, 1942, **84**, 359—385).—The long axis of the embryo relative to the long shell-axis, and the direction of turning of the embryo on the yolk, were observed through mica windows. Left-right asymmetry of cervical, thoracic, and abdominal viscera was normal in all cases. 7 embryos had abnormal axis-angles and one exhibited temporarily abnormal turning (right side of yolk). Reversible and irreversible changes in axis-angles occurred in a no. of cases. Abnormal turning always involved reversible phenomena. To obtain 3 cases of situs inversus in embryos with abnormal turning 150,000 eggs were required on the third day, since the frequency of abnormal turning is only one twentieth. A correlation between abnormal orientation and situs inversus was not found. Mechanisms which may control changes of orientation are discussed. W. F. H.

Histological structure of ovum of *Acipenser* at different stages of sexual maturity. I. Moltchanova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 163—165).—An account of the development and maturation of the egg in the sturgeon. J. D. B.

Experimental reduplication of frog hindlimb. W. Brandt (*J. Exp. Biol.*, 1940, **17**, 396—401).—Rotating or splitting of hindlimb bud in early tadpoles produced extra rotated limbs or (splitting method) two limbs in mirror symmetry in addition to a regenerated limb; coordinated movements were often possible in these limbs. D. M. Sa.

Ontogenetic limits of ability to regenerate hindlimb in various Anuran species. G. I. Ginzburg (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **32**, 163—165).—An account of the development and maturation of the egg in the sturgeon. J. D. B.

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1941, 31, 961—964).—A description of the temporal limits for complete and partial regeneration of hindlimbs in *Rana temporaria*, *R. ridibunda*, *Pelobates fuscus*, and *Bombina bombina* and a discussion of the results. J. D. B.

Development of neural plate structure without induction in ex-plant axolotl ectoderm. N. Dragomirov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 965—968).—Neural plate epithelium differentiates frequently in isolated presumptive ectoderm when grown, on agar, for 4—5 days at 13—16°. This is interpreted as being due, not to "double assurance," but to the fact that in structures (e.g., presumptive ectoderm and neural plate) which form a continuum and are capable of self-differentiation or of contact induction dependence on the induction is not abs. J. D. B.

Organ reduction in ontogenesis. I. Jeshikov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 87—90).—A study of the development of the wings in *Fumea casta*, a psychidid in which the males possess normally developed, the females rudimentary, wings. The larval imaginal wing buds are equally developed in the representatives of both sexes. The reduction in the female wing is due to underdevelopment of the anlage in pupa as a result of the elimination of cell divisions at the last larval instar and to degeneration of the larger part of the wing at a later stage of pupal development. The results are compared with similar phenomena in other insects and there is a discussion of their significance in the study of "rudimentation." J. D. B.

Peculiarities in organisation of females of *Fumea*. I. Jeshikov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 91—94).—A description of the reduction of organs and of the embryonalisation of certain characters in females of *F. casta* and a comparison with similar findings in other Lepidoptera. J. D. B.

Embryological micromanipulator with adjustable egg-holder attachment. H. H. Hillemann (*Anat. Rec.*, 1942, 84, 337—342).—A micromanipulator which produces a rapid or slow movement in a straight line and one of large or small extent (up to 2 in.) is described and pictured. W. F. H.

Method and apparatus for opening and closing eggs which will permit turning at regular intervals during subsequent incubation. H. H. Hillemann (*Anat. Rec.*, 1942, 84, 331—336).—By means of an air-cell cup with cover-glass sealed by ceresine wax the exposed part of the embryo is perfectly protected from outside sources of contamination. Other advantages of the method are that the embryo may be observed without fogging of the cover-glass, a max. of moist respiratory surface is maintained, and there is no drying of extraembryonic membranes. W. F. H.

Isolation and properties of macromolecular component of normal chick embryo tissue. A. R. Taylor, D. G. Sharp, D. Beard, and J. W. Beard (*J. infect. Dis.*, 1942, 71, 115—127).—A macromol. lipoprotein complex containing 10.5% of ribonucleic acid was isolated by ultracentrifugation from normal chick embryo tissue. The sedimentation const. in 0.005M-electrolyte solution at pH 7.1 was 78.7×10^{-13} . This val., with the observed sp. gr. of 1.27 and the assumption that the particle is an unhydrated sphere, would indicate a mol. wt. of 4,800,000 and a diameter of 23 μ . A similar material is also found in chick embryos infected with the virus of equine encephalitis with which it has no relation, the virus having other properties and a sedimentation const. of 25.3×10^{-13} . F. S.

Effect of amino-acids on regeneration. M. Lecamp (*Compt. rend.*, 1942, 214, 330—332).—At a concn. of 10^{-5} M. (higher concns. are sometimes toxic), regeneration in *Polycelis nigra* is accelerated by, in increasing order of activity, glutamic acid, glycine, cystine, lysine, tryptophan, arginine, and histidine; mixtures of these amino-acids are more effective than are the constituents alone. With *Planaria lugubris*, tryptophan does not accelerate tissue differentiation. No significant effect on regeneration was observed in experiments on *Triton palmatus*. F. O. H.

Development of cuticle pattern in *Rhodnius*. V. B. Wigglesworth (*J. Exp. Biol.*, 1940, 17, 180—200). D. M. Sa.

Influence of humidity contrasts on mutation rate in *Drosophila*. I. J. Zujutin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 927—929).—A study of the influence of humidity on three different stocks of *D. melanogaster* and an analysis of the results in terms of genotypical plasticity. J. D. B.

Effects of X-rays on mitosis in neuroblasts of *Chortophaga*. J. G. Carlson (*J. Morph.*, 1942, 71, 449—462).—The immediate effects of 31 r. on different stages of mitosis are recorded and it is tentatively suggested that X-rays may alter the mitotic progress of cells mainly through effects on the prophase chromosomes. J. D. B.

Genetics of *Armadillidium vulgare*, Latr. H. W. Howard (*J. Genet.*, 1942, 44, 143—159).—Three types of female occur: amphogenics which produce broods consisting of 50% males, thelygenics which produce broods consisting almost entirely of females, and arrhenogenics which produce broods mainly of males. Genetical ratios show that normal segregation of the autosomes takes place in the eggs of monogenic females and that the eggs of these do not

develop parthenogenetically. The results support the suggestion that monogeny (thelegeny and arrhenogeny) and amphogeny are inherited cytoplasmically (or in the Y-chromosome). The effect of monogeny on the composition of natural populations is considered. W. F. H.

Analysis of chromosomal polymorphism in two species of *Chironomus*. U. Philip (*J. Genet.*, 1942, 44, 129—142).—*C. dorsalis* and *C. riparius* were analysed for the incidence of inversions. Homozygotes of chromosome IV were distinguished from the heterozygote by means of the position of the nucleolus. Chromosomes of different sequences are combined in individuals at random. No acentric or dicentric fragments occurred in meiosis of males known to have inversions. It was concluded that they were situated outside the chiasma-forming regions and, therefore, had no deleterious effect on fertility. W. F. H.

Physical and mental characteristics of a pair of like twins reared apart from infancy. N. Yates and H. Brash (*Ann. Eug.*, 1941, 2, 89—101).—One twin was reared in an urban environment and poorer from the economic point of view than the other who lived in a semi-rural district. The former was markedly inferior in height, wt., and health but superior in intelligence. Indications were obtained that he was physiologically younger than his twin. In character and temperament, as revealed by interests and behaviour, the twins showed marked similarity. Investigations began when the twins (males) were 16½ years old and continued for 6 months. W. F. H.

Selective elimination of silver foxes in Eastern Canada. J. B. S. Haldane (*J. Genet.*, 1942, 44, 296—304).—Collected data on the frequency of silver and cross foxes killed in several districts of the Quebec peninsula are discussed. The fall in the % of silver fox skins is explained. There is no evidence that cross foxes are killed in greater proportions than red foxes. Annual rate of killing of red foxes is approx. 10%. Different colour varieties cross freely. W. F. H.

III.—PHYSICAL ANTHROPOLOGY.

Diminutive skull from Peru. L. R. Wells (*Amer. J. phys. Anthropol.*, 1942, 29, 425—427).—The cranial capacity was 485 c.c., but in all other respects the skull was normal and apparently that of an individual approaching adulthood. The mastoids and base give the impression that the skull was that of a male. The large and deep orbital cavities are noteworthy. The skull was found on the surface at an ancient burial site near Chilca, Peru. W. F. H.

Unique development of premaxilla in gorilla. M. F. A. Montagu (*Amer. J. phys. Anthropol.*, 1942, 29, 417—420).—A premaxillary contribution to the facial aspect of the skull originating in the palatine plate of the premaxilla is described in two specimens. The condition is explained as due to a difference in the rate of growth of the facial and palatine processes of the premaxilla. The evidence suggests that a separate centre for the palatine plates of the premaxilla was present. W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Cytology of adrenal cortex of normal pigeons and in experimentally induced atrophy and hypertrophy. R. A. Miller and O. Riddle (*Amer. J. Anat.*, 1942, 71, 311—341).—The Golgi apparatus, mitochondria, lipin, cholesterol, and water-insol. ketones in adrenal cortical cells of young pigeons are described. Hypertrophy and hyperactivity were induced by injection of pituitary corticotrophin, formaldehyde, and non-pituitary hormones, and by unilateral adrenalectomy. Following hypophysectomy mitochondria decrease in no. and the Golgi apparatus atrophies. It is concluded that mitochondria are involved in the formation of a hormone present in lipid droplets. In normal animals rate of hormone formation exceeds the demand and lipin storage results. Apart from pituitary stimulation the adrenal cortex maintains a residual activity which may be increased by injections of formaldehyde and several non-pituitary hormones. W. F. H.

Histochemical studies of interstitial cells of the testis. W. F. Pollock (*Anat. Rec.*, 1942, 84, 23—29).—In the adult cat, rat, guinea-pig, mouse, and rabbit, compounds with solubility properties similar to those of active testicular sterones were demonstrated in the interstitial cells. The findings support the physiological evidence that the interstitial cells are the source of the testicular androgen. W. F. H.

Sperm and Sertoli cells of rat in tissue culture. N. Dromidova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 95—99).—Seminiferous tubules of young rats were cut into small pieces and grown in different culture media for periods up to 14 days. In the initial stages of spermatogenesis the spermatogonia adhere to the nuclei of the Sertoli layer; when the spermatocytes ripen they move towards the centre of the tubule and are only partially connected with the Sertoli cytoplasm. Finally, when the maturation of the spermatids commences, they again approach the Sertoli nuclei.

These changes are also found, though not so conspicuously, in the intact testis. J. D. B.

Histological studies on canine female genital tract. R. M. Mulligan (*J. Morph.*, 1942, **71**, 431—448).—The principal histological variations in the ovaries, uterine horns, and vagina of bitches are recorded at various stages of the oestrous cycle, in pregnancy, and in the post-partum state. The differences in normal animals are emphasised and the importance of keeping them in mind in the evaluation of the results of administering hormones, particularly oestrogens, is stressed. J. D. B.

Chromatophores of crustacea. F. G. W. Knowles and H. G. Callan (*J. Exp. Biol.*, 1940, **17**, 262—286).—White chromatophores appearing over the dark ovaries of maturing *Leander serratus* preserve the protective pigment pattern, but do not appear if the ovaries are destroyed by X-rays. D. M. Sa.

Localisation of newly administered iodine in thyroid gland as indicated by radio-iodine. C. P. Leblond (*J. Anat.*, 1943, **77**, 149—152).—Following a single small dose of I, similar in quantity to that available in physiological conditions, injected into dogs and rabbits the autograph method of recording shows that the I is rapidly deposited in the colloid material of the thyroid gland. W. J. H.

Protoplasmic viscosity of *Paramecium*. R. H. J. Brown (*J. Exp. Biol.*, 1940, **17**, 317—324).—*Paramecia* were centrifuged in capillary tubes and the progress of vacuoles containing ingested Fe particles was noted. Viscosity was 0.5 c.g.s. unit. D. M. Sa.

Mathematical analysis of elongation and constriction in cell division. H. D. Landahl (*Bull. Math. Biophysics*, 1942, **4**, 45—62).—An equation by Rashevsky for the rate of elongation is extended to give the rates of elongation and constriction of freely dividing cells. Theoretical predictions thus obtained agree with data from observations on *Arbacia* eggs, with and without fertilisation membranes. F. O. H.

Fundamental form for the differential equation of colonial and organism growth. N. W. Shock and M. F. Morales (*Bull. Math. Biophysics*, 1942, **4**, 63—71).—Rational equations describing colonial and organism growth are derived from a single differential form, total cell no. being used as the basic parameter of growth. The derivation is based on the assumption of two factors, one arising from conditions within the growing cell itself and the other from interactions between the growing cells of the community. F. O. H.

Methyl methacrylate as imbedding agent. H. F. Halenz and L. W. Botimer (*J. Chem. Educ.*, 1942, **19**, 313—314).—Technique for use is described. L. S. T.

Mechanics of paraffin sectioning by microtome. W. T. Dempster (*Anat. Rec.*, 1942, **84**, 241—267).—Cold sectioning, characterised by discontinuous shear movements of material, occurs below a crit. temp. for each type of paraffin. Warm sectioning, in which shear movements occur continuously in point-to-point sequence, appears above this temp. Desirable aspects of the knife are: a narrow level consistent with a low average radius of edge curvature and a low amplitude of edge deflexion and a low average radius of edge curvature. Temp. effects on paraffin and knife edge are discussed. W. F. H.

Distortions due to sliding microtome. W. T. Dempster (*Anat. Rec.*, 1942, **84**, 269—274).—Effects characteristic of the action of the oblique knife are described with special reference to increased section width and thickness. W. F. H.

V.—BLOOD AND LYMPH.

Occurrence of siderocytes in adult human blood. I. Doniach, H. Gruneberg, and J. E. G. Pearson (*J. Path. Bact.*, 1943, **54**, 23—31).—Siderocytes are red cells in which the presence of some easily detachable Fe, invisible in untreated films, can be demonstrated by means of the Prussian-blue reaction. They form a normal embryonic feature in the rat, mouse, and man. Their occurrence is described in 1 case of biliary cirrhosis of the liver with splenectomy, in 4 cases of splenectomy, and in 2 cases of chronic uræmia. C. J. C. B.

Use of measurable cause of death (hæmorrhage) for evaluation of ageing.—See A., 1943, III, 181.

Rôle of honey in prevention and cure of nutritional anæmia in rats. M. H. Haydak, L. S. Palmer, and M. C. Tanquary (*J. Pediatr.*, 1942, **21**, 763—768).—Laboratory rats were fed a diet of raw whole milk supplemented with 20% of honey. Rats receiving milk to which 16% of sucrose was added served as controls. Rats which received a milk-dark honey mixture *ad lib.* showed an increase in hæmoglobin while the hæmoglobin of rats on light honey or sucrose decreased. The gain in wt. and food consumption in the first group were also greater. When the hæmoglobin of young rats on a whole milk diet was reduced to 6—4 g.-%, the addition of 20% of dark honey gradually increased the hæmoglobin; the addition of 20% of light honey caused a gradual further decline in hæmoglobin to 3 g.-%. C. J. C. B.

Anæmia of flexed-tailed mice (*Mus musculus*, L.). II. Siderocytes.—See A., 1943, III, 156.

Influence of diet on physiologic anæmia of infants. K. F. Brokaw, M. S. Sedam, and A. M. Cassirer (*J. Pediatr.*, 1942, **21**, 769—774).—The early introduction of cereals, vegetables, and eggs had no marked effect on the hæmoglobin level or red blood count of infants, but they benefited in growth and improved muscle tone. C. J. C. B.

Morphology of blood in dimorphic anæmia. H. C. Trowell (*Trans. R. Soc. trop. Med. Hyg.*, 1942, **36**, 151—176).—Dimorphic anæmia is an anæmia which is due to deficiency of Fe and hæmatin principle. The blood picture and sternal marrow picture of 174 cases are described. The commonest cause of severe Fe deficiency was a heavy hook-worm load and a diet deficient in Fe. The commonest cause of the macrocytic anæmia type of deficiency was a diet poor in meat and possibly in green vegetables. In the bone marrow, all 3 types of erythropoiesis can usually be detected, hypochromic, megaloblastic, and normoblastic, the last predominating. C. J. C. B.

Grave anæmias in pregnancy and puerperium. F. G. Lescher (*Lancet*, 1942, **243**, 148—151).—9 cases of pernicious anæmia and 8 of hæmolytic anæmia are reported. C. A. K.

Hypochromic anæmia during pregnancy. H. A. Hamilton and H. P. Wright (*Lancet*, 1942, **243**, 184—186).—Repeated hæmoglobin determinations were made on 392 pregnant women from the 3rd month to term. Half the women were given Fe supplements during the period of study. Average initial hæmoglobin vals. were 79% in untreated and 75% in treated cases. At term the vals. were 70% and 77%, respectively. C. A. K.

Production of experimental polycythæmia [by amphetamine]. J. E. Davis and A. H. Harris (*Amer. J. Physiol.*, 1942, **137**, 94—96).—Daily oral administration of 10 mg. of amphetamine increased the erythrocyte count by 12—15% in 5 out of 6 human subjects, within 6—12 days. It is assumed that benzedrine causes polycythæmia by increasing hæmopoiesis by causing a diminution of blood supply to the bone marrow and local hypoxia of that tissue. Observations were made at least 20 hr. after the daily dose of amphetamine. M. W. G.

Premortal variations in blood concentration. K. Helmke (*Virchow's Arch.*, 1939, **304**, 223—229).—Rabbits poisoned with digitapur or pernocton, or suffocated, show hæmoconcn. In KCN and CO poisoning this is obscured by withdrawal of damaged erythrocytes from the circulation which may result in relative hydræmia. J. A.

Effect of vitamin-C, -A, and -B₂ on reticulocytosis in children.—See A., 1943, III, 187.

Iron metabolism and requirement of young women.—See A., 1943, III, 186.

Efficiency of various types of equipment used in collection of blood for transfusion. I. Needles and adapters. L. W. Diggs (*Amer. J. clin. Path.*, 1942, **12**, 518—522).—In collection of blood by the gravity method, 15-gauge needles were most efficient for women and 14-gauge needles for men. Cylindrical glass adapters which fit outside the needle hub gave a faster flow than standard adapters for 14- and 15-gauge needles, gave comparable collection %, and were easier to clean and less breakable than standard glass adapters. C. J. C. B.

Survival after transfusion of human erythrocytes stored in citrate-glucose. W. P. Belk and F. Rosenstein (*Amer. J. med. Sci.*, 1942, **204**, 504—507).—The red cells survive as long as those of fresh blood provided that storage of citrated blood does not exceed 2—3 days. With each additional day of storage they become progressively less useful to the patient, and after 7 days of storage are treated by the recipient as foreign bodies and eliminated in 24—48 hr. The addition of glucose to citrated blood enhances its keeping properties 4 times, as shown by *in vitro* and *in vivo* studies. C. J. C. B.

Simplified blood transfusion set. S. W. Widger and R. Stevens (*Surgery*, 1939, **6**, 602—603). P. C. W.

Transfusion using indirect methods. C. Fortune (*Med. J. Austral.*, 1942, **II**, 94—97).—A review. F. S.

Stored blood. X. Complement, isoagglutinins, and agglutinogens. A. Crosbie and H. Scarborough (*Edinb. Med. J.*, 1942, **49**, 766—772).—The anticoagulant used was Na citrate (0.38% final concn.). Hæmolytic complement titre falls rapidly to 30—50% of the initial val., and independently of it, in the first 2—4 days' storage. Agglutinin titre and agglutinin potency remain unimpaired for at least 6 weeks, when a slight fall occurs in former. 3.8% Na citrate is a better diluent than 0.9% NaCl for blood grouping purposes. H. S.

Stored blood. XI. Phagocytosis in stored citrated blood and opsonic power of stored liquid plasma. J. W. Czekalowski (*Edinb. Med. J.*, 1943, **50**, 40—56).—The anticoagulant was Na citrate (0.38% final concn.). 50% of all types of leucocyte disappeared by the 5th day of storage and 75% by the 8th. 15—20% remain for at least 14 days. 19% are degenerate after 24 hr., 80% after 4 and 95% after 8 days. Leucocytes lose phagocytic power against *S. viridans*, type R, opsonised by stored liquid plasma in 5—8 days,

but opsonised by fresh plasma in 11–14 days. This decrease is due not only to degeneration of cells but also to disappearance of factors from plasma. One of these factors is normal opsonin and a second may be one component of complement or an unknown factor. The opsonising activity of stored plasma is increased by small vols. of fresh plasma to a greater extent than is accounted for by opsonising activity of the fresh plasma. Opsonisation involves the formation of a series of compounds BO_a , BO_b , etc. between bacteria and opsonin which are then potentiated by some other substance, perhaps a component of complement. H. S.

New hæmoglobinometer. D. H. Duffie (*J. Amer. Med. Assoc.*, 1942, 119, 493–494).—A new simple method of determining hæmoglobin after dilution with alkali employs a colorimeter with a green light filter. C. A. K.

Simplified prothrombin test. N. H. Lufkin and M. Strolberg (*Amer. J. clin. Path. Tech. Sect.*, 1942, 6, 64–66).—From a clean pipette 1 drop of thromboplastin solution is delivered into the centre of a clean watch glass; then a small quantity of blood is drawn into a similar pipette and immediately 4 drops are delivered into the watch glass. The time in sec. when the first drop reaches the thromboplastin is noted. The contents of the watch glass are immediately mixed by tilting and blowing through the pipette, and the watch glass is tilted once every sec. The time when the mass becomes motionless is noted. For a control the test is performed on a normal individual using the same solution of thromboplastin. C. J. C. B.

Hæmorrhagic problems in child surgery. I. N. Kugelmass (*Amer. J. clin. Path.*, 1942, 12, 467–479).—A lecture. C. J. C. B.

Prothrombin and fibrinogen studies in chronic ulcerative colitis. R. C. Page and Z. Bercovitz (*Amer. J. digest. Dis.*, 1942, 9, 419–422).—6 out of 21 patients had a const. hypoprothrombinæmia, 13 had smaller degrees of deficiency. The fibrinogen vals. were slightly above normal. N. F. M.

Bleeding tendency in obstructive jaundice and correction by vitamin-K. K. B. Olson and H. Menzel (*Surgery*, 1939, 6, 206–220).—24 cases had their bleeding tendency assessed by measurement of plasma clotting time; 12 had prolonged clotting time and 9 of these bled after operation; only 3 of those cases with normal clotting time bled at operation, and of these 2 showed an increase in clotting time before operation. 14 cases with prolonged clotting time were treated with vitamin-K and bile salts (1000 units and 4 g. daily for 2–7 days) and 13 showed improved clotting time; 36% of these cases only showed bleeding post-operatively. P. C. W.

Hæmorrhagic sweet clover disease. Induced vitamin-C excretion in rat and its effect on the hypoprothrombinæmia caused by 3:3'-methylenebis-(4-hydroxycoumarin). C. A. Baumann, J. B. Field, R. S. Overman, and K. P. Link (*J. Biol. Chem.*, 1943, 146, 7–14).—Substances which stimulate excretion of vitamin-C (chloretone, carvone) diminish the hypoprothrombinæmia and prolong the life of rats treated with 3:3'-methylenebis-(4-hydroxycoumarin); l-ascorbic acid is without effect. Ingestion of the anticoagulant by rats on a condensed milk diet caused a temporary increase in excretion of -C and an increase in -C in the blood but no changes in other tissues. The max. effect is observed 6–9 hr. after ingestion but the increased excretion is not maintained by repeated doses. H. G. R.

Exceptionally weak reactivity of blood agglutinogens in two sisters (sub-group A_3). H. Sachs (*J. Path. Bact.*, 1943, 54, 109–111). C. J. C. B.

Prevention of hæmolytic transfusion reactions with special reference to new biological test. A. S. Wiener, I. J. Silverman, and W. Aronson (*Amer. J. clin. Path.*, 1942, 12, 241–247).—A new method of performing a biological test before a blood transfusion is described in which the blood plasma is examined for evidence of hæmolysis after a small transfusion. 2 contrasting cases are presented to illustrate a positive and negative reaction. C. J. C. B.

Significance of extracorporeal volume of clot and its clinical application. S. P. Lucia, P. M. Aggeler, and L. H. Hamlin (*Amer. J. med. Sci.*, 1942, 204, 507–516).—Diminished clot retraction is often seen in conjunction with hypoprothrombinæmia and in patients with thrombocytopenia but may be present when neither of these conditions obtains. It cannot be assumed under the latter circumstances that "thrombasthenia" is present, as other conditions, including fibrinogenopenia, "fibrinasthenia," or the presence of circulating clot retraction-inhibiting substances, may also be responsible for diminished clot retraction. C. J. C. B.

Effect of injection of tissue extracts on number of blood platelets. A. Uhlein (*J. Lab. clin. Med.*, 1943, 28, 158–161).—Of 6 extracts from 13 spleens from patients with hæmorrhagic purpura, 2 produced a considerable drop in the circulating blood platelets in rats, 3 produced a moderate decrease, while the rest gave no response. 1 of 5 spleen extracts from patients with hæmolytic icterus lowered the no. of platelets. This response was repeated in other animals and was not eliminated by heating the extract. C. J. C. B.

Weltmann reaction in respiratory diseases in children. S. C. Dees and H. Morton (*J. Pediat.*, 1942, 21, 514–523).—The coagulation band is shortened below the normal val. of 6 in the presence of infection and is increased with recovery. In bronchial asthma the coagulation band is 6 unless there is some coexisting infection, which shortens the band. C. J. C. B.

Simple method for determining plasma density and plasma-protein concentration. E. Ponder (*J. Lab. clin. Med.*, 1943, 28, 232–234).—A modification of the Linderström-Lang method (*Harvey Lect.*, 1939, 34, 214) is described. C. J. C. B.

Leukæmic lympho-reticulosis. K. Apitz (*Virchow's Arch.*, 1939, 304, 65–78).—A 61-year-old man with enlarged spleen had a whole cell count of 31,000 (61% lymphocytes, 2% monocytes, and 27% myeloid elements, many of them immature). Post-mortem enlarged lymph-glands, spleen, and liver as well as hyperplasia of the bone marrow were found; histologically there was systemic proliferation of the reticulum cells with many giant and immature forms combined with lymphatic leukæmia. In the blood film reticulum (monocytic) and lymphoid cells could be identified but no indication of the one being derived from the other. J. A.

Agranulocytosis due to sulphanilamide.—See A., 1943, III, 195.

Determination of total cholesterol and cholesterol esters in blood. S. L. Leibo (*J. Lab. clin. Med.*, 1943, 28, 219–224).—Oxalated blood is mixed with anhyd. Na_2SO_4 and extracted with $CHCl_3$ for 20 min. The $CHCl_3$ extract is filtered and 3 aliquot portions are removed. One portion is treated directly with acetic anhydride and H_2SO_4 for total cholesterol. The second portion is used for the determination of esters as follows: the $CHCl_3$ is removed by evaporation and substituted by light petroleum, from which the free cholesterol is removed with digitonin; the light petroleum is evaporated, the esters are taken up in $CHCl_3$, and the colour is developed with acetic anhydride and H_2SO_4 . Both fractions are determined colorimetrically against a standard containing a known amount of cholesterol. C. J. C. B.

Measurement of blood-amylase activity by cuprous oxide precipitation. D. Polowe, H. D. Ratish, and J. G. M. Bullowa (*Amer. J. clin. Path. Tech. Sect.*, 1942, 6, 62–64).—A simplified method for determining amylase activity, based on the amount of Cu_2O pptd., is described. C. J. C. B.

Influence of alterations in acid-base balance on transfers of carbon dioxide and bicarbonate in man. J. D. Rosenbaum (*J. clin. Invest.*, 1942, 21, 735–745).—Alteration of blood- CO_2 , produced by ingestion of NH_4Cl , may be unassociated with any change in CO_2 output by the lungs. The vol. of distribution of HCO_3^- administered intravenously as $NaHCO_3$ was found to approximate to the extracellular fluid vol. as determined by the thiocyanate method. This indicates that the tissue cells of man are freely permeable to dissolve CO_2 , but are impermeable to HCO_3^- . C. J. C. B.

Staining procedure for use in *Brucella* opsonocytaphagic test.—See A., 1943, III, 157.

VI.—VASCULAR SYSTEM.

Blood electrolyte changes in heart-lung preparation. E. H. Wood and G. K. Moe (*Amer. J. Physiol.*, 1942, 137, 6–21).—In an untreated control heart-lung prep. a variable degree of hæmoconcn., a tendency for a slow increase in serum-K, and a progressive fall of -glucose occur. Const. changes in serum-Na, -Ca, and -Cl⁻ were not found. Suitable doses of digitalis cause concomitant increases in external mechanical efficiency and blood- and serum-K with a questionable decrease in serum-Na. A positive correlation was shown between the total dose of a digitalis glycoside and the rate of serum-K increase both during the efficiency increase period and for the duration of the action of the drug; little if any correlation was found between the time of onset of digitalis irregularities and the rate of serum-K increase or the K concn. of circulating serum. The relative K mobilising powers of the glycosides correspond more closely to their relative therapeutic activities than to their relative toxicities for the heart-lung prep. Increased blood-K resulting from digitalis action on the heart-lung prep. originates from both the heart and lung tissue. M. W. G.

Physiology of embryonic mammalian heart before circulation. C. M. Goss (*Amer. J. Physiol.*, 1942, 137, 146–152).—Observations were made on the hearts of rat embryos in tissue cultures; whole embryonic vesicles were explanted instead of fragments of tissue. The embryos remained in vigorous condition and continued their morphological development for 18–24 hr. and the hearts contracted for 3–4 days without change of medium. The power of spontaneous rhythmical contraction is possessed by each of the chambers and they have their own intrinsic rates. The contraction of the myocardium progresses by a wave from one end of the chamber to the other. The atrioventricular interval which makes coordination of the whole heart possible appears along with atrial contraction itself. The spontaneous rhythm of the ventricle is inhibited by the atrium.

Mechanical work, pumping the blood, begins after the preparatory development outlined above. M. W. G.

Method for rapid, repeated, approximate determinations of transverse diameter of the heart. S. Waldman (*J. Lab. clin. Med.*, 1943, 28, 201—203).—The apparatus described is a simple attachment to the fluoroscopic screen. C. J. C. B.

Continuous electronic pulse-rate indicator and recorder. M. M. Schwarzschild and M. C. Shelesnyak (*Rev. Sci. Instr.*, 1942, 13, 496—501).—The circuit described and figured is operated by the cardiac action current impulses which are amplified and applied to a trigger tube and a gas discharge tube and condenser. The shunted meter gives the average current and is calibrated in beats per min. The device may be applied to any quasi-periodic phenomenon in the frequency range 20—400 per min. if at each period an electrical impulse of the order 1 mv. is provided. A. A. E.

Drug-induced convulsions in electrocardiogram in epilepsy. T. Ziskin and A. G. Dumas (*J. Lab. clin. Med.*, 1942, 27, 1249—1255).—The e.c.g. findings during and after epileptic seizures show that cardiovascular changes occur following the seizures, and that these changes are part of circulatory changes throughout the body. The changes during and after convulsive seizures from excitant drugs are the same as those due to epilepsy. C. J. C. B.

Tachycardia in newborn. H. Tarnower and B. Lattin (*N.Y. Sta. J. Med.*, 1942, 42, 805—809).—A cardiac irregularity during the last month of foetal life persisted after birth, when an e.c.g. showed it to be due to auricular flutter with 2:1 and 4:1 block. 2 minims of digitalis 4-hourly by mouth had no effect but intramuscular injection of $\frac{1}{2}$ cat unit of digitalis on the 3rd day arrested the condition. The same treatment was successful in an attack of atrioventricular nodal tachycardia in another child aged 10 days. Both children subsequently developed normally. E. M. J.

Hypothesis of production of T wave in electrocardiogram based on electrokinetic phenomena. J. R. Miller and R. F. Dent (*J. Lab. clin. Med.*, 1943, 28, 168—173).—The T wave is due to an electrokinetic cause. The structure of the heart with its capillary bed is such that contraction could produce streaming potentials of the order of magnitude of the T wave. Pressure perfusion of the heart in dogs showed this to be possible and constriction of the unresponsive heart also produced this effect. C. J. C. B.

Electrocardiographic changes in old age. T. T. Fox, J. Klements, and E. E. Mandel (*Ann. int. Med.*, 1942, 17, 236—246).—Of a total of 300 ambulatory inmates of a home for the aged, 44 belonged to the 7th, 167 to the 8th, 83 to the 9th, and 6 to the 10th decade. All had evidence of peripheral arteriosclerosis and all but 3 fluoroscopic evidence of sclerosis of the aorta. Enlargement of the heart was found in 62%. 23% had normal, 32% had increased systolic, and 45% had increased systolic and diastolic blood pressure. 100 e.c.g. equally distributed between those with normal and enlarged hearts were normal. The relation between subjects with enlarged and those with normal hearts showing abnormal e.c.g. was 2:1; 68% of those with normal and 78% of those with abnormal e.c.g. had hypertension. There were 40 subjects with normal blood pressure and no cardiac enlargement; 55% showed abnormal e.c.g. The incidence of abnormal e.c.g. and of cardiac enlargement increases with age. A. S.

Influence of atropine on complete heart block. R. A. Miller (*Edinb. Med. J.*, 1942, 49, 757—765).—In 4 cases of transient or intermittent complete auriculo-ventricular block (3 of which were induced by digitalis) toxic doses of atropine produced normal sinus rhythm but failed to do so in a 5th which reverted spontaneously. The action depends on extent and severity of lesion and is greatly modified by digitalis. The manner of reversion was studied closely in one case. (9 e.c.g.) H. S.

Anæsthetic management of patients with hyperactive carotid sinus reflex. E. A. Rovenstine and S. C. Cullen (*Surgery*, 1939, 6, 167—176).—Digitalis, anæsthetic gases, certain barbiturates, and avertin have sensitising action on carotid sinus reflex as do morphine and ether in light anæsthesia. Recommended anæsthesia is morphine followed by cyclopropane. A case of periarterial sympathectomy of the carotid bifurcation is described with 2 other illustrative cases. P. C. W.

Abnormalities of amount of circulation (hyper- and hypo-kinemia) and their relation to neurocirculatory asthenia and kindred diagnoses. I. Starr (*Amer. J. med. Sci.*, 1942, 204, 573—580).—A lecture. C. J. C. B.

Respiration as factor in circulation of blood. W. D. Reid (*Ann. int. Med.*, 1942, 17, 206—211). A. S.

Blood pressure [regulation]. F. M. Findlay (*West. J. Surg. Gynec. Obstet.*, 1939, 47, 31—41).—A review. P. C. W.

Reactivity of intact blood vessels of fingers and toes to sensory stimuli in normal resting adults, in patients with hypertension, and in senile subjects. G. E. Bugh, A. E. Cohn, and C. Neumann (*J. clin. Invest.*, 1942, 21, 655—664).—The mean reaction times in the tips of the fingers were 3.12 sec. in normals, 3.86 in senile persons, 2.94 in hypertensive patients. In the tips of the toes the results

were similar. The stimuli used were diffuse light, heat, cold, pin-prick, sudden loud noise (pistol-shot), and electric shock. No correlation was found, provided a reaction to the stimulus occurred, between the reaction time and the state of the vascular bed of the part. C. J. C. B.

Sensitivity of smallest cutaneous blood vessels; quantitative responses to graded mechanical stimulation and to local ischaemia in arterial hypertension, arteriosclerosis, and certain allied disorders. J. R. DiPalma and F. I. Foster (*J. clin. Invest.*, 1942, 21, 675—683).—In 50 patients with arterial hypertension the responses of the small dermal vessels were normal. Of 11 patients with malignant hypertension, 10 had diminished small blood vessels responses. In 5 the small dermal vessels did not respond by reactive hyperæmia to local ischaemia. In 13 patients with hypertension complicated by a nerve lesion, ranging from a cerebral vascular accident to Parkinson's disease, the small cutaneous vessels were up to 18 times more sensitive than in the normal or hypertensive groups. C. J. C. B.

Influence of character of examining room on peripheral blood vessels of normal, hypertensive, and senile subjects. C. Neumann, A. E. Cohn, and G. E. Bugh (*J. clin. Invest.*, 1942, 21, 651—654).—Plethysmographic records of the tips of the fingers varied in the same patient examined in the laboratory and in a bedroom. It was very common for hypertensive subjects to exhibit small pulse waves in the laboratory and large ones when the room was made pleasant. C. J. C. B.

Capillary blood pressure in man. Direct measurements in digits during induced vasoconstriction. L. W. Eichna and R. W. Wilkins (*J. clin. Invest.*, 1942, 21, 697—709).—In the normal-sized digital capillaries of healthy subjects or of hypertensive patients, reflex vasoconstriction decreased capillary blood pressure by 5—33%; reflex vasodilation + local vasodilation produced by histamine failed to prevent this fall. In the abnormally large digital capillaries of patients with Raynaud's disease and scleroderma, reflex or adrenaline vasoconstriction were usually accompanied by decreases in capillary blood pressure. C. J. C. B.

Capillary blood pressure in man. Direct measurements in digits of normal and hypertensive subjects during vasoconstriction and vasodilatation variously induced. L. W. Eichna and J. Bordley (*J. clin. Invest.*, 1942, 21, 711—729).—Digital capillary blood pressure was qualitatively and quantitatively similar in normal and hypertensive subjects. Reflex vasoconstriction, reactive hyperæmia, reflex vasodilation, and variations in skin temp. between 27° and 35° produced only small changes in pressure; only during increases in local venous pressure did the pressure consistently rise. During vasodilation (reflex or from local histamine) there was a greater increase in pressure in the venous limb than elsewhere. No correlation existed between digital capillary blood pressure and arterial pressure, except perhaps during histamine hyperæmia; during vasodilation induced by locally injected histamine (but not in other ways), the capillary pressure of hypertensive subjects exceeded that in normal subjects. In the digits histamine relaxed, to some extent, the increased vascular resistance of hypertension, whereas reactive hyperæmia and reflex vasodilation did not. C. J. C. B.

Capillary blood pressure in man. Direct measurements in digits during arterial hypertension induced by paredrinol sulphate. L. W. Eichna (*J. clin. Invest.*, 1942, 21, 731—734).—During the hypertension induced by paredrinol in subjects with normal arterial pressures, the digital capillary blood pressure remained within normal limits, whether the capillaries had intact innervation or after preganglionic sympathectomy. C. J. C. B.

Permeability of capillaries as factor determining degree of hormonal activity.—See A., 1943, III, 169.

Intravenous and intra-arterial administration of fluids in traumatic shock produced experimentally. D. B. Kendrick (*Surgery*, 1939, 6, 520—523).—Shock was produced in dogs by exposure and manipulation of the intestines under ether or nembutal anaesthesia; symptoms took longer to develop in the latter case (13 hr. as against 4 hr.). In both series intravenous injection of 5% glucose at the time of the onset of symptoms prolonged the survival time of the dogs more than intra-arterial injection. P. C. W.

Spontaneous rupture of pulmonary artery. C. J. Longland (*J. Path. Bact.*, 1943, 54, 103—105).—A case report. The thickness of the wall at the site of rupture was less than 2/3 normal. The wall thinned out gradually as the rupture was approached, without sudden variation; the deficit fell most heavily on the media. C. J. C. B.

Periarteritis nodosa. L. A. Baker (*Ann. int. Med.*, 1942, 17, 223—235).—2 cases were observed. One patient received large amounts of sulphanilamide and vitamin-C without effect. A. S.

Intermittent claudication; treatment with insulin-free deproteinized pancreatic extract (Depropanex). T. J. Fetherree and C. Hurst (*Ann. int. Med.*, 1942, 17, 325—332).—“Depropanex” is a colourless saline solution of a protein-free nitrogenous fraction obtained from an acid-alcohol extract of beef pancreas. It does not contain

histamine or acetylcholine. It contains 2.5% of solids, and its pH is 6.5–6.88. 9 patients suffering from thrombo-angiitis obliterans and 6 with arteriosclerosis obliterans were treated with intramuscular injections every alternate day (4–10 injections). 7 patients with thromboangiitis were improved, as shown on a standard exercise test. The cases with arteriosclerosis obliterans were not improved. There were no consistent changes in blood pressure, heart rate, or skin temp. A. S.

Calcereous aortic stenosis in case of dextrocardia with situs inversus. G. A. Abbott and H. I. Russek (*Amer. J. med. Sci.*, 1942, **204**, 516–521).—A case report. C. J. C. B.

Surgical exploration and closure of patent ductus arteriosus. R. E. Gross, P. Emerson, and H. Green (*Surgery*, 1939, **6**, 201–205).—Report of a second successful case. P. C. W.

Muscle flap repair of perforations in larger arteries of dog. R. M. Isenberger and M. C. Carroll (*Surgery*, 1939, **6**, 265–277).—Incisions in the femoral or carotid arteries of dogs were closed by apposition of living muscle flaps which were held in position by hand for 1–10 min., after which the full blood stream may be allowed to pass through the artery. There is no leakage and rapid restoration of normal function. P. C. W.

Primary tuberculous peripheral vascular disease. T. Thieme and W. G. Maddock (*Surgery*, 1939, **6**, 604–609).—A case is described. P. C. W.

Pulmonary embolism. G. de Takats, W. C. Beck, G. K. Fenn, E. F. Roth, and C. Schweizer (*Surgery*, 1939, **6**, 339–367).—The terminal vascular bed of the lungs was plugged in rabbits by the injection of starch suspensions into the ear vein; the treatment was rapidly fatal, death being preceded by dyspnoea, cyanosis, and convulsions. Such cases of peripheral, precapillary embolism were not protected by atropine injections (which inhibited the dyspnoea) but there was 100% survival when O₂ was administered by tracheal intubation; doubling the dose of injected starch suspension produced death in spite of O₂. Bronchial dilators (adrenaline, amyl nitrite, NaNO₂, and papaverine) had no effect on the mortality. Massive obstruction of the main pulmonary artery was produced in dogs by injections of a suspension of FeCl₃, NaCl, or BaSO₄. Death was preceded by syncope, pallor, and fall in blood pressure. Atropine and papaverine protected some of these dogs from death. E.g. demonstrate a serious interference with coronary flow. Clinical applications of these findings are discussed. In a series of 100 cases only 13 survived; of the 87 fatal cases less than 10% died within 10 min. so that there was time for emergency measures. Atropine and papaverine are recommended in treatment of massive embolism to counteract the autonomic reflexes originating in the affected lung; O₂ is recommended in peripheral embolism in which cyanosis is predominant. P. C. W.

Venous mesenteric occlusion. J. K. Donaldson and E. B. Sive (*Surgery*, 1939, **6**, 80–90).—Complete venous occlusion was established in 10–40-in. lengths of the small gut in 47 dogs. No treatment was given and the mortality varied from 45 to 94% according to the length of gut involved; survival may be as long as 12–16 days before death. The relation of the findings to clinical conditions is discussed. P. C. W.

Varicose veins in pregnancy. A. M. McCausland (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 81–84).—The Trendelenberg method for determining the direction of venous flow and condition of the valves, and the methods of treatment, are described. Of 150 cases only 4 had varicose veins before their 1st pregnancy, and there was a subnormal % of spontaneous abortions. It is suggested that low concn. of oestrogens and relatively high progesterone concn. are causative factors. P. C. W.

Thrombophlebitis migrans. V. J. Birnberg and A. E. Hansen (*J. Pediat.*, 1942, **21**, 775–786).—A review with report of a case. C. J. C. B.

Atherosclerosis of main renal arteries in essential hypertension. G. O. Richardson (*J. Path. Bact.*, 1943, **54**, 33–39).—Of 32 cases of essential hypertension examined at autopsy 25 showed atherosclerotic plaques in one or both main renal arteries, with varying grades of apparent stenosis. Examination of 113 non-hypertensive controls showed plaques in 8 cases. In only 3 of these were the lesions of comparable severity to those seen in essential hypertension. It is suggested that atheromatous plaques may be capable of producing renal ischaemia and consequent hypertension analogous to experimental hypertension. (5 photomicrographs.) C. J. C. B.

Portal system thrombosis occurring in portal hypertension. N. E. Reich (*Ann. int. Med.*, 1942, **17**, 270–294).—10 cases of portal hypertension syndrome with portal venous system thrombosis verified by autopsy or at operation are reported. The spleen was enlarged in all but 3 of the cases although it could be palpated in only 1 patient who suffered from Banti's syndrome. Cirrhosis of the liver was found in all cases. There was only 1 case without ascites. The causation and symptoms of the condition are discussed. A. S.

Effects on renal resistance to blood flow of renin, angiotonin, pitressin, and atropine, hypertension, and toxæmia of pregnancy. H. Lamport (*J. clin. Invest.*, 1942, **21**, 685–694).—Pitressin caused no consistent change in glomerular intra-capillary pressure, total effective renal arteriolar resistance, or in the afferent-to-efferent arteriolar resistance ratio in unanæsthetised dogs. Atropine added to pitressin increased total effective arteriolar renal resistance, afferent arteriolar constriction predominating. Renin infused into the dogs increased glomerular intra-capillary pressure and total arteriolar resistance. Angiotonin acted like renin. In a human subject, angiotonin constricted both sets of arterioles, afferent constriction predominating. Afferent arteriolar constriction outweighed efferent constriction more than is normal in all of the 17 cases of essential hypertension studied. Resistance of the afferent arterioles may vary with blood pressure changes to preserve renal function. C. J. C. B.

Experimental production of hypertension. F. M. Findlay (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 94–97).—A review of the various methods for producing hypertension in experimental animals. P. C. W.

Hypertension due to renal embolism. A. M. Fishberg (*J. Amer. Med. Assoc.*, 1942, **119**, 551–553).—5 cases are reported. C. A. K.

VII.—RESPIRATION AND BLOOD GASES.

Normal human arterial O₂ tension. S. T. Cullen and F. V. Cork (*Amer. J. Physiol.*, 1942, **137**, 238–241).—Data on normal human arterial blood samples indicate that the average O₂ saturation is 94.5%, and the average O₂ tension is 72 mm. Hg. M. W. G.

Onset of respiration at birth. J. Barcroft (*Lancet*, 1942, **243**, 117–121).—A lecture. C. A. K.

Death from asthma. W. T. Vaughan and W. R. Graham (*J. Amer. Med. Assoc.*, 1942, **119**, 556–557).—7 cases are reported. Opiates are contraindicated in severe asthma since they depress the respiratory centres and may increase bronchospasm. C. A. K.

Gaseous metabolism in some *Ornithodoros* species. I. V. Koshantshikov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **32**, 515–518).—Metabolism was studied in hungry and fed specimens of males and females of the species *O. papillipes* and *O. lahorensis*. In both, the respiration was greater in hungry females than in fed ones and vice versa in males. The effect of temp. was measured; in general the intensity of respiration increased with increased temp. but in all cases there was a dip in the curve with lowered respiration at some temp. (15–25°) which varied in the different groups. The R.Q. was higher in females than in males, indicating relatively high carbohydrate metabolism. With increasing temp., the R.Q. tended to fall. P. C. W.

VIII.—MUSCLE.

Contraction potentials in man during reading. E. Jacobson and F. L. Kraft (*Amer. J. Physiol.*, 1942, **137**, 1–5).—A new method of measuring muscle potentials (p.d. in electrodes in muscle) plotting their vals. against time is demonstrated. Direct electrical measurements are made of muscular contraction (tonus) in man in the right quadriceps femoris in subjects engaged in silent reading under controlled conditions. M. G. W.

Tocopherols in treatment of fibrositis. C. L. Steinberg (*N.Y. Sta. J. Med.*, 1942, **42**, 773–777).—"Tocopherex" (a mixture of natural α -, β -, and γ -tocopherols obtained from cottonseed and soya-bean oils and with an antisterility equiv. of 60%) was given in 3 daily doses of 0.2 c.c. in 36 cases, causing marked improvement in the 20 cases of primary fibrositis, and 3 of 4 cases of secondary fibrositis due to Marie-Strümpell disease of the spine. It was tolerated better than equiv. doses of wheat-germ oil. E. M. J.

Oxygen consumption and creatine and chloride content of muscles from vitamin-E-deficient animals as influenced by feeding α -tocopherol. O. B. Houchin and H. A. Mattill (*J. Biol. Chem.*, 1942, **146**, 301–307).—Dystrophic muscles from vitamin-E-deficient animals have a higher O₂ consumption and Cl' content and a lower creatine content compared with normal muscle. Dystrophic hamster muscle and muscle from paralysed nursing rats exhibit an increase in O₂ consumption 250 and 160%, respectively, above normal, this val. increasing with the severity of the dystrophy. The creatine content shows the max. decrease in slowly developing, severe dystrophy. The O₂ consumption of the dystrophic hamster muscle is reduced to normal by administration of α -tocopherol but the Cl' content is high after 48 hr. Oral administration of α -tocopherol acetate lowers the high O₂ consumption in rabbits in 10 hr. but has no effect on the creatine or Cl'. H. G. R.

Effect of parenteral administration of α -tocopherol phosphate on metabolic processes in dystrophic muscle. O. B. Houchin and H. A. Mattill (*J. Biol. Chem.*, 1942, **146**, 309–312).—Parenteral administration of α -tocopherol phosphate reduces the O₂ consumption of dystrophic rabbit muscle by 34% in 1 hr. and by 49% in 4 hr. (i.e.,

to approx. normal vals.). The Cl' content remains high but there is a sharp decline in the creatine content in the first 2 hr. followed by a slight increase at 4 hr., the val. being far below the initial, already low, dystrophic levels. The acetate has little effect on normal muscle, causing only a slight increase in O₂ consumption after 4–6 hr. H. G. R.

Effect *in vitro* of α -tocopherol and its phosphate on oxidation in muscle tissue. O. B. Houchin (*J. Biol. Chem.*, 1942, 146, 313–321).—The high O₂ consumption of dystrophic rabbit muscle is reduced by 40% on the addition of α -tocopherol phosphate to the medium; it is without effect on normal muscle or on muscle that has been immersed in boiling water for 3 min., which reduces the val. to zero. Results with α -tocopherol *in vitro* were not conclusive. The O₂ consumption for both normal and dystrophic muscle is reduced by mincing and homogenising to the same val. The succinic oxidase activity of dystrophic hamster muscle is above the normal to an extent approx. proportional to the degree of dystrophy, is sensitive to malonate, and is reduced by α -tocopherol phosphate to the same extent as is the O₂ consumption; α -tocopherol, either alone or with deoxycholic acid, is without effect. H. G. R.

Electromyograms in tetanus. A. L. Watkins (*J. Amer. Med. Assoc.*, 1942, 119, 261–262).—Case report. C. A. K.

Influence of methyltestosterone on muscular work and creatine metabolism in normal young men. L. T. Samuels, A. F. Henschel, and A. Keys (*J. Clin. Endocrinol.*, 1942, 2, 649–654).—50 mg. of methyltestosterone administered daily to 4 normal young men for 3–4 weeks did not affect their grip strength, or their fluid shift, blood-sugar, lactic or pyruvic acid produced during short intense exercise. The treatment did not affect basal metabolic rate or N output. During treatment there was a progressive increase in creatinuria and slight rise in blood-creatinine. Creatinine was unaffected. The changes disappeared after stopping treatment. P. C. W.

Effect of pregnancy on myasthenia gravis. H. R. Viets, R. S. Schwab, and M. A. B. Brazier (*J. Amer. Med. Assoc.*, 1942, 119, 236–242).—From observations in 8 cases it is shown that pregnancy usually has a favourable effect on patients with myasthenia gravis. C. A. K.

Acute paralytic myohæmoglobinuria in man. E. G. L. Bywaters and J. H. Dible (*J. Path. Bact.*, 1943, 54, 7–15).—There was loss of staining ability with other degenerative changes in striped muscle; there was a history of muscular weakness and the passage of "black" urine after severe exercise. The course of the final illness resembled that of acute nephritis. (8 photomicrographs.) C. J. C. B.

IX.—NERVOUS SYSTEM.

Staining myelin sheaths of optic nerve fibres with osmium tetroxide vapour.—See A., 1943, III, 158.

Characteristics of human Schwann cells *in vitro*.—See A., 1943, III, 157.

Relation between physical properties of electric currents and their electronarcotic action. A. Van Harreveld, M. S. Plesset, and C. A. G. Wiersma (*Amer. J. Physiol.*, 1942, 137, 39–46).—Effects of electrical currents applied to the brains of dogs with electrodes placed on the temples were studied. In addition to a type of electronarcosis which resembles chemical narcosis (Leduc, *Compt. rend.*, 1902, 135, 199), another unquiet type, characterised by righting reflexes and hyperkinesis, was observed. The quiet type is designated as narcotic, the unquiet type as the kinetic type of electronarcosis. Pulse as well as a.c. produces both types of electronarcosis, and which type appears depends for the most part on individual reaction. The relation between the pulse duration and the pulse strength necessary to produce the same depth of electronarcosis resembles closely the strength-duration curves of peripheral nerves. For a.c. the relation between frequency and current strength necessary to maintain the same depth of electronarcosis resembles the parametric curves obtained for peripheral nerves. The electronarcotic effect of d.c. is small compared with that of pulse or a.c.; electronarcosis is therefore due to the stimulating properties of the current applied. M. W. G.

Periodic phenomena in interaction of two neurones. G. Sacher (*Bull. Math. Biophysics*, 1942, 4, 77–81).—The periodic and resonant properties of a closed neurone circuit, consisting of one excitatory and one inhibitory neurone, are mathematically derived and applications to some visual and electrophysiological phenomena briefly discussed. F. O. H.

Apparatus and technique for measurement of vibratory threshold and of vibratory "adaptation" curve. C. D. Aring and W. O. Frohning (*J. Lab. clin. Med.*, 1943, 28, 204–207).—A modification of Laidlaw and Hamilton's apparatus (*Bull. Neurol. Inst. N.Y.*, 1937, 6, 494) is described. C. J. C. B.

Effect of visual and taste stimuli on muscular tonus in man.—See A., 1943, III, 167.

Metabolism of brain suspensions. II. Carbohydrate utilisation.—See A., 1943, III, 194.

Comparison of synthetic and natural belladonna alkaloid compounds in treatment of Parkinsonism. H. Vollmer (*N.Y. Sta. J. Med.*, 1942, 42, 1069–1071).—No difference in therapeutic val. was seen in 15 patients when treatment was changed from belladonna to rabellon although in some cases the latter seemed to be superior. E. M. J.

Moderate dosage atropine treatment of Parkinsonism. L. J. Doshay and T. R. Ford (*N.Y. Sta. J. Med.*, 1942, 42, 1060–1068).—112 cases of Parkinsonism were treated by 3 daily oral doses of 0.5% atropine sulphate increased slowly from 1 to 10 drops, each drop containing $\frac{1}{10}$ grain. Maintenance doses ranged from 5 to 10 drops 2–3 times daily and half that during the summer. Dryness of mouth and blurring of vision was seen in 80–90% of cases, and nausea and vomiting in 11%; there were no cases with severe reaction. Results were classed as much improved 26%, slightly improved 38%, unimproved 36%. E. M. J.

Occurrence of peripheral facial paralysis in hypertensive vascular disease. H. R. Merwarth (*Ann. int. Med.*, 1942, 17, 298–307).—16 cases of hypertensive peripheral facial paralysis are presented. In all cases there was a precipitate onset without preceding retro-aural pain or perversion of taste. The incidence is 3.7% of all cases of facial paralysis. A. S.

Cortical representation of macula lutea.—See A., 1943, III, 167.

Relationship of hypothalamus to large bowel.—See A., 1943, III, 178.

1916 Stanford Binet vocabulary test revised for rapid routine practice. M. B. Brody (*J. ment. Sci.*, 1941, 87, 88–95).—The revised test can be given in 3–8 min. Dementia can often be diagnosed from the performance coupled with the patient's behaviour during the test. G. D. G.

Psycho-biological approach to the acute anxiety attack. H. A. Palmer (*J. ment. Sci.*, 1941, 87, 208–229).—A discussion, with 11 case histories. G. D. G.

Tests of psychomotor efficiency in patients treated with metrazol. J. J. O'Connell and L. S. Penrose (*J. ment. Sci.*, 1941, 87, 183–191).—Reaction time, tapping rate, and strength of grip were measured before and after metrazol treatment. Psychomotor efficiency appears to be increased by metrazol therapy. G. D. G.

Curability of mental diseases by "shock" treatment. R. Freudenberg (*J. ment. Sci.*, 1941, 87, 529–544).—Factors favouring cure of schizophrenia are: acute onset, short duration of illness, pyknic or athletic build, cyclothymic temperament, tendency to remissions. Unfavourable factors are: insidious onset, long duration of illness, dysplastic or leptosomic build, schizothymic temperament, process symptoms. The proportion of favourable to unfavourable factors is a fairly reliable guide in predicting the outcome of the treatment. G. D. G.

Treatment of mental disorders by electrically induced convulsions. R. E. Hemphill and W. G. Walter (*J. ment. Sci.*, 1941, 87, 256–275).—The results with 75 cases of mental disorder were: recovered 20, improved 22, no change 33. The technique is described and the physiology discussed. G. D. G.

Schizophrenic brain metabolism during insulin shock treatment. J. Wortis and W. Goldfarb (*N.Y. Sta. J. Med.*, 1942, 42, 1053–1059).—The arteriovenous O₂ difference (brachial or femoral artery and internal jugular vein) of the schizophrenic did not differ from the normal before or after a course of insulin shocks. During insulin coma the O₂ difference was much reduced, most vals. being below 5 vol.-%, and its significance as regards cerebral metabolism during this stage is discussed. Arterial CO₂ content was elevated within 1 hr. after injection of insulin and returned to normal 30 min. after that of glucose. In cases developing a seizure there was a sharp rise prior to and a sharp fall after the convulsion in the hyperpneic phase. E. M. J.

Electrical convulsion therapy. R. E. Hemphill (*Lancet*, 1942, 243, 152–154).—Clinical results in 200 cases are discussed. 3 fractures were seen. C. A. K.

Spinal injuries in convulsion therapy. L. C. Cook and D. E. Sands (*J. ment. Sci.*, 1941, 87, 230–240).—Radiography showed vertebral fractures in 14.7% of 143 patients who had undergone cardiazol or triazol treatment, in 10.4% of 134 idiopathic epileptics, and 1.5% of 135 controls. Post-therapeutic fractures usually occur in mid-dorsal region, are usually symptomless, and of insufficient importance to preclude convulsion treatment. G. D. G.

Hypoglycæmia: oral and facial movements. W. Mayer-Gross (*J. ment. Sci.*, 1941, 87, 157–169).—Facial hyperkinesis was observed in 30 out of 31 patients undergoing insulin shock treatment. Sucking, eating, and sniffing movements occurred, with hypersensitiveness of the whole facial region. G. D. G.

Allergic factor in idiopathic epilepsy. D. C. Dewar (*J. ment. Sci.*, 1941, 87, 608–630).—There is a greater incidence of allergic mani-

festations in the personal and family histories of epileptics than of normal and psychotic subjects. After desensitisation of epileptics by sp. intramuscular injections, there was an improvement in the epileptic condition. G. D. G.

Schizophrenia in a hypogonad man. G. F. Sutherland and R. G. Hoskins (*J. Clin. Endocrinol.*, 1942, 2, 647—648).—A middle-aged eunuchoid patient recovered from a schizophrenic psychosis following treatment with methyltestosterone (10 mg. orally 1—3 times daily). The recovery has been maintained for 2 months by implanted testosterone. P. C. W.

Occurrence and significance of small vascular lesions in brain. F. A. Pickworth (*J. ment. Sci.*, 1941, 87, 50—76).—Small vascular lesions have been found in the brains of mental patients, but they probably also occur in many "mentally normal" persons. They result in limitation of the mind, inappropriate behaviour, impulsive action, and stereotypy. G. D. G.

Recent advances in aetiology and treatment of neurosyphilis. E. L. Hutton (*J. ment. Sci.*, 1941, 87, 1—49). G. D. G.

Comparison of direct diazo-reaction [for bilirubin] by photoelectric colorimeter, 3 test-tube method, and oxidation test in xanthochromic spinal fluid. G. Lepehne (*J. Lab. clin. Med.*, 1943, 28, 229—232).—The direct diazo-reaction for bilirubin was delayed or biphasic-delayed, and the oxidation test negative or diminished-delayed. The total protein content did not influence the type of the reaction. This bilirubin is of the same type as that in serum in hæmolytic jaundice and jaundice of the newborn. C. J. C. B.

Cisternal puncture. L. J. Alexander, E. C. Fox, and A. G. School (*Arch. Dermat. Syphilol.*, 1942, 46, 725—727).—A favourable report based on over 6000 punctures without serious upset. C. J. C. B.

X.—SENSE ORGANS.

Nutritional defects and eyes. B. Roncs (*Sight Saving Rev.*, 1942, 12, 178—181).—A general description of the part played by upsets in endocrine function, metabolic disturbances, and vitamin deficiencies in producing ocular lesions. K. T.

Action of new native anaesthetic drug lupicaine on eye. I. M. Nikitin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 32, 596—598).—Lupicaine (lupine *p*-aminobenzoate hydrochloride) is water-sol. up to 1% without pptn. Anaesthesia of the eye was attained in normal patients and in those with cataract by dropping lupicaine solutions (0.1—1%) on to the eye; anaesthesia lasted 5—38 min. Hyperæmia of the conjunctiva was produced by the higher concns. but was prevented by the addition of adrenaline. Lupicaine had no effect on pupil diameter, accommodation, or intra-orbital tension. In the absence of nictitation there was some desiccation and desquamation of the cornea; the diffusion of fluorescein from the conjunctival sac into the anterior chamber was accelerated by lupicaine. In rabbits toxic symptoms were produced by 2 mg. per kg. injected intravenously and by 15—45 mg. per kg. when given subcutaneously. Fatal doses were 3 mg. per kg. and 60 mg. per kg. respectively. 249 ophthalmological operations have been successfully carried out using the new local anaesthetic and are summarised. A solution was stable for 9 months in spite of regular sterilisation by boiling. P. C. W.

Voluntary convergence. W. R. Mathewson (*Brit. J. Ophthalm.*, 1943, 27, 34—35).—Experience with a series of army officers transferred in middle age to clerical work confirmed the val. of convergence exercises against prisms base out. Wearing prisms of increasing strength, the patient was required to maintain single vision while approaching a light from a distance, and while the frames were alternately raised and lowered; he also wore them at home for some days at a time. J. H. A.

Possible fallacy in use of cross-cylinder. F. A. Williamson-Noble (*Brit. J. Ophthalm.*, 1943, 27, 1—12).—By means of a series of photographs, the author shows that one factor influencing a patient's response to the cross-cylinder test for the amount of astigmatism is under- or over-correction of the spherical error. Thus an over-corr. hypermetrope or an under-corr. myope will tend to prefer the + axis horizontal, even in the absence of an astigmatic error, and vice versa. When astigmatism is present, the results depend on the size and shape of the "diffusion circle" formed on the retina; they are unreliable in compound astigmatism, but a good guide in the simple and especially in the mixed varieties. J. H. A.

Case of mustard gas keratitis under constant observation for twenty years. T. L. de Courcy (*Brit. J. Ophthalm.*, 1943, 27, 54—60).—The patient, a man now 62 years of age, was seen in 1922, four years after exposure to mustard gas. In 1925 he had his first attack of ulceration, the interval having been marked by rapid changes in refraction. These attacks recurred at varying intervals for the next 12 years, leaving scars which successively reduced visual acuity. Some of the early treatment is described as over-enthusiastic, and it is emphasised that any drugs used as drops must be prepared in much more dil. solutions than in ordinary keratitis. Up to 1937, the greatest benefit was derived from Locke's solution,

oily drops, and X-rays; since then, short-wave diathermy has prevented any further attacks of ulceration, and contact lenses have given him 6/9 vision in his better eye. J. H. A.

Third entity of primary symmetrical fatty corneal dystrophy. J. A. Conway and A. Loewenstein (*Brit. J. Ophthalm.*, 1943, 27, 49—54).—The authors describe the case of a woman of 35 whose corneæ were infiltrated throughout the whole thickness with small greyish-white deposits of fat. The periphery of each cornea shows a definite lipoidal arc, the centre being relatively clear. For 15 years she suffered from kidney disease, and she recently developed a thyroid swelling and slight exophthalmos. Biochemical investigation revealed albuminuria, raised blood-urea and -cholesterol, and low albumin/globulin ratio. It is suggested that the cause of the condition is a long-standing nephrotic lipæmia, and that the peripheral corneal tissue, which normally acts as a fat filter to protect the optically important centre, has become clogged and ceased to function. Alternatively, some endocrine disorder may have produced a failure of the oxidising powers of the cornea. J. H. A.

Relationship between monochromatic light and pupil diameter. Low-intensity visibility curve as measured by pupillary measurements. J. H. Wagman and J. E. Gullberg (*Amer. J. Physiol.*, 1942, 137, 769—778).—An infra-red photographic method for measuring pupil diameter under any condition of light adaptation is described. The human scotopic visibility curve, obtained by relating pupil diameter to intensity of monochromatic lights, has its max. at 510 mμ. It is suggested that the size of the pupil is controlled by nerve fibres activated by the rods and cones. P. G.

"Hole" at macula due to looking at sun. C. A. Pittar (*Brit. J. Ophthalm.*, 1943, 27, 36—38).—The case described is that of a naval A.A. gunner with right vision 2/60, who was found to have oedema and pigmentary disturbance at the macula, followed 8 months later by the appearance of a typical punched-out macular hole. There was no history of a blow on the eye, and the lesion was apparently due to watching enemy planes flying out of the sun. A small corneal nebula, the result of a spark in the eye, confused the picture. J. H. A.

Anomalies of colour vision. K. Dunlap and R. D. Loken (*Science*, 1942, 46, 251—252).—Criticisms of the Stilling and Ishihara chart tests for colour blindness. K. T.

Prevention of chronic otitis and deafness. W. S. Adams. E. Naylor-Strong. E. P. Fowler. J. A. Glover. J. N. Dobbie. W. M. Mollison. J. C. Hogg (*Proc. Roy. Soc. Med.*, 1943, 36, 129—136).—An extensive discussion on the prevention and treatment of otitis media with much valuable statistical data. Adams proposes better education of the public and practitioner in view of the necessity for early treatment. The importance of the condition of the nasopharynx and of X-rays for revealing sinus infection is stressed and the removal of tonsils and adenoids advised. Fowler discusses treatment with sulphonamides and Glover points out the importance of social conditions and environment. P. G.

Methods used for estimating percentage loss of hearing. H. A. Carter (*Laryngoscope*, 1942, 52, 879—890).—A crit. description of 11 different methods for estimating % hearing loss. K. T.

Hearing losses. S. L. Fox (*Dis. Eye, Ear, Nose, Throat*, 1942, 2, 322—336).—A description of the causes and methods of diagnosis, treatment, and prevention of all types of hearing loss, illustrated by typical audiograms. K. T.

Experimental observations on auditory masking. H. G. Kobrak, J. R. Lindsay, and H. B. Perlman (*Laryngoscope*, 1942, 52, 870—878).—The acoustic reflex contraction of the tensor tympani muscle in rabbits and the stapedius in man to a pure tone, both alone and in the presence of a masking tone or noise, was studied. A masking tone below the tensor threshold in rabbits had no effect on the reflex but a masking tone above the threshold produced additional tensor contraction. In man the masking tone may produce a dip in the hearing sensation curve without affecting the stapedius reflex. It is suggested, therefore, that the masking effect must originate either in the central nervous system above the level of the acoustic reflex or in a different part of the cochlea from that involved in the reflex. Since both the reflex contractions and the cochlea potentials are unaffected by a masking tone, it seems probable that the phenomenon of masking arises outside the peripheral sense organ. K. T.

Treatment of Ménière's syndrome. N. D. Fabricant (*Amer. J. med. Sci.*, 1942, 204, 598—601).—A review. C. J. C. B.

Histamine in Ménière's syndrome. M. Atkinson (*J. Amer. Med. Assoc.*, 1942, 119, 4—7).—Histamine is successful only in selected cases. C. A. K.

Taste differences in compounds having :N:C(S)· linking. C. Y. Hopkins (*Canad. J. Res.*, 1942, 20, B, 268—273).—A series of thion-mercapto-thiazolidines and -oxazolidines and a thionthiazoline were tasteless to some persons and very bitter to others; 3 keto-thiazolidines were tasteless to all subjects. This dual taste reaction appears to be due to the :N:C(S)· linking. See A., 1943, II, 108 for new compounds prepared. F. O. H.

Defects of smell after head injury. A. D. Leigh (*Lancet*, 1943, 244, 38—40).—1000 cases of head injury were examined of which 72 showed an impaired sense of smell. Test substances were coffee, camphor, eucalyptus, peppermint, and cloves. The cases are discussed and grouped from the point of view of recovery. P. G.

Vibratory sensibility. Quantitative study of its thresholds in nervous disorders. I. L. Fox and W. W. Klemperer (*Arch. Neurol. Psychiat.*, 1942, 48, 622—645).—66 cases were examined with a specially constructed pallesthesiometer providing variation in the amplitude of vibration. Section of the spino-thalamic tract had no effect on vibratory sensation. There was radiation of a vibratory stimulus below the level of anaesthesia in cases of complete transection of the spinal cord. Lesions of the posterior column affect vibratory sensation, but if the stimulus excites both cutaneous and deep receptors, transmission by multiple spinal pathways occurs. Subcortical lesions in the parietal region cause impairment of vibratory sensation. Vibratory sensation is considered to be a functional elaboration of touch, pressure, and position and not a sp. modality. P. G.

Intramedullary tractotomy. III. Studies on sensation. L. M. Weinberger and F. R. L. Grant (*Arch. Neurol. Psychiat.*, 1942, 48, 355—381).—On the basis of clinical findings in 18 cases of intramedullary tractotomy on the spinal Vth nerve it is concluded that there are taste fibres in the descending tract of this nerve, and that pain fibres from the mucous membrane of the mouth lie medially to those from the face. Fibres for pain and temp. have a separate course. Subtemporal and subtemporal section of the Vth nerve gives no guarantee of permanent anaesthesia. P. G.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Role of endocrines in anaphylaxis and allergy. L. Farmer (*Ann. int. Med.*, 1942, 17, 212—222).—The literature is reviewed and some clinical observations are recorded. A. S.

Fibrous dysplasia of bone with endocrine disorders and cutaneous pigmentation (Albright's disease).—See A., 1943, III, 154.

Thyroid disease in the southern negro. F. F. Boyce (*Surg. Gynec. Obstet.*, 1940, 70, 761—767).—An analysis of 952 cases. The mortality is twice that in whites. In the negro thyrotoxicosis arises on the basis of a previous simple goitre. The decrease in liver function in thyroid disease in negroes is much greater than in whites. P. C. W.

Medical aspects of treatment of toxic goitre. J. H. Means (*West. J. Surg. Obstet. Gynec.*, 1939, 47, 62—64).—The parts played by I, minerals and vitamins, digitalis, and irradiation in the treatment of thyrotoxicosis, and the medical prep. of the patient for operation, are discussed. P. C. W.

Massive adenomatous goitre successfully removed. C. E. Rea (*Surgery*, 1939, 6, 183—189).—A case. P. C. W.

Recurrent hyperthyroidism. R. B. Cattell and H. J. Perkin (*West. J. Surg. Obstet. Gynec.*, 1939, 47, 55—61).—Of 4956 patients with exophthalmic goitre treated by subtotal thyroidectomy, 2.4% were later operated on for persistent hyperthyroidism and 3.7% for recurrent hyperthyroidism. Blood-I is increased in cases of exophthalmic goitre with symptoms lasting less than 9 months; when the condition has lasted longer than this blood-I returns to normal. Pre- and post-operative blood-I levels were determined in 256 cases which were graded into 3 groups; group 1 with elevated blood-I levels pre-operative and normal levels post-operative showed 8.8% of transitory post-operative myxoedema and 0.6% of recurrent hyperthyroidism; group 2 with normal pre- and elevated post-operative blood-I levels showed 3.3% of transitory hypothyroidism and 19.6% of recurrent hyperthyroidism; group 3 with normal pre- and post-operative blood-I showed 4% of recurrent hyperthyroidism. It is concluded that group 1 should have a less radical operation and groups 2 and 3 a more radical one. P. C. W.

Thyrotoxicosis and menstruation. P. M. G. Russell and E. M. Dean (*Lancet*, 1942, 243, 66).—Studies in 139 cases of thyrotoxicosis showed that menstruation is often normal, but scanty periods leading to amenorrhoea are common, and menorrhagia is very rare. C. A. K.

Serum-magnesium in thyroid disease. R. F. Dine and P. H. Lavietes (*J. clin. Invest.*, 1942, 21, 781—785).—In 14 normal subjects, the non-ultrafilterable, or bound, fraction of serum-Mg was 17—31% of the total. In each of 9 proved untreated cases of hyperthyroidism, bound Mg exceeded these vals., and ultrafilterable Mg was subnormal. In 4 patients with myxoedema, all the serum-Mg was ultrafilterable. After treatment, bound and ultrafilterable Mg return to normal. In 8 patients with hypermetabolism without hyperthyroidism, bound Mg was normal. C. J. C. B.

Adenomatous goitre with hyperthyroidism. S. F. Haines (*West. J. Surg. Obstet. Gynec.*, 1939, 47, 155—161).—A review of the literature and of 842 consecutive cases of hyperthyroidism. Adenomatous goitre with hyperthyroidism is considered a separate condition from exophthalmic goitre. P. C. W.

Seasonal conditions and effects of low temperatures on thyroid glands of Amphibia. I. Adult *Triturus viridescens*. A. H. Morgan and C. H. Fales (*J. Morph.*, 1942, 71, 357—389). J. D. B.

Effects of thyroidectomy on skull of domestic rabbit.—See A., 1943, III, 153.

Carcinoma of parathyroid gland. K. A. Meyer, P. A. Rosi, and A. B. Ragins (*Surgery*, 1939, 6, 190—200).—A case is reported with typical hyperparathyroid symptoms. Removal of the tumour alleviated joint pain and X-ray examination of the bones showed recalcification of fibrocystic areas and later decalcification of some long bones. The high serum-Ca, low blood-P, and slightly raised phosphatase persisted. P. C. W.

Fœtal rat parathyroids as affected by changes in maternal serum-calcium and -phosphorus through parathyroidectomy and dietary control. J. G. Sinclair (*J. Nutrition*, 1942, 23, 141—152).—The proportional wt. of fœtal parathyroids at birth (average 2.8 mg. per kg. body wt.) is approx. double that in adults, varying from 2.14 to 3.4 mg. per kg. according to diet. Maternal parathyroidectomy induced variations from 2.6 to 10.34 mg. per kg. Variations in the wt. of fœtal parathyroids at birth resulting from maternal diet are associated with the level of serum-Ca and -P in the mother or with stimulation of secretion of parathyroid hormone. A diet balanced in respect of Ca and P and regarded as optimum for reproduction did not prevent parathyroid enlargement during pregnancy, with cumulative effects in a second pregnancy. A similar diet containing more Ca and less P suppressed maternal and fœtal parathyroids in normal but gave improved results in parathyroidectomised animals. Al acetate, added to a normal diet, had a hypercalcaemic effect. Fœtal parathyroids are depressed by high maternal Ca or excessive hormone from enlarged maternal glands but are stimulated by high serum-P or low -Ca in the mother. The fœtal parathyroid does not protect the mother from effects of parathyroidectomy. The fœtal hormone is not lost by dilution but protects fœtal serum-Ca levels. A. G. P.

Keten acetylation of parathyroid hormone. T. R. Wood and W. F. Ross (*J. Biol. Chem.*, 1943, 146, 59—62).—Acetylation of the hormone is accompanied by complete inactivation. Since the activity is not restored by liberation of phenolic OH by alkaline hydrolysis it is probably dependent on the presence of free NH₂ groups. H. G. R.

[Potentiation of] adrenaline inhibition of isolated guinea-pig intestine [by flavones]. J. Lavollay (*Compt. rend.*, 1942, 214, 287—290).—The inhibitory effect of adrenaline is prolonged by addition of flavone derivatives, which inhibit oxidation. J. E. P.

Adrenals and serum-protein levels in cat. L. Leven, J. H. Leatham, and R. C. Crafts (*Amer. J. Physiol.*, 1942, 136, 776—782).—Increase in the concn. of total serum-protein after adrenalectomy is due to increased globulin. Albumin concn., in spite of hæmoconcn., remains normal or decreases. Restoration of adrenal-ectomised cats by deoxycorticosterone acetate or adrenal cortical extract produces hæmodilution and decreases in globulin and total serum-protein, while serum-albumin increases. In the cat the adrenal cortex may thus control the metabolism of serum-albumin, but not globulin. T. F. D.

Adrenal steroids in circulatory failure. W. W. Swingle, J. W. Remington, V. A. Drill, and W. Kleinberg (*Amer. J. Physiol.*, 1942, 136, 567—576).—Both corticosterone (C) and 17-hydroxy-11-dehydrocorticosterone (H) unlike deoxycorticosterone (D) are effective in protecting the circulation of the adrenalectomised dog against shock-inducing procedures such as intestinal stripping and removal of both adrenal glands at a single-stage operation. In this action (C) is inferior to (H); it is also effective after muscle trauma and hæmorrhage where (D) also shows activity. The action of (H) in hæmorrhage is different from and inferior to that of (D), but the effect of the latter is greatly reduced or even lost unless small amounts of carbohydrate active steroids (e.g., C and H) are present. Treatment with (H) is ineffective in preventing circulatory collapse following muscle injury unless the animal has been receiving maintenance doses of cortical extract previous to trauma. T. F. D.

Prophylactic action of deoxycorticosterone in shock due to massive venous thrombosis. L. N. Katz, S. T. Killian, R. Asher, and S. Perlov (*Amer. J. Physiol.*, 1942, 137, 79—87).—Experimental massive venous occlusion of the leg (in dogs) causes a fall in blood pressure, rise in hæmatocrit, and increased leg size to 2.3—6.9% of body wt. Death (13 out of 15 animals) results in 3½—21 hr. Deoxycorticosterone administration over a period of 24 hr. previous to and during first 24 hr. after onset of occlusion prevents development of shock and 8 out of 11 animals survived, despite loss of fluid comparable to that of controls. When the sterone is not given sufficiently early before onset of occlusion, shock and mortality are similar to those of untreated animals, but death is delayed and fluid loss greater. The sterone diminishes loss of fluid into the occluded limb due to some action on the oncotic pressure of the blood. M. W. G.

Use of Cutler-Power-Wilder adrenal cortex function test in Addison's and other diseases. A. Saurer (*Schweiz. med. Wschr.*, 1942, **72**, 357—361; 394—398).—The Cutler-Power-Wilder test of adrenal cortex function was studied in 50 cases. The NaCl concn. in 4-hr. specimens of urine of normals and in various diseases is 70—160 mg.-% (42—96 mg.-% Cl) on the 3rd day. The urinary vals. in 3 Addisonians were 456, 262, and 737 mg.-% NaCl (274, 157, 442 mg.-% Cl). Well compensated Addison patients gave normal vals. in the Cutler test. Abnormal vals. were also found in conditions of water retention of various causations. The Cutler test is not a sp. adrenal cortex function test but tests the general water-mineral metabolism. A. S.

Adrenalectomy and fat absorption.—See A., 1943, III, 177.

Blood-sugar levels and carbohydrate combustion in normal men [action of adrenaline].—See A., 1943, III, 193.

Hyperinsulinism due to tumour of pancreas. R. D. Forbes, C. F. Davidson, and J. Duncan (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 76—80).—A case is described with hypoglycæmia and complete recovery following removal of a tumour from the pancreas consisting of tissue of apparent islet origin. P. C. W.

Production of insulin resistance in depancreatized dogs. J. A. Green, A. David, and G. Johnston (*Amer. J. Physiol.*, 1942, **136**, 595—599).—Insulin resistance of variable degree was produced in chronic experiments in depancreatized dogs by injections of typhoid vaccine, typhoid *H* antigen, skimmed milk, *B. coli* cultures, and turpentine. Small pieces of remaining pancreas, the presence of fatty liver, and filling the liver with acacia are not factors in insulin resistance. T. F. D.

Experimental modification of water and salt output in patients with diabetes insipidus.—See A., 1943, III, 180.

Inheritance of diabetes insipidus.—See A., 1943, III, 156.

New crystalline compounds of insulin. D. A. Scott and A. M. Fisher (*Trans. Roy. Soc. Canada*, 1942, [iii], **36**, V, 45—48).—Zn-insulin in water with excess of *n*- and *iso*-amylamine and piperidine yield cryst. compounds which retain all the activity (to mice) of the insulin, but lose 20, 35, and 25% respectively of their activity when dried over H_2SO_4 , after which they contain respectively 14.1, 14.2, and 14.3% of N. They undergo no apparent change when heated at 110° for 1 hr. Similar compounds are obtained from amorphous insulin free from Zn. A. Li.

Insulin allergy.—See A., 1943, III, 215.

Sarcoidosis (Boeck-Besnier-Schaumann disease) as cause of pituitary syndrome. E. J. Kraus (*J. Lab. clin. Med.*, 1943, **28**, 140—146).—A case report. (4 photomicrographs.) C. J. C. B.

Hypophysis and surgery. J. Rossier (*Schweiz. med. Wschr.*, 1942, **72**, 380—385).—Historical survey of the development of hypophyseal surgery. A. S.

Pituitary type of myxœdema. J. Lerman and H. D. Stebbins (*J. Amer. Med. Assoc.*, 1942, **119**, 391—395).—A case of pituitary myxœdema (form of Simmonds' disease) was reported previously by Means, Hertz, and Lerman (*Trans. Assoc. Amer. Physicians*, 1940, **55**, 32) and the diagnosis was subsequently confirmed by laboratory studies which showed gonadal and adrenocortical hypofunction and absence of gonadotropic and diabetogenic substances of the anterior pituitary. Another similar but fatal case is reported. Autopsy showed atrophy of pituitary, thyroid, and adrenal glands. C. A. K.

Removal of anterior pituitary and renal function. H. L. White, P. Heinbecker, and D. Rolf (*Amer. J. Physiol.*, 1942, **136**, 584—591).—Decreases in diodrast and inulin plasma clearances, attributed to decrease in renal blood flow, and a decrease in max. tubular output of diodrast, attributed not only to a decrease in renal blood flow but also to a depression of the functional capacity of the tubules to transport diodrast at high plasma levels, both occur following loss of anterior lobe but not of pars nervosa of hypophysis, in dogs. These changes are unaccompanied by diminution of blood vol., based on original wt., or by glomerular intermittence. F. T. D.

Pituitary gland in relation to metabolism. J. B. Collip (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 1—3).—Resumé of evidence concerning the sp. metabolic principle of the pituitary. P. C. W.

Influence of pituitary in thyroid disease. W. O. Thompson, P. K. Thompson, S. G. Taylor, and L. F. N. Dickie (*West. J. Surg. Gynec. Obstet.*, 1939, **47**, 4—9).—12 patients with myxœdema and basal metabolic rates of —31% to —47% failed to respond to injections of pituitary thyrotropin. Half of 94 patients with all degrees of thyroid function showed rises of 10—53% in basal metabolic rate when similarly injected; the rise was greater in cases with lower basal metabolic rate than in those with hyperthyroidism. 19 patients with rates of —29% to +8% showed rises as high as 36% when injected with thyrotropin and developed typical symptoms of hyperthyroidism. P. C. W.

Microhistometric method applied to thyrotropic hormone assay. P. Starr, R. W. Rawson, R. E. Smalley, E. Doty, and H. Patton (*West.*

J. Surg. Obstet. Gynec., 1939, **47**, 65—75).—A method of assay is described based on the measurement of the height of an average cell from 200 acini in an immature female guinea-pig injected with the test substance in 3 daily subcutaneous injections; the mode, standard deviation, and probable error of the mean are determined and a frequency curve is constructed. The mode for untreated guinea-pigs is 3.75 μ . and under thyrotropin treatment this increases to 8—9 μ . but no further increase is possible however high the dose. Acetone ppts. from 50-ml. urine samples were tested and showed some thyrotropin present in the urine for some individuals with normal basal metabolic rates; no thyrotropin or increased amounts in urine from patients with low basal metabolic rates; unusually large amounts in urine from 3 totally thyroidectomised patients; and none or little in urine from hyperthyroid patients even when exophthalmos was present. P. C. W.

Rate of elimination of thyrotropic hormone. P. A. Wunder (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **34**, 235—236).—Thyrotropin is rapidly eliminated from the blood. When the serum from 3—4 chicks intravenously injected with thyrotropic extract from 15—20 mg. of acetone-dried beef pituitary was collected 1 hr. after the injection and injected into a 3-day-old chick the thyroid response of the latter was very much less than that produced by the extract from 15 mg. of the same pituitary powder. P. C. W.

Relation of adeno- and neuro-hypophysis to insulin sensitivity and sugar tolerance in dogs. P. Heinbecker, H. L. White, and D. Rolf (*Amer. J. Physiol.*, 1942, **136**, 592—594).—The fasting blood-sugar levels of simple (removal of anterior and posterior lobes) and total (removal of the entire adeno- and neuro-hypophysis including the median eminence) hypophysectomised dogs are lower than normal. Insulin sensitivity in such dogs is due entirely to loss of adeno-hypophysis. Loss of adeno- or neuro-hypophysis has no effect on sugar tolerance as demonstrated by blood-sugar response to orally or intravenously administered glucose, although there results an exaggeration of the degree of hypoglycæmia which even normally may follow hyperglycæmia. T. F. D.

Stimulation of gonadotropic anterior pituitary secretion. M. Julesz (*Schweiz. med. Wschr.*, 1942, **72**, 541—544).—10 women and 4 men were kept on a ketogenic diet. Injection of urine into immature mice produced maturation of Graafian follicles. The injected urine did not contain acetoacetic acid or acetone. It is thought that ketonæmia increases the formation of follicle-stimulating hormone in the anterior pituitary. A. S.

Interstitial cell stimulation and luteinisation under the influence of male and female hypophyses. C. A. Pfeiffer (*Yale J. Biol. Med.*, 1942, **14**, 619—630).—Luteinisation of the follicles did not occur, but the interstitial cells developed well, in ovarian grafts in male rats and in the ovaries of const. œstrus female rats, obtained by implanting testis at birth. Injection of luteinising hormone (LH) in const. œstrus females caused luteinisation of all follicles in the proper stage of development. The level of endogenous LH could not be raised sufficiently to produce luteinisation by injections of œstrogen. In testis grafts in female rats the interstitial cells grew normally so that they develop as well in a low-LH environment as in the presence of sufficient LH to cause luteinisation. To conform to the conception that LH and interstitial cell stimulating hormone are identical it is necessary to assume that the interstitial cells respond to a lower level of either hormone than that required for luteinisation. F. S.

Action of posterior pituitary extracts on [metamorphosis in] tadpoles. N. H. Howes (*J. Exp. Biol.*, 1940, **17**, 128—138).—Posterior lobe extracts were injected into developing stages of *Bufo bufo bufo* which were weighed at short intervals. No increases in wt. were found until marked absorption of the tail had occurred. After this stage the responses were progressive until complete metamorphosis, when adult Salientian results were obtained. D. M. Sa.

Chromatic behaviour.—See A., 1943, III, 165.

XII.—REPRODUCTION.

Speed of development of insect eggs at constant temperatures. J. Davidson (*Austral. J. Exp. Biol.*, 1942, **20**, 233—239).—Time-temp. curves for the rate of development of eggs of *Drosophila melanogaster* and *Habrobracon juglandis* and post-diapause eggs of *Austrocieta cruciata*, and the trend in the rate of development in poikilothermic animals, are determined. The data cover the whole range of temp. at which development to hatching occurs and they are divided into two groups, (a) data extending from the lowest to that temp. at which development proceeds at the greatest rate, defined as the peak temp., which includes 82.7—90% of the total temp. range, and (b) data extending from the peak to the highest temp. at which development to hatching occurs. This covers the remainder of the total temp. range. J. N. A.

Prepubertal growth of germ cells in ovary of *Didelphys virginiana*.—See A., 1943, III, 157.

Isomerides of stilboestrol.—See A., 1943, II, 88.

Clinical evaluation of oestrone, oestradiol benzoate, and diethylstilboestrol. H. W. Eisfelder (*J. Clin. Endocrinol.*, 1942, 2, 628—633).—A group of more than 200 menopausal women were divided into 4 groups and treated with parenteral oestrone, parenteral oestradiol benzoate, oral or parenteral diethylstilboestrol, or ovarian extracts, sedatives, and androgens. By transferring the groups from one form of treatment to another therapeutic potencies and relative costs of the different methods were evaluated. Stilboestrol is least expensive but most liable to produce irritating side effects. Parenteral administration is to be preferred where accurate dosage is required. Oestradiol benzoate is most effective and longest acting of the natural oestrogens; it is much cheaper than oestrone.

P. C. W.

Treatment of acne with orally administered oestrogens. C. H. Lawrence and N. T. Werthessen (*J. Clin. Endocrinol.*, 1942, 2, 636—638).—25 patients (14 women and 11 men of average age 26 and 20 years respectively) were treated by daily oral administration of ethinyloestradiol (0.15—0.3 mg.) or diethylstilboestrol (0.5—2 mg.). 17 of the patients became free of acne within 2—9 months and the remaining 8 patients are still under treatment and all show improvement.

P. C. W.

Dosage of female sex hormone, oestradiol, and anhydrohydroxyprogesterone by sublingual application. C. A. Joel (*J. Clin. Endocrinol.*, 1942, 2, 639—642).—6 women whose ovaries were X-irradiated in 1939 were given 60, 75, or 90 mg. of oestriol sublingually followed by 150 mg. of pregnenolone also sublingually. All patients developed proliferation of the endometrium followed by secretory progesterational changes.

P. C. W.

Angioneurotic oedema following stilboestrol. W. Saphir and A. R. Weinglass (*J. Amer. Med. Assoc.*, 1942, 119, 557).—Case report.

C. A. K.

Oestriol glycuronide in primary dysmenorrhoea. R. E. Boynton and N. Winther (*J. Amer. Med. Assoc.*, 1942, 119, 122—124).—50 unmarried women of 17—25 with primary dysmenorrhoea were given oestriol glycuronide tablets by mouth, and 50 controls were given placebo tablets indistinguishable from those containing the glycuronide. In the former group 6 cases had complete relief and 19 no relief, in the latter group 4 cases were completely relieved and 29 cases unchanged. The need for considering psychogenic factors is stressed.

C. A. K.

Retarding effect of ghost formation on absorption from subcutaneously implanted hexoestrol tablets. S. J. Folley (*Nature*, 1942, 150, 735—736).—The absorption of hexoestrol from 1000-mg. tablets implanted subcutaneously in bovines was fast in the first 10—15 days (9 mg. per day) but subsequently retarded (1.5 mg. per day). The decreased rate of absorption is attributed to "ghost" formation (A., 1943, III, 31) and this is borne out by the fact that tablets removed after 22—63 days' implantation and re-implanted into the same or another heifer showed an absorption of only 6—10 mg. in the first 10 days compared with an absorption of 77—96 mg. in the first 10 days of their initial implantation.

P. C. W.

Nausea and vomiting with stilboestrol. J. W. Finch (*J. Amer. Med. Assoc.*, 1942, 119, 400—402).—Studies in 95 women showed that diethylstilboestrol produced nausea and vomiting most readily in those subjects in whom these symptoms were pronounced during pregnancy. Desensitisation can be produced by giving very small doses, e.g., 0.1 mg. daily, and working up to the therapeutic level, from which it is concluded that the vomiting is allergic in nature.

C. A. K.

Recovery of reproduction system of male rat from regressive changes induced by stilboestrol. C. S. Matthews, E. L. Schwabe, and F. E. Emery (*Endocrinol.*, 1942, 30, 89—92).—Rats were rendered sterile by administration of 3 mg. of stilboestrol weekly for 58 days. One testis was then removed for examination; the other testis regained functional activity in an average of 47.5 days.

V. J. W.

Effects of oestrogen on androgenic stimulation of prostate and seminal vesicle of rat. R. R. Greene and D. M. Thomson (*Endocrinol.*, 1942, 30, 85—88).—Daily administration of 50 µg. of testosterone propionate to castrate rats maintained prostate and vesicle wts. at about the normal level. Simultaneous administration of 100 µg. of α-oestradiol slightly decreased this effect, but smaller doses had no results, whilst 100-µg. doses of oestradiol alone caused wts. to be slightly greater than in castrate controls.

V. J. W.

Significance of oestrogenic hormones in carcinogenesis. L. A. Emge (*West. J. Surg. Obstet. Gynec.*, 1939, 47, 107—113).—Varying doses of oestrogen were administered to female rats exogenously for various periods of time. Hyperplasia of mammary tissue and sex organs was produced without malignant change. Review and discussion.

P. C. W.

Oestrogenic content of cirrhotic livers.—See A., 1943, III, 179.

Oral hormone therapy in anovulatory bleeding. G. Stohr (*J. Clin. Endocrinol.*, 1942, 2, 633—636).—A case is described with cyclic bleeding from an endometrium in the proliferative phase. Oral administration of pregnenolone (1000 mg. given over 12 days)

D 3 (A., III.)

during the second half of the cycle produced a secretory phase in the endometrium and after 2 such treatments normal endometrial cycles were continued with only thyroid medication.

P. C. W.

Vasomotor effects of progesterone. D. V. Hirst and E. C. Hamblen (*J. Clin. Endocrinol.*, 1942, 2, 664).—One of the authors (D. V. H.) showed marked fall in blood pressure and pulse rate associated with mental depression during daily injection of 10 mg. of progesterone for 4 days. The fall was much greater than that produced by sesame oil injections.

P. C. W.

Detoxication of progesterone derivatives in liver. C. P. Leblond (*Amer. J. med. Sci.*, 1942, 204, 566—569).—Experiments with pregnanediol and pregnanediolone in hepatectomised rats indicate that detoxication of these substances by the liver is not dependent on the path of absorption but is the result of inactivation by the liver cells.

C. J. C. B.

Dysgerminoma and arrhenoblastoma. V. E. Dudman (*West. J. Surg. Obstet. Gynec.*, 1939, 47, 128—136).—A case is reported of adenoma tubulare testiculare.

P. C. W.

Benign ovarian neoplasms and post-menopausal hæmorrhage. R. B. K. Rickford and E. M. Whapham (*J. Obstet. Gynaec.*, 1942, 49, 653—659).—A case is described of a woman of 66 with fairly regular vaginal hæmorrhage every month and genital conditions similar to those during reproductive life in spite of her being 20 years post-menopausal. Bleeding ceased after removal of one ovary containing a large simple pseudomucinous cystadenoma without any granulosa tissue.

P. C. W.

Granulosa cell tumour of ovary. M. Schulze (*West. J. Surg. Obstet. Gynec.*, 1939, 47, 114—127).—The literature is reviewed and 2 cases are reported. Of 8 patients in the author's series followed for more than 5 years only one died of the tumour.

P. C. W.

Transmission of radioactive iron to human foetus. W. T. Dommerenke, P. F. Hahn, W. F. Bale, and W. M. Balfour (*Amer. J. Physiol.*, 1942, 137, 164—170).—Radioactive Fe fed in single doses (1—122 mg.) to women near the end of pregnancy appears in the foetal circulation in 40 min.; the speed of transfer suggests that plasma rather than the red blood cell is the vehicle. Distribution of radio-Fe in foetal tissues following feeding of the mother and subsequent therapeutic abortion shows a wide dissemination of the isotope, with greatest concn. in red blood cells. Of the tissues studied, the liver contained the greatest quantity. In early pregnancy the foetal hæmatocrit on comparison with that of the mother is low. The converse applies in late pregnancy.

M. W. G.

Case of delayed induction of menstruation in primary amenorrhoea. J. M. Looney (*J. Clin. Endocrinol.*, 1942, 2, 643—644).—An amenorrhoeic 23-year-old woman was treated with thyroid, anterior pituitary extract, chorionic gonadotropin, and finally with pregnant mare's serum. 2 years after treatment she menstruated once. A year later she menstruated after treatment with serum gonadotropin and thyroid.

P. C. W.

Mechanism of uterine bleeding. R. B. Greenblatt (*J. Clin. Endocrinol.*, 1942, 2, 645—646).—Uterine bleeding was produced 3 times in an ovariectomised woman by oestrogen-progesterone therapy; bleeding could not be produced following treatment with progesterone alone. In no instance could any endometrium be obtained from the atrophic uterus by curettage. The importance of the myometrium and its vascular supply in menstruation is stressed.

P. C. W.

Premarin in post-menopausal complications. J. R. Goodall (*J. Obstet. Gynaec.*, 1942, 49, 660—663).—Premarin (oestrogenic extract from the urine of pregnant mares) was successfully used by mouth in the treatment of 21 cases of menopausal symptoms and 3 cases of kraurosis vulvæ.

P. C. W.

Mitotic activity in uterine leiomyomas. P. H. Hartz and M. J. Hugenholtz (*Amer. J. clin. Path.*, 1942, 12, 523—524).—Mitotic figures were present in the tumour cells in 63% of 90 cases; in 21% they were found easily and in greater no.

C. J. C. B.

Colostrum skin test for pregnancy. L. M. Goldman, H. B. Kessler, and M. E. Wilder (*J. Amer. Med. Assoc.*, 1942, 119, 130).—The colostrum skin test (cf. Falls *et al.*, *Amer. J. Obst. Gynaec.*, 1941, 41, 431) was studied in 550 subjects. 11% of 185 pregnant women gave a negative reaction and 70% of 315 non-pregnant women and men gave positive reactions. These figures show that the test is unreliable in the diagnosis of pregnancy.

C. A. K.

Regeneration of uterine mucosa after spontaneous abortion and normal delivery. R. N. Rutherford and J. Mezer (*J. Amer. Med. Assoc.*, 1942, 119, 124—128).—A lecture, with figures illustrating regeneration of the uterine mucosa, and a discussion of therapeutic aspects.

C. A. K.

Pregnancy after thoracoplasty. F. R. Stansfield (*J. Obstet. Gynaec.*, 1942, 49, 682—686).—39 cases are collected from the literature and 1 case is reported for the first time. Dyspnoea is the only likely complication of labour and is readily dealt with by forceps delivery under spinal anaesthesia.

P. C. W.

Labour in young and old primiparæ. Y. M. Bromberg and A. Brzezinski (*J. Obstet. Gynaec.*, 1942, 49, 672—681).—Analysis of 3685 primiparæ; 136 (3.7%) were aged 14—16 years and 67 (1.8%) were 35—44 years. Course of labour in the young primiparæ was normal and in the older primiparæ was not as complicated as previous reports have indicated. The rate of Cæsarean section in the older patients was slightly above normal and the rate of forceps application markedly higher (25% as against a normal 2%). Chief complications were increased duration of labour, high % of dry labour and uterine inertia, and premature labour. P. C. W.

Puerperal morbidity [in Palestine]. A. Sadovsky, A. Brzezinski, and Y. M. Bromberg (*J. Obstet. Gynaec.*, 1942, 49, 664—671).—There were 908 cases (9.3%) of puerperal infection in 9697 successive deliveries in the Rothschild-Hadassah Hospital, Jerusalem. Incidence was highest in primiparæ, in the sirocco months (May and October), in women of European origin and in women under 18 years of age. Morbidity was relatively low in women over 30 years of age. Mortality rate was 0.7 per 1000. P. C. W.

Third stage of labour. R. C. Brown, J. V. O'Sullivan, and J. Sanctuary (*J. Obstet. Gynaec.*, 1942, 49, 646—652).—The placenta always separates from the centre and is pushed off the uterine wall by the accumulation of blood behind the separated area. Expulsion is by the Schultze method if the placenta is situated in the fundus but by the Mathews Duncan method if situated low in the uterus, when the lower edge of the placenta may be detached during the earlier stages of labour with consequent loss of the capacity to retain the accumulation of blood formed when the central portion separates and therefore hæmorrhage during the 3rd stage of labour. Supporting evidence is provided by the fact that in 16 cases of placenta prævia 14 of the placentæ were expelled by Mathews Duncan method and free loss of blood occurred during the 3rd stage in all these cases. Analysis of 246 placentæ showed that the position of the hole in the membranes was central in 89% of the 145 expelled by the Schultze method and peripheral in 86% of the 101 expelled by the Mathews Duncan method; blood loss during the 3rd stage was noted in 17 of the former and in 78 of the latter group. P. C. W.

Fœtal survival after injection of antuitrin S in pregnant rats and rabbits. R. M. Coco (*Amer. J. Physiol.*, 1942, 137, 143—145).—Rats were injected with 40—100 r.u. of antuitrin S on the 5th—19th day of gestation and with 40—200 r.u. of antuitrin S on the 14th—21st day of pregnancy. Rabbits were injected with 40 r.u. of antuitrin S per kg. body wt. on the 23rd—27th day of pregnancy. The varying amounts of antuitrin S usually result in death of the fœtus *in utero* or soon after parturition and rarely in postponed and prolonged parturition; the ovaries contained induced corpora lutea but these did not reach a threshold level of secretion. M. W. G.

Experimental production of pouch in male of *Trichosurus vulpecula*. A. Bolliger (*Nature*, 1942, 150, 688—689).—The scrotum, but not testes, was removed from a 3-month-old Australian phalanger, and 40 i.u. of human pregnancy urine gonadotropin injected intramuscularly 2 weeks later; 0.1 mg. of œstradiol dipropionate was administered at 4 weeks and 0.2 mg. at 5 and at 7 weeks after operation. After the 3rd œstradiol dose a fully developed pouch at the site of the scrotum had developed, similar in shape and size to those found in similar aged females treated with œstrogens. Typical pouches, but less perfect, were similarly produced on 2 4-month-old animals (the testes were removed also). All 3 animals died a month after formation of the pouch, apparently from the toxic effect of the œstrogen. The scrotum and pouch in *Trichosurus* are homologous and subject to hormonal control, contrasting with *Didelphys virginiana* (Burns, A., 1940, III, 902). E. R. S.

Non-utilisation of lactic acid by lactating mammary gland. R. C. Powell, jun., and J. C. Shaw (*J. Biol. Chem.*, 1942, 146, 207—210).—In cows the arteriovenous difference in blood-lactic acid is probably due to excitement raising concn. of lactic acid in arterial blood. This difference is not significant after the animal has been under nembutal anaesthesia for 30—55 min. P. G. M.

Use of nembutal anaesthesia in milk secretion studies. E. P. Reineke, M. B. Williamson, and C. W. Turner (*J. Dairy Sci.*, 1941, 24, 317—320).—Under nembutal anaesthesia goats secrete milk and the uptake of milk precursors proceeds normally. This method avoids excitement effects in withdrawing arterial and venous blood. J. G. D.

Variations in bull semen and their relation to fertility. E. W. Swanson and H. A. Herman (*J. Dairy Sci.*, 1941, 24, 321—331).—Of the properties tested survival with vigorous motility at 5° was best correlated with fertility. Initial motility appeared to be the best test for suitability for storage. J. G. D.

Syndrome characterised by gynecomastia, aspermatogenesis with a-Leydigism, and increased excretion of follicle-stimulating hormone. H. F. Klinefelter, E. C. Reigenstein, and F. Albright (*J. Clin. Endocrinol.*, 1942, 2, 615—627).—9 cases are described. Testicular biopsies in 7 showed hyalinisation of the seminiferous tubules and normal interstitial tissue. Excretion of follicle-stimulating gonado-

tropin was increased to levels normally seen in castrates. Œstrogenic secretion was not increased in the 2 cases studied. 17-Ketosteroid excretion was normal or low. Breast tissue was examined in 4 patients and showed some ductal hyperplasia with marked proliferation of periductal connective tissue. In discussion the theory that the testis secretes 2 hormones, androgen from the Leydig cells, and X-hormone or inhibin from the tubules, is supported. P. C. W.

Effects of testosterone propionate in immature and adult female rats. G. L. Laqueur and C. F. Fluhmann (*Endocrinol.*, 1942, 30, 93—101).—In all cases mucification of the vagina and enlargement of the uterus was produced and there was mammary stimulation. In immature and diœstrous rats the endometrium was folded and ovaries small; in œstrous rats the endometrium was not folded and the ovaries were enlarged by presence of corpora lutea. Administration of human pregnancy serum to immature rats following testosterone produced large corpora lutea and follicles. V. J. W.

Andrologic endocrinology. II. Treatment of androgenic failure. R. L. Pullen, J. A. Wilson, E. C. Hamblen, and W. K. Cuyler (*J. Clin. Endocrinol.*, 1942, 2, 655—663).—A review. P. C. W.

Adenoma of interstitial cells of testis. H. Braun (*Virchow's Arch.*, 1939, 304, 106—114).—Among 31 dogs over 12 years of age 39% had uni- or bi-lateral tumours of the testis. Treatment with sex-hormones had no effect on the interstitial cell tumours; the latter had no endocrine action. No secondaries were found. In a man 45 years of age who had died from cancer of the cardia an adenoma of the interstitial cells had completely replaced the spermatogenic tubules. The other testis showed normal spermatogenesis but an increased no. of interstitial cells. There was no evidence of endocrine disturbance. J. A.

Histological changes in testes of newborns and children. C. Diaa (*Virchow's Arch.*, 1939, 304, 171—189).—In the testis of the fœtus during the 7—9th month, of the newborn child, guinea-pig, or puppy there is normally a preponderance of a delicate interstitial fibrous tissue devoid of Leydig cells over the narrow seminiferous tubules which are usually solid and filled with spermatogonia or poorly differentiated cells. Pituitary hormones, derived from the pregnant mother or injected (Antex Leo) into the pregnant animal, cause temporary reduction in the amount of the interstitial fibrous tissue, and hyperplasia and widening of the spermatogenic tubules. J. A.

Prostatic surgery in presence of cardiac disease. J. H. Harrison (*Amer. J. med. Sci.*, 1942, 204, 469—483).—A general discussion based on 25 cases. C. J. C. B.

Acid phosphatase activity of human urine, an index of prostatic secretion. W. W. Scott and C. Huggins (*Endocrinol.*, 1942, 30, 107—112).—Determined by method of King and Armstrong (A., 1935, 403) acid phosphatase is present in adult male urine in 3—5 times the amount in children's or female urine, or in old age. More is present in the first oz. voided than in the rest and it is markedly decreased by castration or prostatectomy. V. J. W.

XIII.—DIGESTIVE SYSTEM.

Tumours of salivary glands. I. Review of prognostic data. H. Study of 43 cases. J. W. Houck (*Surgery*, 1939, 6, 550—564, 565—584).—I. A review.

II. An analysis of 48 consecutive cases with follow up in 40 cases. A classification is suggested on the bases of the size and movability of the tumour. P. C. W.

Parotid duct obstruction without calculus. Suggestion for treatment. L. Pelter (*Amer. J. digest. Dis.*, 1942, 9, 417—419).—4 cases were successfully treated with prostigmine methosulphate, 1/2000, 1 c.c. subcutaneously. N. F. M.

Œsophageal hypertrophy. K. Helmke (*Virchow's Arch.*, 1939, 304, 79—86).—In 4 men aged 41, 57, 59, and 64 with considerable hypertrophy and dilatation of the heart, hypertrophy of the smooth muscle coat of the œsophagus was found, slight in its middle third and gradually increasing in thickness towards the cardia, below which it abruptly appeared normal. Fibromyomata were found in the œsophagus in all cases and histologically only lymphocytic infiltration. Stimulation by the enlarged heart was held to have caused the hypertrophy, which had remained unnoticed during life. J. A.

Recent advances in surgery of œsophagus. C. E. Bird (*Surgery*, 1939, 6, 617—637, 772—801, 949—975).—A review (667 refs.). P. C. W.

Œsophageal stenosis. E. M. Miller and R. T. Bothe (*Surgery*, 1939, 6, 598—601).—A case is reported of a child of 2 years with spontaneous stricture followed 1 year later by spontaneous opening after tubovalvular gastrostomy. P. C. W.

Analysis of 938 gastroscopic examinations. R. J. R. Renshaw, G. E. Clark, and J. R. Forsythe (*Amer. J. digest. Dis.*, 1942, 9, 401—404).—Gastroscopy is a valuable diagnostic procedure with certain

limitations. It is indicated (1) in chronic abdominal pain with negative radiological findings, (2) where radiological reports are doubtful or unexpected, (3) in gastric ulcer, (4) in gastric tumours of doubtful origin. N. F. M.

Gastric atrophy in far advanced pulmonary tuberculosis complicated by intestinal tuberculosis. L. L. Hardt, M. Weissman, and J. S. Coulter (*Amer. J. digest. Dis.*, 1942, 9, 404—407).—63 out of 119 cases showed atrophic gastritis on gastroscopic examination. Histological examination of 42 stomachs after death showed simple atrophy in 18 and inflammatory changes in 13. N. F. M.

Effect of hydrochloric acid on pyloric sphincter, digestive tract, and gastric evacuation. J. P. Quigley, M. R. Read, K. H. Padzow, I. Meschan, and J. M. Werle (*Amer. J. Physiol.*, 1942, 137, 153—159).—Balloon studies (method: Meschan and Quigley, A., 1938, III, 400) permitting direct observation of the motor activity of the entire pyloric sphincter region in dogs showed that HCl in the stomach exerts little or no physiological action on the motor activities and pressure changes in the pyloric sphincter region or on the process of evacuation. HCl in the duodenum is moderately effective in suppressing the pyloric antrum and thus retards evacuation. The pyloric sphincter and upper duodenum are inhibited with little effect on evacuation process, although some duodenal regurgitation occurs from more complete inhibition of the antrum than of the duodenal bulb. Acid in the duodenum produces a preliminary augmentation of motility in the sphincter region but is rare, transient, and moderate in degree. M. W. G.

Depression of gastric motility without elevation of body temperature after injection of pyrogens. H. Necheles, P. Dommers, M. Weimer, W. H. Olson, and W. Rychel (*Amer. J. Physiol.*, 1942, 137, 22—29).—Effects of small doses of pyrogens that do not raise body temp. in the dog were tested on gastric motility stimulated by prostigmine. Depression of gastric motility resulted with no change in rectal temp. and no subjective signs in most animals. A characteristic difference occurred in the kinds of depression produced by the different substances used, some of which were (average dose intravenously) pentnucleotide 0.9 c.c., thymus-nucleic acid 53 mg., yeast-nucleic acid 37.5 mg., *B. coli* vaccine, triple typhoid vaccine, cryst. bacterial pyrogen 0.023 c.c. From the findings it is suggested that great care should be taken in assaying preps. which depress gastric activity as they may contain subthreshold doses of pyrogens in regard to body temp. but not in regard to gastric function. M. W. G.

Acute perforated peptic ulcers. M. W. Kelly (*Surgery*, 1939, 6, 524—534).—152 cases are reviewed; the best results are given by simple closure. P. C. W.

Histopathology of chronic gastritis. R. Schindler and M. Ort-mayer (*Amer. J. digest. Dis.*, 1942, 9, 411—414).—A description of the histology of 52 biopsies from the stomach removed without the use of ligatures or clamps. N. F. M.

Gastric mucosal changes of tuberculosis. D. C. Browne, G. Mc-Hardy, and C. Wilen (*Amer. J. digest. Dis.*, 1942, 9, No. 12, 407—411).—Tuberculous gastritis was produced in pyloric pouches in dogs. Gastroscopic examination of 50 patients with pulmonary tuberculosis showed atrophic gastritis in 12, superficial gastritis in 11, ulcers in 8, and normal mucosa in 19. N. F. M.

Secretion of water as component of gastric acid secretion. H. W. Davenport (*Amer. J. digest. Dis.*, 1942, 9, 416—417).—Gastric HCl is more likely to be secreted at a concn. of 0.159N. than at 10⁻⁵N. In the latter event the energy needed to re-absorb the necessary amount of water during passage through the gastric tubules would be impossibly high (59 kg.-cal. per l. of gastric juice). N. F. M.

Pancreatitis in acute and chronic alcoholism. E. Clark (*Amer. J. digest. Dis.*, 1942, 9, 428—431).—36 autopsies on cases of acute and chronic alcoholism are recorded in which some type of pancreatitis was present, together with cirrhosis or fatty degeneration of the liver. It is not clear whether these cases were selected on account of the pancreatitis or not. A causal relationship is suggested between alcoholism and pancreatitis. N. F. M.

Peptic erosions in jejunum. O. Hug. (*Virchow's Arch.*, 1939, 304, 190—202).—A 53-year-old man complained of ulcer symptoms for 18 months; post-mortem showed peptic oesophagitis with a perforation site above the cardia measuring 6 cm. in diameter and numerous ulcers both recent and chronic, measuring 5—25 mm. in diameter in the whole of the duodenum and upper jejunum for 95 cm. Histologically the older ulcers showed a fibrosed base and signs of re-crescent inflammation. J. A.

Intubation of human small intestine. Method of determining digestive activity in any portion of gastro-intestinal tract, with measurements of protein digestion in stomach and small intestine. K. A. Elsom, F. W. Chornock, and F. G. Dickey (*J. clin. Invest.*, 1942, 21, 795—800).—A specially devised apparatus containing a test food substance is introduced into the intestine by intubation. When it has reached the desired position, the test substance is exposed to the action of the intestinal juice. The digestion which occurs in a measured time can be determined by analysis of the

remaining portion of the test substance. The results indicate that substantial proteolytic activity occurs in the normal stomach, far less in the achlorhydric stomach. Throughout the normal small intestine, the concn. of proteolytic enzymes is sufficiently high to effect a considerable digestion, regardless of the point at which the process begins, or whether a further supply of enzymes is available during the period of the test. C. J. C. B.

Influence of adrenalectomy on rate of glucose absorption from intestine. W. G. Clark and E. M. MacKay (*Amer. J. Physiol.*, 1942, 137, 104—108).—Using Cori's method for determining glucose absorption from the intestinal tract of unanæsthetised rats, adrenalectomy markedly reduced the rate of absorption 24 hr. after operation. Animals maintained after adrenalectomy for 2 weeks with a Na supplement and then deprived of extra salt for 36 hr. still showed diminished absorption; if Na supplement was continued throughout, rate of absorption was normal. Diminished glucose absorption after adrenalectomy is held to be due to the disturbance of Na metabolism and not to the removal of any effect of the adrenal cortical hormone on the intestinal mucosa. M. G. W.

Free border of intestinal epithelial cells of vertebrates.—See A., 1943, III, 157.

Sprue. H. S. Stannus (*Trans. R. Soc. trop. Med. Hyg.*, 1942, 36, 123—149).—A review. A theory is given based on the "partition" hypothesis which predicates for neutral fat and for fatty acids a different mode of absorption, a different route after absorption, a different composition during transport, and a different destination and different rôle in metabolism. C. J. C. B.

Chyladenectasis with steatorrhœa. D. M. Vaux (*J. Path. Bact.*, 1943, 54, 93—96).—Mesenteric chyladenectasis was found at autopsy in a man of 49 years in whom steatorrhœa had been observed for the previous 7—8 weeks. Inflammatory changes in the mesenteric glands themselves were a possible cause of the lymphatic obstruction. (3 photomicrographs.) C. J. C. B.

Cause and treatment of coeliac disease.—See A., 1943, III, 193.

Digestion of national wheatmeal. N. C. Wright (*Lancet*, 1942, 243, 165—166).—The results of Krebs and Mellanby (A., 1942, III, 905) are criticised and those of earlier workers are reviewed. Mean vals. for protein digestibility are white flour 86%, national wheatmeal 81%; energy digestibility vals. are white flour 92%, national wheatmeal 88%; for protein content, white flour 12.0% national wheatmeal 12.35%; both have energy content of 344 cal. per 100 g. C. A. K.

Effect of vagotomy and sympathectomy on sensitivity of intestinal smooth muscle to adrenaline. W. B. Youmans, A. I. Karstens, and R. W. Aumann (*Amer. J. Physiol.*, 1942, 137, 87—93).—Dogs (unanæsthetised) were used with Thiry fistulæ of the jejunum and an adrenaline injection rate (intravenously) that would produce submax. inhibition of intestinal motility (balloon-Hg manometer). Vagotomy has no effect on the sensitivity of jejunal smooth muscle to adrenaline or produces a slight increase. Sympathetic decentralisation of the pre-aortic ganglia has little or no effect. Destruction of the nerve fibres in the mesenteric pedicle supplying an intestinal segment renders that segment several times more sensitive to adrenaline than another segment having its nervous connexions with decentralised pre-aortic ganglia intact. The only denervations which produced marked hypersensitivity of intestinal smooth muscle to adrenaline were those involving sectioning of axons passing to the intestine from cell bodies located in the pre-aortic ganglia. M. W. G.

Essential nature of non-specific granulomatous lesions of gastro-intestinal tract. A. O. Wilensky (*Surgery*, 1939, 6, 288—305, 452—467).—A review with 165 references. P. C. W.

Acute intestinal obstruction caused by non-absorbable suture material. T. J. Snodgrass (*Surgery*, 1939, 6, 437—444).—A case. P. C. W.

Chronic duodenal obstruction. B. P. Mullen (*West. J. Surg. Obstet. Gynec.*, 1939, 47, 85—87).—2 cases are reported. P. C. W.

Serum-diastase determinations during artificially produced intra-duodenal pressure against head of the pancreas. S. G. Castigliano (*Amer. J. digest. Dis.*, 1942, 9, 425—428).—A description of the test on one individual. The serum-diastase failed to rise when the duodenal balloon was inflated to a pressure of 42—48 mm. Hg, showing normal pancreatic function. N. F. M.

Comparative study of glucose and dextrin tolerance in patients with chronic ulcerative colitis.—See A., 1943, III, 193.

Colon irritation. III. Bulk of fæces. O. Wozasek and F. Steigmann (*Amer. J. digest. Dis.*, 1942, 9, 423—425).—Bran increased stool bulk in 13 out of 15 normal subjects and in 14 out of 23 dyspeptic patients. 15 out of 45 normals and 21 out of 58 dyspeptic patients had increased mucus secretion. N. F. M.

Linitis plastica of colon. J. R. Judd, N. P. Larsen, and I. L. Tilden (*Surgery*, 1939, 6, 278—285).—A case is reported. P. C. W.

Enterobiasis in children. Incidence, symptomatology, and diagnosis with simplified Scotch cellulose tape technique. A. H. Jacobs (*J. Pediat.*, 1942, 21, 497—503).—Of 228 unselected clinic children, 31.3% were positive for pinworm eggs. C. J. C. B.

Enterobius vermicularis in appendix. J. R. Schenken and E. S. Moss (*Amer. J. clin. Path.*, 1942, 12, 509—517).—23% of 1000 surgically removed appendices were infected with *E. vermicularis*. 42% of the appendices from white females, 38% of the appendices from white males, 10% from negro females, and 12% from negro males were infected. C. J. C. B.

XIV.—LIVER AND BILE.

Heart disease and liver function.—See A., 1943, III, 91.

Relation of liver function, pulse rate, and temperature of hyperthyroid dogs to vitamin-B₁ and yeast.—See A., 1943, III, 107.

Tests of hepatic efficiency. J. B. Rennie (*Glasgow Med. J.*, 1942, 138, 125—142).—A crit. review of recent tests grouped according to the amount of information on hepatic efficiency obtainable.

G. H. B.

Hippuric acid synthesis as test of hepatic efficiency. J. B. Rennie (*Brit. J. exp. Path.*, 1942, 23, 329—338).—In 69 subjects free of hepatic, cardiac, or renal disease the mean excretion of benzoic acid after a dose of 6.0 g. of Na benzoate was 3.19 g. in 4 hr. (range 2.40—4.39 g., S.D. 1.07, S.E. 0.13 g.). 164 observations were made on 84 patients with liver disease. In 54 of the 60 initial observations on patients with acute hepatitis, secondary carcinoma of the liver, cirrhosis and obstructive jaundice, the output of benzoic acid in 4 hr. was less than 2.40 g. In disease of the biliary tract positive results were obtained when stone was present in the common duct, particularly with cholangitis. In disease of the gall-bladder only, excretion of benzoic acid was normal or very slightly diminished. The test is the most sensitive test of hepatic efficiency available. F. S.

Relation of hippuric acid excretion to volume of urine. [Relation to its use as test of liver function.] T. E. Machella, J. D. Helm, and F. W. Chornock (*J. clin. Invest.*, 1942, 21, 763—770).—In 100 patients with hepatic disease, a significant direct correlation was found between hippuric acid output and urinary vol. Low hippuric acid excretion in some patients with hepatic disease could be increased to normal or above by inducing a water diuresis. These observations detract from the val. of the hippuric acid test of liver function.

C. J. C. B.

Liver function and dietary yeast in hyperthyroidism. V. A. Drill and H. W. Hays (*Amer. J. Physiol.*, 1942, 136, 762—771).—Removal of yeast from the diet of dogs, hyperthyroid from thyroid feeding, is related to the production of abnormal liver function (bromsulphalein retention test) which is not subsequently improved by treatment with yeast concentrate or vitamin-B injections. Thyroid feeding produces a marked tachycardia and an increase in rectal temp. Removal of yeast from the diet of such thyroid-fed dogs caused a drop in pulse rate and a slight decrease in rectal temp., and these were raised to the previous hyperthyroid levels on injection of -B₁. T. F. D.

Bromsulphalein retention in low-grade chronic illness [and liver insufficiency]. M. H. Stiles, M. T. Stiles, and A. McM. Kolb (*J. Lab. clin. Med.*, 1943, 28, 180—187).—Impairment of liver function by this test was found in 98 of 112 patients with low-grade chronic illness. The degree of impairment varies directly with the severity of symptoms. C. J. C. B.

Role of intracellular cations in liver-glycogen formation in vitro. A. B. Hastings and J. M. Buchanan (*Proc. Nat. Acad. Sci.*, 1942, 28, 478—482).—Glycogen formation by rat liver tissue in vitro is increased by the high concns. of K⁺, Mg⁺⁺, and glucose such as occur in intracellular fluid. Breakdown is favoured by high concn. of Na⁺ and absence of glucose typical of extracellular fluid.

K. L. E.

Antagonism between thyroxine and vitamin-A [and liver-glycogen]. C. Wegelin (*West. J. Surg. Obstet. Gynec.*, 1939, 47, 147—154).—Rats given daily injections of 0.5 mg. of thyroxine for 8 days showed increased mitoses in the liver with decreased liver-glycogen and liver- and kidney-fat; daily injection of 10,000 units of vitamin-A increased liver-glycogen, but had no effect on mitoses or fat deposition. Simultaneous injection of the two substances produced intermediate effects. P. C. W.

Interrelated influence of thiamin, riboflavin, pantothenic acid, and vitamin-B₆ on liver-glycogen reserves.—See A., 1943, III, 129.

Effect of lymphatic block on bile resorption in obstructive jaundice. B. G. P. Shafroff, H. Doubilet, W. F. Ruggiero, A. P. Preiss, and Co Tui (*Amer. J. Physiol.*, 1942, 137, 97—103).—In anaesthetised dogs biliary obstruction with complete block of the thoracic lymph duct produces a high concn. of bilirubin in blood at the end of 65 hr.; it was greater and more rapid in onset than that obtained by partial lymphatic shock, and greater still than that obtained by simple

biliary obstruction. Complete stoppage of lymph flow through the thoracic duct markedly reduced the secretory pressure of bile in the extra-hepatic bile ducts. When biliary obstruction was produced in complete lymphatic shock, the bile ducts did not dilate in 4 of 5 experiments. M. W. G.

Diagnostic value of serum choline-esterase determinations in jaundice and in cirrhosis of the liver. A. Schiffrin, L. Tuchman, and W. Antopol (*Amer. J. digest. Dis.*, 1942, 9, 342—347).—A statistical analysis of 98 cases. The normal range was 40—120 c.c. of CO₂ per 0.5 c.c. of serum. Vals. below 40 are rarely found in "simple" biliary obstruction, but frequently occur if cholangitis or hepatic metastases coexist. In "catarrhal icterus" vals. of 28—100, in hepatic cirrhosis 9—69, were obtained. N. F. M.

Hepatico-renal syndrome. C. G. Heyd (*Amer. J. digest. Dis.*, 1942, 9, 348—350).—A review. N. F. M.

Chemical composition of [anti-pernicious anæmia] liver fractions. Hemoglobin production factors in human liver.—See A., 1943, III, 83.

Acute cholecystitis. L. S. Fallis and R. D. McClure (*Surg. Gynec. Obstet.*, 1940, 70, 1022—1028).—Analysis and discussion of 320 cases. P. C. W.

Surgical treatment of acute cholecystitis and common duct obstruction. H. Finsterer (*Surgery*, 1939, 6, 491—506).—An analysis of the author's large series of cases. Early operation is advocated with local anaesthesia of the abdominal wall and N₂O narcosis.

P. C. W.

Complete biliary obstruction complicating duodenal ulcer; perforation of ulcer followed by immediate release of the obstruction. S. Levine and G. B. Gordon (*Amer. J. digest. Dis.*, 1942, 9, 397—398).—A case report. N. F. M.

Varices of gall-bladder, associated with a mucosal cyst. M. Feldman, J. E. Goodman, and T. Weinberg (*Amer. J. digest. Dis.*, 1942, 9, 399—400).—Report of a case. N. F. M.

High-fat diet preceding cholecystography. H. Curl (*J. Amer. Med. Assoc.*, 1942, 119, 607—610).—Studies in 182 normal students showed that filling of the gall bladder after oral administration of sol. iodophthalein was best after a high-fat diet for several days or weeks. Many subjects on a low-fat diet showed no gall bladder shadow. C. A. K.

XV.—KIDNEY AND URINE.

Parathyroids and clearance of inorganic phosphate. M. Fay, V. G. Behrmann, and D. M. Buck (*Amer. J. Physiol.*, 1942, 136, 716—719).—Determinations of PO₄''' and creatinine clearances during or after intravenous PO₄''' injections in dogs, either parathyroidectomised or after the administration of parathyroid extract, showed no effect on the capacity of the kidney to excrete PO₄'''. T. F. D.

Skin test to diodrast. H. L. Naterman and S. A. Robins (*J. Amer. Med. Assoc.*, 1942, 119, 491—493).—Intracutaneous injection of 0.05 c.c. of undiluted diodrast shows positive reactions in patients allergic to the drug, and should be done before diodrast is injected intravenously. C. A. K.

Treatment of experimental renal hypertension with vitamin-A.—See A., 1943, III, 93.

Renal hyperlipæmia in dogs.—See A., 1943, III, 88.

Effect of pH on production of pyrrolidonecarboxylic and glutamic acid during enzymic hydrolysis of glutathione by rat kidney extract.—See A., 1943, III, 141.

Intercapillary glomerulosclerosis. C. L. Mauser, A. H. Rowe, and P. P. E. Michael (*Ann. int. Med.*, 1942, 17, 101—105).—In 2 cases of intercapillary glomerulosclerosis there was persistent albuminuria, hypertension, advanced vascular degeneration with retinal artery sclerosis, and diabetes mellitus. A. S.

Nephrotoxic nephritis in rabbits. C. F. Kay (*Amer. J. med. Sci.*, 1942, 204, 483—490).—Nephritis was produced in rabbits by the injection of nephrotoxic duck serum. Nephritis did not develop in rabbits exposed to X-ray but when later injected with nephrotoxic serum, they developed nephritis by passive transfer of antibodies to duck serum. C. J. C. B.

Simple kidney plethysmograph. F. E. Emery (*J. Lab. clin. Med.*, 1943, 28, 209). C. J. C. B.

Significance of ureterocoloacal reimplantation in chicken. H. M. Weyrauch and F. Hinman (*Surg. Gynec. Obst.*, 1940, 70, 170—177).—The ureter was surgically separated from the cloaca and reimplanted bilaterally in 4 chickens and unilaterally in 15 chickens. Obstruction of the urinary tract occurred in 91% of cases and ascending infection in 87% of cases. Normal resistance to such infection is therefore upset by the operation. P. C. W.

Non-diabetic glycosuria. E. J. Dewees and P. H. Langner, jun. (*Amer. J. med. Sci.*, 1942, 204, 491—594).—37 individuals with apparently non-diabetic glycosuria, based on a single glucose tolerance curve 5—13 years previously, showed excessive incidence of

diabetes mellitus. The amount of glucose in the urine was not, in itself, of prognostic significance. C. J. C. B.

Significance of urinary ammonia. A. P. Briggs (*J. Lab. clin. Med.*, 1943, 28, 174—179).—A review. C. J. C. B.

Comparison of the methods of analysis for lead in urine. W. R. V. Marriott (*Amer. J. clin. Path.*, 1942, 12, 488—495).—A review. The spectroscopic method is best, but expensive equipment is required. For clinical laboratory work, the Horwitz-Cowgill or the Lentonoff-Reinhold method is the most satisfactory. C. J. C. B.

Qualitative examination of urinary calculi. J. F. McIntosh and R. W. Salter (*J. clin. Invest.*, 1942, 21, 751—754).—The distinctive features of the method include the separation of the Ca into oxalate and non-oxalate fractions, and the determination of the presence or absence of Mg. C. J. C. B.

Classification and chemical pathogenesis of urinary calculi. J. F. McIntosh (*J. clin. Invest.*, 1942, 21, 755—760).—A method for classification of calculi is given, based principally on the presence or absence of metallic elements. C. J. C. B.

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

The war and ageing. V. Korenchevsky (*J. Amer. Med. Assoc.*, 1942, 119, 624—630).—A review. C. A. K.

Structure and behaviour of the cortical cells of wool fibres. E. H. Mercer (*J. Coun. Sci. Ind. Res. Australia*, 1942, 15, 221—227; cf. A., 1938, 1, 347).—Cortical cells isolated from wool by means of trypsin may be stretched and set, and supercontract when boiled in aq. Na₂S solution or a 10% solution of KOH in alcohol containing 7% of water. By treatment of cells with Br-water followed by 1% Na₂CO₃ solution, a fibrillar structure is revealed which is considered to be of importance in explaining the elastic properties of fibres and cortical cells. C. S. W.

Adaptation to salinity in *Gammarus*. L. C. Beadle and J. B. Cragg (*J. Exp. Biol.*, 1940, 17, 153—163).—Four species were tested with varying salinities from fresh to sea-water and differences are explained in terms of the evolution of fresh-water adaptations. D. M. Sa.

Osmotic relationships of polychaetes. G. P. Wells and I. C. Ledingham (*J. Exp. Biol.*, 1940, 17, 337—352).—Reactions are given of isolated rhythmic preps. to varying hypotonic salinities. D. M. Sa.

Polychaete tissues and magnesium. G. P. Wells and I. C. Ledingham (*J. Exp. Biol.*, 1940, 17, 353—363).—Low Mg concns. raise and high concns. depress the activity of isolated tissues. D. M. Sa.

Salinity and ciliary activity of polychaetes. G. P. Wells, I. C. Ledingham, and M. Gregory (*J. Exp. Biol.*, 1940, 17, 378—385). D. M. Sa.

Daily rhythm of cockroach activity. D. L. Gunn (*J. Exp. Biol.*, 1940, 17, 267—277).—Daily phases of activity could be controlled by artificial dark and illuminated periods. D. M. Sa.

Daily rhythm of cockroach activity. K. Mellanby (*J. Exp. Biol.*, 1940, 17, 278—287). D. M. Sa.

Humidity behaviour of the mealworm beetle. D. P. Pielau (*J. Exp. Biol.*, 1940, 17, 295—306).—Beetles tend to collect in parts with lower humidity. Humidity receptors are described in the antennal sensillae. D. M. Sa.

Moulting in *Rhodnius prolixus*. V. B. Wigglesworth (*J. Exp. Biol.*, 1940, 17, 201—222). D. M. Sa.

XVII.—TUMOURS.

Adenocarcinoma of pyloric stomach and other gastric neoplasms in mice induced with carcinogenic hydrocarbons. H. C. Stewart and E. Lorenz (*J. Nat. Cancer Inst.*, 1942, 3, 175—189).—Methylcholanthrene, benzyrene, and dibenzanthracene were introduced into the stomach wall, in impregnated threads or by injection of solutions in oil or suspensions in serum. Of 19 mice with impregnated cotton threads one bore a sarcoma. In 274 pure line mice injected with 0.14—0.8 mg. of hydrocarbon, 44 adenomas, 18 adenocarcinomas, 8 adenoacanthomas, 18 mixed adenocarcinoma and sarcoma, 2 mixed adenoacanthoma and sarcoma, and 30 sarcomas were found in the glandular stomachs and 44 squamous papillomas and 14 squamous carcinomas were present in the forestomachs. (12 photomicrographs.) E. B.

Influence of limited application of methylcholanthrene on epidermal iron and ascorbic acid. C. Carruthers and V. Sontzeff (*J. Nat. Cancer Inst.*, 1943, 3, 217—220).—A single application of a benzene solution of methylcholanthrene to the shaved backs of Buffalo mice caused a reduction in the ratio of Fe to nucleic acid-P present in the skin from 0.52 to 0.27. Repeated painting caused further reduction to 0.14. Painting with benzene did not lower the ratio. Paintings with benzene or methylcholanthrene did not change

the ascorbic acid : nucleic acid-P ratio, which lay between 0.17 and 0.19. E. B.

Reduction of total lipin/protein-nitrogen ratio of mouse epidermis by a single application of methylcholanthrene. L. F. Wicks and V. Sontzeff (*J. Nat. Cancer Inst.*, 1943, 3, 221—226).—Single applications of methylcholanthrene lowered the lipin/protein-N ratio from 5.2 to 2.0 in 5 days. Painting with benzene had no such effect. E. B.

Production of subcutaneous sarcomas in mice with tars extracted from atmospheric dusts. J. Leiter, M. B. Shimkin, and M. J. Shear (*J. Nat. Cancer Inst.*, 1943, 3, 155—165).—Dusts were collected from city air by electrostatic pptn. filtration, and labyrinth pptn. The subcutaneous injection of 20 mg. of dust, suspended in saline, into male C3H mice induced no sarcomas. The injection of 50 mg. of tar extracted from the dust produced sarcomas in 18 out of 291 mice in 12 months. E. B.

Production of tumours in mice with tars from city air dusts. J. Leiter and M. J. Shear (*J. Nat. Cancer Inst.*, 1942, 3, 167—174).—An improved filtration apparatus sampling 275 cu. ft. per min. was used to collect dust from American cities. Single injection of 50 mg. of tar from the dust into 400 mice produced 30 sarcomas in 16 months. E. B.

Formation of haemolymph nodes in rats treated with 1:2:5:6-dibenzanthracene. A. Lasnitzki and D. L. Woodhouse (*Nature*, 1942, 150, 660).—Immature rats injected subcutaneously with a colloidal solution of dibenzanthracene 5 times weekly for 4 weeks (daily dose 0.001 m-mol.) developed brownish-red discoloration of the lymph nodes. The changes in the nodes were: widening of the lymph spaces and decrease in lymph tissue; presence of red blood cells in the lymph spaces; and increased no. of macrophages containing red blood cells and haemosiderin. Similar changes were produced by 3:4-benzpyrene and methylcholanthrene but not by the non-carcinogenic hydrocarbons anthracene and phenanthrene. P. C. W.

Induction of hepatic lesions, hepatomas, pulmonary tumours, and haemangio-endotheliomas in mice with *o*-aminoazotoluene. H. B. Andervont, H. G. Grady, and J. E. Edwards (*J. Nat. Cancer Inst.*, 1942, 3, 131—153).—Subcutaneous injections of 2-amino-5-azotoluene moistened with glycerol were given to mice of strains A, C3H, C, C57 black, and hybrids derived from strains A, C3H, and C. In addition to inducing hepatic changes in almost all female mice and in many male mice of all strains, the treatment induced many pulmonary tumours in strains A and C and their hybrids. The susceptibility to these induced pulmonary tumours was inherited in a similar way to that to spontaneous pulmonary tumours. Haemangio-endotheliomas occurred most frequently in female mice of C strain or C back cross mice; most of these tumours arose in the interscapular fat but a few occurred at other sites. (11 figures.) E. B.

Carcinogenic effectiveness of ultra-violet radiation of wave-length 2537 Å. H. F. Blum and S. W. Lippincott (*J. Nat. Cancer Inst.*, 1942, 3, 211—216).—Low-pressure Hg arcs gave 95% of their carcinogenic radiation in the 2537 Å. line. Such radiation, which is absorbed principally in the stratum corneum, is much less effective in inducing malignant change than radiation of longer λ. E. B.

Review of some spontaneous neoplasms in mice. S. W. Lippincott, J. E. Edwards, H. G. Grady, and H. C. Stewart (*J. Nat. Cancer Inst.*, 1942, 3, 199—210).—Descriptions of typical mammary hepatic, pulmonary, renal, and fibroblastic tumours. (2 inadequate figures.) E. B.

Spontaneous fibrosarcoma of foreleg and paw in a C3H mouse. J. E. Edwards, A. J. Dalton, J. White, and T. N. White (*J. Nat. Cancer Inst.*, 1943, 3, 191—198).—A malignant tumour which has been transplanted through four generations in mice of the same line without producing metastases. (7 figures.) E. B.

Glutamic acid from tumours. T. Wieland (*Ber.*, 1942, 75, [B], 1001—1007).—The tumour-protein is hydrolysed with HCl (d 1.19), the solution is evaporated to dryness, and the residue dissolved in water, neutralised, and filtered from pptd. humus. The filtrate is chromatographed through acid Al₂O₃, which is freed from adsorbed cystine by H₂S. Elution is effected with cold, saturated Ba(OH)₂, and Ba⁺⁺ is removed by H₂SO₄. The solution is conc. and two successive crops of glutamic acid hydrochloride are withdrawn. As judged by [α] these crops from six different tumours are constituted to the extent of 99% of natural l(+)-glutamic acid. H. W.

Hyaluronidase and polysaccharide from tumours. A. Pirie (*Brit. J. exp. Path.*, 1942, 23, 277—284).—A weak hyaluronidase was present in transplantable tumours of the mouse, rat, and guinea-pig, and in one fowl tumour. The Rous and Fujinami filterable fowl tumours contained no hyaluronidase but contained a viscous polysaccharide which was hydrolysed by hyaluronidase. Preps. of this polysaccharide contained varying amounts of Cu which catalysed a reduction in viscosity of the polysaccharide by ascorbic acid. F. S.

Absence of seasonal influence in Rous No. 1 sarcoma in young chicks. J. G. Carr (*Brit. J. exp. Path.*, 1942, **23**, 339—342).—There was no definite seasonal variation in the susceptibility to the Rous No. 1 sarcoma in healthy young Brown Leghorn chickens. F. S.

Nucleic acid of rabbit papilloma virus protein. A. R. Taylor, D. Beard, D. G. Sharp, and J. W. Beard (*J. infect. Dis.*, 1942, **71**, 110—114).—The papilloma virus protein contained 6.5% of carbohydrate in terms of glucose and 1.46% of lipid solvent extractive. Thymus-nucleic acid was present and procedures for its isolation yielded an impure product containing a quantity of nucleic acid corresponding to 6.8% of the whole virus protein. This, combined with estimates by P determinations on discarded fractions, indicated the presence of 8.7% of nucleic acid. No ribonucleic acid was detected. Max. absorption of the whole protein was about 2750 Å. and that of the isolated nucleic acid was 2630 Å. F. S.

Metabolic studies on neoplasm of bone with radioactive strontium. A. G. Treadwell, B. V. A. Low-Beer, H. L. Friedell, and J. H. Lawrence (*Amer. J. med. Sci.*, 1942, **204**, 521—529).—Administration of radioactive Sr to 6 cases of bone tumour prior to biopsy or amputation shows uptake chiefly by growing bone and by osteogenic tumour tissue. C. J. C. B.

Origin of cancer in man. W. Cramer (*J. Amer. Med. Assoc.*, 1942, **119**, 309—316).—A lecture. C. A. K.

Malignant tumours of thyroid gland. H. Welti and R. Huguenin (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 10—22).—An analysis of 88 cases. P. C. W.

Cancer of thyroid. W. L. Watson and J. L. Pool (*Surg. Gynec. Obstet.*, 1940, **70**, 1037—1050).—167 cases are analysed. Papillary adenocarcinoma is the most common form; lymphosarcoma, apparently primary in the thyroid, was found in 5 cases. Pre-operative diagnosis of thyroid cancer was confirmed by aspiration biopsy in 83% of 74 cases. P. C. W.

Carcinoma of body of uterus. J. C. Masson and R. O. Gregg (*Surg. Gynec. Obstet.*, 1940, **70**, 1083—1093).—Analysis of 907 cases treated at the Mayo Clinic during 24 years. P. C. W.

New classification of ovarian tumours. W. Schiller (*Surg. Gynec. Obstet.*, 1940, **70**, 773—782). P. C. W.

Leiomyosarcoma of stomach. C. J. Baumgartner (*West. J. Surg. Obstet.*, 1939, **47**, 27—30).—A case is reported with a complete absence of symptoms, apart from possible melæna, until the tumour penetrated through the diaphragm and perforated into the abdomen. P. C. W.

Rhabdomyosarcoma. H. Y. Harper and J. M. Feder (*Surgery*, 1939, **6**, 76—79).—A case is described. Peculiar features were the facts that the tumour had lain dormant for 50 years, was situated in the sternocleidomastoid muscle, and occurred in a negro. It is suggested that rhabdomyosarcomata are related to mixed tumours or teratomata. P. C. W.

Sarcoidosis. C. Cameron and E. K. Dawson (*Edinb. Med. J.*, 1942, **49**, 737—756).—A review of the nature, pathology, clinical features, and diagnosis of the disease based on the account of a case. (12 photographs.) H. S.

Relationship between regeneration and tumour growth.—See A., 1943, III, 155.

Anacidity and gastritis associated with gastric carcinoma.—See A., 1943, III, 177.

Multiple tests of hepatic function in gastroenteric malignancy.—See A., 1943, III, 178.

Radium therapy of carcinoma of cervix. Röntgen-ray therapy of skin cancer. Irradiation treatment of cancer of lip. Radium applicator for treatment of corporeal carcinoma.—See A., 1943, III, 199.

XVIII.—NUTRITION AND VITAMINS.

Nutritional problems in wartime. C. J. Barbonka (*Amer. J. digest. Dis.*, 1942, **9**, 309—312).—A lecture. N. F. M.

Canine nutrition. J. J. Davies (*Vet. Rec.*, 1942, **54**, 337—340).—A clinical paper, with discussion. E. G. W.

Diet in pregnancy. W. C. W. Nixon (*J. Obstet. Gynaec.*, 1942, **49**, 614—636).—A lecture. P. C. W.

Nutrition of expectant and nursing mothers. People's League of Health (*Lancet*, 1942, **243**, 10—12).—A dietetic survey of 5022 expectant and nursing women showed that in 1938—39 there was no marked shortage of first-class protein or of vitamin-B₁; there was Ca shortage in 70% and Fe deficiency in 98%, -A and -C deficiency in about 50%. Some women were given supplements of the above substances and these showed a statistically significant reduction in the frequency of pregnancy toxæmia. The effects on prematurity and birth-wt. of baby are also discussed. C. A. K.

Maintenance of nutrition in surgical patients. A. Stengel and I. S. Ravdin (*Surgery*, 1939, **6**, 511—519).—Discussion with description of the orojejunal method of feeding. P. C. W.

Nutritional studies on powdered wool. J. I. Routh (*J. Nutrition*, 1942, **23**, 125—130).—Growth of young rats was not maintained by use of powdered wool as sole dietary protein. Supplementary feeding of tryptophan, methionine, histidine, and lysine corr. the deficiency. A. G. P.

Nutritional value of autoclaved and raw soya beans supplemented only by vitamins and salt mixture. F. M. Baldwin and E. J. Movitt (*Food Res.*, 1942, **7**, 403—404).—The nutritional val. of soya-bean protein as the sole source of protein in the diet of rats at a level of 40.5% is increased by 62% by steam-autoclaving. Raw soya-bean protein produces appreciable growth. H. G. R.

Role of amino-acids in human nutrition. W. C. Rose, W. J. Haines, and J. E. Johnson (*J. Biol. Chem.*, 1942, **146**, 683—684).—Valine and methionine are indispensable constituents of the human diet. P. G. M.

Influence of feeding low-nitrogen rations on reliability of biological values. J. I. Miller and F. B. Morrison (*J. Agric. Res.*, 1942, **65**, 429—451).—Lambs fed on a low-N ration reached a stable level of urinary N excretion (approx. 0.037 g. per kg. body wt.) in 10—12 days. Addition to the ration of 4 and 1.2% of dried skim milk protein improved appetite and caused less or no loss of body wt. but, despite complete protein digestion, the urinary N losses rose to approx. 0.0474 and 0.0438 g., respectively. Following a low-N period of 20 days, lambs showed unusually high efficiency of N utilisation for at least 30 days. The relative biological val. of the N in different rations was not influenced by low-N feeding. R. H. H.

Effect of added glucose on digestibility of protein and of fibre in rations for sheep. T. S. Hamilton (*J. Nutrition*, 1942, **23**, 101—110).—Feeding maize sugar to sheep increased the apparent digestibility of the dry matter, N-free extractives, and total carbohydrate and decreased that of total N and crude fibre in the ration without affecting that of ether extract or gross energy. The true digestibility of the total N was unchanged, the decrease in apparent digestibility being due to increased metabolic N in faeces. A. G. P.

Synthetic food media for use in nutrition studies of the European corn borer. G. T. Bottger (*J. Agric. Res.*, 1942, **65**, 493—500).—Comparative tests were made of the nutritive vals. of 20 food media for the development of *Pyrausta nubilalis*, Hbn. Casein was superior to zein, and the addition of peptone to either stimulated feeding and growth of larvae. A glucose-sucrose ratio of 2:1 satisfied the carbohydrate requirement. Fat requirements were not estimated. Mineral salts were beneficial nutritionally and as buffers against the production of excessive acidity. Vitamin-A, -B₁, and -E aided nutrition. R. H. H.

Chart of the nutritive values of British Columbia fishery products. B. E. Bailey (*Progr. Repts. Fish. Res. Bd. Canada*, 1942, No. 53, 9—11). R. G. W.

Metabolisable energy of some chicken feeds. G. S. Fraps, E. C. Carlyle, and J. F. Fudge (*Texas Agric. Exp. Sta. Bull.*, 1940, No. 589, 23 pp.).—The average difference in metabolisable energy, as calc. from the digestible constituents of the rations with allowance for protein retained, in 128 tests on growing chicks was 2% and the standard deviation of this difference was only 2.8%. A. A. M.

Quality of national loaf. E. I. McDougall and P. Herbert (*Lancet*, 1942, **243**, 69—70).—17 samples of the national loaf from different parts of the country were examined for crude-fibre content. 5 slightly, and 2 greatly, exceeded the upper limit of 0.9% recommended by the Medical Research Council (*ibid.*, 1941, **240**, 203). C. A. K.

Nutritive value of agar and Irish moss. H. W. Nilson and J. W. Schaller (*Food Res.*, 1941, **6**, 461—469).—Rats grow well on diets supplemented with 5—30% of agar or 5—20% of refined Irish moss though some groups exhibit differences in the mean daily wt. gain. On levels above 10% agar or Irish moss the animals require more food and water per g. gain in wt. The digestibility coeffs. of the N-free extract of agar and Irish moss are 28 and 50%, respectively, irrespective of the level in the diet. As the level of supplement is increased there is a significant depression in the apparent digestibility of the dry matter of the remainder of the diet amounting to almost 10% at the higher levels. H. G. R.

Effect of aromatic hydrocarbons on growth of young rats. H. D. West and N. C. Jefferson (*J. Nutrition*, 1942, **23**, 425—430; cf. A., 1940, III, 596).—Addition of diphenyl or chrysene to low-protein rat diets retarded growth; supplementary feeding of l-cystine or dl-methionine counteracted this effect. The action of the hydrocarbons was not the outcome of lowered food consumption but resulted from increased demands of the tissues for S-containing acids. A. G. P.

Availability to rats of phosphorus in red clover hays of widely different phosphorus content. D. E. Williams, F. L. MacLeod, and

E. Morrell (*J. Nutrition*, 1942, **23**, 501—511).—Utilisation of dietary P by rats was higher on a ration containing clover hay of high P than on that of low P content. Similar results were obtained when P was supplied as clover ash. The poorer availability of P in low-P clover was associated with its Fe and Al contents. A. G. P.

Trace elements in foods. H. O. Calvery (*Food Res.*, 1942, **7**, 313—331).—A comprehensive review of the occurrence, nutritive val., and toxicity of trace elements. H. G. R.

Effect of magnesium-deficient diet on serum-phosphatase activity in albino rats. F. H. Snyder and W. R. Tweedy (*J. Biol. Chem.*, 1942, **146**, 639—647).—The serum-Mg⁺⁺ of 28-day-old rats on a Mg-deficient diet in 4—5 days falls to 0.8 mg. per 100 c.c. By this time the serum-phosphatase has fallen to 22.5 units (normal about 70). This depression persists for periods up to 30 days, and is accompanied or immediately followed by increased calcification. P. G. M.

Effect of manganese on calcification in the growing rat. C. Chornock, N. B. Guerrant, and R. A. Dutcher (*J. Nutrition*, 1942, **23**, 445—458).—Restriction of growth of rats by high-Mn diets was proportional to the Mn intake. On high-Ca-low-P diets large Mn intakes increased the excretion (faecal) of P and, at very high Mn levels, of Ca. Increase of P in such diets improved the retention of both Ca and P. Rickets developed in animals receiving much Mn. Administration of vitamin-D or of K citrate increased the retention of Ca and P and improved calcification. Dietary Mn was stored mainly in the liver. Mn injected subcutaneously was partly stored in liver and bones but a large proportion was excreted in faeces. Small Mn intakes, sufficient to correct perosis in chicks, had no effect on growth or calcification in rats receiving either normal or rachitogenic diets. A. G. P.

Iron requirement of children of early school age. F. A. Johnston and L. J. Roberts (*J. Nutrition*, 1942, **23**, 181—193).—Healthy hæmoglobin levels in children of 8—11 years are maintained by a daily intake of 11.4 mg. of Fe. A. G. P.

Fluorine and spondylitis deformans. F. H. Kemp, M. M. Murray, and D. C. Wilson (*Lancet*, 1942, **243**, 93—96).—X-Ray studies in 27 subjects suggest that excessive F intake may, in association with defective nutrition, predispose to spondylitis deformans. C. A. K.

Synthesis of vitamins by intestinal bacteria. P. R. Burkholder and I. McVeigh (*Proc. Nat. Acad. Sci.*, 1942, **28**, 285—289).—*Escherichia coli*, *Proteus vulgaris*, *B. aerogenes*, *B. mesentericus*, and *B. vulgatus*, grown in a synthetic medium, synthesise varying amounts of biotin (except *B. mesentericus*), nicotinic acid (except *P. vulgaris*), aneurin, and riboflavin. R. L. E.

Dietary deficiencies in surgical patients. R. W. McNealy, J. A. Gubler, and E. H. Tuft (*Surgery*, 1939, **6**, 48—64).—A review followed by detailed daily diets from the 5th pre-operative to the 40th post-operative day in surgical cases. 7 illustrative cases are reported. The ill effects of vitamin deficiencies are stressed. P. C. W.

Oral lesions associated with dietary deficiencies in monkeys. O. D. Chapman and A. E. Harris (*J. infect. Dis.*, 1941, **69**, 7—17).—*Macacus mulatta* monkeys on certain vitamin-deficient diets developed oral lesions and increase in the fusospirochaetal flora. Monkeys on diets deficient in the -B₂ complex, except -B₆, with supplements of -A, -D, -C, nicotinic acid, and riboflavin developed more severe oral lesions and survived for a shorter time. Monkeys on an adequate stock diet resisted artificial implantation of the fusospirochaetal flora under the severest of test conditions. F. S.

Utilisation by rat of vitamin-A. O. W. Barlow and H. Kocher (*Amer. J. Physiol.*, 1942, **137**, 213—216).—Vitamin-A administered intramuscularly in oil to -A-deficient rats is 10—15% as effective as when given orally. Solutions of -A in propylene glycol are as effective by the intramuscular as by the oral route. The effectiveness of intramuscular injections in oil or propylene glycol increases with the division of the dose. M. W. G.

Variation of vitamin-A fluorescence in cyclic changes of ovary.—See A., 1943, III, 114.

Fate of excess vitamin-A stores during depletion: value of the histological demonstration of vitamin-A. H. Popper and S. Brenner (*J. Nutrition*, 1942, **23**, 431—443; cf. A., 1940, III, 512, 586).—Vitamin-A fluorescence in rat livers was paralleled by chemically determined -A in livers but not by that in the retina or blood. The Kupffer cells contained more -A than did liver cells during depletion and when the vitamin supply was large. In the mid-phase of depletion much -A was present in liver. In hypervitaminosis the Kupffer cells store the excess of -A and destroy it. During depletion Kupffer cells distribute the remaining -A. Livers of male rats lost -A more rapidly than did those of females during depletion although the method of utilisation was apparently the same. A. G. P.

Relation of liver stores to occurrence of early signs of vitamin-A deficiency in white rats. S. Brenner, M. C. H. Brookes, and L. J. Roberts (*J. Nutrition*, 1942, **23**, 459—471).—On a vitamin-A-free diet 4-week-old normal rats were depleted of all liver-A in 1 week.

Hypervitaminotic rats lost 90% of their excess -A in 8 and 98% in 18 weeks. Blood and retina also lost excess -A but retained significant amounts after all liver-A was depleted. Female rats stored and retained more -A in livers and less in blood than did males. A. G. P.

Relationships of avitaminosis-A to vitamin-C in the young bovine. P. D. Boyer, P. H. Phillips, W. D. Pouden, C. W. Jensen, I. W. Rupel, and M. E. Nesbit (*J. Nutrition*, 1942, **23**, 525—531).—In dairy calves plasma-ascorbic acid levels are contingent on the -vitamin-A levels especially when the latter fall below 0.10 µg. per c.c. Development of -A pathology occurs several weeks after plasma-A levels have been reduced to 0.05—0.07 µg. per c.c. Increased intracranial pressure in -A-deficient calves is associated with a marked lowering of the ascorbic acid content of the c.s.f. The vitamin-C of the fluid of the cow is 5—10 times that of the plasma. Administration of -C to -A-deficient calves increased the -C content of c.s.f. and reduced intracranial pressure in 3 out of 5 cases. In rats -A deficiency caused diminished urinary excretion of -C. A. G. P.

Experimental avitaminosis-A in man. K. H. Wagner (*Z. physiol. Chem.*, 1940, **265**, 59; cf. A., 1942, III, 538).—Errors are corr. and tabulated data added. W. McC.

Absorption of vitamin-A in tuberculosis. B. B. Breese, E. Watkins, and A. B. McCoord (*J. Amer. Med. Assoc.*, 1942, **119**, 3—4).—Determination of vitamin-A blood levels after oral test doses of -A showed that there was diminished absorption in 29 cases of severe pulmonary tuberculosis. C. A. K.

Vitamin-A in relation to diseases of farm animals. N. S. Barron (*Vet. Rec.*, 1942, **54**, 29—39).—Vitamin-A in livers of 105 sheep and lambs, 134 pigs, 16 cows, 29 calves, 32 fowls, and 3 foals and 72 samples of ewes' milk was determined. The fetal lamb possesses no store of -A in its liver and relies during its early post-natal period on the colostrum of the ewe; the piglet is born with a limited reserve. The calf relies largely on its dam for its initial supply of -A. Certain diseases are associated with lowered -A reserve; gastritis, enteritis, and certain respiratory disorders (not tuberculosis). The livers of tuberculous cows contained greater reserves of -A than those of non-tuberculous animals. E. G. W.

Treatment of experimental renal hypertension with vitamin-A.—See A., 1943, III, 93.

Crystalline vitamin-A.—See A., 1943, II, 90.

Crystalline aliphatic esters of vitamin-A.—See A., 1943, II, 90.

Vitamin-A investigations. V. Adsorption from treated dogfish liver oil. L. A. Swain (*Progr. Repts. Fish. Res. Bd. Canada*, 1942, No. 53, 7—9).—A tenfold concn. of vitamin-A was obtained by passing a 2% solution of dogfish liver oil (the -A esters had already been converted into -A alcohol) in benzene through a tube containing Al₂O₃ activated by digestion with HCl. The adsorbed -A alcohol was recovered by elution with benzene containing 0.5% of ethyl alcohol. R. G. W.

Vitamin-A assays of plant tissues. Potential sources of errors in sampling. L. E. Booher, E. M. Hewston, and R. L. Marsh (*Food Res.*, 1941, **6**, 493—498).—Bioassays of raw plant tissues may be vitiated unless enzymes that catalyse oxidation of carotene are first inactivated. This may be brought about by preliminary cooking or treatment of the tissue with a mixture of acetone and alcohol. The vitamin-A vals. of carrots and sweet potatoes, in contrast to green leafy vegetables, are unaltered by the cooking process and presumably they do not contain appreciable amounts of these enzymes. H. G. R.

[Determination of] chlorophyll and carotene in plant tissue.—See A., 1943, III, 151.

Vitamin-B requirements of man. R. J. Williams (*J. Amer. Med. Assoc.*, 1942, **119**, 1—3).—A well-balanced human diet of 2500 calories was assayed for members of the vitamin-B complex (*Univ. of Texas, Publ.* 4137, 1941). It contained thiamin 3.6 mg., nicotinic acid 40 mg., riboflavin 3.7 mg., pantothenic acid 11.2 mg., biotin 0.25 mg., inositol 98.7 mg., pyridoxine 1.8 mg., and folic acid 1.4 mg. 6 commercial preps. of -B complex were wholly inadequate in -B vitamins. C. A. K.

Vitamin-B complex in the nutrition of dog. A. E. Schaefer, J. M. McKibbin, and C. A. Elvehjem (*J. Nutrition*, 1942, **23**, 491—500).—Irregular and sub-optimal growth occurred in dogs receiving a vitamin-B-free diet (sucrose-casein-cottonseed and cod-liver oil-salts) supplemented with thiamin, riboflavin, nicotinic acid, pyridoxine, pantothenic acid, and choline. Growth was improved by addition of liver extract. Further purification of the casein used was followed by arrested growth, loss of wt., and anorexia. This condition was corr. by liver extract, but not by mixtures of inositol, p-aminobenzoic acid, and glutamine. A. G. P.

Relation of liver function, pulse rate, and temperature of hyperthyroid dogs to vitamin-B₁ and yeast.—See A., 1943, III, 107.

Chastek paralysis in foxes: B₁-avitaminosis induced by feeding fish.—See A., 1943, III, 98.

Pharmacological interactions of cobra venom and aneurin.—See A., 1943, III, 139.

Effect of vitamin-B₁ on concentration of glucose optimal for fruiting of certain fungi.—See A., 1943, III, 149.

Inactivation of vitamin-B₁ in diets containing whole fish. R. G. Green, W. E. Carlson, and C. A. Evans (*J. Nutrition*, 1942, 23, 165—174).—Occurrence of Chastek paralysis in foxes receiving a ration containing 20% of whole carp was prevented by a supplement of 10 mg. of thiamin daily, was shown only as a transient anorexia when 5 mg., and was allayed 1 month when 2 mg., of thiamin was given. Foxes receiving skin, scales, skeleton, and heads of carp or carp viscera developed paralysis: none appeared in those receiving carp muscle. Rations containing whole fish given alternately with balanced rations containing adequate vitamin-B₁ did not induce Chastek paralysis. Fish probably inactivates -B₁ when mixed with it in the ration. A. G. P.

Thiamin content of Australian biscuits and breakfast foods. E. C. Slater and J. Rial (*Med. J. Austral.*, 1942, II, 231—234; cf. A., 1941, III, 595).—Biscuits, cakes, cereals, etc. (bread excluded) provide 8.9% of total calories, 12% of carbohydrate, 5.6% of protein, and 5.4% of fat in the average New South Wales diet. The thiamin content, determined by a photoelectric fluorimeter, was 0.1—3.6 µg. per g. in 36 varieties of biscuits and 0.1—6.1 µg. per g. in 22 breakfast foods. A large proportion of thiamin is destroyed in manufacture: A good source is rolled oats. There is little loss during the household cooking of porridge. F. S.

Distribution of thiamin in the wheat plant at successive stages of kernel development.—See A., 1943, III, 149.

Thiamin, riboflavin, nicotinic acid, and pantothenic acid contents of wild rice.—See A., 1943, III, 151.

Determination of thiamin, modification of the Schopfer technique. J. M. Chaves and I. V. Mattoso (*Anais Assoc. Quim. Brasil*, 1942, 1, 250—263).—Most of the asparagose used in Schopfer's technique can be cheaply replaced by urea. The optimum initial acidity of media for the growth of the micro-organism is pH 6.0—6.5. F. R. G.

Riboflavin content of pork muscle. N. R. Ittner and E. H. Hughes (*Food Res.*, 1941, 6, 239—244).—Pigs cannot synthesise sufficient quantities of this vitamin for growth and health. The riboflavin content of the muscle is related strictly to that of the diet. H. G. R.

Riboflavin content of some common foods. H. E. Munsell (*Food Res.*, 1942, 7, 85—95).—The riboflavin contents of a no. of common foods assayed by the rat-growth method are tabulated. H. G. R.

Vitamin-B₂ content of kefir granules. M. Schulz and W. Werner (*Zentr. Bakt.*, 1942, II, 105, 26—31).—Fresh kefir granules contain 6—11 mg. and kefir powder 2.7 mg. of vitamin-B₂ per 100 g. The -B₂ content of kefir is derived from bacterial synthesis and is not dependent on the -B₂ content of the whey on which the kefir is grown. F. S.

Need for pantothenic acid and an unidentified factor in reproduction in domestic fowl. M. B. Gillis, G. F. Heuser, and L. C. Norris (*J. Nutrition*, 1942, 23, 153—163).—Pantothenic acid as well as a heat-stable factor present in liver extract is essential for reproduction in hens. The liver factor in itself did not increase hatchability as did pantothenic acid but stimulated the action of the latter. Dietary deficiency of pantothenic acid caused a dermatitis in feet and shanks. A. G. P.

Effect of pantothenic acid on growth in rats. K. Schwarz (*Z. physiol. Chem.*, 1942, 275, 232—244).—Pantothenic acid deficiency and cessation of growth are produced in young rats by maintaining their mothers throughout pregnancy on a diet of milk, rice, and white bread and, after the young reach the wt. of 28—32 g., feeding them on the diet of Kuhn and Wendt (A., 1939, III, 166). Renewed growth, after an induction period of approx. 14 days, is initiated by administering pantothenic acid, each µg. of which leads to a wt. increase of 62.5 mg., up to a total increase of 20 g. The relation between daily dose and time required to attain a certain wt. increase is nearly hyperbolic. Wt. increases greater than approx. 20 g. require proportionately larger amounts of the acid, chiefly because the diet lacks material of unknown nature. This material is termed "factor 125" because the decrease in the rate of growth begins after the rats weigh approx. 125 g. W. McC.

Achromotrichia from pantothenic acid deficiency. Multiple actions of pantothenic acid. K. Schwarz (*Z. physiol. Chem.*, 1942, 275, 245—257).—Rats require pantothenic acid for production of hair pigment and hence achromotrichia is produced by deficiency and cured by administration of the acid. The preventive and curative daily doses are approx. 20 µg. per rat. The daily dose required to renew growth which has ceased because of deficiency is approx. 50 µg. whereas that required to prevent the cessation of growth is only approx. 5 µg. Competition takes place in the organism between demand for growth and demand for pigment production, growth requirement usually being satisfied first. W. McC.

Synthetic differential growth inhibitor. P. B. Medawar, G. M. Robinson, and (Sir) R. Robinson (*Nature*, 1943, 151, 195).—On steam-distillation, malt extract affords a differential inhibitor, probably an unsaturated lactone, (?) C₆H₈O₂. dl-8-Δ^α-Hexenolactone (parasorbic acid), b.p. 116°/16 mm., now synthesised, resembles the above lactone in chemical behaviour and exhibits the differential growth-inhibitory property. The growth factor thus inhibited may be pantothenic acid or an analogous substance. δ-Valerolactone is non-toxic in the special sense and non-inhibitory. The malt extract distillate contains a highly toxic substance of salicylic acid type and several aldehydes which are non-differential inhibitors. A. A. E.

Biotin in chick nutrition. D. M. Hegsted, R. C. Mills, G. M. Briggs, C. A. Elvehjem, and E. B. Hart (*J. Nutrition*, 1942, 23, 175—179).—Cryst. biotin and biotin concentrates prevent a typical scaly dermatitis and promote growth in chicks. The min. biotin requirement of chicks is 7—10 µg. per 100 g. of diet. A. G. P.

Inactivation of biotin by rancid fats. P. L. Pavcek and G. M. Shull (*J. Biol. Chem.*, 1942, 146, 351—355).—Biotin is inactivated by rancid fats, the mechanism being one of partial oxidation similar to that produced by dil. H₂O₂. The inactivated form is not detected by the *Lactobacillus casei* assay but gives a response by the yeast-growth method. 96% inactivation occurs in 12 hr. with ethyl linoleate of high peroxide val., but in presence of α-tocopherol this amounts to only 40% after incubation for 48 hr. The higher is the peroxide val., the greater is the inactivation. H. G. R.

Ascorbic acid requirements of children. O. A. Bessey and R. L. White (*J. Nutrition*, 1942, 23, 195—204).—Among 93 children examined 80% of those receiving 3 oz. or more of orange juice daily or equiv. amounts of ascorbic acid in citrus fruits or tomatoes maintained a satisfactory plasma-ascorbic acid level. With less than 3 oz. daily plasma levels fell. The amount of ascorbic acid consumed in less potent foods (other fruits and vegetables) in ordinary home diets under city conditions was insufficient appreciably to affect plasma levels. A. G. P.

Daily intake of ascorbic acid required to maintain adequate and optimum levels of this vitamin in blood plasma. M. L. Fincke and V. A. Landquist (*J. Nutrition*, 1942, 23, 483—490).—The daily intake of ascorbic acid necessary to maintain a plasma-vitamin-A level of 0.8 mg. per 100 ml. was 38—61 mg. in 3 women and 69—89 mg. in 2 men, i.e., 0.8—1.2 mg. per kg. body wt. The intake required to maintain tissue saturation was 1.7—2.0 mg. per kg. daily. A. G. P.

Effect of controlled ascorbic acid ingestion on urinary excretion and plasma concentration of ascorbic acid in normal adults. C. A. Storvick and H. M. Hauck (*J. Nutrition*, 1942, 23, 111—123).—Among 6 adults (2 men, 4 women) lower ascorbic acid contents in urine and plasma were associated with lower levels of vitamin-C intake; variations among individuals and in the same subject from day to day were considerable. Urinary and fasting plasma-ascorbic acid were closely correlated at lower but not at higher levels of ascorbic acid intake. To maintain tissue saturation on a basal diet providing 10 mg. of ascorbic acid daily a supplement of 65—150 mg. was necessary. Increase in ascorbic acid intake resulted in increased urinary ascorbic acid, but the corresponding effect on fasting plasma vals. occurred only with intakes up to the min. requirement for tissue saturation. A. G. P.

Utilisation of vitamin-C by cancer patients.—See A., 1943, III, 128.

Relation of volume of daily milk production to the ascorbic acid content of cow's milk. A. D. Holmes, F. Tripp, E. A. Woelfler, and G. H. Satterfield (*Food Res.*, 1942, 7, 111—117).—No strict relationship was found between the vol. of milk produced per day and the amount of vitamin-C found in milk though there is some correlation between the daily vol. of milk and the total daily -C output. As the vol. of milk decreases with the advance of lactation the total output of -C decreases. In Guernsey cows the -C val. varies between 21.65 and 15.99 mg. per l. corresponding to 13—14 and 3.79 l. per day, respectively, the largest daily output being 406 mg. from cows producing the largest vol. of milk. For Holsteins, -C varies between 25.27 and 16.44 mg. per l. corresponding to 4—5 and 5—6 l. per day; the highest daily output is 380 mg. from cows producing 20—21 l. per day and the lowest is 76 mg. from cows producing 3—4 l. per day. H. G. R.

Sources of vitamin-C in Alberta. H. K. Waagen and L. B. Pett (*Canad. J. Res.*, 1942, 20, B, 274—283).—The vitamin-C contents of various fruits and vegetables grown in Alberta were determined. The vals. obtained ranged from 84 in strawberries to approx. 1 mg.-% in plums and celery; grapefruit juice contained 42 mg.-%. On cooking, losses in -C content occur both by oxidation and by extraction by the cooking water; data for such losses are tabulated. Seasonal variations in -C content of potatoes, oranges, and grapefruit are described; with potatoes (steamed), the val. is max. (17.0) in September and min. (2.4 mg.-%) in January. F. O. H.

Ascorbic acid content of pigmented fruits, vegetables, and their juices. M. M. Kirk and D. K. Tressler (*Food Res.*, 1941, 6, 395—

411).—Daily variations in the vitamin-C content of fruits, due to season, ripeness, and amount of sun and rain, together with varietal differences and differences according to the portion of the fruit, are observed. Peach and egg plant skins contain more than the pulp but in the latter fruit there is little difference between the portion immediately under the skin and the centre portion. The following vals. are reported in mg. per g.: strawberries 0.40—1.04, raspberries 0.13—0.30, blueberries 0.13—0.20, plums 0.03—0.10, peaches 0.07—0.13, turnips 0.32—0.47, blackberries, cherries, and dewberries very little. Much -C is lost during the prep. of the fruit for juices but is arrested by heating. The temp. of pressing has little effect providing the fruit is heated to 60—76.7° though the pressing process causes some loss. The -C content is inversely proportional to the sugar added and this loss is probably caused by oxidation during stirring. No appreciable loss occurs during storage in a dark room in glass bottles. There is less -C in apple juice (which is very low in -C) from Greening and Cortland varieties, but not from Baldwins, than in the residual pomace. H. G. R.

Vitamin-C, carotene, calcium, and phosphorus in expressed vegetable juice. M. E. Puffer, W. F. Hinman, H. Charley, and E. G. Halliday (*Food Res.*, 1942, 7, 140—143).—Vegetable juices (celery, cabbage, carrots, spinach) contain 8—69, 22—36, 15—90, and 24—62% of the reduced ascorbic acid, carotene, Ca, and P, respectively, of the whole vegetable and wt. for wt. are almost as good sources of nutritional elements as the whole vegetables. No loss of carotene but an appreciable decrease in reduced ascorbic acid occurs on keeping. H. G. R.

Ascorbic acid content of onions and observations on its distribution. E. F. Murphy (*Food Res.*, 1941, 6, 581—594).—The vitamin-C content of fresh onions varies between 0.17 and 0.40 mg. per g. of fresh material for Crystal White Wax and Early Red Globe, respectively, varietal differences being due chiefly to variations in the young central leaves. Small onions contain 32—141% more than large onions of the same variety. The peripheral storage leaves contain only 14—59% of the -C of the central leaves. During storage under domestic conditions losses of 47—80% of -C occur and losses during boiling range from 10—65% and are dependent on the time factor if the amount of cooking water is const. H. G. R.

Ascorbic acid content of muscadine grapes. T. A. Bell, M. Yarbrough, R. E. Clegg, and G. H. Satterfield (*Food Res.*, 1942, 7, 144—147).—The muscadine grape is not a rich source of ascorbic acid, the Scuppernon variety having the highest val. (6.8 mg. per 100 g.). The skins contain 3 times as much as the edible portion and the ripe grape has the same content as the green. H. G. R.

Protection of ascorbic acid during its extraction from plant tissues. M. E. Reid (*Food Res.*, 1942, 7, 288—294).—The successful use of HPO_3 depends on the amount used in the early stages of grinding and sufficient vol. to cover the whole of the sample when crushing begins. Spinach and kale, carrot, banana, and potatoes, and soya beans and cowpeas have low, intermediate, and high requirements of HPO_3 , respectively, and cooking decreases the HPO_3 requirements. Soya beans contain 32—34 mg. of ascorbic acid per 100 g. at the edible stage and it is well preserved in cooking if they are heated rapidly. H. G. R.

Stability of ascorbic acid in metaphosphoric acid extracts. L. W. Mapson and C. A. Mawson (*Nature*, 1943, 151, 222—223).—Samples taken for analysis in 5% HPO_3 or a mixture of HPO_3 and trichloroacetic acid should be kept in the dark if delay between extraction and analysis is likely. Extracts kept at 0° should suffer no loss during 2 days; those kept at room temp. should be analysed within 24 hr. Loss is less when the supernatant extract is separated from the ppt. A. A. E.

Comparison of four methods for determining vitamin-C with a 25-day weight-response bioassay. C. F. Dunker, C. R. Fellers, and W. B. Esselen, jun. (*Food Res.*, 1942, 7, 260—266).—The method described depends on the increase in wt. and protection from scurvy in guinea-pigs on a vitamin-C-free diet supplemented with various levels of -C over a period of 25 days. The method is recommended for foods containing an antioxidant or both active and inactive forms of -C. It gives good agreement with indophenol titration methods and the standard Sherman method (Sherman *et al.*, A., 1922, ii, 407). The Harris and Ray short curative method (A., 1934, 227) and the Stevens I titration (B., 1938, 973) do not agree well with the Sherman method, the I titration giving high results. H. G. R.

Determination of ascorbic acid based on use of standardised 2:6-dichlorophenol-indophenol in xylene. D. M. Highet and E. S. West (*J. Biol. Chem.*, 1942, 146, 655—662).—The method described involves direct shaking of the solution containing ascorbic acid with a standardised solution of 2:6-dichlorophenol-indophenol in xylene, followed by photoelectric determination of unreduced dye remaining in the xylene. It is applicable to coloured juices, urine, plasma, or serum, and HPO_3 tissue filtrates. Solutions containing 5% of HPO_3 or a modified Sendroy's reagent show no destruction of ascorbic acid at room temp. in 24 hr. For determinations on plasma or serum 0.03N-HCl is preferable to 2% HPO_3 . No pro-

tein ppt. is formed, and emulsification with the xylene dye solution is prevented by previous addition of a solution of resin in petroleum. P. G. M.

Use of formaldehyde and 2:6-dichlorophenol-indophenol in determination of ascorbic acid and dehydroascorbic acid. J. W. H. Lugg (*Austral. J. Exp. Biol.*, 1942, 20, 273—285).—The extraction of ascorbic and dehydroascorbic acids from biological materials is discussed, and methods for determination of these acids in HPO_3 extracts are described. The methods depend on the fact that reducing substances which occur in the extracts can be grouped into 3 classes according to their behaviour towards formaldehyde. Substances in class I, e.g., SO_3^{2-} , $\text{S}_2\text{O}_3^{2-}$, cysteine, H_2S , and H_2S -treated pyruvic acid, readily condense with formaldehyde at pH 3.5 or 1.5 to form feebly or non-reducing substances. Substances of class II, of which the only one so far encountered is ascorbic acid, condense readily with formaldehyde at pH 3.5 but only very slowly at pH 1.5. Substances in class III, e.g., quinol, thiourea, Fe^{II} salts, reductone, do not condense either at pH 3.5 or 1.5. The condensations are carried out under carefully controlled conditions, and then the reducing capacities of the reaction mixtures are determined under standard conditions at pH 1.5 with 2:6-dichlorophenol-indophenol. J. N. A.

Colorimetric determination of vitamin-C. M. L. Isaacs (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 948—949).—The aq. extract of the sample is treated with an NH_4 molybdate- Na_2SiO_3 -acetic acid reagent, and the blue coloration is measured photoelectrically. J. D. R.

Interrelationship of manganese, phosphatase, and vitamin-D in bone development. G. F. Combs, L. C. Norris, and G. F. Heuser (*J. Nutrition*, 1942, 23, 131—140).—Rachitic chicks showed abnormally high bone-phosphatase levels unless Mn was omitted from the rachitogenic diet. In absence of Mn vals. were normal. The effect of Mn on phosphatase vals. was much greater when a rachitogenic than when a non-rachitogenic diet was given. The perosis index of chicks receiving neither Mn nor vitamin-D was less than of those receiving -D but not Mn. A. G. P.

Activated ergosterol in treatment of chronic arthritis. I, II. R. G. Snyder and W. H. Squires (*N.Y. Sta. J. Med.*, 1940, 40, 708—719; 1941, 41, 2332—2335).—I. 23 cases of chronic arthritis of 2—5 years' duration were treated by the administration of Ertron, an activated ergosterol product, an average of 300,000 U.S.P. units of vitamin-D being given daily over several months. Improvement set in after 1—3 months. No toxic reactions except some nausea and vomiting were seen, yielding rapidly to interruption of medication.

II. Results after 2—3 years were good or excellent in 11 of the 23 cases. 3 cases have been lost sight of. E. M. J.

Irradiated ergosterol poisoning. P. A. Tumulty and J. E. Howard (*J. Amer. Med. Assoc.*, 1942, 119, 233—236).—Massive doses of irradiated ergosterol produced signs of intoxication in 2 patients, in whom hypercalcaemia was considered responsible for signs of renal damage. C. A. K.

Changing concepts of antisterility vitamin (vitamin-E). K. E. Mason (*Yale J. Biol. Med.*, 1942, 14, 605—617).—A review. F. S.

α -Tocopherol requirement of mouse. M. Goettsch (*J. Nutrition*, 1942, 23, 513—523).—With a diet of low vitamin-E content, supplemented with the min. amount of α -tocopherol to permit live births and survival of young, seven generations of mice showed no retardation of growth or change in age at which oestrus first occurred. In absence of α -tocopherol females were sterile. 0.5—1.0 mg. of α -tocopherol given at the beginning of gestation ensured the birth of young in at least 85% of cases. Males retained fertility and growth rates on low-E diets. A. G. P.

Vitamin-E in habitual abortion and habitual miscarriage.—See A., 1943, III, 118.

Vitamin-E in progressive muscular dystrophy.—See A., 1943, III, 96.

Factors influencing the onset and cure of nutritional muscular dystrophy. S. H. Epstein and S. M. Morgulis (*J. Nutrition*, 1942, 23, 473—482).—The dystrophy in rabbits was cured by parenteral administration of $\text{Na}_2 \alpha$ -tocopheryl phosphate. Dietary cod-liver oil is necessary for the production of active dystrophy; the latter is detected by a test (described) for creatinuria. Use of aq. $\text{Na}_2 \alpha$ -tocopheryl phosphate in clinical tests for avitaminosis-E is recommended. A. G. P.

Determination of tocopherols in muscle. H. B. Devlin and H. A. Mattill (*J. Biol. Chem.*, 1942, 146, 123—130).—The method of Emmerie and Engel (A., 1939, II, 123) is modified by extracting with Moore and Ely's solvent (A., 1941, III, 942), removing cholesterol by selective adsorption on "florisil," destroying with 85% H_2SO_4 double linkings that reduce FeCl_3 , and dissolving the FeCl_3 + dipyrindyl in glacial acetic acid. All-glass apparatus is used since rubber interferes. The tocopherol contents of the muscle of healthy and vitamin-E-deficient rats (except severely deficient males in which the val. is 7.5 mg.) are 11.8 and 9.4 mg. per kg. respectively.

The val. is increased slowly to 20.0 mg. by oral administration of a-tocopherol. W. McC.

Water-soluble compounds with antihæmorrhagic activity.—See A., 1943, II, 88.

Percutaneous administration of vitamin-K. Value of vitamin-K in newborn.—See A., 1943, III, 85.

Determination of factor V by measurement of nitrite produced by *Hæmophilus influenza*. C. L. Hoagland and S. M. Ward (*J. Biol. Chem.*, 1942, **146**, 115—122; cf. A., 1943, III, 63).—The amount of NO₂ produced by *H. influenza* in a proteose-peptone medium containing KNO₃ or NaNO₃ and optimal concns. of all other factors essential for the growth of this organism is used as a measure of the V-factor content of added blood. Results are expressed in terms of co-enzyme I and this is used to prepare the standard solution. Healthy human erythrocytes contain 40—70 µg. of factor-V per c.c. and this val. is not affected by various diseases. It is greatly increased by ingestion of nicotinic acid, but is unaffected by that of nicotinamide possibly because separate metabolic pathways exist for the acid and amide. W. McC.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Heat production in warm-blooded animals and constancy of body-temperature. G. G. Jaure (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 213—216).—Body-heat is probably produced chiefly in organs (especially liver) other than muscle and is lost in others, e.g., lungs and (especially) skin. When allowance is made for the periods (approx. 12 hr. daily) during which the first group of organs is not producing heat, the val. for daily heat production calc. from increases in the temp. of blood as it passes through the heat-producing organs agrees well with the experimental val. Periodic activity of the organs, equilibrium between heat production + heat intake and heat loss, and other factors which contribute to maintenance of approx. const. body-temp. are discussed. W. McC.

Rôle of viscera in regulating temperature of body. N. A. Fedorov and E. I. Shur (*Amer. J. Physiol.*, 1942, **137**, 30—38).—Thermogenesis in liver and intestines (using a thermoelectric method) was studied in angiotomised dogs with cannulae in portal and hepatic veins. In normal fasting dogs lowest temp. of the blood is found in the aorta and highest in the hepatic vein. Positive evidence is given of intestinal thermogenesis. When the animal is cooled (application of ice to skin) the difference in temp. between the blood in hepatic and portal veins is increased, i.e., there is a rise in hepatic heat production providing the blood flow is accelerated. On overheating the animal, the reverse occurs. No noticeable changes occur in thermogenesis in the case of homogeneous blood transfusion. The febrile state caused by heterogeneous transfusion is accompanied by an increase in thermogenesis of liver and intestines. After anaphylactic shock the same changes occur as in the case of heterogeneous transfusion with greater variations in temp., especially in intestines. Liver and intestines participate in determining the febrile process accompanying the transfusion of foreign blood. M. W. G.

Fasting respiratory metabolism of white rat following controlled feeding. C. L. Kingdon, I. L. Bunnell, and F. R. Griffith, jun. (*Amer. J. Physiol.*, 1942, **137**, 114—123).—Fasting respiratory metabolism of the albino rat is described hr. by hr. for 36 hr., following controlled feeding. The 24-hr. fasting rat is an unfortunate choice as a metabolic standard, since it is midway in the transition from the metabolism of mixed foodstuffs to one exclusively of fat; the slightest inaccuracy in estimation of fasting time at this interval will result in results of wide diversity. M. W. G.

Disturbance of nucleic acid metabolism produced by therapeutic doses of X- and γ-radiations. I. Methods of investigation. II. Accumulation of pentose nucleotides in cytoplasm after irradiation. III. Inhibition of synthesis of thymonucleic acid by radiation. J. S. Mitchell (*Brit. J. exp. Path.*, 1942, **23**, 285—295, 296—309, 309—313).—I. Unstained sections of histologically comparable portions of untreated and irradiated tissue were photographed on the same microscopic field by ultra-violet light of λ 2537 Å. By measuring the blackening of the photographic plates, employing a comparison neutral wedge and a microphotometer with standard visible radiation, the distribution of the nucleic acids in the tissues could be deduced. Additional information was obtained by measurements of the ultra-violet absorption and fluorescence spectra and by histochemical tests.

II. There was an increase in the absorption of ultra-violet radiation λ 2537 Å. in the cytoplasm of proliferating and differentiating cells after therapeutic doses of X- and γ-radiations. This was due to the accumulation in the cytoplasm of pentose nucleotides, probably ribonucleotides, containing adenine and some other unidentified chromophoric groups. The magnitude of the change is consistent with presence of 3% of ribonucleotides and is suggestive of a metabolic disturbance produced by irradiation. (12 photomicrographs.)

III. There is no comparative increase in the nucleic acid content of the nuclei after irradiation. The inhibition of the synthesis of

thymonucleic acid in the nucleus is probably due to inhibition by radiation of the process of reduction of ribo- to deoxyribo-nucleotides in the nucleus. This explains the well-known inhibition of mitosis by irradiation, and the accumulation of ribonucleotides in the cytoplasm may account for the main cytoplasmic changes. F. S.

Choline metabolism. III. Metabolism of trimethylamine and its oxide. H. Müller and I. Immendorfer (*Z. physiol. Chem.*, 1942, **275**, 267—276; cf. A., 1943, III, 44).—Trimethylamine, orally administered to rats and guinea-pigs, is converted to the extent of 19 and 41% respectively into its oxide, which is excreted in the urine. The corresponding vals. after subcutaneous injection are 11 and 32.5% but no accumulation of the oxide occurs in the body and no conversion of the amine into urea can be detected. Part of the amine is excreted unchanged. When the oxide is injected into rats 11% of it is recovered unchanged from the urine, which also contains much of the amine. The amine, added to pulped organs or passed through the surviving liver (rabbit), is not converted into oxide. The oxide is quantitatively converted into the amine by pulped liver and liver extract but is scarcely or not at all changed by perfusion. Yeast does not convert the amine into its oxide. Probably reversible conversion of amine into oxide occurs in the liver, the change amine → oxide predominating in the intact healthy liver and the reverse change in the damaged liver. W. McC.

Production of urea from glutamine. IH. F. Leuthardt (*Z. physiol. Chem.*, 1940, **265**, 1—8; cf. A., 1938, III, 508).—No accumulation of NH₃ occurs in liver slices shaken with glutamine and this has no catalytic effect on production of urea from NH₃. The production is increased by glutamic acid, especially when the liver of fasting animals is used, although the high rate of production of urea from glutamine is not due to intermediate production of the acid. The increase does not occur if lactate is present. High concns. of NH₄ salt do not irreversibly damage liver, the decrease in production of urea which occurs when the NH₄ concn. increases being probably due to a reaction that couples oxidation of glucose and synthesis of urea. Such a reaction explains the difference between glucose on the one hand and lactate, pyruvate, and glutamic acid on the other when used as respiratory substrates. The breakdown of glutamine does not lead to the intermediate production of glutamic anhydride. W. McC.

Transmethylation as metabolic process in man. S. Simmonds and V. du Vigneaud (*J. Biol. Chem.*, 1942, **146**, 685—686).—Daily ingestion of 2 g. of trideuteromethionine by a normal male for 3 days results in the isolation of creatinine and choline, both containing D, thus proving the occurrence of transmethylation in man. P. G. M.

Greying of hair. O. S. Gibbs (*Science*, 1942, **95**, 576).—A criticism of Hrdicka's theory of metabolic melanin formation. E. R. R.

Degradation of D- and L-phenylalanine and -tyrosine in alcaptonuria. F. Lanyar (*Z. physiol. Chem.*, 1942, **275**, 217—224; cf. A., 1943, III, 48).—L-Phenylalanine and L-tyrosine, administered in 0.5-g. doses to a woman suffering from alcaptonuria, were quantitatively excreted in the urine as homogentisic acid. Under the same conditions, the proportions of D-phenylalanine and D-tyrosine converted into homogentisic acid were 40—45 and 68% (i.e., 43% of the D-form in the DL-compound) respectively. In each case part of the D-form is probably converted into the L-form in the body and part degraded otherwise than is the corresponding L-form and by different enzymes. W. McC.

Experimental alcaptonuria in white mouse. F. Lanyar (*Z. physiol. Chem.*, 1942, **275**, 225—231).—Slight temporary alcaptonuria was produced in white mice when L-phenylalanine and L-tyrosine were administered orally in high doses or in repeated smaller doses. Toxic symptoms but no alcaptonuria were produced by a single injection of L-phenylalanine. D-Tyrosine and D-phenylalanine also produced no alcaptonuria. Possibly homogentisic acid is a normal product of intermediary metabolism. When organs which degrade tyrosine and phenylalanine have to deal with very large amounts of the L-forms of these acids degradation does not proceed to the normal end-point and hence homogentisic acid appears in the urine. W. McC.

Poikilodermatomyositis. Report of case with complete post-mortem examination. R. C. Horn, jun. (*Arch. Dermat. Syphilol.*, 1941, **44**, 1086—1097).—A case of poikilodermatomyositis with calcinosis is described with a complete autopsy report. He had advanced and widespread muscular atrophy with a generalised eruption characterised by atrophy, pigmentation, and subcutaneous deposition of Ca. (6 photomicrographs.) C. J. C. B.

Fat metabolism in acne vulgaris. E. B. LeWinn and I. Augerman (*J. Lab. clin. Med.*, 1943, **28**, 190—192).—Fat tolerance, as indicated by blood-cholesterol changes following the ingestion of fat, in 20 patients with acne vulgaris was normal. C. J. C. B.

Investigation of fat metabolism with deuterium as indicator. I. Essential fatty acids. K. Bernhard, H. Steinhäuser, and F. Bullet (*Helv. Chim. Acta*, 1942, **25**, 1313—1318).—It is shown with the help of D as indicator that the rat cannot synthesise linoleic or linolenic

acid when given a diet rich in carbohydrates supplemented by daily doses of about 150 μ g. of adermin. These unsaturated acids must be added to the diet as exogenic factors. The nomenclature "vitamin-F" is unserviceable and should be replaced by "essential fatty acids." H. W.

Effect of hexoses and pentoses on formation in vitro of phospholipin by brain as measured with radioactive phosphorus. H. Schachner, B. A. Fries, and I. L. Chaikoff (*J. Biol. Chem.*, 1942, 146, 95—103; cf. A., 1942, III, 738).—In surviving sliced brain of rats (but not in brain pulp) the rate of conversion of 32 P into phospholipin is greatly increased by adding glucose, galactose, mannose, and fructose, but not by adding pentoses. The increase is presumably due to increased rate of production of phospholipin or a precursor containing P. Except when it is very low, the concn. of hexose does not affect the rate, which is approx. const. during the first 4 hr. No increase occurs in absence of O_2 . W. McC.

Glycogen storage disease. R. Günther (*Virchow's Arch.*, 1939, 304, 87—96).—In an 11-months-old male child in whom amyotonia congenita became manifest 3 months previously extensive storage of glycogen was present post-mortem in the muscles of the extremities, and to a smaller degree in the central nervous system and smooth muscles. Liver, kidneys, and heart were not enlarged. J. A.

Role of anterior pituitary in adrenaline hyperglycemia and liver glycogenolysis. R. C. de Bodo, H. I. Bloch, and I. H. Gross (*Amer. J. Physiol.*, 1942, 137, 124—135).—Adrenaline infused intravenously at the rate of 0.0035 mg. per kg. per min. for 5 min. produces marked hyperglycemia in normal dogs and in neurohypophysectomized dogs with intact anterior pituitary; it produces only a slight hyperglycemia in hypophysectomized dogs despite the presence of ample liver-glycogen stores. Fasted normal dogs with much smaller liver-glycogen content respond to adrenaline with a far greater hyperglycemia than the hypophysectomized. Hypophysectomy impairs the mobilisation of liver-glycogen in response to adrenaline. M. W. G.

Availability of *d*(+)- and *l*(-)-histidine for production of liver-glycogen. R. M. Featherstone and C. P. Berg (*J. Biol. Chem.*, 1942, 146, 131—136; cf. Remmert and Butts, A., 1942, III, 766).—Rats absorb *l*(-)- and *d*(+)-histidine, administered by stomach tube, at approx. equal rates, which are greater in the earlier than in the later stages of absorption. The *d*(+)- is more readily excreted than the *l*(-)-form. Liver-glycogen is produced from the *l*(-)-, but only to a small extent or not at all from the *d*(+)-form. When *l*(+)-glutamic acid is administered in amounts approx. equiv. to the *l*(-)-histidine retained in similar periods, liver-glycogen is produced at approx. the same rate. Possibly *l*(+)-glutamic acid is an intermediate in the conversion of histidine into liver-glycogen. W. McC.

Sex variation in carbohydrate metabolism. X. Comparative glucose tolerance of normal rats and those with fatty livers. H. J. Deuel, jun., and A. Davis (*J. Biol. Chem.*, 1942, 146, 649—653).—Higher blood-sugar vals. are recorded after administration of glucose to rats with fatty livers than with rats receiving a stock diet. The phenomenon is more severe in the female, as indicated both by the actual blood-sugar level, and by the greater elevation above the control level and more prolonged hyperglycemia. In males the increase over the fasting level is almost identical in animals with or without fatty livers. P. G. M.

Tests of carbohydrate metabolism in infants. S. Livingston and E. M. Bridge (*J. Amer. Med. Assoc.*, 1942, 119, 117—122).—Details are given for the performance of the following tests in children under 2 years: oral and intravenous glucose tolerance and fructose tolerance tests, insulin sensitivity and adrenaline tests. C. A. K.

Treatment of disturbances of infantile metabolism with autonomic drugs. E. Mayerhofer (*Schweiz. med. Wschr.*, 1942, 72, 388—394).—Good results in the treatment of infantile diabetes mellitus, anorexia nervosa, and acrodynia were obtained with "bellergal" (a mixture of atropine, ergotamine tartrate, and phenobarbitone). A. S.

Carbohydrate metabolism of patients [with hypogonadism] treated with methyltestosterone. Carbohydrate metabolism of animals treated with methyltestosterone and testosterone propionate.—See A., 1943, III, 121, 122.

Ketosis in dairy cattle.—See A., 1943, III, 129.

Syntheses of ethylene α -disuccinate and glyceryl α -trisuccinate. Metabolic experiments with ethylene α -disuccinate and succinic acid.—See A., 1943, II, 81.

Causation of acute attacks of gout by disturbances of oxalic acid metabolism. J. W. Grott (*Schweiz. med. Wschr.*, 1942, 72, 492—495).—Acute attacks of gout with normal or increased blood-uric and increased -oxalic acid concn. were observed in 4 patients, who were cured by a diet low in oxalic acid. A. S.

Continued administration of propylene glycol. W. Van Winkle, jun., and H. W. Newman (*Food Res.*, 1941, 6, 509—516).—No impairment of liver or kidney function or pathological changes in these tissues was observed in dogs given 5 or 10% concn. of propylene

glycol in their drinking water for 5—9 months. When $\frac{1}{4}$ of the carbohydrate is substituted by the caloric equiv. in propylene glycol in the diet of rats they grow better than the controls and the liver-glycogen increased 2—7 times. Administration of large doses to dogs and cats caused no alteration in the serum-Ca. H. G. R.

Suggested mechanism of biological acylations. I. Formation of acetylcholine. E. Baer (*J. Biol. Chem.*, 1943, 146, 391—397).—Acetylation or benzoylation of choline acetate in acetic acid by pyruvate or phenylglyoxylic acid, respectively, and Pb tetra-acetate, to give acetyl-(aurichloride) or benzoyl-choline, new m.p. 204—205° (auri., new m.p. 187—188°, and platinichloride, new m.p. 234°), is described. This oxidative acylation offers an explanation of the chemical reaction involved in the biological formation of acetylcholine. It is suggested that enzymic oxidative acylation may be fundamental in promoting biological acylations, and a reaction mechanism is proposed (cf. Stedman *et al.*, A., 1937, III, 259). A. T. P.

Prolonged water deprivation in dog. J. R. Elkinton and M. Taffel (*J. clin. Invest.*, 1942, 21, 787—794).—In 4 dogs deprived of water and food for 11—20 days, serum-Na rose; the total water loss greatly exceeded the extracellular water loss, indicating substantial intracellular water loss. The intracellular water loss was differentiated into 3 processes: water lost on an osmotic basis, water lost with cell destruction in fasting, and water lost with K released in excess of N. The concn. of Na and Cl in urine diminished, whereas that of K increased. C. J. C. B.

Role of potassium in muscle phosphorylations. P. D. Boyer, H. A. Lardy, and P. H. Phillips (*J. Biol. Chem.*, 1942, 146, 673—682).—K⁺ is essential for the transfer of $PO_4^{'''}$ from 3-phosphoglyceric or 2-phosphopyruvic acid to creatine and, indirectly, to adenylic acid. This stimulation is inhibited by Ca⁺⁺. Na⁺ has no stimulating effect. The optimum concn. of K⁺ for phosphorylation of creatine by 3-phosphoglyceric acid is 0.2M. P. G. M.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Sulphanilamides.—See A., 1943, II, 109.

N¹-Sulphanilamidoalkylpyrimidines.—See A., 1943, II, 106.

Synthesis of sulphanilamide derivatives of the pyrimidine group.—See A., 1943, II, 106.

Synthesis of carboxylic acid derivatives of 2-sulphanilamidothiazole.—See A., 1943, II, 110.

Mechanism of secretion of sulphonamides in gastric juice. H. W. Davenport (*Yale J. Biol. Med.*, 1942, 14, 589—597).—The solubilities of sulphanilamide, sulphapyridine, sulphadiazine, sulphathiazole, and acetylsulphanilamide in dog plasma and in HCl of a concn. equal to that of the gastric juice were determined at 37°. The rates of diffusion of the 5 drugs through the tissues of the dog were determined. Using these data the characteristics of the gastric secretion of these drugs can be wholly attributed to their physical and chemical properties, sp. secretory processes playing no part. F. S.

Role of ionisation in bacteriostatic action of sulphonamides. P. B. Cowles (*Yale J. Biol. Med.*, 1942, 14, 599—604).—The bacteriostatic action of a no. of sulphonamides against *B. coli in vitro* was, in general, at a max. when the pK_a of the drug was close to the pH of the medium, and decreased progressively as the pK_a vals. varied in either direction from this pH. F. S.

Solubility and pH data of commonly used sulphonamides. W. G. Clark, E. A. Strakosch, and N. I. Levitan (*J. Lab. clin. Med.*, 1943, 28, 188—189).—The data are tabulated for 6 common sulphonamides. C. J. C. B.

Effect of food and alkali on absorption and excretion of sulphonamide drugs after oral and duodenal administration. O. L. Peterson and M. Finland (*Amer. J. med. Sci.*, 1942, 204, 581—587).—Sulphanilamide is absorbed rapidly and completely when given orally or into the duodenum. Food delays absorption but does not diminish the amount excreted in the urine. Sulphapyridine, sulphathiazole, and sulphadiazine are poorly absorbed from the duodenum. Sulphadiazine is absorbed more slowly but more completely after a meal than on a fasting stomach, and absorption is increased by alkali. NaHCO₃ hastens the absorption of sulphadiazine on an empty stomach, but does not increase the total amount absorbed. Na sulphadiazine is rapidly absorbed from the duodenum, or after oral administration in a fasting subject; absorption is delayed and is less complete if it is given after a meal. C. J. C. B.

Sulphathiazole micro-crystals. L. A. Chambers, T. N. Harris, F. Schumann, and L. K. Ferguson (*J. Amer. Med. Assoc.*, 1942, 119, 324—327).—Sulphathiazole micro-crystals are prepared by exposing a solution of the drug to sonic vibrations. The small crystals which formed were considered preferable to sulphathiazole powder or macrocrystals for local application as they are more rapidly dissolved. C. A. K.

Antibacterial action of phosphorylated diaminodiphenyl sulphone. M. I. Smith, S. M. Rosenthal, and E. L. Jackson (*U.S. Publ. Hlth. Repts.*, 1942, **57**, 1534—1542).—The pharmacological action and chemotherapeutic activity of an *N*-phosphoryl derivative of 4:4'-diaminodiphenyl sulphone have been studied. Its toxicity is $\frac{1}{10}$ that of its parent substances. Its chemotherapeutic activity against streptococci is of the same order as that of the parent substance. Administered parenterally in experimental pneumococcus infections in mice, it had a curative action that could not be demonstrated with the parent sulphone; the results obtained compare favourably with those from sulphadiazine and Na sulphadiazine. C. G. W.

Sulphonamide resistance. M. Hamburger, L. H. Schmidt, J. M. Rueggsegger, C. L. Sesler, and E. S. Gruen (*J. Amer. Med. Assoc.*, 1942, **119**, 409—411).—A patient with type VII pneumococcus endocarditis was treated over 6 months with sulphyprazine. Pneumococci isolated at intervals showed progressive increase in sulphonamide resistance and whereas at first they could grow in sulphyprazine concns. up to 2.5 mg.-%, they finally grew in concns. up to 80 mg.-%. C. A. K.

"Sulphanilamide effect" of substances devoid of sulpho-groups. J. Hirsch (*Science*, 1942, **96**, 139—140).—Both *p*-aminobenzamide and *p*-aminophenylarsonic acid reduce the growth of cultures of *B. coli*, the former almost as effectively as sulphanilamide. *p*-Amino-benzoic acid inhibits both actions. E. R. R.

Sulphadiazine in influenzal meningitis. W. Sako, C. A. Stewart, and J. Fleet (*J. Amer. Med. Assoc.*, 1942, **119**, 327—331).—Sulphadiazine was given to 7 children with influenzal meningitis. 5 recovered. C. A. K.

Sulphonamides in influenzal meningitis. E. G. Knout, W. J. Mitchell, and P. M. Hamilton (*J. Amer. Med. Assoc.*, 1942, **119**, 687—691).—Out of 63 patients with influenzal meningitis, 19 untreated cases all died, 19 treated with anti-influenzal serum all died, 1 of 13 treated with sulphanilamide survived, 9 of 12 treated with sulphypridine survived. C. A. K.

Sulphonamides in meningococcal meningitis. H. L. Hodes and P. S. Strong (*J. Amer. Med. Assoc.*, 1942, **119**, 691—694).—12 of 110 patients with meningococcal meningitis died after treatment with sulphonamides. Sulphathiazole and sulphadiazine were superior to sulphanilamide. C. A. K.

Sulphadiazine in meningococcal meningitis. E. Rundlett, A. M. Gnassi, and P. Price (*J. Amer. Med. Assoc.*, 1942, **119**, 695—696).—There were no deaths in 23 cases of meningococcal meningitis treated with sulphadiazine. A rise of sugar in the c.s.f. is a favourable sign. The drug did not influence the course of arthritis. C. A. K.

Sulphonamides in bacterial endocarditis. C. Smith, H. C. Sauls, and C. F. Stone (*J. Amer. Med. Assoc.*, 1942, **119**, 478—482).—The literature concerning the use of sulphonamides in *Strep. viridans* endocarditis is reviewed. 2 of 15 patients treated by the authors recovered, one after ligation of a patent ductus arteriosus. Sulphadiazine is the drug of choice and its action may be enhanced by hyperthermia produced by intravenous injection of typhoid-paratyphoid vaccine. C. A. K.

Prolonged administration of sulphypridine in subacute bacterial endocarditis. M. Wilburne and T. A. McGoldrick (*Ann. int. Med.*, 1942, **19**, 333—339).—621 g. of sulphypridine were administered over 8 months. No untoward effects were observed except mild nausea and vomiting in the first month. Postmortem examination did not show changes attributable to the drug. A. S.

Sulphypridine and sulphathiazole in pneumonia. F. K. Herbert, E. F. Dawson-Walker, and W. G. A. Swan (*Lancet*, 1942, **243**, 145—148).—In 30 cases of pneumonia, effective blood concns. were more easily attained with sulphypridine than with sulphathiazole, due to the more rapid excretion of the latter. C. A. K.

Sulphathiazole in cavernous sinus thrombophlebitis. G. B. Moore, J. D. Gardner, K. R. Bell, and A. J. Tannenbaum (*J. Amer. Med. Assoc.*, 1942, **119**, 708—710).—Successful case report. Blood concns. of 25—33 mg.-% of sulphathiazole were maintained. C. A. K.

Sulphonamides in gonorrhoea. M. A. Magid (*J. Amer. Med. Assoc.*, 1942, **119**, 405—407).—Use of sulphonamides in 575 soldiers with gonorrhoea showed that sulphathiazole was the most satisfactory. C. A. K.

Use of sulphanilamide in postabortal and puerperal infections. B. J. Hanley and D. Golenternek (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 137—146).—Of 150 cases of puerperal sepsis treated by conservative methods 75 were given in addition sulphanilamide; of these 75 43% showed improvement with a shorter period in hospital than the control cases. P. C. W.

Sulphanilamide in smallpox. P. B. Wilkinson (*Lancet*, 1942, **243**, 67—69).—Sulphanilamide was ineffective in the toxic phase of 103 cases of smallpox but helped in the control of septic complications. C. A. K.

Local application of sulphanilamide in compound fractures. N. K. Jensen, L. W. Johnsrud, and M. C. Nelson (*Surgery*, 1939, **6**, 1—12).

—Direct application of sulphanilamide crystals (5—15 g.) in the open wound in 41 patients with compound fractures or dislocations reduced the normal incidence of infection observed with other methods of treatment. The drug does not disappear from the blood for at least 60 hr. The incidence of infection in groups of 10 guinea-pigs, in which the ribs were fractured and infected with *Staph. aureus hemolyticus*, was 80% without treatment or when 0.5 g. of sulphanilamide was given subcutaneously, but only 20% when the same dose was given directly into the wound. P. C. W.

Sulphathiazole ointment in inclusion conjunctivitis. P. Thygeson and W. Stone (*J. Amer. Med. Assoc.*, 1942, **119**, 407—408).—11 of 15 cases were successfully treated. C. A. K.

Local treatment of infected wounds with sulphathiazole. H. N. Green and T. Parkin (*Lancet*, 1942, **243**, 205—210).—14 grossly infected wounds responded well to intensive local application of sulphathiazole. Warm saturated solution of the drug may be the best form of administration. C. A. K.

Succinylsulphathiazole in typhoid and dysentery carriers. W. M. M. Kirby and L. A. Rantz (*J. Amer. Med. Assoc.*, 1942, **119**, 615—618).—Succinylsulphathiazole by mouth produces blood concns. of less than 1 mg.-% and less than 5% is excreted in the urine. It is probably hydrolysed in the alimentary tract to liberate free sulphathiazole. Dysentery bacilli disappeared from the stools of 5 carriers after the drug had been given, but typhoid bacilli were still present in 3 carriers after 2 weeks' administration. The only reactions were a tendency to frequent loose stools and slight perianal irritation. C. A. K.

Treatment of bacillary dysentery with succinylsulphathiazole. E. J. Poth, M. Chenoweth, jun., and F. L. Knotts (*J. Lab. clin. Med.*, 1943, **28**, 162—167).—The drug was equally effective in the acute and more chronic forms of the disease. All 10 cases responded promptly. There were no toxic manifestations. Dosage was 0.25—1.0 g. per kg. daily for 2—17 days. C. J. C. B.

Use of sulphaguanidine for ulcerative colitis. M. Kraemer (*Amer. J. digest. Dis.*, 1942, **9**, 356—357).—Good results were obtained in 11 out of 16 cases. The drug may inhibit secondarily invading organisms. N. F. M.

Sulphaguanidine in avian coccidiosis. C. Horton-Smith (*Vet. Rec.*, 1942, **54**, 259).—Sulphaguanidine, given either in capsules (0.2—0.5 g.) or mixed with the food (0.5—1%), protected chicks against experimental infection with coccidial oöcysts. E. G. W.

Sulphamethazine and sulphadiazine treatment in caecal coccidiosis of chickens. C. Horton-Smith and E. L. Taylor (*Vet. Rec.*, 1942, **54**, 516).—Small daily doses of sulphamethazine or sulphadiazine gave almost complete protection against the development of coccidiosis in chicks which had received lethal doses of oöcysts up to 96 hr. previously. E. G. W.

Sulphanilamide in animals: dosage and tolerance. A. W. Stableforth and S. L. Hignett (*Vet. Rec.*, 1942, **54**, 525—532).—Horses, cows, and dogs were given sulphanilamide by the oral or subcutaneous route, and the concns. of the drug in the blood and milk were determined. Dosage should give a concn. in the blood of 10 mg.-%. The drug was also given to an ewe and several pigs. For the various species a suitable dose was 1 g. per 10—15 lb. body wt. Serious toxic effects may occur in cows if the drug is continued for longer than 7 days. E. G. W.

Sulphanilamide in bovine mastitis due to *Strep. agalactiae*: value of irrigation with euflavine in lactose solution. A. W. Stableforth, S. L. Hignett, P. S. Watts, J. D. Paterson, A. Cunningham, S. J. Edwards, J. Malcolm, and R. W. Roach (*Vet. Rec.*, 1942, **54**, 539—542).—Of 658 cows infected with *Str. agalactiae*, 411 were treated orally with sulphanilamide, 72 by udder irrigation with euflavine in lactose solution, and 175 kept as controls. The work was carried out at 6 centres and the animals were from 61 herds in various parts of England and Scotland. Oral sulphanilamide cannot be recommended as a routine treatment but is useful for the associated clinical symptoms. The irrigation treatment did not give such good results as have been reported with aq. solutions of acridine dyes; the irritant effect on the udder was not lessened by the use of lactose as a vehicle. E. G. W.

Treatment of bovine mastitis by irrigation with proflavine sulphate. H. S. Cockburn (*Vet. Rec.*, 1942, **54**, 204—205).—Udder irrigation with 1:7500 proflavine sulphate together with a mixed mastitis vaccine resulted in clinical cure in 49 of 71 quarters (39 cows) affected with mastitis. E. G. W.

Topical application of sulphonamides in veterinary practice. H. C. Swann (*Vet. Rec.*, 1942, **54**, 171—174).—A discussion, with case records. E. G. W.

Acquired sensitivity to sulphonamides. J. Nelson (*J. Amer. Med. Assoc.*, 1942, **119**, 560—561).—A patient showed a febrile reaction when given sulphathiazole 7 months after an initial course of the drug. Reactions were also caused by sulphadiazine and sulphanilamide but not by sulphypridine. C. A. K.

Sulphadiazine anuria. H. A. Bradford and J. H. Shaffer (*J. Amer. Med. Assoc.*, 1942, 119, 316—318).—A fatal case of sulphadiazine anuria is described. Autopsy showed ulceration of the epithelium lining the renal pelvis and pptn. of the drug in the renal tubules, some of which were swollen and desquamated. The total amount of drug given was 50.5 g. C. A. K.

Acute urinary suppression following sulphadiazine. J. W. Schulte, F. P. Shidler, and J. J. Niebauer (*J. Amer. Med. Assoc.*, 1942, 119, 411—413).—Case report. C. A. K.

Ureteral obstruction following sulphadiazine. S. L. Raines (*J. Amer. Med. Assoc.*, 1942, 119, 496—497).—Fatal case report. C. A. K.

Fatal anuria following sulphadiazine. C. A. Hellwig and H. L. Reed (*J. Amer. Med. Assoc.*, 1942, 119, 561—563).—Case report. Autopsy showed severe degeneration of the renal tubules which may be more important than mechanical blocking in the causation of anuria. C. A. K.

Renal complications of sulphadiazine. W. A. Keitzer and J. A. Campbell (*J. Amer. Med. Assoc.*, 1942, 119, 701—703).—11 cases are described and methods of avoidance are suggested. C. A. K.

Drug fever and rigor after use of sulphathiazole and their chemospecificity. S. Moeschlin (*Schweiz. med. Wschr.*, 1942, 72, 510—513).—10 cases of drug fever and rigor after the use of sulphathiazole were observed. The increase in body-temp. was maintained as long as the drug was given. The reaction was sp. to sulphathiazole and was not observed with other sulphanilamides. In some cases, oral administration of 0.2 g. of the drug produced fever. The increase in body-temp. occurred shortly after the appearance of the drug in the blood. Corneal infiltration and phlyctenular keratoconjunctivitis were observed in some cases. A. S.

Intraperitoneal sulphathiazole. H. B. Sutton (*J. Amer. Med. Assoc.*, 1942, 119, 559).—Intraperitoneal sulphathiazole (3 g.) in a patient with gangrenous perforation of the appendix produced subsequent adhesions and intestinal obstruction. 2 g. of the drug which was applied to the abdominal wall caused a keloid scar. C. A. K.

Intraperitoneal administration of sulphadiazine. J. D. Ryan, E. Bauman, and J. H. Mulholland (*J. Amer. Med. Assoc.*, 1942, 119, 484—486).—Administration of sulphadiazine produced clinically effective blood concns. for 48—96 hr. when the dose was 10 g. to 25 g. respectively. C. A. K.

Aplastic anaemia due to sulphathiazole. L. M. Meyer and M. Perlmuter (*J. Amer. Med. Assoc.*, 1942, 119, 558—559).—Report of fatal case. C. A. K.

Effect of sulphathiazole on body temperature. F. Tramèr (*Schweiz. med. Wschr.*, 1942, 72, 550—551).—A child suffering from lobar pneumonia developed severe hypothermia in the course of sulphathiazole treatment. The body temp. fluctuated between 34.8° and 36° for 4 days. A. S.

Death during sulphathiazole therapy. M. Lederer and P. Rosenblatt (*J. Amer. Med. Assoc.*, 1942, 119, 8—18).—4 cases of death following sulphathiazole therapy are described. In all cases there was fever, sometimes associated with rashes or conjunctival injection, during drug administration, and death followed an increase in the dose. Autopsy showed sulphathiazole urolithiasis and scattered necrotic foci in liver, spleen, lymph nodes, adrenal cortex, bone marrow, kidney, and other organs. C. A. K.

Effect of sodium sulphathiazole on nasal mucosa. C. E. Futch, L. K. Rosenovold, and C. E. Stewart (*J. Amer. Med. Assoc.*, 1942, 119, 7—8).—5% Na sulphathiazole solution produced an early and severe destructive action on the nasal mucosa of rabbits after local application. C. A. K.

Nervous and mental effects of sulphonamides. S. C. Little (*J. Amer. Med. Assoc.*, 1942, 119, 467—474).—Literature is reviewed and illustrative case reports are given to show that nearly all sulphonamides used clinically may be toxic to the nervous system. C. A. K.

Modern antimalarials. M. Ehrenstein (*Amer. J. Pharm.*, 1942, 114, 456—482).—A lecture.

Fluorescence and adsorption of stilbamidine and its estimation in biological fluids. A. J. Henry and D. N. Grindley (*Ann. trop. Med. Parasit.*, 1942, 36, 102—112).—The adsorption of stilbamidine (4:4'-diamidinostilbene) by cellulose pulp was a typical reversible adsorption process, involved the free base only, and was considerably influenced by pH. The drug was determined by comparison of fluorescence of spots on filter-paper (No. 50) made by standard drops of the unknown and standard solutions. F. S.

Increased toxicity of old solutions of stilbamidine. J. D. Fulton and W. Yorke (*Ann. trop. Med. Parasit.*, 1942, 36, 134—137).—The max. tolerated doses in mice of the dihydrochloride and the disethionate (hydroxyethylsulphonate) of stilbamidine were 1 and 2 mg. respectively. Exposure of 1% solutions to sunlight for 2 days reduced the max. tolerated doses to less than 0.25 mg. and 0.25 mg. respectively. The increase in toxicity was accompanied by the

development of a slight yellow colour and was not further increased by a longer exposure to sunlight. Heating at 60° for 5 min., boiling for 2 min., and keeping in the dark for 14 days did not produce the change. F. S.

Increase in toxicity of stilbamidine solution on exposure to light. H. J. Barber, R. Slack, and R. Wien (*Nature*, 1943, 151, 107—108).—The toxic product, which has been separated, is almost certainly 4:4'-diamidinophenylbenzylcarbinol. Biological results are summarised. The change is associated solely with the unsaturated stilbene linkage and at least one other product, a yellow substance, is formed. A. A. E.

Trypanocidal action of additional aromatic diamidines. J. D. Fulton and W. Yorke (*Ann. trop. Med. Parasit.*, 1942, 36, 131—133).—All except one of 7 new aromatic diamidines had a curative effect in mice infected with *Trypanosoma rhodesiense*. Two of them, 4:4'-diamidinomonomethylstilbene and 4:4'-diamidino-2-hydroxystilbene, had a high degree of therapeutic activity. One, 4:4'-diamidinodimethylstilbene, was also active against *T. congolense* in mice. F. S.

Treatment of sleeping sickness in Sierra Leone. E. M. Lourie (*Ann. trop. Med. Parasit.*, 1942, 36, 113—131).—An account is given of the toxic effects and therapeutic val. of antypol, tryparsamide, pentamidine, propamidine, and stilbamidine in 3197 cases of *Trypanosoma gambiense* infection. In early cases the curative vals. of pentamidine and propamidine are no less than those of tryparsamide with or without previous injections of antypol. Stilbamidine is of considerably less val. In later cases typarsamide is much more effective than the three diamidines. F. S.

Toxic effects of tyrothricin, gramicidin, and tyrocidine. C. H. Rammekamp and L. Weinstein (*J. infect. Dis.*, 1942, 71, 166—173).—In a concn. of 0.66 mg. per c.c. tyrothricin and tyrocidine were hæmolytic and leucocytolytic in defibrinated blood. Gramicidin was only slightly leucocytolytic. Daily intraperitoneal injections of 0.2 mg. of tyrothricin or 0.1 mg. of gramicidin were not tolerated by mice. Daily intraperitoneal injections of 10 mg. of tyrothricin were tolerated by rabbits. The intradermal injection of 0.2 mg. of gramicidin or 0.01 mg. of tyrothricin produced induration. Oral administration of tyrothricin (63 mg. in 42 days) in mice was innocuous. Large amounts of tyrothricin may be applied to local infections in man without toxic effects, e.g., 17 g. on a leg ulcer during 1 year. F. S.

"Infection-prevention" test for the evaluation of skin disinfectants. W. J. Nungester and A. H. Kempf (*J. infect. Dis.*, 1942, 71, 174—178).—A mouse is anaesthetised, the tail is infected with pneumococci and is dipped in the disinfectant to be tested for 2 min., the abdomen is opened, a $\frac{1}{2}$ -in. portion of tail is placed in the peritoneal cavity, and the abdomen is closed. The mortality when the proprietary tincture of mercurin (0.1% o-hydroxyphenylmercuric chloride and 0.1% sec.-amyltrichlorol) was used as disinfectant was 26%, with 0.1% tincture of phemerol was 12%, with aq. I solution (2% I and 2.3% KI) 5%, and with alcoholic I solution (2% I and 2.3% KI in 95% alcohol) 0%. F. S.

Effect of benzedrine sulphate in migraine. J. S. Gottlieb (*Amer. J. med. Sci.*, 1942, 204, 553—559).—In 12 of 18 patients the attacks were aborted quickly when the drug was given intravenously (3—20 mg.). 8 of 22 patients obtained relief, or the paroxysms were aborted, when the drug was taken orally (10—40 mg.) during the prodromal stage. 3 patients having frequent and severe attacks became symptom-free when the drug was taken daily in divided doses. C. J. C. B.

Pholedrine in prevention of operative shock. E. Landau, V. Logue, and H. Kopelman (*Lancet*, 1942, 243, 210—212).—Pholedrine was effective in 10 cases in prevention of operative shock. It is of no val. when shock has developed. C. A. K.

Treatment of congestive heart failure in ambulatory patients with orally administered mercurial diuretic. J. Burstein, G. Brown, and C. Klein (*J. Lab. clin. Med.*, 1942, 28, 147—149).—7 of 9 patients with congestive heart failure, known to be well controlled by intravenous mercurial diuretics, were given an oral prep. and showed an increase in urinary output. Side reactions, chiefly cramps and diarrhoea, occurred in 6. C. J. C. B.

Carvacrolphthalein.—See A., 1943, II, 90.

4:4'-Diamidinodiphenyl ether (M. and B. 637) in canine babesiasis. J. Carmichael (*Vet. Rec.*, 1942, 54, 158).—Successful treatment of 25 cases of *Babesia canis* infection in dogs in Uganda using a single dose of 10 mg. per kg. body wt. is recorded. E. G. W.

Phenothiazine as anthelmintic in horses. T. Grahame, J. E. N. Sloan, and P. G. D. Morris (*Vet. Rec.*, 1942, 54, 213—214).—In 4 horses a single dose of 25—30 g. of phenothiazine gave good results with all the smaller strongyles and strongylus spp., moderate results with young stages of *Oxyuris equi*, and had no effect on adult *O. equi* or immature *Parascaris equorum*. There was no change in the blood picture. E. G. W.

Blood picture of sheep treated with phenothiazine. H. H. Holman and I. H. Pattison (*Vet. Rec.*, 1942, **54**, 215—216).—41 lambs were given phenothiazine (5—30 g.) and the blood picture was studied. No change was detected. E. G. W.

Phenothiazine poisoning. E. L. Taylor (*Vet. Rec.*, 1942, **54**, 95—97).—A review, together with an account of phenothiazine poisoning in horses on 5 farms with 6 deaths. E. G. W.

Fatal phenothiazine poisoning. D. R. Humphreys (*Lancet*, 1942, **243**, 39—40).—Case report of a girl of 6 years who received 9.5 g. of phenothiazine in 6 days. Death was due to hæmolytic anæmia (red cell count 1,250,000 per cu.mm., hæmoglobin 26%). C. A. K.

Difference in action of drugs on isolated intestine or *in situ* with exo- and endo-intestinal contact. R. Tiffeneau and M. Beauvallet (*Compt. rend.*, 1942, **214**, 640—642).—Adrenaline, acetylcholine, pilocarpine, and BaCl₂, administered by an endointestinal route, have no action on the musculature. It is only after absorption and passage into the general circulation that they produce their characteristic effects. J. N. A.

Taurine.—See A., 1943, II, 83.

Anæsthesia, anæsthetics, and surgeons. E. R. Schmidt and R. M. Waters (*Surgery*, 1939, **6**, 177—182).—Discussion including brief analysis of 21,000 cases from University of Wisconsin. P. C. W.

Anæsthesia and anoxæmia in relation to use of nitrous oxide. F. J. Murphy (*Surg. Gynec. Obstet.*, 1940, **70**, 741—743).—The ill effects of asphyxia and anoxæmia that often occur when N₂O is unskillfully administered are stressed. P. C. W.

Effect of nitrous oxide-oxygen-ether anæsthesia on oxygenation of maternal and foetal blood at delivery. C. A. Smith (*Surg. Gynec. Obstet.*, 1940, **70**, 787—791).—The O₂ content of umbilical cord blood was determined in 28 infants delivered under N₂O-O₂-ether anæsthesia. Mothers and infants showed decreased oxygenation of blood as compared with those delivered under ether anæsthesia alone; the results were the same as those obtained with N₂O-O₂ anæsthesia. The addition of ether to N₂O-O₂ anæsthesia had no effect on the N₂O content of the infants' blood but lowered the amount in the maternal blood. Foetal apnœa was usually associated with anoxæmia. Ether anæsthesia alone is recommended. P. C. W.

Use of lupicaine in stomatological practice. M. G. Kartvelischvili (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 599—600).—102 cases of tooth extraction were carried out under local or regional lupicaine anæsthesia; total loss of feeling sets in 1—7 min. after the infiltration depending on the concn. of solution used. The effect lasts 20—40 min. with infiltration and 55—260 min. in regional anæsthesia. Addition of adrenaline enhances the anæsthetic effect. P. C. W.

Effect of prolonged local anæsthesia in oil on abdominal wound healing. C. A. V. Burt and J. A. Gius (*Surg. Gynec. Obstet.*, 1940, **70**, 753—760).—Abdominal incisions were made into the peritoneal cavities of cats without local anæsthesia, with local infiltration of almond oil, or with local infiltration of anæsthetic in oil. Catgut or silk was used to suture the deeper layers of all wounds; local reaction to catgut was marked in all cases, that to silk was slight. The incidence of discharge was higher with catgut in all types of experiment. There was no increased incidence of discharge or delayed healing in those wounds infiltrated with oil, nor any local inflammatory reaction. The use of oily anæsthetic infiltration for local anæsthesia in man is suggested. P. C. W.

Cutaneous hypersensitivity to local anæsthetics of aniline group. R. Paillard and F. Wyss-Chodat (*Schweiz. med. Wschr.*, 1942, **72**, 442—444).—Cutaneous hypersensitivity reactions in 3 patients are described after administration of ethyl or butyl *p*-aminobenzoate. A. S.

Convulsions following percarine local anæsthesia. G. Organe (*Lancet*, 1942, **243**, 33—34).—3 cases, 1 fatal, are described. 2 had received excessive dosage and 1 had severe obstructive jaundice and fever. The total dose should not exceed 15 c.c. of 0.1% solution per 14 lb. body wt. C. A. K.

General anæsthesia in cattle using chloral hydrate intravenously. J. K. H. Wilde (*Vet. Rec.*, 1942, **54**, 247—248).—Narcosis and anæsthesia can be produced in cattle by the slow intravenous injection of chloral hydrate. E. G. W.

Mechanism of pentothal sodium antidiuresis.—See A., 1943, III, 180.

Effects of eupaverine on pulmonary circulation. H. H. Bradshaw and E. J. Chodoff (*Surg. Gynec. Obstet.*, 1940, **70**, 768—772).—Eupaverine (3 mg. per kg.) lowered the systemic blood pressure transiently in anæsthetised cats and raised the pulmonary blood pressure. The effects were qualitatively the same when eupaverine was given after the intravenous injection of oil producing oil emboli. It increased the mortality following oil injections. P. C. W.

Suspected copper poisoning in pigs. D. D. Ogilvie (*Vet. Rec.*, 1942, **54**, 301).—Pigs developed symptoms, considered to be due to Cu

poisoning, after feeding on swill kept in a Cu boiler coated with verdigris. E. G. W.

Copper sulphate tolerance of sheep. H. E. Bywater (*Vet. Rec.*, 1942, **54**, 380).—100 lambs were given 3 oz. of 2% CuSO₄ (twice the usual dose) for parasitic gastritis without adverse effects. E. G. W.

[Treatment of] Rocky Mountain spotted fever [with arsenicals]. G. E. Baker (*Ann. int. Med.*, 1942, **17**, 247—269).—3—4 intravenous injections of a mixture of 0.3 g. of neosalvarsan dissolved in 10 c.c. of an aq. solution of metaphen at 3—4 days' interval was very beneficial. A. S.

Lead intoxication and scurvy. E. Ramel and J. J. Schenk (*Schweiz. med. Wschr.*, 1942, **72**, 364—365).—Report of a severe case of scurvy due to Pb poisoning. The patient recovered on blood transfusion and ascorbic acid treatment. A. S.

Antimony content and toxicity of urea stibamine. R. C. Guha, N. K. Dutta, and B. Mukerji (*Nature*, 1943, **151**, 108—109).—The Sb content of samples of urea stibamine (Brahmachari) was fairly const. at 39—42% (max. below 44%), and the toxicity val. (Burn) for mice was 200—225 mg. per kg., with a max. tolerated dose often about 150 mg. per kg. and seldom above 170 mg. per kg. A. A. E.

Mercurial poisoning in horse from eating "treated" oats. C. M. Edwards (*Vet. Rec.*, 1942, **54**, 5).—Death was due to eating a small quantity of oats treated with a proprietary mercurial seed dressing. E. G. W.

Castor seed poisoning in camel. E. F. Peck (*Vet. Rec.*, 1942, **54**, 184).—Recovery followed gastric lavage during which castor seeds were found in the rumen washings. E. G. W.

Cyanide poisoning from choke cherry seed. M. Pijoan (*Amer. J. med. Sci.*, 1942, **204**, 550—553).—4 cases of poisoning from the ingested, fresh seed of the western choke cherry, *Prunus melanocarpa*, are described. The fresh pith of this cherry contains cyanophoric glucosides which break down into HCN in the gastrointestinal tract. C. J. C. B.

Toxic dose of inspired radium emanation. B. Rajewsky, A. Schraub, and E. Schraub (*Naturwiss.*, 1942, **30**, 489—492; cf. A., 1940, III, 317).—Results of experiments with mice, reports of cases of Ra poisoning, and observations of conditions in pitchblende mines indicate that Read and Mottram's results (*Brit. J. Radiol.*, 1939, **12**, 54) are approx. correct. They are, however, untrustworthy because young instead of adult mice were used, insufficient mice were used for inadequate periods, and experimental conditions were inadequately controlled. The toxic concn. of Ra emanation in air for mice is approx. 10⁻⁹ curie per c.c. W. McC.

Phosphorus poisoning. S. H. Adams, R. O. Davies, and W. M. Ashton (*J. Min. Agric.*, 1942, **49**, 61—62).—Herbage near the point of burst of P bombs was poisonous to cattle. Elementary P was detectable after 6—14 days. A. G. P.

Toxicology of selenium. VI. Effects of subacute exposure to hydrogen selenide. H. C. Dudley and J. W. Miller (*J. Ind. Hyg.*, 1941, **23**, 470—477).—Concns. of H₂Se below 0.021 mg. per l. of air caused a slight nasal discharge during exposure of guinea-pigs, and dyspnœa after 24 hr.; above 0.021 there was irritation of nose and eyes, with dyspnœa immediately after exposure; some animals died after exposure from respiratory and circulatory failure. Exposure for 2 hr. to 0.012 mg. per l. caused death of 50% of animals, whilst 0.001—0.004 mg. per l. caused death of 50% of the animals in 8-hr. There was a straight-line relationship between time of exposure and L.D.₅₀ when the time was more than 1 hr. Lethal concn. caused a marked fall in wt., fatty changes in the liver, lymphoid hyperplasia, and acute or sub-acute pneumonia. E. M. K.

Treatment of burns in wartime. H. N. Harkins (*J. Amer. Med. Assoc.*, 1942, **119**, 385—390).—A lecture. C. A. K.

Experiences with mustard gas in animals and man. E. Rothlin (*Schweiz. med. Wschr.*, 1942, **72**, 385—388).—A lecture. A. S.

Mechanism of action of ordinary war gases. C. D. Leake and D. F. Marsh (*Science*, 1942, **96**, 194—197).—War gases are discussed from the pharmacological viewpoint. E. R. R.

Action of *Potentilla anserina*, L., and *Potentilla argentea*, L., on isolated guinea-pig uterus. H. W. Youngken, jun., and E. B. Fischer (*Amer. J. Pharm.*, 1942, **114**, 417—421).—Infusions, decoctions, and extracts (e.g., alcoholic, light petroleum) of *P. anserina* and *P. argentea* stimulate the activity of the isolated guinea-pig uterus but have no power to counter the spasmodic effects produced by BaCl₂, ergotoxine, and tincture of ergot. The activity of *P. anserina* is greater than that of *P. argentea*. W. McC.

Significance of the length of the molecule on the anaphylaxis-like reactions caused by sodium 8'-acylamido-2'-hydroxynaphthalene-1'-azobenzene-2 : 5-disulphonate. W. Jadassohn, H. E. Fierz-David, and A. Huber (*Helv. Chim. Acta*, 1942, **25**, 1125—1128).—The compounds containing 13—18 C atoms in the fatty acid residue invariably cause contractions of the uterus of the untreated guinea-pig. Compounds with a fatty acid residue with 6—13 C atoms do not cause

contractions but almost invariably counteract the effects of the longer-chained substances. Compounds with a shorter fatty acid residue cause neither contraction nor counteraction. H. W.

Chronic toxicity of diphenylene sulphide to the albino rat. J. O. Thomas, F. deEds, and A. J. Cox (*Food Res.*, 1942, 7, 161—169).—Decreased growth rates are observed in rats after continued feeding of diphenylene sulphide together with a decreased food consumption which varies inversely with the concn. of the former in the diet. At the 0.05% dosage level the retardation of growth is due to decrease in the food intake but at 0.1% it is due chiefly to diphenylene sulphide inanition. No effect is observed with a concn. of 0.025% in the diet. With increasing dosage the wt. of the spleen decreases but the histology remains normal. There is no evidence of blood injury or of cell destruction in the kidneys though a light brown pigmentation of the epithelial cells of the proximal convoluted tubules of the latter is observed. H. G. R.

Metabolic disturbances in workers exposed to dinitrotoluene. L. C. McGee, A. McCausland, C. A. Plume, and N. C. Marlett (*Amer. J. digest. Dis.*, 1942, 9, 329—332).—Of 154 inexperienced workmen exposed for 12 months, $\frac{2}{3}$ complained of metallic taste, weakness, headache, anorexia, or dizziness. Half of the group developed pallor, cyanosis, or low-grade anaemia. Jaundice occurred in 2 instances, and there was no case of permanent physical impairment. Frequent examination of the men and supervision of particular operations are advocated. N. F. M.

Influence of serum-bromide concentration on distribution of bromide ion between serum and spinal fluid. E. G. Weir (*Amer. J. Physiol.*, 1942, 137, 109—113).—NaBr was administered to dogs in such quantities that the dogs fell into 3 groups: group 1, serum-NaBr was 20—50 mM. Br per kg. water; group 2, 1—10 mM. Br; group 3, 70—95 mM. C.s.f. was obtained by cisternal puncture under ether. When wide variations in the level of serum-Br⁻ exist, the val. of the distribution ratio $[Br^-]_{\text{serum}}/[Br^-]_{\text{c.s.f.}}$ varies inversely as the serum-Br⁻ concn. M. W. G.

Incidence of bromide medication. H. Tod (*Edinb. Med. J.*, 1942, 49, 773—775).—Of 1026 admissions to mental hospitals 38% had raised blood-bromide levels. The highest incidence was found in neurotic females. H. S.

Hypoglycaemia following alcoholic intoxication. H. G. Tucker, jun., and W. B. Porter (*Amer. J. med. Sci.*, 1942, 204, 559—566).—4 cases are reported. C. J. C. B.

Bracelet dermatitis. O. L. Levin and H. T. Behrman (*N.Y. Sta. J. Med.*, 1939, 39, 1877—1879).—Report of a case caused by wearing a bracelet made of cocobolo wood (of the cokus ebony). E. M. J.

Effect of acid and alkaline salts on patients with rheumatoid arthritis. S. D. Jacobson, B. Leichtentritt, and R. H. Lyons (*Amer. J. med. Sci.*, 1942, 204, 540—546).—5 females with typical rheumatoid arthritis were placed on a fixed diet and were given NH_4Cl and $NaHCO_3$; changes in their body-water were estimated. With the loss of water induced by NH_4Cl there was decreased pain and joint swelling and increased joint mobility. These changes were reversed by the accumulation of water induced by $NaHCO_3$. C. J. C. B.

Application of maximum likelihood to dosage-mortality curves. F. Garwood (*Biometrika*, 1941, 32, 46—58).—The usual practical max. likelihood treatment of dosage-mortality problems is shown to be equiv. to calculating successive corrections to the regression coeffs. A refinement of the method described converges more rapidly when applied to normal distributions. W. F. H.

Method of physiological assay of pyrethrum extracts [on nerve cord of cockroach]. O. Lowenstein (*Nature*, 1942, 150, 760—762).—The ventral nerve cord of a female cockroach was exposed and the grid electrode of a recording unit placed on the 5th abdominal ganglion, the neutral electrode in contact with the abdominal tissues. Stimulation of the hair sensillae on the cerci produced a potential of such magnitude as to be heard easily in a loudspeaker in the recording unit. When heavy oil solutions of pyrethrins (0.07—1.3%) were applied to the nerve cord the survival time of the prep. was reduced. Acoustical recognition of the end-point was sharp. The mean survival time plotted against pyrethrin concn. gave a hyperbolic curve; the sensitivity of the preps. is greatest at pyrethrin concns. between 0.13 and 0.23%. There is an approx. correspondence between external application of 1.6% and direct application to the exposed cord of 0.3% pyrethrin. 10 insects are required for each assay. E. R. S.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Medical problems encountered in modern air travel. J. W. Heim (*J. Ind. Hyg.*, 1942, 24, 109—115).—5 subjects were exposed for 4 hr., and 4 subjects for 7 hr., daily to a pressure corresponding with a height of 12,000 ft.; in each case fatigue, sleepiness, abnormal hunger, headache, and eyestrain were experienced, the longer

exposure also causing dizziness. Physical and mental fatigue persisted between exposures. No blood changes could be detected during the 3—4 weeks of the experiment; only temporary changes occurred in the blood pressure, pulse rate, and respiratory rate. Body wt. diminished during the 5 weekly exposure days, but rose again during the week-end. Psychological tests indicated mental fatigue. The symptoms and treatment of the decompression illness of high altitudes are discussed; symptoms begin at 30,000 ft., and at 35,000 ft. 10% of subjects were affected. There is no correlation between physical type and incidence of symptoms, but younger persons seem less susceptible to severe symptoms; elimination of dissolved N_2 by preliminary O_2 breathing prevents symptoms in some people. E. M. K.

Silicosis. E. J. King (*Fuel*, 1942, 21, 74—79).—A review. A. B. M.

Significance of chemical examination in diagnosis of silicosis. E. U. Gardner and A. J. Redlin (*J. Ind. Hyg.*, 1942, 24, 125—130).—150 lungs were carefully examined and total SiO_2 was determined; 58 were from patients with no chronic disease and no exposure to SiO_2 , whilst 92 were from patients with more than 5 years in dusty industry with a definite SiO_2 risk. 72 of this latter group had silicosis. The max. and mean vals. for total SiO_2 increased with the degree of silicotic nodulation, but the min. vals. in all the groups were similar. In a particular specimen, there was no correlation between SiO_2 content and either nodulation or duration and intensity of exposure. SiO_2 content expressed as % of dry wt. is unsatisfactory because fibrosis, vascular engorgement, and pneumonic exudates all make the lung heavier. Animal experiments showed that when SiO_2 dust was inhaled, the SiO_2 content of the lungs increased with time until fibrosis began, when the SiO_2 content decreased. E. M. K.

Ventilation requirements for radium dial painting. W. C. L. Hemeon and R. D. Evans (*J. Ind. Hyg.*, 1942, 24, 116—120).—The rate of emanation of Rn from Ra paints was used to calculate ventilation requirements, assuming the max. safe concn. to be 10^{-11} curie per l. of air. E. M. K.

Prevention and control of hazards in radium dial painting industry. L. F. Curtiss (*J. Ind. Hyg.*, 1942, 24, 131—141).—The properties of the radioactive elements are described, and some of the biological injuries caused by Ra are discussed. Methods of measuring exposure are described, including details of an exposure meter for γ -radiation. Safe limits for exposure are stated and preventive measures recommended. E. M. K.

Analysis of atmospheric samples of explosive chemicals. F. H. Goldman (*J. Ind. Hyg.*, 1942, 24, 121—122).—Sampling methods were limited to the midget impinger, a bubbler used with the midget impinger, or the gas sampling bottle, since conditions prevented the use of electrical apparatus. Analytical methods are indicated for some explosive chemicals. E. M. K.

Etiology of acute illness among workers using low-grade stained cotton. R. Schneider, P. A. Neal, and B. H. Caminita (*Amer. J. Publ. Health*, 1942, 32, 1345—1359).—The illness (cotton mill fever) could be produced in man by inhalation of dust from normal cotton contaminated by Gram-negative bacilli which are found in enormous nos. in low-grade cotton, or by culture filtrates of these organisms. The severity of symptoms was proportional to the no. of bacteria present in the sample. Intradermal injections of infected cotton extracts caused a severe local inflammation. C. J. C. B.

Potential hazards of the leather industry. W. J. McConnell, J. W. Fehnel, and J. J. Ferry (*J. Ind. Hyg.*, 1942, 24, 93—108).—The hazards are dependent on the use of alkalis, acids, CrO_3 , tanning materials, oils, dyes, and solvents; these may cause skin affections and systemic poisoning among workers handling them or exposed to the vapours of those that are volatile. Where benzene was encountered, its concn. in the air often exceeded the safe limit. Practical measures for safe operation are outlined. E. M. K.

Hazards and control of industrial toxic solvents. W. M. Pierce (*Chem. Met. Eng.*, 1942, 49, No. 12, 85—87).—A brief review.

XXII.—RADIATIONS.

Clinical and physical significance of quality in telerradiation therapy. W. T. Murphy (*N.Y. Sta. J. Med.*, 1942, 42, 966—972).—A comparison of depth doses and isodose curves for 200-, 400-, and 1000-kv. beams and a 3-g. Ra pack. E. M. J.

X-Ray therapy of polyposis of colon.—See A., 1943, III, 125.

Individual action and summation effects of X-radiation and dermatological preparations on skin of albino rabbit.—See A., 1943, III, 140.

Effect of irradiation with ultra-violet rays and short waves on metabolism and insensible perspiration. A. Lippmann (*Med. f. Austral.*, 1942, II, 77—81).—After irradiation with ultra-violet rays the skin reacts almost immediately with a rise of temp., which is noticeable

1 hr. after erythema is visible. There is a decrease in insensible perspiration which precedes erythema and becomes pronounced with erythema. 2 hr. after irradiation O_2 consumption is slightly increased and does not return to normal in 24 hr. if erythema persists. The changes in insensible perspiration are not due to a reflex mechanism but to local changes. Short waves, in doses insufficient to cause pyrexia or sweating, cause a rise of O_2 consumption and diminished perspiration. These changes are definite at 80 min. F. S.

Skin-reactions in post-radiation erythema and in direct pigmentation. H. Hamperl, U. Henschke, and R. Schulze (*Virchow's Arch.*, 1939, 304, 19—33).—Irradiation of human skin with ultra-violet light of λ below 320 $m\mu$, by destroying the nucleic acid in the cell nuclei, causes erythema of corium followed by increase in melanin in the prickle cells. The amount of nucleic acid destroyed corresponds quantitatively with the intensity of the erythema. Ultra-violet light of above 320 $m\mu$ produces within 10—15 min. an increase in melanin in the basal layer of the epidermis without affecting the prickle cells (direct pigmentation). J. A.

Energetic balance of appearance of mitogenetic radiation. A. G. Gurvitsch and L. G. Gurvitsch (*Acta Physicochim. U.R.S.S.*, 1942, 16, 282—287).—The energy balance for the appearance of mitogenetic radiation is considered from the point of view of Frankenburg's hypothesis, viz., that free radicals are produced, the heat of recombination of which is sufficient to cause production of ultra-violet photons, and that the recombination energy is absorbed by some substance present, being given out later as sensitised fluorescence. It is shown that the heat of recombination is insufficient by itself, and that visible light and O_2 are also required. When these are taken into consideration, Frankenburg's views are confirmed. The systems investigated experimentally were urea + urease, glycylglycine + erepsin, and glucose + zymase. A. J. M.

Peculiarities of chain reactions and common energy levels in living systems. A. G. Gurvitsch and L. D. Gurvitsch (*Acta Physicochim. U.R.S.S.*, 1942, 16, 288—295).—The hypothesis of common energy levels or chain reactions in living systems is developed. Mol. aggregates, not in equilibrium and for the existence of which there must be a continuous expenditure of energy (made evident by mitogenetic radiation), are assumed. The closeness of the mols. is sufficient for a common energy level to be maintained, energy being transferred from one mol. to the next until irradiated. The common energy level is often quite high, since "degradation" radiation is readily called forth, e.g., by cooling, centrifuging tissues, or by applying very weak currents. The conceptions developed explain why chain reactions proceed to a considerable extent in living organisms, but quickly stop when attempts are made to carry them out *in vitro*. A. J. M.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Chemical and physical investigation of germicidal aerosols. II. The aerosol centrifuge. S. R. Finn and E. O. Powell (*J. Hygiene*, 1942, 42, 354—364; cf. A., 1942, III, 417).—A mathematical treatment of the principles of the aerosol centrifuge has given data which are adequate as a basis for design. Several types of centrifuge are described and the size-ranges of particles delivered by them were calc. and compared with practical results. The agreement was satisfactory. D. D.

Temperature coefficient of hydrogen-ion concentration in blood and other buffers. J. Skotnický (*Z. physikal. Chem.*, 1942, 191, A, 180—191).—The temp. coeff. of pH for human blood, determined with both H and quinhydrone electrodes, is -0.017 per 1° and is unaffected by individual or pathological variations. The close agreement of this val. with that of the temp. coeff. of the neutral point of water (-0.0165 per 1°) implies the existence in blood of a buffer mechanism that maintains the alkalinity const. when the temp. changes. The serum-proteins play a large part in regulating the pH of blood, which should not be regarded as a simple bicarbonate buffer. Vals. of dpH/dT are tabulated for a no. of simple aq. solutions and buffer mixtures. A new method for obtaining the dissociation const. of water is described. F. L. U.

Ionic concentration gradients and their biochemical significance.—See A., 1943, I, 91.

Electrophoretic components of globin. L. Reiner, D. H. Moore, E. H. Lang, and M. Green (*J. Biol. Chem.*, 1942, 146, 583—587).—Globin fractions which differed in solubility contained the same two electrophoretic components. Globin has 60% of the fast and 40% of the slow component. On isolation, these were found to differ in their H dissociation curve, absorption spectra, and S content. J. E. P.

Electrophoretic patterns, colloid osmotic pressure, and viscosity of serum denatured by ultra-violet radiation. B. D. Davis, A. Hollaender, and J. P. Greenstein (*J. Biol. Chem.*, 1942, 146, 663—671).—Ultra-violet irradiation of horse and of human serum and of albumin and globulin fractions of the latter produced a marked

increase in relative viscosity and a decrease in colloid osmotic pressure, the electrophoretic pattern becoming homogeneous with approx. the mean mobility of the components originally present. Irradiation of serum induces an unfolding and splitting of the protein mols. with subsequent aggregation. J. E. P.

Electrophoretic study of the protein components in cerebrospinal fluid and relationship to the serum proteins.—See A., 1943, III, 101.

Exchange adsorption of neutral salts by proteins.—See A., 1943, I, 89.

XXIV.—ENZYMES.

Kinetics as a function of temperature of lipase, trypsin, and invertase activity from -70° to 50° . I. W. Sizer and E. S. Josephson (*Food Res.*, 1942, 7, 201—209).—In the temp. range studied the rate of hydrolysis increases exponentially with temp. according to the Arrhenius equation. There is a sharp break at 0° to -2° with a relatively low activation energy characterising the system in the upper range and a high val. at the lower range, the break usually occurring where the digest changed from liquid to solid. The activation energies are: lipase 7600 and 37,000, trypsin 15,400 and 65,000, invertase 11,100 and 60,000 g.-cal. Heat-inactivation occurs above 40° . The activity is not affected by storage for 27 days at -70° . H. G. R.

Photochemical spectrum of cytochrome oxidase. J. L. Melnick (*J. Biol. Chem.*, 1942, 146, 385—390).—The absorption spectrum of the CO compound of cytochrome oxidase from rat heart muscle was charted by Warburg's photochemical method. The main absorption band is at about 450 $m\mu$, with two secondary max. at 510 and 589 $m\mu$, indicating that the oxidase is a phæohæmin enzyme. Its identity with the cytochrome a_3 component of Keilin and Hartree (A., 1939, III, 719) is discussed. J. E. P.

Quantitative field test for estimation of peroxidase. W. B. Davis (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 952—953).—The sample of tissue is ground with a buffer solution (starch- $Na_2S_2O_3$ -KI-Na acetate), filtered, and 0.9% H_2O_2 is added. The time for production of a blue-black colour is the reciprocal of the enzyme activity. The method is designed to test the blanching of vegetables. J. D. R.

Enzyme inhibition by derivatives of phenothiazine. III. Catalase, cytochrome oxidase, and dehydrogenases. H. B. Collier and D. E. Allen (*Canad. J. Res.*, 1942, 20, B, 284—290; cf. A., 1941, III, 225).—The inhibition of catalase (guinea-pig liver) and of cytochrome oxidase by leucophenothiazine is confirmed. Phenothiazine sulphoxide is a powerful inhibitor of catalase, its activity at pH 5.3 being greater than that at 6.8. Succinic oxidase (ox heart) is inhibited by phenothiazine and thionol. Succinic dehydrogenase is inhibited by oxidised phenothiazine, and cytochrome oxidase by the leuco-form. The lactic dehydrogenation system of yeast is inhibited by phenothiazine, which is simultaneously reduced; urease, but not *D*-amino-acid oxidase, is partly inhibited. The bearing of these findings on the action of phenothiazine on living organisms is discussed. F. O. H.

Production of active and inactive catalase by *Proteus vulgaris*. T. L. Swenson and H. Humfeld (*J. Agric. Res.*, 1942, 65, 391—403).—*P. vulgaris* produced active and activatable catalase. An activator (Kolmer's cholesterinised antigen) gave a fourfold increase in the active form. Exposure of agar cultures to concns. of O_2 up to 75% caused a progressive increase in catalase production. Bacterial activity was correlated with the rate of activation, which was absent at 0° for 60 min. but marked at 37.5° in 5 min. The activatable form of the enzyme was regarded as an integral part of the living cell, since it could not be extracted with acetone. R. H. H.

Coccarboxylase and related esters.—See A., 1943, II, 111.

Inhibition of choline-esterase by eserine and prostigmine. G. S. Eadie (*J. Biol. Chem.*, 1942, 146, 85—93; cf. A., 1941, III, 533).—Measurements of the rates of hydrolysis of acetylcholine by the choline-esterase of dog's serum in presence of the inhibitors eserine and prostigmine, and of the effects of varying the concn. of substrate and inhibitor, show that equilibrium between enzyme and inhibitor is attained within a few min. after mixing. The inhibitors compete with the substrate in forming compounds with the enzyme and each mol. or active centre of enzyme combines with two mols. of inhibitor. At 36.5° , the dissociation const. of the compounds are 3×10^{-14} for eserine and 2×10^{-14} for prostigmine, whilst that of the enzyme-substrate compound is 1.7×10^{-3} . W. McC.

Serum-choline-esterase and muscular exercise.—See A., 1943, III, 88.

Influence of ascorbic acid and other readily oxidised substances on pancreatic lipase. D. Michlin and O. J. Borodina (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 921—923).—Hydrolysis of tributyrin by the lipase was increased by addition of ascorbic acid. The acid in an atm. of N_2 and the dehydro-form in air were without effect. The possibility that ascorbic acid served to bind Cu, a strong lipase poison, was precluded. The activation of lipase was probably due

to the ability of ascorbic acid to form a redox system. Similar effects were produced by pyrocatechol and other substances.

R. H. H.

Liberation of deaminating enzyme in pneumonia. E. R. Trethewie (*Austral. J. Exp. Biol.*, 1942, 20, 289—293).—The activity of deaminating enzyme in normal human plasma is determined. Approx. 50% of the activity remains after incubation for 40 min. of plasma in presence of added adenyly compounds. There is no significant change in activity in samples of plasma taken over a period of several days and for slight pH changes. There is increased enzyme activity in the blood of patients with pneumonia. This blood also contains a cardio-depressant substance, which is not an adenyly compound since it is not inactivated by deaminating enzyme. The significance of the results is discussed and it is suggested that the cardio-depressant substance is of platelet origin.

J. N. A.

Action of enzymes on $\alpha\alpha'$ -iminodicarboxylic acids.—See A., 1943, II, 56.

Effect of orange and lemon juices on the activity of proteolytic enzymes. T. C. Manchester (*Food Res.*, 1942, 7, 394—402).—Lemon or orange juice and citric acid accelerate the action of pepsin. With sausage casing or aged, cooked ovalbumin as substrate there is an increase of 1.5 times at pH 2.4 but an inhibition at pH 1.5—1.1; an acceleration over the whole range of pH 2.4—1.1 occurs with freshly cooked ovalbumin. Lemon juice contains a small amount of a proteolytic enzyme. The acceleration of peptic activity is due to citric acid and an unidentified factor and not to ascorbic acid or ascorbic acid + Fe.

H. G. R.

Proteolytic enzyme derived from plasma.—See A., 1943, II, 84.

Enzymic degradation of cell wall substances. II. D. H. F. Clayton (*Chem. and Ind.*, 1943, 49—51; cf. A., 1943, III, 142).—The degradation of hemicelluloses, lignin, and cellulose by enzymic and other systems is considered. Lignification increases the resistance of the cell wall to degradation by biological agencies. The complex chemical constitution of the mature cell wall also increases resistance, hydrolysis of the diverse groupings requiring the simultaneous presence of sp. enzymes.

R. H. H.

Preparation and properties of the amylases produced by *Bacillus macerans* and *Bacillus polymyxa*. E. B. Tilden and C. S. Hudson (*J. Bact.*, 1942, 43, 527—544).—All of 13 cultures of *B. macerans* developed in varying amounts the unique amylase capable of converting starch into the non-reducing cryst. (Schardinger) dextrins. 9 cultures of *B. polymyxa* produced varying amounts of an amylase of a type similar to those already known. Optimal cultural conditions for the production of these two enzymes are described. Exposure to 50° for 1 hr. did not inactivate the *B. macerans* enzyme and considerably inactivated the *B. polymyxa* enzyme. At 40° the *B. macerans* amylase showed its greatest activity at pH 5.0—6.0, the *B. polymyxa* at pH 6.8. The enzymes are stable and the *B. macerans* enzyme, in particular, seems to have many theoretical applications to carbohydrate chemistry which merit consideration.

F. S.

Determination of synthetic activity of amylase in living vegetable tissue. B. A. Rubin, E. V. Artzichovskaja, and O. T. Lutikova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 914—916).—Invertase and amylase are closely interrelated in the carbohydrate metabolism of the living cell. An extension of Kursanov's method for determining invertase activity (A., 1937, III, 141) enabled the activities of both enzymes to be measured. The experimental procedure is described.

R. H. H.

Enzyme action. H. C. Eyster (*Science*, 1942, 96, 140—141).—The action of narcotics on the activity of diastase is compared with their action on the adsorptive capacity of charcoal for methylene-blue; it appears to depend fundamentally on adsorption.

E. R. R.

Invertase activity in identical mixtures in the liquid and frozen states. Z. I. Kertesz (*J. Amer. Chem. Soc.*, 1942, 64, 2577—2578).— $\bar{a} \times 10^4$ for hydrolysis of sucrose by invertase is 253 at 20.2°, 38.5 if liquid at -6.8° or 10.49 if frozen, and 0.321 at -17.8° (frozen) (cf. A., 1933, 679; Sizer et al., A., 1943, III, 272). The difference for solid and liquid states is probably due to varying availability of water, as is also alteration of \bar{a} by addenda to prevent freezing.

R. S. C.

Identification of carbohydrate group in nicotinamide nucleotides. F. Schlenk (*J. Biol. Chem.*, 1942, 146, 619—625).—The carbohydrate of the nicotinamide nucleoside obtained from cozymase by hydrolysis with a phosphatase prep. from almond press-cake is *D*-ribose (*p*-bromophenylhydrazone, m.p. 165—166°). Hydrolysis of cozymase by 0.1N-H₂SO₄ at 100° yields a pentosephosphoric acid, which, from its formation of only a trace of formaldehyde by the action of HIO₄, is identical with *D*-ribose-5-phosphoric acid, thus proving the method of linking of the phosphoric acid in the cozymase mol.

P. G. M.

Phosphorylative glycogenolysis and calcification in cartilage. A. B. Gutman, F. B. Warrick, and E. B. Gutman (*Science*, 1942, 95, 461—462).—Calcifying cartilage contains an enzyme system for phosphorylative glycogenolysis, the processes of which are essential for *in vitro* calcification of cartilage in solutions containing P as inorg.

PO₄''' only. Phosphoric ester substrate is thereby provided for bone-phosphatase in the cartilage matrix.

E. R. S.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Yeasts occurring in souring figs. E. M. Mrak, H. J. Phaff, R. H. Vaughn, and H. N. Hansen (*J. Bact.*, 1942, 44, 441—450).—150 yeasts were isolated from 3 varieties of souring figs and included 36 *Saccharomyces*, including 25 *S. cerevisiae* and 2 *S. fragilis*, 33 *Candida*, including 26 *C. krusei*, 14 *Pichia kluyveri*, 12 *Kloeckera lindneri*, 8 *Hanseniaspora mulleri*, and 6 *Torulopsis stellata*. The sugar tolerance of the organisms was low. The production of volatile and fixed acids was low and not sufficient to cause souring. Adaptive lactase formation occurred in *S. fragilis*.

F. S.

Influence of potassium on sugar metabolism [of yeast]. S. N. Farmer and D. A. Jones (*Nature*, 1942, 150, 768—769).—K and PO₄''' stimulate glucose metabolism to the same extent in yeast cells and cell-free extracts. Stimulation is most marked when fermentation has proceeded to a slight extent. Zwaardemaker's relationship for K and U (cf. A., 1918, i, 326) does not hold for degradation of glucose by yeast.

E. R. S.

Configuration of yeast nucleosides. J. M. Gulland, G. R. Barker, and D. O. Jordan (*Nature*, 1943, 151, 109).—The identity of the sugar, whether *D*-ribose or *D*-lyxose, is briefly considered in relation to Hendricks' results (A., 1941, I, 165).

A. A. E.

Adaptive enzymes of certain strains of yeasts. H. E. Rhoades (*J. Bact.*, 1941, 42, 99—114).—All of 9 strains of yeasts of the species *Saccharomyces cerevisiae*, *S. ellipsoideus*, *S. carlsbergensis*, and *Schizosaccharomyces pombe* readily fermented glucose, mannose, sucrose, and raffinose regardless of the C source in which the cells had been grown; that is, these sugars were fermented by constitutive enzymes. In contrast, other C sources were fermented by adaptive enzymes as a result of a sp. chemical stimulation of the cells by growth in the presence of the sp. substrate or a closely related substance. Galactozymase and the maltase complex were adaptive enzymes. Maltase, mellezitase, α -methylglucosidase, and possibly trehalase were related in that fermentation of the corresponding substance could be accelerated by growth of the yeast cells in any one of the 4 substrates.

F. S.

Vitamin synthesis by a yeast converted from heterotrophic into autotrophic habit. L. H. Leonian and V. G. Lilley (*Science*, 1942, 95, 658).—A preliminary note on a method by which strains of *Saccharomyces cerevisiae* able to exist without exogenous thiamin, pyridoxine, inositol, and pantothenic acid have been developed.

E. R. R.

Virus inactivator from yeast. W. N. Takahashi (*Science*, 1942, 95, 586—587).—The extraction of the inactivator from yeast by autolysis and autoclaving is described. The activity of the extract depends on a chemical, rather than an adsorption, reaction, does not occur with heat-denatured viruses, and is destroyed by 0.1N-NaOH at 100°. The substance may be a polysaccharide.

E. R. R.

Differential staining of living and dead yeast cells. D. R. Mills (*Food Res.*, 1941, 6, 361—371).—Methylene-blue, methyl-green, and erythrosin give the sharpest distinction between living and dead yeast cells and a concn. of 1:10,000 of the first-named is recommended. The time of staining has little effect on the count when the solution is buffered at pH 4.6 and slightly more cells are stained at the higher pH vals. Plate counts are approx. 50% lower than counts by staining and give the no. of reproducing cells whereas staining estimates all viable cells. Glucose agar stimulates 25% more yeast cell reproduction than wort agar.

H. G. R.

Staining technique for evaluating toxicity of antibiotic substance of microbiological origin. H. Katznelson (*Canad. J. Res.*, 1942, 20, C, 602—608).—The absorption of neutral-red by dead cells of *Schizosaccharomyces pombe* provided an index of the toxicity of an antibiotic agent produced by a bacillus.

R. H. H.

Is lysis identical with autolysis in fungi? V. F. Altergot, O. P. Kuvshinova, and G. M. Baraeva (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 32, 677—680).—The instability of lysis in various species of *Fusaria* and the facts that the respiratory processes are the same in normal and lytic cultures of *F. graminearum* and *F. nivaeum* and their proteolytic activity is different from that of autolytic cultures show that lytic processes in micro-organisms are not identical with autolysis. Autolysis of a fungus, previously described as automy-cophagy, is a phenomenon which occurs in a viable organism when the equilibrium between the destructive and synthetic processes in the protoplasm is disturbed. Lysis of a culture may lead either to autolysis, sterility, and death of the culture or to a relatively stable condition.

J. N. A.

Influence of the trace element vanadium on *Aspergillus niger*. D. Bertrand (*Compt. rend.*, 1941, 213, 254—257).— 4.3×10^{-6} g. per l. of V increased the dry wt. of *A. niger* as compared with that on a medium purified to contain less than 10^{-8} g. per l. V, in concn. such

as would naturally be met with, is physiologically important to *A. niger*; probably max. dry wt. is given by 2×10^{-9} g. per l.

I. A. P.

Antibacterial substances produced by moulds. I. Penicidin, product of growth of a penicillium. N. Atkinson (*Austral. J. Exp. Biol.*, 1942, 20, 287—288).—When the penicillium examined is grown on modified Czapek-Dox medium at 18–20°, the metabolism solution contains penicidin (separated as a pale yellow oil), which inhibits growth of bacteria. The crude substance inhibits growth of *B. typhosum* at a dilution of approx. 1:10⁵. Penicidin is relatively thermostable in neutral solution, and is fairly stable in acid, but not in alkaline, solution. It is readily adsorbed by activated C, and dialyses through Cellophane from the metabolism solution in water at 3°. The biuret, Molisch, and Millon's reactions are negative.

J. N. A.

Production of two antibacterial substances, fumigacin and clavacin. S. A. Waksman, E. S. Horning, and E. L. Spencer (*Science*, 1942, 96, 202—203).—Fumigacin (not the same as fumigatin) and clavacin have been isolated from *Aspergillus fumigatus* and *A. clavatus* respectively. Fumigacin is very sol. in CHCl₃ and in alcohol, less sol. in ether and in water, can be cryst. from alcohol, and is active against Gram-positive bacteria. Clavacin is sol. in CHCl₃, in ether, in alcohol, and in water, is active against Gram-negative bacteria, and has high bactericidal activity. Both are isolated by adsorption on Norit, followed by elution with appropriate solvents. E. R. R.

Antagonism between soil infusoria and [plant] pathogenic fungi. A. L. Brodski (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 33, 81—83).—In artificial media mycelium of *Verticillium dahliae* does not grow in presence of *Culicoides* and its pseudosclerotia fail to germinate. *Bacillus mesentericus* and *Bact. fluorescens* have a similar though much weaker action on the fungus. The active principle in *Culicoides* cultures appears in the substrate. Tomato plants grown in aq. media to which pseudospores of *V. dahliae* are added show symptoms of wilt after bud formation. Similar cultures to which active *Culicoides* is also added produced flower and fruit without the appearance of wilt. In wilt-infected soil addition of *Culicoides* appreciably lowers the proportion of infected plants and considerably increases the final yields obtained. The possible use of *Culicoides* in the practical control of wilt is discussed. A. C. P.

High-concentration hydrogen cyanide fumigation of fungi and bacteria. N. Polunin (*Nature*, 1942, 150, 682—684).—Malt agar plates developed *Penicillium frequentans* and *Aspergillus* sp. when exposed in the Druce Herbarium, Oxford. Some of these plates were left in the Herbarium during fumigation with HCN (more than 30 mg. per l. of air was the concn. aimed at) for 50 hr. The fungi on these plates were killed, and the plates would not support growth of fresh inocula, whilst unfumigated plates showed vigorous growth. 8 days after fumigation plates began to support growth. E. R. S.

Actinomyces antibioticus, a new soil organism antagonistic to pathogenic and non-pathogenic bacteria. S. A. Waksman and H. B. Woodruff (*J. Bact.*, 1941, 42, 231—249).—In fluid media this organism produced an anti-bacterial substance, which could be completely removed by charcoal. The active substance resists 100° for 30 min. and is sol. in ether, ethyl alcohol, CS₂, acetone, and CHCl₃. It was separated into two cryst. fractions, actinomycin A, insol. in light petroleum, and actinomycin B, sol. in light petroleum. The A fraction was highly bacteriostatic, whereas the B fraction had little bacteriostatic action but was often strongly bactericidal. Both fractions prevented the development of *Azotobacter* in concns. of 1:1,000,000, and inhibited N fixation by this organism. Fungi were also sensitive to actinomycin. (1 photomicrograph.) F. S.

Vitamin-C in the protozoic cell. G. Roskin and O. Nastiukova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 32, 566—568).—Ascorbic acid, detected by staining with AgNO₃, was found in the digestive vacuoles but not in the plasma of *Paramecium* grown in a medium containing the acid. *Trypanosoma* in the blood of guinea-pigs contain ascorbic acid in amounts varying with its concn. in the blood. R. L. E.

Respiration of malaria plasmodia. J. Maier and L. T. Coggeshall (*J. infect. Dis.*, 1941, 69, 87—96).—O₂ uptake increases with the development of the parasite from the ring to the segmenting form. Glucose is utilised by *P. knowlesi* and probably meets its normal energy requirements. Glucose can be replaced entirely by mannose, fructose, and glycerol, to a smaller extent by Na d-lactate, and to a slight extent by Na αβ-glycerophosphate and maltose. F. S.

Diagnostic value of complement fixation in malaria. A. D. Dulaney, W. K. Stratman-Thomas, and O. S. Warr (*J. infect. Dis.*, 1942, 70, 221—225).—102 of 125 patients with malaria parasites in blood films gave a positive complement-fixation test for malaria with *Plasmodium knowlesi* antigen. 15 of 192 presumably malarious patients with negative blood films and 24 of 170 presumably non-malarious patients gave a positive complement fixation. 7 of 188 normal subjects gave a non-sp. reaction. Complement fixation thus gave highly sp. results and may prove useful as a supplementary test. F. S.

Edema of mice infected with *Trypanosoma cruzi*, and accompanying pathological lesions. H. O. J. Collier, J. D. Fulton, and J. K. M. Innes (*Ann. trop. Med. Parasit.*, 1942, 36, 137—150).—This infection in mice produced subcutaneous oedema without changes in the thyroid, myocarditis, valvulitis, phlebitis, myositis, hepatitis, and other changes. (11 photomicrographs.) F. S.

Effect of sulphanilamide and trypaflavin on cultures of *Leishmania tropica*.—See A., 1943, III, 132.

Common aerobic spore-forming bacilli. I. Staining for fat with Sudan-black B-safranin. K. L. Burdon, J. C. Stokes, and C. E. Kimbrough (*J. Bact.*, 1942, 43, 717—724).—Sudan-black B is superior to the red Sudan stains for demonstrating fat in bacterial cells. A loopful of a suspension of bacteria in a saturated solution of the dye in 70% alcohol is dried on a slide and counterstained with a 1% aq. solution of safranin. The preps. are permanent and show the fat droplets as bluish-black or bluish-grey granules in a pink-stained cytoplasm. By using this method on smears from 24–48-hr. cultures on glucose or glycerol agar the following were fat-positive: the large-celled varieties, *Bacillus megatherium*, *B. mycoides*, *B. cereus*, *B. subtilis*, Michigan, and *B. anthracis*; also *B. brevis* and *B. circulans*. The small-celled varieties, *B. mesentericus*, *B. subtilis*, Ford and Marburg, and *B. vulgatus*, were fat-negative. F. S.

Sylvatic plague studies. I. Convenient individual mouse jar. J. R. Douglas and C. M. Wheeler (*J. infect. Dis.*, 1941, 69, 29—31).—Full directions, with 4 diagrams, are given. The jar is made from a screw-cap jar with a combined water-bottle holder and label made from a strip of galvanised metal. F. S.

Apparatus for fluid bacterial cultures. F. Fuhrmann (*Zentr. Bakt.*, 1942, II, 105, 97—109).—The prep. and use of an all-glass apparatus is described. In this apparatus cultures can be grown in various gas mixtures and volatile metabolic products can be collected and measured. F. S.

Preparation of silica gel [for bacterial cultures]. D. Müller and F. Holm (*Zentr. Bakt.*, 1942, II, 105, 131—133).—Recently boiled 2N-Na₂SiO₃ is added drop by drop to air-free 2N-HCl until pH 5.5 is reached (chlorophenol-red). The mixture is then distributed into Petri dishes in layers 0.4–0.7 cm. deep. The gel sets in a few min. and the dishes are then washed in running tap-water for 24 hr. and then for 24 hr. in distilled water, after which the pH should be 7.5. The dishes are then placed in a vol. of nutrient medium equiv. to 10 times the vol. of gel for 24 hr. in the cold or 10 hr. at 40° or the nutrient may be poured on the gel to a depth of 1.0–1.5 cm. and changed 3 or 4 times. They are then washed with water, drained, autoclaved for 10 min. at 121° with a disc of filter-paper in the cover, slowly cooled, and dried for 2 hr. at 40°. F. S.

Culture dishes for the cultivation and enumeration of anaerobic bacteria. G. Kaess (*Zentr. Bakt.*, 1942, II, 105, 32—38).—The apparatus consists of a glass disc, 8.8 cm. in diameter, cemented to the rim (3 mm. deep) of a glass cover of the same diameter. A piece of the rim, 15 mm. wide, is cut out for an opening to the dish. The organisms are suspended in about 13 c.c. of nutrient agar recently boiled for 15 min. to remove O₂ and then poured into the dish. A layer (1.5 cm.) of 0.5% glucose in 2% agar is then added and the opening plugged. Satisfactory growth of anaerobes is obtained without special apparatus and the 3 mm. deep culture is suitable for counting and microscopic examination. F. S.

New Petri-dish cover and technique for the cultivation of anaerobes and microaerophiles. J. H. Brewer (*Science*, 1942, 95, 587). E. R. R.

Simplified Petri dish holder. H. E. Morton (*Amer. J. clin. Path. Tech. Sect.*, 1942, 6, 71—72). C. J. C. B.

Bacteriological studies on "natural" fermentation process of preparing egg white for drying. L. S. Stuart and H. E. Goresline (*J. Bact.*, 1942, 44, 541—549).—Eight samples of commercially fermenting egg white contained bacteria of the *coli-aerogenes* groups in such nos. (400—2000 millions per ml.) as to exclude other bacterial types. After inoculation of fresh egg white with fermenting egg white there was at first a rise in pH from 7.45 to 9.1, probably due to loss of CO₂ and then production of acid at the expense of sugar during the first 72 hr. At 96 hr. proteolysis had commenced accompanied by an increase in pH from 6.25 to 6.6. Egg white separated from eggs with high initial bacterial counts, from shell contamination, fermented rapidly while eggs with low counts fermented slowly. Dried fermented egg white retained its original colour at room temp. for 4 months whereas dried unfermented egg white turned dark reddish-brown. Fermentation by the *coli-aerogenes* group yielded a bright, granular, cryst. product on drying whereas proteolytic bacteria yielded a dull amorphous product. F. S.

Adenylic acid and bacterial growth. S. Caspe and A. G. Osler (*J. lab. clin. Med.*, 1943, 28, 150—151).—0.2% adenylic acid inhibits the growth of ordinary types of bacteria. C. J. C. B.

Behaviour of micro-organisms at subfreezing temperatures. III. Influence of sucrose and hydrogen-ion concentration. V. H. McFar-

lane (*Food Res.*, 1941, **6**, 481—492).—At -10° and -20° the growth of a cold-tolerant strain of *Saccharomyces* and of *B. coli* in concns. of sucrose between 1 and 50% varied with the concn. of the latter only at pH 3.6—3.7. There were fewer viable cells in some of the intermediate concns. of sucrose with yeast at pH 6.5 or 5 and *B. coli* at pH 5, 30 and 50% sucrose tending to retard destruction of the organisms. There was less destruction of yeast cells in distilled water, especially at -20° , than in lower concns. of sucrose whereas greater destruction of *B. coli* occurred in distilled water than in any concn. of sucrose. When the pH was the only variable, greatest destruction of the organisms occurred at pH 3.6—3.7, though in some cases pH 6.5 was less favourable towards yeast than pH 5. When temp. was the only variable, greater destruction occurred after several weeks storage at -10° than at -20° .

H. G. R.

Preserving and germicidal action of various sugars and organic acids on yeasts and bacteria. F. J. Erickson and F. W. Fabian (*Food Res.*, 1942, **7**, 68—79).—The preserving and germicidal action against bacteria (in descending order) is fructose, glucose, sucrose, lactose and lactic, acetic, citric acid (based on the no. of g. in 10 c.c. of broth); the order based on pH is acetic, citric, lactic, indicating that the effect does not depend only on the $[H^+]$ but also on the non-ionised mol. and/or the anion. Yeasts are more resistant both to sugars (fructose and glucose being the only sugars having a germicidal action on all yeasts; sucrose is germicidal only to *S. cerevisia*, and lactose is without effect) and to acids. The order of effectiveness of the acids is acetic lactic, citric whether based on pH or on the quantity added. The order for acids in combination with sugars is lactic, acetic, citric, the most effective sugars being fructose and glucose, the thermophiles being particularly susceptible to this combination. Fructose and glucose in combination with acids are more germicidal than sucrose and lactose. In sugar-acid combination the latter is the more important factor in producing a germicidal effect.

H. G. R.

Action of wetting agents on micro-organisms. I. Effect of pH and wetting agents on germicidal action of phenolic compounds. E. J. Ordal, J. L. Wilson, and A. F. Borg (*J. Bact.*, 1941, **42**, 117—126).—Undissociated phenol was more toxic to *Staphylococcus aureus* than phenolates. The addition of detergents to buffered solutions of phenolic compounds increased the germicidal activity of such solutions. The sp. effect was a function of the character as well as the concn. of the detergent. The germicidal action of solutions containing buffer, phenol, and detergent decreased with increasing alkalinity from pH 9 to 11 although the germicidal action of solutions of buffer and detergent increased in the same range. The detergent therefore enhanced the action of the undissociated phenol more than that of the phenolate.

F. S.

Influence of temperature on bactericidal activities of alcohols and phenols. F. W. Tilley (*J. Bact.*, 1942, **43**, 521—525).—The bactericidal efficiencies of phenol, *o*- and *p*-cresol, *o*- and *p*-butylphenol, resorcinol, ethyl and *n*-butyl alcohol against *Staphylococcus aureus* and *Bact. typhosus* were determined by a modified Rideal-Walker technique at temp. 10° apart. Temp. coeffs. were calc. by dividing the disinfection time at the lower temp. by the disinfection time at the higher temp. The effect of temp. varied with each disinfectant and with each test organism.

F. S.

Germicidal power of some *o*-phenylphenol compounds compared with standard chlorine disinfectants in presence of oyster liquor. W. A. Nolte and L. H. James (*Food Res.*, 1941, **6**, 537—546).—Na *o*-phenylphenoxide is more germicidal (particularly at 0.025—0.004% concn.) against the natural flora of oyster liquor in acid and alkaline than at neutral reaction and is an inferior disinfectant to Na chloro-*o*-phenylphenoxide. $Ca(OCl)_2$ is more effective at pH 6 than at 7 or 8 and is inferior to the Na chloro-salt. Na *p*-toluenesulphon-chloramide is most effective at acid and neutral reactions and is less effective than $Ca(OCl)_2$ or the Na chloro-salt in alkaline reactions.

H. G. R.

Urethane: absence of parallelism with the anti-sulphanilamide action of *p*-aminobenzoic acid. G. J. Martin and C. V. Fisher (*Science*, 1942, **95**, 603).—Urethane (0.5 g. per kg.) fails to inhibit the antistreptococcal action of sulphanilamide (2.0 g. per kg.). *p*-Aminobenzoic acid, at the same concn., completely inhibits this action.

E. R. R.

Mechanism of species adaptation to carcinogens. R. R. Spencer and M. B. Melroy (*Science*, 1942, **95**, 592—595).—Continuous exposure through many generations to carcinogenic and other agents, in amounts which had no effect on individuals, caused weakening or death in *Eberthella typhi*, *Paramecium multimicronucleatum*, and *Stenostoma tenuicaudatum*. Rhythmic exposure to harsh environments may offer a more useful technique in studying species adaptation.

E. R. R.

Focal infection. R. Rössle (*Virchow's Archiv*, 1939, **304**, 1—18).—Subcutaneous abscesses produced in rabbits by injecting aleuronate to which tracer-substances (oil, trypan-blue, Li-carmin) were added showed complete isolation by fibrin and local inhibition of circulation during the acute stage, up to the 9th day. After the 13th day the

fibrous tissue capsule becomes repeatedly perforated and some of the tracer-substances reach the surrounding tissue; owing to rapid formation of a new barrier of epitheloid, giant, and pseudoxanthomatous cells and fibrous tissue, they never reach the regional glands. Slow exchange of substances takes place due to vascularisation of capsule and variation in pressure inside the abscess by metabolism, exudation, and shrinking of the fibrous tissue.

J. A.

Test for sexual fusion in bacteria. J. W. Gowen and R. E. Lincoln (*J. Bact.*, 1942, **44**, 551—554).—There was no greater variability in two distinctive strains of *Phylomonas stewartii* when grown together as mixed culture than when the two were grown separately. There was therefore no evidence of variants arising from sexual fusion.

F. S.

Bacteria of Antarctica. C. A. Darling and P. A. Siple (*J. Bact.*, 1941, **42**, 83—98).—From samples of snow, soil, mud, plant debris, and air collected during the second Byrd expedition in 1933—1934, 178 cultures of bacteria were isolated. 117 were spore-forming rods included in 9 species; *Bacillus mesentericus* and *B. subtilis* were the most common. 45 were non-sporing rods included in 9 species. 16 were cocci of 5 species and 6 were not determined. Bacteria are therefore widely distributed in the Antarctic and are probably carried there mostly by wind currents.

F. S.

Microbial flora of the Rocky Mountain wood tick, *Dermacentor andersoni*, Stiles. E. A. Steinhaus (*J. Bact.*, 1942, **44**, 397—404).—2502 specimens of the wood tick yielded 77 strains of bacteria, 2 strains of yeasts, at least 1 rickettsia (that of Rocky Mountain spotted fever), 1 rickettsia-like organism, and 1 strain of bacteriophage. No acid-fast bacteria, moulds, spirochaetes, or mobile protozoa were found. Each of the 77 strains of bacteria was studied in detail. Of 2016 unfed ticks only 1.6% harboured bacteria, but in 486 recently fed ticks bacteria were found in 9.1%. The bacterial flora of *D. andersoni* would therefore consist of adventitious organisms recently acquired from its hosts.

F. S.

Bacteriology of fresh water. III. Types of bacteria present in lakes and streams and their relationship to bacterial flora of soil. C. B. Taylor (*J. Hygiene*, 1942, **42**, 284—296; cf. A., 1942, III, 269).—About 800 cultures were made from the waters of lakes and the rivers feeding them. The organisms were very difficult to culture, Na caseinate-agar giving the best results. It was impossible to classify them as they showed practically no biochemical properties. Most of the organisms were short rods. Colonies on solid media were frequently pigmented and many cultures liquefied gelatin. Nearly all the organisms were Gram-negative; the Gram-positive pleomorphic rods common in soils were absent. The flora of the lakes was not of const. composition or distribution. Many types commonly found elsewhere seem able to multiply in lake waters.

D. D.

Cell inclusions of globiforme and related types of soil micro-organisms. F. E. Clark and R. B. Mitchell (*J. Bact.*, 1942, **44**, 529—532).—Volutin and fat inclusions in coccus-forming rods abundant in soil, and techniques for their demonstration, are described. (1 photomicrograph.)

F. S.

Identification scheme for numbering cultures of *Rhizobia*. L. W. Erdman (*Iowa State Coll. J. Sci.*, 1941, **15**, 425—432).—A scheme which has been in operation for a no. of years is described and its advantages are summarised.

R. H. H.

Cytophaga group: biology of myxobacteria. R. Y. Stanier (*Bact. Rev.*, 1942, **6**, 143—196).—A review. (21 photomicrographs.)

F. S.

Elasticotaxis in myxobacteria. R. Y. Stanier (*J. Bact.*, 1942, **44**, 405—412).—Swarm movements in myxobacteria belonging to the family *Myxococcaceae* are oriented parallel to stresses in the agar substrate, which results in a subsequent orientation of the fruiting bodies in irregular lines at right angles to the direction of movement. This phenomenon, elasticotaxis, is discussed with particular reference to the hypothesis of Weiss ("Principles of Development," New York, Halt, 1939) that such phenomena are due to the production of oriented structures in the substrate the pattern of which is retraced by the developing cells.

F. S.

Cytology of *Pseudomonas tumefaciens*, the crown-gall organism. C. Stapp (*Zentr. Bakt.*, 1942, II, 105, 1—14).—*Ps. tumefaciens* normally contains one or two nuclear-staining granules. After 1—2 days' growth the bacilli form star-shaped aggregates, the bacilli lying radially, and the nuclear material collects at the centre of the star. The bacilli become longer and thicker while the central nuclear material fuses and divides. There is finally a redistribution of the nuclear material among the bacilli which separate and divide to form the normal vegetative organism. (45 photomicrographs.)

F. S.

Production of gluconic acid and 2-ketogluconic acid from glucose by species of *Pseudomonas* and *Phytomonas*. L. B. Lockwood, B. Tabenkin, and G. E. Ward (*J. Bact.*, 1941, **42**, 51—61).—In an aerated glucose medium 16 strains of *Pseudomonas*, distributed among 10 species, produced 2-ketogluconic acid, the yield being in excess of 80% of the consumed glucose in all but 3 strains. One strain of *Ps. ovalis* produced only gluconic acid. 4 of 8 species of

Phytomonas produced 40–82% of gluconic acid, none produced 2-ketogluconic acid. F. S.

Rôle of vitamins and metallic elements in nutrition of crown-gall organism. F. C. McIntire, A. J. Riker, and W. H. Peterson (*J. Bact.*, 1941, 42, 1–13).—This organism, *Phytomonas tumefaciens*, grew well on a synthetic medium with the addition of 5 µg. of Fe⁺⁺⁺, 0.1 µg. of Mn, and 0.5 µg. of Zn per ml. Growth was only moderately increased by the addition of yeast extract. The stimulation of growth by org. material in yeast extract was attributed to thiamin, riboflavin, pantothenic acid, and amino-acids. The organism synthesised large amounts of biotin, moderate amounts of thiamin and pantothenic acid, and such other factors as were necessary for its growth in the synthetic medium. This characteristic may explain its cell-stimulating property. The addition of Mn to the synthetic medium increased the rate of sugar fermentation, increased the % of fermented sugar converted into gum and cells, and reduced the amount of fermented sugar accounted for as unidentified products. F. S.

Tumour formation by attenuated crown-gall bacteria in the presence of growth-promoting substances. A. C. Braun and T. Laskaris (*Proc. Nat. Acad. Sci.*, 1942, 28, 468–477).—An attenuated culture of *Phytomonas tumefaciens* forms large tumours in tomato plants when supplemented by growth-substances, the form of tumour varying with the growth-substance used. These tumours can be successively transplanted and continue to grow even when free from cells of *P. tumefaciens*. R. L. E.

Reduction of acetoacetic acid by Lemoigne's *Bacillus* M. P. Heitzmann (*Compt. rend.*, 1942, 214, 509–511).—In the absence of O₂ and presence of glucose, *Bacillus* M reduces acetoacetic to *l*-β-hydroxybutyric acid, especially at pH 7. This activity can be evaluated by measuring the CO₂ evolved after addition of NaHCO₃. Lactic and acetic acids are amongst the products derived from the glucose. Approx. 1 mol. of glucose is used for each mol. of acetoacetic acid reduced. H. W.

Luminous bacteria. I. Nutritional requirements, with special reference to methionine. II. Anaerobic metabolism of facultatively anaerobic species. M. Doudoroff (*J. Bact.*, 1942, 44, 451–459, 461–467).—I. *Photobacterium fischeri*, *P. splendendum*, *P. sepiæ*, and *Achromobacter harveyi* grew in inorg. media with simple org. compounds as the sole C source. The addition of methionine was necessary for most strains of *P. phosphoreum* and no compound could replace it in one strain. One strain did not require methionine and another strain was trained to accept homocystine as a substitute.

II. All showed the same general mixed acid type of anaerobic sugar dissimilation. Among the products formed were formic, acetic, lactic, and succinic acids, alcohol, CO₂, acetylmethylcarbinol, and, with *P. phosphoreum*, H₂ and occasionally βγ-butylene glycol. F. S.

Detection of *B. thermoacidurans* (Berry) in tomato juice and cultivation in the laboratory. R. M. Stern, C. P. Hegarty, and O. B. Williams (*Food Res.*, 1942, 7, 186–191).—Proteose peptone, yeast extract, glucose, and K₂HPO₄ at pH 5 is a satisfactory medium for cultivation of *B. thermoacidurans*; for detection in tomato juice, plating of 1 c.c. of juice (since the juice is shown to have an inhibiting effect on the growth of the organism) in 20 c.c. of proteose peptone-acid agar is recommended. Continued transfer on nutrient agar produces cultures that are unable to grow in and to spoil normal tomato juice though use of the medium described above has no such effect. The organism is still viable and able to cause spoilage after 4 months' storage of sealed cultures in the ice box. H. G. R.

Pyridoxine nutrition of lactic acid bacteria. N. Bohonos, B. L. Hutchings, and W. H. Peterson (*J. Bact.*, 1942, 44, 479–485).—*Lactobacillus casei* stored pyridoxine in amounts greater than were necessary for growth. The pyridoxine requirement was dependent on the O₂ tension of the medium, increasing with incubation in anaerobic jars, addition of metallic Fe, and addition of NaHSO₂ in that order. 3 of the 6 species of lactic acid bacteria examined did not require pyridoxine for growth and acid production and could synthesise the vitamin. The response of *L. casei* to a no. of pyridoxine analogues paralleled the antidermatitic effect of the same compounds in rats. F. S.

***Erwinia*-coliform relationship.** R. P. Elrod (*J. Bact.*, 1942, 44, 433–440).—Of 19 strains of *Erwinia* isolated from soft-rot in plants 16 had the property of macerating vegetable tissue, a property not shared by any of 50 coliform strains. All but 2 of the *Erwinia* and 22 of the 50 coliform organisms, including 3 of faecal origin, fermented pectin in a synthetic medium. On the basis of fermentation reactions there is a close relationship between the two types, but the *Erwinia* should be separated from the coliforms because of their macerating ability. F. S.

Preventive methods in certain tropical diseases. Z. Bercovitz (*Amer. J. digest. Dis.*, 1942, 9, 327–329).—Malaria, yellow fever, typhus, cholera, dysentery, and sleeping sickness are briefly dealt with. N. F. M.

Effect of aldehydes and fatty acids as added hydrogen acceptors on the fermentation of glucose by *Aerobacter indologenes*. M. N. Mickelson

and C. H. Werkman (*J. Bact.*, 1939, 37, 619–628).—Acetic and propionic acids added to glucose fermentation cause an increase in yield of butylene glycol and decrease in H₂. Propionic acid is reduced to propyl alcohol. Acetaldehyde undergoes a Cannizzaro reaction if added to alkaline glucose fermentation of *A. indologenes*. Propionaldehyde and butaldehyde are reduced to the corresponding alcohols and some butaldehyde is converted into butyric acid. No increase in H₂, but slight increase in CO₂ and small amounts of succinic acid with decreases in ethyl alcohol were noted. Fumaric acid is reduced to succinic acid. If acetaldehyde is added to a fermentation with a reaction favourable to the formation of butylene glycol, production of acetylmethylcarbinol and ethyl alcohol is increased and that of H₂ decreased. A. A. M.

Bacterial morphology as shown by electron microscope. II. Bacterial cell wall in genus *Bacillus*. S. Mudd, K. Polevitzky, T. F. Anderson, and L. E. Chambers (*J. Bact.*, 1941, 42, 251–264).—*B. subtilis*, *B. megatherium*, and *B. anthracis* have definite, solid cell walls. An inner protoplasm may shrink from this wall, or escape following injury, leaving the cell wall, which maintains the shape of the intact cell. The solidity of the wall is sufficient to leave jagged lines of fracture when broken by sonic vibration. In *B. subtilis* the flagella are continuous with the cell wall and the spores are very dense, rigid bodies. (12 electron micrographs.) F. S.

Effect of pectin, galacturonic acid, and methyl α-galacturonate on growth of Enterobacteriaceæ. J. E. Steinhilber and C. E. Georgi (*J. infect. Dis.*, 1941, 69, 1–6).—Pectin (2–5%) and galacturonic acid (0.5–2.0%) at pH 6–7 failed to inhibit the growth of members of the colon-dysentery-typhoid group of bacteria. Methyl α-d-galacturonate (0.5–2.0%) inhibited the growth of *Bact. alkaligenes*, *Bact. typhosum*, *Bact. paratyphosum*, *Bact. pullorum*, *Bact. schottmülleri*, *Bact. dysenteriae*, *Bact. gallinarum*, and *Bact. newcastle*. Inhibition by pectin, reported by others, may be due to the lowering of pH in the intestinal tract and to the liberation of free methyl α-d-galacturonate. F. S.

Differentiation of "intermediate" coli-like bacteria. R. H. Vaughn and M. Levine (*J. Bact.*, 1942, 44, 487–505).—The intermediate organisms differ from *Bact. coli* in that they can utilise citrate as a sole source of C, produce H₂S in proteose-peptone and Fe^{III} citrate agar, decompose cellobiose, use urea (but not uracil) as a sole source of N, grow poorly at 45°, and are sensitive to boric acid. They differ from *Bact. aerogenes* in that they do not produce acetylmethylcarbinol from glucose, are methyl-red-positive, use urea, but not uric acid, uracil, yeast-nucleic acid, allantoin, or hydantoin, as a sole source of N, and do not decompose Na malonate. F. S.

Ageing without reproduction and viability of young bacterial cells at low temperatures. J. M. Sherman and H. B. Naylor (*J. Bact.*, 1942, 43, 749–756).—Young cells of *Bact. coli* (4-hr. culture) held at 1° remained physiologically young (reproduced without a lag phase on subculture) for 36 days. Young cells of *Strep. lactis* progressively aged at 1°, having the properties of mature cells after 1 week. The death rate of young cells of *Bact. coli* at 1° was greater than that of mature cells. The death rate of young cells of *Strep. lactis* at 1° was less than that of mature cells, possibly because of the ability of young cells to age at this temp. F. S.

Effect of metal ions on reactions of phosphopyruvate by *Escherichia coli*. M. F. Utter and C. H. Werkman (*J. Biol. Chem.*, 1942, 146, 289–300).—The rate of attainment of the phosphoglyceromutase-enolase equilibrium of extracts of *E. coli* and of Lebedev extract, but not the final point of equilibrium, is accelerated by Mg⁺⁺ and Mn⁺⁺, retarded by Ca⁺⁺ and Ni⁺⁺, and unaffected by Na⁺ and K⁺. Enolase is the enzyme stimulated by the metal ions and inhibition by NaF is linked with the metal component of the system. NaF completely inhibits stimulation by Mg⁺⁺ but has less effect on that by Mn⁺⁺. Mn⁺⁺ and Mg⁺⁺ have an inhibiting action on the hexose diphosphate-triose phosphate equilibrium in the high concn. range. Transference of PO₄^{'''} from phosphopyruvate to adenylic acid in the bacterial extract is stimulated by Mg⁺⁺ and Mn⁺⁺, the former only being inhibited by NaF; both ions stimulate the breakdown of adenosine triphosphate. H. G. R.

Action of sulphathiazole on colon-typhoid-dysenteriae group of organisms.—See A., 1943, III, 133.

Immunity in brucellosis. I. F. Huddleson (*Bact. Rev.*, 1942, 6, 111–142).—A review. F. S.

Conservative surgery with irradiation in gas gangrene infection. R. L. Sewell (*Surgery*, 1939, 6, 221–229).—The results of treating 12 cases with amputation and/or serum are compared with the results in 5 cases given sulphanilamide and X-irradiation in addition. The additional treatment improved the recovery rate. P. C. W.

Septic tonsillitis caused by anaerobic organisms. S. Bahrman (*Virchow's Arch.*, 1939, 304, 248–254).—Report on 9 cases of death from sepsis following tonsillitis in which there was a great variety of saprophytic among predominantly anaerobic bacteria; a const. feature was the absence of hæmolytic streptococci and the presence of Gram-negative anaerobic bacilli causing local thrombophlebitis

with abscesses and blood-borne propagation with septic infarcts of the lungs but seldom of other sites. J. A.

Spore formation among anaerobic bacteria. I. Formation of spores by *Clostridium sporogenes* in nutrient agar media. I. Kaplan and J. W. Williams (*J. Bact.*, 1941, **42**, 265—282).—In a Difco nutrient agar medium, buffered with phosphates, the optimum pH for sporulation of *Cl. sporogenes* was 6.9—7.4. Sporulation was inhibited at or below pH 6.1. Increases in the concn. of peptone or variations in the meat extract concn. had little effect on sporulation. 1% of fermentable sugar in dil. nutrient agar completely inhibited sporulation. 1% of lactose stimulated sporulation. In an originally alkaline medium, 1% of fermentable sugar inhibited sporulation only in media that contain small concns. of available N. There was a relationship between decrease in metabolic activity from its max. and the onset of sporulation. F. S.

Nitrate, nitrite, and indole reactions of gas gangrene anaerobes. R. W. Reed (*J. Bact.*, 1942, **44**, 425—431).—21 gas gangrene *Clostridia* fell into three groups in respect to the reduction of NO_3^- and NO_2^- . 5 species, *Cl. welchii*, *fallax*, *tertiium*, *septique*, and *aerofetidum*, reduced both, but NO_3^- more rapidly than NO_2^- . 10 species, including *Cl. sordelli*, *sporogenes*, *novyi*, *tetani*, and *butyricum*, reduced both, but NO_2^- as rapidly as or more rapidly than NO_3^- . 6 species, including *Cl. carnis*, *histolyticus*, and *bifermentans*, failed to reduce both NO_2^- and NO_3^- or reduced them at an equally slow rate so that qual. tests were negative. All species broke down or utilised indole. 4 species, *Cl. sordelli*, *bifermentans*, *capitovialis*, and *sphenoides*, grown in a tryptophan medium showed a greater rate of indole formation than of indole breakdown. F. S.

Powdered grass as enrichment medium for acid-forming anaerobes. C. H. Castell (*J. Bact.*, 1942, **43**, 463—471).—In a medium consisting of commercial powdered grass mixture (Green melk) 30 g., corn starch 30—50 g., CaCO_3 10—20 g., and tap water 1 l., *Cl. acetobutylicum* failed to grow and *Cl. pasteurianum* and *Cl. butyricum* grew as well as in corn-liver medium. Growth was obtained with a no. of other clostridia, including *Cl. welchii* and *Cl. novyi*. F. S.

Use of plant materials as enrichment media for butyric acid-forming anaerobes. C. H. Castell (*J. Bact.*, 1942, **43**, 473—479).—A wide variety of green plants, fruits, and vegetables provided the basis of enrichment media for butyric acid-forming clostridia. Such media required no additional reducing agents nor special apparatus for bringing about anaerobic conditions. These results explain why these organisms are so prevalent in silage, decomp. plant tissues, and humus-rich soil. F. S.

Growth requirements of *Clostridium tetani*. J. H. Mueller and P. A. Miller (*J. Bact.*, 1942, **43**, 763—772).—In addition to the usual inorg. elements *Cl. tetani* required an acid hydrolysate of protein, tryptophan, adenine or hypoxanthine, pantothenic acid, thiamin, riboflavin, "folic acid," and probably biotin. One or more additional factors may be necessary. F. S.

Dissimilation of pyruvic acid by cell-free preparations of *Clostridium butylicum*.—See A., 1943, III, 141.

New type of glucose fermentation by *Clostridium thermoaceticum* n. sp. F. E. Fontaine, W. H. Peterson, E. McCoy, and M. J. Johnson (*J. Bact.*, 1942, **43**, 701—715).—Of two types of bacteria associated with the fermentation of cellulose, one grew rapidly and fermented glucose to lactic acid, subsequently converting the lactic acid into acetic and butyric acids, and the other grew slowly and produced 2.5 mols. of acetic acid per mol. of glucose fermented. The latter organism, *Cl. thermoaceticum*, was an obligate anaerobe, spore-forming, acid-forming, and thermophilic. The acetic acid produced was derived solely from glucose. 85% of the C in the glucose destroyed was recovered as acetic acid, and 5% as cells. At least part of the remaining 10% was accounted for by glucose decomp. products. Since 2.5 mols. of a two-C compound (acetic acid) were obtained from 1 mol. of glucose it appeared that either there was some primary cleavage of glucose other than the classical 3-3 split, or a one-C compound was being reabsorbed. The latter appeared more likely since such a condition was observed in *Bact. coli* by Wood *et al.* (A., 1940, III, 933). F. S.

***Clostridium welchii* infection of uterus complicating pregnancy.** C. Rendle-Short (*J. Obstet. Gynaec.*, 1942, **49**, 581—613).—6 cases are reported and compared with previous cases reported in the literature. 4 of the cases recovered on treatment with antiserum and sulphanilamide. P. C. W.

Diphtheria in inoculated persons. B. T. J. Glover and H. D. Wright (*Lancet*, 1942, **243**, 133—134).—In Liverpool, from 1932 to 1939 there were 396 cases of diphtheria with 11 deaths in 54,985 inoculated persons, 6 of the deaths occurring in subjects who were not, on modern standards, satisfactorily inoculated. The case rate in uninoculated subjects was 11.3 per 1000 per annum. C. A. K.

Diphtheria immunisation: interpretation of Schick test. J. J. Phair (*Amer. J. Hyg.*, 1942, **36**, 283—293).—480 adults and children (white and coloured) were studied to estimate the val. of the Schick reaction as a means of assaying immunity to diphtheria. Three separate groups were studied in 1934, 1939, and 1940. In the first

group (165) the results of antitoxin titrations of blood and of Schick tests were noted. In the second (216) Schick tests were made one month after 4 intranasal instillations of a conc. formol toxoid. Blood was taken when the Schick test was made. The third group (99) was bled at the time of the Schick test and 3, 7, and 30 days afterwards; diluted toxoid was also injected and readings taken 30 days after the original test and at 24-hr. intervals. Schick tests were read at 3 and 7 days. 9 of 371 individuals possessing demonstrable antitoxin were classified as Schick-positive or pseudo-positive. Among 376 classified as Schick-negative 31 showed less than 0.01 unit and 14 no antitoxin. In the third group 9 of 15 negative reactors with little or no apparent antitoxin showed within 30 days more than 0.01 unit. Thus 60% of the 31 "false negatives" were able to react rapidly to minute sp. stimulus. A high degree of correlation was shown between the Schick test and the actual or potential capacity of the individual to produce antitoxin. B. C. H.

Natural resistance. I. Relative resistance of guinea-pigs and mice to diphtheria toxin. M. H. Petherick (*Austral. J. Exp. Biol.*, 1942, **20**, 263—272).—The fatal doses of diphtheria toxin, administered by various routes, for mice and guinea-pigs are determined. The sensitivity of mouse skin to the toxin compared with guinea-pig skin is approx. 20,000:1. This is the only instance of a true variation in susceptibility of the tissues of the two species. After injection of the same no. of units of toxin per g. of body wt., guinea-pigs excrete in the urine a larger amount of toxin than do mice; 90 min. after injection 40% of the toxin is still present in the mouse and 20% in the guinea-pig. Part of the injected toxin is quickly absorbed by parenchymatous organs; it is always present in blood, liver, spleen, kidney, and adrenals, but not in brain, heart, or skeletal muscle. The rates of disappearance of intradermally injected toxin from the skin of mice and guinea-pigs are not very different, and the difference does not explain the exceptionally high resistance of the mouse skin. J. N. A.

Inactivation of diphtheria toxin by l-ascorbic acid. C. W. Jungelblut (*J. infect. Dis.*, 1941, **69**, 70—80).—The inactivation of diphtheria toxin by vitamin-C does not follow the laws of multiple proportions and is limited to small doses of toxin and ascorbic acid. Detoxification is enhanced by the presence of Cu^{++} , suggesting that the toxin is inactivated during the auto-oxidation of ascorbic acid, the responsible substance being a peroxide. Administration of -C to guinea-pigs may protect against a lethal dose of toxin, but fails to make subtherapeutic doses of antitoxin effective. Neither -C nor $-\text{B}_1$ had any effect on the development of post-diphtheritic paralysis in guinea-pigs. F. S.

Serological relationships between *Diplococcus pneumoniae* and *Haemophilus influenzae*. O. D. Chapman and W. Osborne (*J. Bact.*, 1942, **44**, 620—621).—There is a common carbohydrate component shared by pneumococcus type 6b and *H. influenzae* type a, giving a cross "Quellung" reaction between the organisms and their antisera. F. S.

Identification of gonococcus from cultures and effect of certain animal sera on fermentations of gonococcus. L. R. Peizer (*J. Bact.*, 1942, **43**, 733—738).—Normal horse, ox, and sheep bloods are not suitable enrichments for gonococcus sugar-fermentation tests since in their presence the gonococcus produces acid in maltose agar as well as in glucose agar. Ascitic fluid, rabbit and guinea-pig sera are good and stable enrichments in this respect. A 25% aq. solution of sol. starch is also a suitable fermentation agar base. F. S.

Metabolism of *Leptospira*. W. D. Rosenfeld and M. R. Greene (*J. Bact.*, 1941, **42**, 165—172).—A factor necessary for the growth of *Leptospira canicola* present in animal serum was not identified. It was not nicotinic acid, thiamin hydrochloride, nicotinamide, riboflavin, vitamin- B_6 hydrochloride, or ascorbic acid. Nicotinic acid (1 μg . per ml.), thiamin hydrochloride (3 μg . per ml.), nicotinamide (1 μg . per ml.), and riboflavin (0.001 μg . per ml.) were growth-accessory factors, stimulating growth in combination with the unknown factor. In large concns. the known growth factors inhibited growth. F. S.

Products obtained from starch by the action of the amylase of *Bacillus macerans*.—See A., 1943, III, 142.

Growth requirements of meningococcus. I. D. Frantz (*J. Bact.*, 1942, **43**, 757—761).—Of 15 strains of meningococci in early generations 14 were cultivated on a liquid medium having the following composition in g. per l.: d-glutamic acid 1.3, l-cystine 0.012, $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$ 2.5, KCl 0.09, NaCl 6.0, NH_4Cl 1.25, $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ 0.6, and glucose 5.0. F. S.

Morphology and cytology of *Myxococcus xanthus*, n. sp. J. M. Beebe (*J. Bact.*, 1941, **42**, 193—223).—The vegetative cells of this organism, which was isolated from dry cow dung, are Gram-negative rods, 0.5—1.0 μ . by 4.0—10.0 μ . As they approach the spore stage they shorten and become spherical by the time they are imbedded in the slime of the orange fruiting body, which is 300—400 μ . in diameter. In the vegetative phase the nucleus is a single compact mass which divides before cellular fission. It stains with nuclear dyes and is Feulgen-positive. During the transitional phase the

nucleus divides into four chromosomes. In prophase the chromosomes are divided into distinct chromomeres. An autogamous fusion of chromatin material occurs before the mature spore is formed and nuclear division, probably meiotic, takes place during germination of the spores. (19 photomicrographs.) F. S.

Antigenic properties of *Hemophilus pertussis* and related organisms.
II. Protection tests in mice. G. Eldering (*Amer. J. Hyg.*, 1942, 36, 294—302).—Polysaccharides were prepared from *Br. bronchiseptica*, *parapertussis*, and *H. pertussis*. 98 of 103 mice injected with 0.35—0.75 mg. of the *Br. bronchiseptica* polysaccharide and 23 of 30 injected with a vaccine of whole organisms survived infection with 10—40 million *Br. bronchiseptica*; 128 of 133 controls died. Little protection was shown against *parapertussis*. 27 of 42 mice injected with polysaccharide from the *parapertussis* bacillus and all of 23 mice injected with a vaccine of the whole organisms were protected against infection with *parapertussis*. 24 of 27 control mice died. Similar protection was shown against *Br. bronchiseptica*, but not against *H. pertussis*. 21 of 32 mice injected with pertussis vaccine survived infection with 2—3 billion *H. pertussis* against 12% survival in the control group; a high degree of protection was shown against the 2 related organisms. Injection of the polysaccharide made mice more susceptible to *H. pertussis*. 24 of 29 treated and 26 of 33 untreated mice survived infection if they were given 0.05 mg. of the fraction 3—15 hr. before infection. Only 5 of 41 control mice survived. Protection and cross-protection tests emphasised the close relationship between the 3 organisms. B. C. H.

Tolerance of rabbits to agglutinin and toxins of *Hemophilus pertussis*. W. E. Ehrlich, A. Bondi, jun., S. Mudd, and E. W. Florsdorf (*Amer. J. med. Sci.*, 1942, 204, 530—539).—The agglutinin is important in establishment of antibacterial immunity. No evidence of toxicity of the purified agglutinin was found when tested in dosage 300—1000 times the lethal dosage of the thermolabile toxin. In the blood, a mild transient anaemia was observed after high sublethal doses, and a leucocytosis also after lower doses, of preps. containing heat-labile or -stable toxins. With sonic extract the leucocytosis was almost exclusively a lymphocytosis; with Sauer's vaccine both a lymphocytosis and granulocytosis; and with heated sonic extract in most cases predominantly a granulocytosis. The two leucocytoses, therefore, appear to be caused by different toxins of *H. pertussis*. The tissue changes after lethal doses of the toxins included congestion and oedema of the lungs, cloudy swelling of kidneys, liver, and heart, and necrosis especially in liver and lymphatic tissue of the spleen. In surviving animals there were lymphatic hyperplasia especially in the spleen, and extramedullary myelopoiesis in liver and spleen. C. J. C. B.

Pertussis prophylaxis. J. F. Coppolino (*J. Pediat.*, 1942, 21, 348—352).—A vaccine of pertussis bacilli (phase I) given at 2- or 3-week intervals in 3 successive subcutaneous doses of 20, 40, and 40 billion organisms was of val. in prevention of pertussis in 152 children. The duration of immunity is 3—4½ years or more. C. J. C. B.

(A) Photoelectric titration of pneumococcal capsular polysaccharide.
 (B) Elaboration of soluble capsular polysaccharide by *Pneumococcus III* in relation to growth phases *in vitro*. S. C. Bukantz, A. Cooper, and J. G. M. Bullowa (*J. Bact.*, 1941, 42, 15—27, 29—49).—(A) Estimations of concns. of sp. polysaccharide were made by measuring in a photon reflectometer the turbidity produced in the zone of antibody by excess of a standard sp. antiserum after 20 min. at 37°.

(B) The max. total production of sp. polysaccharide by *Pneumococcus III* in blood broth cultures was the same when either small or large inocula of pneumococci were made. After small inocula there was a delay in the appearance of sp. polysaccharide, but the quantity produced per pneumococcus per hr. was greater than with large inocula. With all inocula the production of sp. polysaccharide per pneumococcus per hr. was greatest during the earliest culture phase and progressively decreased as the culture aged. F. S.

Anaerogenic strain of *Proteus*. J. L. Edwards (*J. Hygiene*, 1942, 42, 238—239).—An organism resembling *Proteus* was isolated from faeces. It produced acid but no gas in carbohydrate media. D. D.

Classification of 110 strains of *Staphylococcus aureus*. O. Durfee (*J. Bact.*, 1942, 44, 589—595).—Most of the strains belonged to the Cowan groups I and III and produced Julianelle "A" polysaccharide. Leucocidin-positive strains belonged mainly to group II and produced less "A" polysaccharide than other strains. F. S.

Staphylococci. I. Occurrence of bacteriophage carriers among strains of *Staphylococcus aureus*. II. Identification of *Staph. aureus* strains by means of bacteriophage. R. T. Fiske (*J. infect. Dis.*, 1942, 71, 153—160, 161—165).—I. Lysogens were found in 19 or 44.2% of 43 coagulase-positive strains and were absent in 40 coagulase-negative strains. The latter strains were resistant to the lysogens isolated from the pathogenic strains. The lysogens were classified into 24 different phases according to their selective activity on the staphylococcal strains.

II. By the differential action of 27 phages 95 cultures of *Staph. aureus* were divided into many groups each containing cultures isolated from related sources. F. S.

Local lesions produced in mice by staphylococcus toxin and by toxin- and non-toxin-producing strains. R. H. Rigdon (*Surgery*, 1939, 6, 91—97).—Pathological changes which occur in the 10 hr. following the subcutaneous injection of the products in mice are described. Staphylococcus toxin is formed rapidly *in vivo* and unites quickly with striated muscle and leucocytes. It necrotises muscle and lyses white blood cells within 30 min. The organisms of the toxin-producing strain of staphylococcus grow rapidly and spread through the necrotic tissue of the abdominal wall. Polymorphs are characteristically present following the injection of all 3 products. Leucocytes have phagocytic action on the non-toxin-producing strain but not on the toxin-producing strain of staphylococcus. P. C. W.

Young pigs as test animals for staphylococcus enterotoxin. E. W. Hopkins and E. F. Poland (*Food Res.*, 1942, 7, 414—419).—Vomiting was induced in 53 out of 57 suckling pigs injected intraperitoneally with filtrates containing staphylococcus enterotoxin whereas autoclaved filtrates from enterotoxic strains, filtrates from non-enterotoxic strains, or filtered, uninoculated medium were without effect. H. G. R.

***Asterococcus muris* (*Streptobacillus moniliformis*). I. Morphology and nomenclature. II. Cultivation and biochemical activities.** F. R. Heilman (*J. infect. Dis.*, 1941, 69, 32—44, 45—51).—A simplified medium composed of starch, salts, and proteose peptone supports the growth of this organism. The growth requirements and fermentation reactions of *A. muris* and of the associated L1 organism are identical. This supports the view that the L1 organism is a degraded form of *A. muris*. F. S.

Production of active resting cells of streptococci. A. J. Wood and I. C. Gunsalus (*J. Bact.*, 1942, 44, 333—341).—Resting cell suspensions of *Strept. mastitidis* (Lancefield group B) of high physiological and low endogenous respiration and fair stability are obtained by culturing in a well-buffered medium rich in N and accessory factors and low in carbohydrate, followed by washing in neutral PO_4^{3-} buffer. Such suspensions had strong dehydrogenase activity. Methylene-blue in a concn. of 1/20,000, which was not toxic, or less was satisfactory as a H acceptor in dehydrogenase studies. F. S.

Hydrolysis of arginine by streptococci. C. F. Niven, jun., K. L. Smiley, and J. M. Sherman (*J. Bact.*, 1942, 43, 651—660).—The majority of hemolytic and non-hemolytic streptococci, except the *viridans* group, hydrolysed arginine with the production of NH_3 . In the lactic group, *Strep. lactis* hydrolysed arginine whereas the closely related *Strep. cremoris* lacks this ability or attacks it very slightly. F. S.

Lactic acid fermentation of streptococci. P. A. Smith and J. M. Sherman (*J. Bact.*, 1942, 43, 725—731).—Washed cells were suspended in a PO_4^{3-} -buffered 0.5% solution of glucose and incubated at 37° for 12 hr. The average % of lactic acid from glucose fermented for each variety was: pyogenic streptococci, groups A, B, C, E, G, H, 85.8—89.7, group F, 81.8; *viridans* streptococci, 90.2—93.6; lactic streptococci, 93.7 and 96.6; enterococci (group D), 90.8—96.0. The slightly lower average efficiency of the pyogenic streptococci is of possible significance. F. S.

Factors necessary for massive growth of group A hemolytic streptococcus. A. W. Bernheimer and A. M. Pappenheimer. **Improved medium for cultivation of hemolytic streptococcus.** A. W. Bernheimer, W. Gillman, G. A. Hottle, and A. M. Pappenheimer (*J. Bact.*, 1942, 43, 481—494, 495—498).—Massive growth was obtained by modifying the gelatin hydrolysate medium of Pappenheimer and Hottle (A., 1940, III, 936), as follows: increase in glucose concn. to 3—4%, frequent neutralisation of the lactic acid formed, reduction in total salt concn. to a min., use of 2% of H_2SO_4 -hydrolysed casein in place of 1% of HCl-hydrolysed gelatin, and increase in Ca pantothenate concn. to 4 mg. per l. Full directions for the prep. of this essentially defined medium are given in the second paper. F. S.

Dehydrogenation of alcohols by streptococci of group B. I. C. Gunsalus and A. J. Wood (*J. Bact.*, 1942, 44, 523—528).—Resting cell suspensions of *Streptococcus mastitidis* oxidised a no. of alcohols, as indicated by methylene-blue reduction in Thunberg tubes. Several alcohols, including the normal alcohols C_2 to C_6 , sec. alcohols from C_3 to C_6 , tert.-amyl alcohol, and β -butylene glycol were more active as H donors to methylene-blue than glucose. Methyl alcohol was not activated. Glycerol was dehydrogenated rapidly by some strains. An adaptive mechanism was present in some strains for the dehydrogenation of certain sugars, including galactose. F. S.

Synthetic medium for cultivation of *Streptococcus faecalis*. R. L. Schuman and M. A. Farrell (*J. infect. Dis.*, 1941, 69, 81—86).—The medium consists of pantothenic acid, vitamin-B₆, riboflavin, glucose, a salt mixture, arginine, glutamic acid, methionine, tryptophan, tyrosine, and valine. Growth is equal to that obtained in a complex medium containing principally a gelatin hydrolysate and a purified liver concentrate. Pantothenic acid is not replaceable by β -alanine. The addition of glutathione, nicotinic acid, betaine, uracil, glucosamine, xanthine, hypoxanthine, glutamine, Na_2S , or reduced Fe, does not increase growth. F. S.

Respiration of *Streptococcus pyogenes*. I. Optimal conditions of respiration. II. Inhibition of respiration and growth by sulphanilamide; inhibition of respiration by hydroxylamine and its sulphonamide and other derivatives. III. Bearing of respiration on existing theories of mechanism of action of the chemotherapeutic agents. M. G. Sevag and M. Shelburne (*J. Bact.*, 1942, 43, 411—420, 421—445, 447—462).—I. Washed suspensions of β -hæmolytic streptococci oxidised glucose aerobically only to a negligible degree. The amount of anaerobic glycolysis of glucose was also very low. When respiratory factors (co-enzymes etc.) were supplied by yeast extract, serum, yeast extract plus serum, or whole blood the aerobic and anaerobic respiration was accelerated several-fold. No accumulation of H_2O_2 in aerobic systems was detected. The O_2 consumption was not accelerated by catalase, showing that H_2O_2 did not accumulate to slow down the respiration.

II. The aerobic and anaerobic respiration was inhibited by sulphanilamide, NH_4OH , *p*-hydroxylaminobenzenesulphonamide, *p*-aminobenzenesulphonhydroxamide, benzenesulphonhydroxamide, and benzhydroxamic acid. The inhibition of respiration took place even in the absence of growth. In the presence of growth the inhibition of respiration resulted in a proportional inhibition of growth.

III. *p*-Hydroxylaminobenzenesulphonamide inhibited the aerobic respiration of streptococci in the presence or absence of catalase and in the presence or absence of small amounts of H_2O_2 resulting from oxidation of the drug. Sulphanilamide inhibited the aerobic respiration of pneumococci in presence or absence of H_2O_2 resulting from the oxidation of glucose, and in the presence or absence of catalase. The "anti-catalase" theory of the action of the sulphonamides is therefore untenable. Sulphanilamide blocks the respiratory enzymes, which in turn inhibits growth. F. S.

Effect of sulphadiazine on hæmolytic streptococci.—See A., 1943, III, 135.

Effect of sulphapyridine on phagocytosis and dissociation.—See A., 1943, III, 133.

Effects of visible radiation on pigmentation of *Serratia marcescens*. K. W. Kreitlow (*J. Bact.*, 1941, 42, 127—131).—Blue light transmitted by Cellophane filters or emitted by fluorescent lamps inhibited pigment formation in *S. marcescens* at 20—27°. The best pigment formation took place in red light or darkness at 20—27°. F. S.

Genus *Shigella* (dysentery bacilli and allied species). E. Neter (*Bact. Rev.*, 1942, 6, 1—36). F. S.

Toxicity of cultures of *Shigella dysenteriae*. R. J. Dubos, H. D. Hoberman, and C. Pierce (*Proc. Nat. Acad. Sci.*, 1942, 28, 453—458).—*S. dysenteriae* cultures are greatly increased in yield and toxicity by aeration during growth. Glucose in the medium reduces toxicity, probably by encouraging anaerobic metabolism. The toxic factor is bound to the cells, and is liberated by autolysis. It is resistant to proteolytic enzymes and has been obtained as a highly active water-sol. prep. R. L. E.

Purines as growth requirements of *Spirillum serpens*. D. E. Pennington (*Proc. Nat. Acad. Sci.*, 1942, 28, 272—276).—Growth of *S. serpens* in an asparagine-inorg. salts medium is increased by addition of hypoxanthine, and is reduced by excess of guanine or adenine over the hypoxanthine present. Guanine or adenine alone has no effect; in equal amounts they increase growth, but excess of either reduces this effect, in extreme cases completely masking it. R. L. E.

Ultracentrifugation and cytology of *Spirillum volutans*. R. L. King and H. W. Beams (*J. Bact.*, 1942, 44, 597—608).—In a centrifugal field of 400,000 *g* all the granules visible in *Spirillum volutans* are displaced to the centrifugal region and are therefore heavier than the surrounding protoplasm. Some granules, which do not stain with Fe hæmatoxylin but reduce osmic acid, are probably reserve food with a peripheral layer of fat. Some granules staining with Fe hæmatoxylin and with Janus-green represent mitochondria. No chromatin or nucleus was identified. F. S.

Status of *Bacillus subtilis*; separation of precipitogens from bacterial spores. C. Lamanna (*J. Bact.*, 1942, 44, 611—617).—By boiling in 0.1N- or 0.05N-HCl precipitogens were separated from spores of *B. subtilis* and *B. vulgaris*. The antigen of each species did not cross-ppt. with spore antiserum of the heterologous species. F. S.

Modification of Kahn test [for syphilis] for use with hæmolyzed blood. H. J. Lawler (*J. Lab. clin. Med.*, 1943, 28, 193—198).—The serum is diluted with a large vol. of $(NH_4)_2SO_4$ solution to salt out the globulin and centrifuged. The supernatant solution, containing most of the hæmoglobin of the original specimen, is poured off, the globulin is redissolved, and a slightly modified Kahn test is performed on the globulin solution. C. J. C. B.

Simplified rotator for blood typing and slide test for syphilis. C. G. Culbertson (*Amer. J. clin. Path. Tech. Sect.*, 1942, 6, 72).

C. J. C. B.

Use of bovine tetanus antitoxin. J. Glaser (*N.Y. Sta. J. Med.*, 1942, 42, 1080—1082).—Bovine tetanus antitoxin was used in 38 children, 50% of which had a personal allergic history, without alarming reactions. 2 cases showed generalised and 13 minor reactions. E. M. J.

Use of fluoroscopic method for diagnosis of *M. tuberculosis* in sputum. R. B. Dienst (*Amer. J. clin. Path. Tech. Sect.*, 1942, 6, 61).—The smears are made from the sputum in the usual manner and stained for 2—3 min. in a solution of 97 c.c. of distilled water, 3 c.c. of liquified phenol, and 0.1 g. of auramin O. The smears are removed, washed in tap water, and given 3—5 min. in a fresh destaining solution (100 c.c. of 70% alcohol, 0.5 c.c. of conc. HCl, and 0.5 g. of NaCl). The smears are washed in tap water, dried, and examined under the 4-mm. lens of a microscope equipped with the fluorescence accessories. If acid-fast bacilli are present, small fluorescent organisms will be seen against a nearly black background. C. J. C. B.

Underlying principles and minimum standards of laboratory examination for tubercle bacilli. H. C. Sweany (*Amer. J. clin. Path.*, 1942, 12, 458—465).—A review. C. J. C. B.

Egg media for isolation of all three types of tubercle bacilli. J. R. McCarter and E. M. Kanne (*J. infect. Dis.*, 1942, 71, 102—105).—Egg-yolk media were superior to whole egg media for the isolation of human and bovine tubercle bacilli. Egg yolk was not necessary for the initiation of growth by avian tubercle bacilli. Glycerol increased the growth of avian tubercle bacilli on egg-yolk or whole egg media, but not the growth of human tubercle bacilli on egg-yolk media. F. S.

Levinson test for tuberculous meningitis. B. Burman and R. Weintraub (*J. Lab. clin. Med.*, 1943, 28, 213—218).—This test (*J. infect. Dis.*, 1917, 21, 571) was accurate in 97% of 217 cases of tuberculous meningitis. C. J. C. B.

Oxidation-reduction potentials in salmonella cultures. IV. Relation of observed potentials to pH. W. Burrows (*J. infect. Dis.*, 1942, 71, 106—109).—The relation of species characteristic reduction potential produced by *Bact. cholerae-suis* (+35 mv. at pH 7.2), *Bact. typhosum* (—80 mv. at pH 7.2), and *Bact. enteritidis* (—160 mv. at pH 7.2) in nutrient broth cultures to pH was 60 mv. per unit pH change. F. S.

Antibacterial activity of sulphathiazole and its methyl derivative.—See A., 1943, III, 133.

Typhoid vaccine studies. V. Relationship between antigenic and immunological properties of bacterial suspensions. G. F. Luippold (*Amer. J. Hyg.*, 1942, 36, 354—361).—Mice were immunised with formalised vaccines prepared from organisms of the coliform and typhoid groups, either individually or as combinations, to improve the "O" antigenic structure of a Salmonella. The degree of protection to doses of Salmonella was compared with control mice inoculated with a vaccine of the test organism. Experiments were carried out using *Bact. paratyphosum A* and *B* and *Bact. schottmuelleri*. Although some degree of protection was shown by the improvised "O" vaccines they were not so effective as those of the test organisms except in the case of an avirulent strain of *Bact. paratyphosum A*, when a mixed coliform-typhoid vaccine afforded better protection. Results showed that antigenic structure was not synonymous with immunological response and that the reaction of an organism in the animal body must depend on quality (protective power), quantity, and identity of antigens. In a few cases the response to pure somatic vaccines was similar to the formalised "H-O product." B. C. H.

Function of nicotinic acid in bacterial metabolism. I. J. Kligier and N. Grossowicz (*J. Bact.*, 1941, 42, 173—192; cf. A., 1941, III, 143).—Nicotinic acid added in varying amounts to a carbohydrate-free synthetic or peptone medium (free from nicotinic acid) has no effect on the growth of *Bact. paratyphosum A*. In the absence of nicotinic acid, the addition of glucose and other fermentable carbohydrates to such a medium inhibits or prevents growth. Lactate does not have this effect. Nicotinic acid is therefore not a growth-promoting substance but plays an essential rôle in the fermentation of carbohydrates. It is also essential for the complete utilisation of lactic acid and for the oxidation of acetic acid. It plays no part in the oxidation of formic acid by this organism. Dehydrogenation experiments indicate that nicotinic acid does not act as such, but must first be converted into a cozymase-like substance (codehydrase). Such conversion occurs only in the living cell. F. S.

Preservation of Vi antigen in T.A.B.C. vaccine: combined active immunisation with T.A.B.C. vaccine in tetanus-formol toxoid. S. G. Rainsford (*J. Hygiene*, 1942, 42, 297—322).—*V* strains of *Bact. typhosum* can be sterilised with merthiolate or colloidal Ag without destruction of Vi or O antigen. The effect of various methods of preservation and temp. of storage is examined. The application to the production of a stable T.A.B.C. vaccine is discussed and a suitable technique is described. J. H. B.

Genetic constitutions of host and pathogen in mouse typhoid. M. R. Zelle (*J. infect. Dis.*, 1942, **71**, 131—152).—Virulence increased in each of 4 passage series derived from a stock culture of *Bact. typhi-murium* composed of bacterial types of different virulence. Passage through both resistant and susceptible pure strains of mice resulted in increased virulence. Large increases in virulence were accompanied by changes in colony type showing that the mechanism of changes in virulence was by selection in the host. The isolation of more virulent than avirulent bacteria from infected mice confirmed the differential survival of the two types of bacteria. There was no relation between virulence and growth rate or fermentation reactions. F. S.

Nature of virus adaptations. R. G. Green (*Science*, 1942, **95**, 602—603).—Classification into cytologic, histologic, and zoologic adaptations is suggested. E. R. R.

Egg inoculator and shell membrane teaser for virus culture. W. B. Durham (*Science*, 1942, **95**, 609). E. R. R.

Identification of two strains of virus isolated from cases of atypical pneumonia. M. D. Beck and M. D. Eaton (*J. infect. Dis.*, 1942, **71**, 97—101).—These strains were identical with that found in a previously described case (Eaton *et al.*, *J. exp. Med.*, 1941, **73**, 641) as demonstrated by virulence to mice and homologous and heterologous cross immunity tests. These strains have a group antigenic relationship with the viruses of meningopneumonitis, psittacosis, and lymphogranuloma venereum, but they are not antigenically identical with any of these viruses. F. S.

Influenza A virus in rabbit, rat, and guinea-pig. R. A. Hyde (*Amer. J. Hyg.*, 1942, **36**, 338—353).—Influenza A virus can be passed through rabbits and guinea-pigs by intranasal serial passage as an inapparent infection; it was recoverable from the rabbit after 12 passages. The virulence of the virus was not enhanced for the rabbit on rabbit serial passage and in the case of both rabbits and guinea-pigs virulence was decreased for mice but could be restored for the mouse by passage through mice. Antibodies were demonstrated in rabbits and guinea-pigs after intraperitoneal inoculation of the virus and in the guinea-pig after intranasal inoculation. Rats were not responsive to intranasal passage of the virus although antibodies were demonstrated after intraperitoneal and intranasal inoculation. No complement-fixing antigens could be demonstrated in the lungs of rabbits, guinea-pigs, or rats. B. C. H.

Serological reactions after vaccination and infection with influenza A virus. M. D. Eaton and W. P. Martin (*Amer. J. Hyg.*, 1942, **36**, 255—263).—1102 persons were inoculated with either an active tissue culture of influenza A virus or a formalised complex influenza A-distemper vaccine. 7987 persons were observed as controls. Mouse-neutralisation and complement-fixation tests on 1% of normal population, 7% of vaccinated and control groups, and 50% of those vaccinated who developed influenza, showed that the antibody response produced by the vaccines was not so large as that resulting from infection with the virus of influenza A although some active immunity was induced. 985 (12.3%) and 92 (8.3%) cases of influenza occurred in the control and vaccinated groups respectively. 6—9 months after vaccination or infection the antibody titres fell to $\frac{1}{2}$ — $\frac{1}{4}$ that of the max. but remained higher than initial titres. Those who had contracted influenza maintained higher antibody levels than non-infected vaccinated persons. Increase in antibodies after infection or vaccination was less marked in those persons showing high initial titres; serological reactions may therefore fail to detect infection with virus A. Influenza occurred with equal frequency in persons with low, medium, or high initial titres. B. C. H.

Susceptibility of animals to influenza virus. A. K. Schubladze (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 674—676).—*Lagurus lagurus*, *Microtus orvalis*, and the grey house mouse (*Mus musculus*) are highly susceptible to the influenza virus, whilst the marmot (*Citellus rufestum*) is only slightly sensitive. J. N. A.

Equine encephalomyelitis virus isolated from naturally infected *Triatoma sanguisuga* (Le Conte). C. H. Kitselman and A. W. Grundmann (*Kansas Agric. Exp. Sta. Tech. Bull.*, 1940, No. 50, 15 pp.).—The virus was demonstrated in 3 of 5 separate lots of *T. sanguisuga* taken in pastures used for horse grazing and in which several clinical cases of equine encephalomyelitis had occurred. A. A. M.

Neutralising antibody in experimental equine encephalomyelitis. R. W. Schlesinger, I. M. Morgan, and P. K. Olitsky (*J. Amer. Med. Assoc.*, 1942, **119**, 618—620).—Sp. immunisation of rabbits protects against intracerebral test inoculation of equine encephalomyelitis virus only when serum antibody titre exceeds 1/300, at which level antibody appears in c.s.f. Subcutaneous injection of active virus in adult rabbits produces fever which defervesces after 5—6 days when serum antibody titre reaches 1/300. Young rabbits die of encephalitis before this titre is reached. Vaccination of man is discussed and considered justified in epidemics. C. A. K.

Relationship of St. Louis and Western equine encephalitic viruses to fowl and mammals in California. B. F. Howitt and W. van

Herick (*J. infect. Dis.*, 1942, **71**, 179—191).—Antibodies against the St. Louis encephalitic virus were present in the sera of normal fowls, horses, and other mammals, either alone or in association with those against the Western equine strain. They were more frequent in endemic areas and in domestic animals. F. S.

Use of the egg protection test for the recognition of St. Louis encephalitis in man. R. J. Blattner and J. V. Cooke (*J. infect. Dis.*, 1942, **70**, 226—230).—The presence of St. Louis encephalitis protective antibodies was demonstrated in serum by an egg protection test, utilising the *in vitro* serum-virus and passive protection techniques. F. S.

Infectious mononucleosis and encephalomyelitis.—See A., 1943, III, 87.

Purification of poliomyelitis virus. P. F. Clark, A. F. Rasmussen, and W. C. White (*J. Bact.*, 1941, **42**, 63—81).—Poliomyelitis virus, partially purified by extraction with ether, was not pptd. by $\frac{1}{2}$ saturation with $(\text{NH}_4)_2\text{SO}_4$ but was pptd. by $\frac{1}{2}$ saturation with $(\text{NH}_4)_2\text{SO}_4$. Pptn. was more effective in the acid range at approx. pH 4.5. Repeated $\frac{1}{2}$ saturations in series did not lead to more complete concn. but caused more denaturation. There was no separation into water-sol. and saline-sol. fractions. The results place the virus in the globulin portion of brain-cord suspensions. Ether-extracted virus sedimented more constantly than crude saline extracts in a Beams centrifuge, exerting a force of 40,000—60,000 g. F. S.

Effect of aluminium hydroxide sedimentation, sand filtration, and chlorination on the virus of poliomyelitis. J. E. Kempf, M. G. Wilson, M. E. Pierce, and M. H. Soule (*Amer. J. Publ. Health*, 1942, **32**, 1366—1370).—The virus was not removed from water by $\text{Al}(\text{OH})_3$ sedimentation and filtration methods which removed 99.6% of *B. coli*. An $\text{Al}(\text{OH})_3$ sediment of 1.5 c.c. per l. was required. The MV strain was inactivated by 1.5 p.p.m. of Cl_2 for 25 min. while the DG strain was inactivated by 1 p.p.m. but not by 0.9 p.p.m. for 25 min. C. J. C. B.

Effect of prolonged storage on the antigenicity of chloroform-inactivated canine rabies vaccine. C. N. Leach and N. H. Johnson (*Amer. J. Publ. Health*, 1942, **32**, 1380—1382).—Commercial CHCl_3 -inactivated canine rabies vaccine produced adequate immunity in dogs after at least 16.5 months' storage. C. J. C. B.

Pathogenic rickettsiae: their nature, biologic properties, and classification. H. Pinkerton (*Bact. Rev.*, 1942, **6**, 37—38). F. S.

Elementary bodies of vaccinia. J. E. Smadel and C. L. Hoagland (*Bact. Rev.*, 1942, **6**, 79—110).—A review. F. S.

Culture on chick chorio-allantois as test of inactivation of vaccinia virus. W. B. Dunham and W. J. MacNeal (*J. Bact.*, 1942, **44**, 413—424).—The ability of liquor antisepticus (U.S.A. National Formulary, 1935) and some of its constituents to inactivate vaccinia virus was tested by inoculation on the chorio-allantoic membranes of developing chick embryos. The virus retained its activity for 6 hr. in Tyrode solution, distilled water, or 25% alcohol. It was inactivated in 2 min. by 90% liquor antisepticus and deteriorated less rapidly in boric acid, menthol, thymol, and eucalyptol. F. S.

Serological identification of potato viruses X, Y, and A. C. Stapp (*Zentr. Bakt.*, 1942, II, 105, 127—128).—By injecting rabbits with suspensions of virus purified by methods not yet published antisera were obtained which were of higher specificity than those produced by crude antigen. With these antisera both qual. and quant. estimates could be made of the viruses in potatoes. F. S.

Preparations of viruses causing tobacco necrosis. F. C. Bawden, N. W. Pirie, and A. G. Ogston (*Brit. J. exp. Path.*, 1942, **23**, 314—328).—Six cultures of viruses causing tobacco necrosis, Potato, Princeton, Tobacco VI, Rothamsted, Tobacco I, and Tobacco II, were purified. The first three shared antigens but were serologically unrelated to the others, suggesting that the disease can be caused by different viruses, each of which may occur in a no. of strains. On pptn. with $(\text{NH}_4)_2\text{SO}_4$ Rothamsted gave an amorphous ppt., Princeton showed anisotropy of flow but gave no crystals, Potato cryst. as thin lozenge-shaped plates and Tobacco VI as hexagonal prisms. Tobacco I and II cryst. in a variety of forms of which the two commonest were dodecahedra and bipyramids. The materials isolated from all cultures were nucleoproteins. The sedimentation consts. of the cultures were determined in a Svedberg ultracentrifuge. F. S.

Liquid crystals of virus of tobacco mosaic, *Nicotiana virus* 1, Allard. V. L. Rishkov and V. A. Smirnova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 940—932).—The prep. of liquid crystals from a conc. solution of the virus is described. The giant crystals formed were 140—170 μ . in length and 17—40 μ . in breadth. Observations were made on the types of crystals obtained from virus solutions of varying pH. Aggregates of paracrystals formed in mixtures of the virus and various colloidal solutions bore some resemblance to the cryst. virus accumulation in the plant cell. The chemical, physical, and morphological similarity of liquid crystals of the virus nucleoproteins to structural elements of the protoplasm is discussed. R. H. H.

Derivatives of tobacco mosaic virus. II. Carbobenzyloxy-, *p*-chlorobenzoyl, and benzenesulphonyl virus. G. L. Miller and W. M. Stanley. **III. Rôle of denaturation of the virus in measurement of phenolic groups. IV. Determination of phenol groups in virus derivatives by means of model experiments with derivatives of tyrosine.** G. L. Miller (*J. Biol. Chem.*, 1942, **146**, 331—338, 339—344, 345—350; cf. A., 1942, III, 354).—II. Measurements of the sp. virus activity of the carbobenzyloxy-, *p*-chlorobenzoyl, and benzenesulphonyl derivative of tobacco mosaic virus indicate that approx. 70% of the NH_2 groups and 10—20% of the phenol + indole groups can be substituted without loss of activity. When tested on leaves of *Phaseolus vulgaris*, some derivatives exhibit a lower sp. activity than when tested on leaves of *Nicotiana glutinosa*. The normal virus is formed when the derivatives are propagated on plants of Turkish tobacco.

III. The addition of urea in the Miller-Stanley pH 8 modification of Herriott's method for the determination of phenolic groups in derivatives of the virus causes denaturation which is lacking in uniformity. Complete denaturation of the virus without danger of hydrolysis of the substituent groupings is obtained with the use of Na dodecyl sulphate in slightly acid solution. It is not recommended for use in the pH 11 method. Acetyl-phenolic linkings in preps. of acetylated virus may undergo a gradual spontaneous hydrolysis. Determinations of phenol and indole groups in phenylureido-, carbobenzyloxy-, *p*-chlorobenzoyl, and benzenesulphonyl derivative give lower results by the modified method, due to more complete denaturation rather than to spontaneous alteration in the virus.

IV. Carbobenzyloxy-, *p*-chlorobenzoyl, and benzenesulphonyl derivatives give a lower recovery under the pH 11 method than does the acetyl derivative, due to variation in the rates of saponification. The phenylureido-derivative gives more colour than does the normal virus, due to formation of aniline during treatment at pH 11. Mono-substituted derivatives of tyrosine yield less colour than free tyrosine, thus agreeing with the low chromogenic power of tyrosine when present in protein combination. H. G. R.

Effect of water extraction from leaves of tobacco on acyl derivatives of the protein of tobacco mosaic virus. P. Agatov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 170—171).—Tobacco leaf tissue extract does not liberate acyl groups from acetyl or benzoyl derivatives of tobacco mosaic virus protein. The acyl derivatives are virulent and reproduce in the plant. R. L. E.

Utilisation of pus [with iatren] in treatment of pyogenic disorders. I. J. Arnsson (*N.Y. Sta. J. Med.*, 1942, **42**, 770—772).—An auto-pus vaccine containing 5% of iatren was injected daily in 1—2 c.c. doses intravenously up to a total of 8 c.c. in 122 cases of furunculosis and 28 other pyogenic dermatoses. Treatment was successful in all but 4 of the furunculoses, in 5 carbuncles, and in 6 cases of subaxillary or rectal abscesses. E. M. J.

Active immunity. J. A. Toomey (*J. Amer. Med. Assoc.*, 1942, **119**, 18—25).—A review of methods of prevention against smallpox, diphtheria, whooping cough, tetanus, and typhoid. C. A. K.

Impact-theory analysis of antigen action. K. G. Zimmer (*Naturwiss.*, 1942, **30**, 452—453).—The question of impact no. and effect of biological variability are much more easily investigated if the results are discussed from the directly obtained action curves and not from the bell-shaped distribution curves. J. N. A.

Comparative immunologic studies with salivary and epithelial extracts of dog, cat, and rabbit. W. C. Spain, R. E. Gillson, and M. B. Strauss (*J. Allergy*, 1942, **13**, 563—571).—A common antigenic factor is present in epithelial and salivary extracts of the dog, cat, or rabbit as shown by direct skin tests on patients hypersensitive to animals, by neutralisation point determinations on mixtures of sensitive serum and epithelial or salivary extracts, and by reactions of guinea-pig uteri sensitised to epithelial and salivary extracts. C. J. C. B.

Antigens and malignant tumours.—See A., 1943, III, 128.

Allergy in identical twins. L. H. Crip (*J. Allergy*, 1942, **13**, 591—598).—Report of 7 pairs of twins. C. J. C. B.

Absorption of allergens. M. Walzer (*J. Allergy*, 1942, **13**, 554—562).—An address. C. J. C. B.

Results of intradermal skin tests with trichina antigen in allergic and normal individuals. C. E. Arbesman, E. Witebsky, and H. Osgood (*J. Allergy*, 1942, **13**, 583—589).—Of 2 groups of 28 patients each, skin tested with trichina antigens, the normal group reacted in 7.4% and the allergic group in 22.6%. C. J. C. B.

Purification of water-soluble fractions in ragweed pollen; study of alkali-soluble fractions and estimation of these fractions in pollen extract. A. Stull, W. B. Sherman, and W. M. Wing (*J. Allergy*, 1942, **13**, 537—553).—Various alkali-sol. protein fractions (fraction 3) separated from low ragweed pollen differed chemically and immunologically from fraction 1 and 2 (cf. A., 1941, III, 634). They resembled each other chemically and gave positive skin tests on certain ragweed-sensitive cases and on skin sites passively sensitised

with the sera of certain ragweed-sensitive patients (passive transfer). The three fractions showed marked differences in their capacity to neutralise ragweed-sensitive sera and their relative activity varied with different sera. Dale tests on 16 animals sensitised to whole low ragweed extract and on 6 animals sensitised with a prep. of fraction 3 failed to show sensitivity to fraction 3 although many sensitisations to fraction 1 and fraction 2 resulted. C. J. C. B.

Sensitisation to fresh fruits. L. Tuft and G. I. Blumstein (*J. Allergy*, 1942, **13**, 574—582).—A labile antigen is present in fresh fruit extracts. Deterioration is rapid; it occurs mainly in 24 hr. and is complete within 1—3 days. This antigen is altered or destroyed by heat during canning and stewing. Rapid freezing (as in frozen fruits) preserves the allergenic properties of fresh fruits; Seitz filtration reduces the potency of freshly extracted juice. This lability of the antigen accounts for the frequent failure to obtain positive skin reactions in clinically sensitive patients even with the conc. stock extracts. C. J. C. B.

Oral prophylaxis against poison ivy. H. Gold and P. Masucci (*J. Allergy*, 1942, **13**, 606—609).—33 patients sensitive to poison ivy were given prophylactic oral therapy in the spring and summer of 1941. The incidence of toxic skin reactions was high, and the desensitisation obtained was of short duration, lasting in some patients only a few months. C. J. C. B.

Treatment of rhus poisoning by alcoholic extracts controlled by preliminary patch tests. J. R. Clarke, jun., and C. M. Hanna (*J. Allergy*, 1942, **13**, 599—605).—The results in 82 cases were 91.5% successful. C. J. C. B.

Psychosomatic correlations in allergic conditions.—See A., 1943, III, 100.

XXVI.—PLANT PHYSIOLOGY.

Effect of high temperatures on viability of pollen in cotton (in relation to premature fruit dropping. S. S. Abaeva (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 443—445).—The optimum temp. for germination of pollen of the cotton plant was 35—37°. The pollen was deprived of its viability at temp. above 41—42°. In normal climatic conditions, exposure of the cotton plant to temp. above 40° is confined to the period 11 a.m.—noon, by which time germination has been initiated. R. H. H.

Influence of aëration and soil temperature on development of inoculated and non-inoculated soya plants. M. M. Gukova and V. S. Butkevitch (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 937—940).—The optimum conditions for development of soya bean plants inoculated with nodule bacteria were a well-aërated soil and a temp. of 24°. Compared with plants grown at 30° the total yield increased by 50%, the yield of beans by 45%, and the rate of photosynthesis by 44%. R. H. H.

Influence of soil temperature on fixation of molecular nitrogen by Leguminosæ. V. S. Butkevitch and M. M. Gukova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **35**, 118—121).—Peas were grown in soil treated with a nutrient solution containing little NO_3^- , but inoculated with nodule bacteria. The temp. was varied from 15° to 30°, the optimum for development being 20—15°. In this range the wt. and N content of whole plants and of beans were, respectively, above 3 and 4 times the vals. obtained at 30°. R. H. H.

Inheritance and interrelationship of components of quality, cold-resistance, and morphological characters in wheat hybrids. W. W. Worzella (*J. Agric. Res.*, 1942, **65**, 501—522).—The mode of inheritance by wheat hybrids of gluten strength, granulation, carotenoid content, crude protein, kernel and test wt., and cold-resistance was quant. and governed by genetic factors. The components of quality were not correlated with one another or with cold-resistance. Genetic linkage was found between the genes for gluten strength and glume colour, for protein content and kernel colour, and for coleoptile and straw colours. R. H. H.

Apparatus for the production of artificial frost injury in the branches of living trees. B. A. Studhalter and W. S. Glock (*Science*, 1942, **96**, 165). E. R. R.

Influence of variety, environment, and fertility level on chemical composition of soya bean seed. J. L. Cartter and T. H. Hopper (*U.S. Dept. Agric. Tech. Bull.*, 1942, No. 787, 66 pp.).—10 varieties of soya bean were grown under different soil and climate conditions in 5 soya-bean-producing states. The % of carbohydrate, nitrogenous, lipin, and mineral constituents were influenced by physiological vigour as controlled by environment during growth. The I val. of the seed oil is influenced by temp. during the period of bean development and oil metabolism. High temp. depresses and low temp. raises the I val. The % of oil and total sugars vary in the same direction and inversely with % of protein. No large variations occurred in % of crude fibre in seed or unsaponifiable matter in oil. Soya beans grown at high temp. had high Ca content. Total ash, P, and K were influenced more by soil type and fertility than by

variety or climatic conditions. Varieties and strains of soya beans inherit their characteristic chemical composition. A. A. M.

Factors affecting longevity of cottonseed. D. M. Simpson (*J. Agric. Res.*, 1942, **64**, 407—419).—The moisture content of cotton seed changes rapidly in equilibrium with the R.H. of the storage atm. Seed having less than 8% of water stored in tinned or in airtight glass containers showed only slightly reduced viability in 7 years. Of seed stored at 32.2° that containing 14% of water was killed in 4 months; that with 7% of water showed impaired viability after 3 years. At 0.5° seed having 14% of water remained viable for 3 years. Effects of storage at 21° were intermediate between the above. Seedling mortality was greater from seed stored at 0.5° than in that stored at higher temp. Increase in seed moisture content or in storage temp. is associated with increase in free fatty acid content of the seed oil. A. G. P.

Electrical correlates of growth in corn roots. H. S. Burr (*Yale J. Biol. Med.*, 1942, **14**, 581—588).—During the first mm. of the growth of the root in maize seed the voltage gradient between the seed and the root tip was 20 mv. with the tip negative. With increasing length of the root and accelerated growth rate the p.d. increased to 50 mv. With the onset of differentiation there were fluctuations in p.d., presumably representing the diversion of energy from the electrical reserves of the organism. The results support the hypothesis that the electrical phenomena in the living system are fundamental and, in some measure, determine the pattern of organisation. F. S.

Diffusion and "adenoid" activity as factors in intake of ions by plant cells. R. Collander (*Naturwiss.*, 1942, **30**, 484—489).—Since plant cells are usually almost impermeable to salts, the passage of ions into and out of the cells is controlled chiefly by "adenoid" action and to a small extent only by osmotic diffusion. W. McC.

Toxicity and accumulation of chloride and sulphate salts in plants. F. M. Eaton (*J. Agric. Res.*, 1942, **64**, 357—399).—In sand cultures Cl^- and SO_4^{2-} (exceeding 50 m-equiv. per l.) in the nutrient depressed growth of all crops examined, the toxicity of SO_4^{2-} averaging 50% of that of Cl^- . The relative tolerance of individual crops varied considerably. Above certain min. vals. increased $[\text{SO}_4^{2-}]$ or $[\text{Cl}^-]$ produced progressive effects, the action of each additional unit of SO_4^{2-} or Cl^- being smaller than the last. The succulence of crops (except barley) was not affected by the salt concn. of the nutrient. The increased concn. of salt constituents in plant saps was relatively smaller than that in the nutrients which produced them. Accumulation of K in sap was unaffected by the concn. of other ions. The electrical conductivity of expressed saps was not an effective measure of their electrolyte content. The osmotic pressure of expressed saps increased in parallel with that of culture media but salt injury to plants is not attributable to restriction of water intake by high osmotic pressure in the substrate. Blossom-end rot was frequent in tomatoes grown in high-salt (especially high- SO_4^{2-}) media. The terms "crit. concn.," "limit of tolerance," and "threshold vals." have no real significance in relation to salt tolerance. A. G. P.

Effect of major and minor nutrient elements on pollen germination in plants. V. V. Zerling (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 439—442).—The relative effects of 27 elements on the germination of pollen are recorded. The ions most favourable for increasing extent of germination and the length of the pollen tube were H^+ and BO_3^{3-} . R. H. H.

Influence of cerium, lanthanum, and samarium on development of peas. A. A. Drobkov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 669—670).—When peas are grown in 6 l. of Hellriegel solution containing 5 mg. of H_3BO_3 , 10 mg. of MnSO_4 , and various concns. of $\text{Ce}(\text{NO}_3)_3$, $\text{La}(\text{NO}_3)_3$, and $\text{Sm}(\text{NO}_3)_3$ there is in almost every case a favourable effect on the plant. With 10^{-3} g. of Ce or La the wt. of green mass increases 22.6%, whilst with 10^{-3} g. of Sm, the increase is only 11.5%. With 10^{-2} g. of rare earths the increase in wt. of vegetative organs and seeds is 65.23 and 45.66%, respectively. With the same amounts of Ce, La, and Sm, the corresponding increases are 40.7 and 26.01, 25.48 and 30.17, and 35 and 39.64%, respectively. J. N. A.

Effect of radioactive elements and rare earths on yield and rubber content of kok-saghyz. A. A. Drobkov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 667—668).—When the plants are grown in sand watered with Hellriegel's solution, containing no Mn and B, the root yield and content of rubber are both low, but in presence of Mn and B, the root yield is increased 100%, and the amount of rubber is also increased. When 2.5×10^{-3} g. of rare earth oxides per 10 kg. of sand is present the root yield and rubber content are increased by 21 and 72.2% respectively, whilst with 2.5×10^{-2} g. of rare earth oxides the increases are 4.9 and 101.8%, respectively. Although Ra is more effective than the rare earths in increasing the root yield, it has less influence on the rubber content. With 10^{-9} g. of Ra the root yield and rubber content are increased 32.5 and 32.7%, respectively, whilst with 10^{-8} g. of Ra the increase is 50.8% in both cases. J. N. A.

Rôle of phosphates in early phases of growth and development of kok-saghyz. N. N. Michailov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 664—666).—N and K fertilisers have only a slight effect on the plant, whilst P has a very favourable effect, and increases dry wt. of the plant, no. of leaves per plant, length and breadth of leaf, inorg. and water-sol. org. P, nucleoproteins, phospholipins, carbohydrates, and protein- and non-protein-N. Plants provided with P during early stages of growth take up more N and convert it into proteins at a greater rate. The amounts of different forms of P in the plant are increased if the amount of PO_4^{3-} is increased and placed near to the roots. When N and P are administered the amounts of inorg. and acid-sol. org. P, but not phosphatides and nucleoproteins, are increased. J. N. A.

Phosphatide content of plants in relation to mineral nutrition. G. Pfützer and H. Roth (*Chemie*, 1942, **55**, 289—293).—On poor soils the phosphatide content of spinach, rape, and barley increased with increasing applications of N, P, and K fertilisers singly or in combination. Abnormal plants from impoverished soils or those rich but unbalanced in nutrients were rich in phosphatides. Small fertiliser treatments which produced relatively great increases in yield lowered the phosphatide content of the crop; heavier manurial treatments resulted in high gross yields of crops in which the proportion of phosphatides approached or even exceeded that in abnormal plants. Min. phosphatide contents of plants are associated with nutrient supply levels at which the yield increment per unit nutrient available is max. A. G. P.

Effect of ammonia- and nitrate-nutrition on carbohydrate metabolism of red clover in the Arctic. S. A. Kasparova and T. A. Proskurnikova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 941—944).—The effects of $\text{Ca}(\text{NO}_3)_2$ and $(\text{NH}_4)_2\text{SO}_4$ treatments on carbohydrate metabolism were compared. Measurements of leaf and stem contents of mono- and di-saccharides and of starch are recorded. Higher vals. were obtained for $(\text{NH}_4)_2\text{SO}_4$ -treated plants. R. H. H.

Formation of nicotine in plants grafted on tobacco. A. Schmuk, A. Smirnov, and G. Iljin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 365—368; cf. A., 1940, III, 547).—Nightshade (*Solanum nigrum*), tomato (*S. lycopersicum*), and stramonium (*Datura stramonium*) are grafted on tobacco plants (*N. tabacum* and *N. rustica*); in all cases considerable amounts of nicotine are developed, and thus the tobacco plant has bestowed its power to synthesise nicotine independently on other plants which normally have no such power. When tobacco is used as scion, and the other plants as stocks, nicotine disappears from the graft system and cannot be detected in the stock or scion. Thus formation of nicotine by tobacco is connected with the root system and stem. When both are present, nicotine can even be formed by plants otherwise unable to synthesise it. If they are absent, even tobacco plants refuse to synthesise nicotine in their leaves. In the case of the anabesine plant, *N. glauca*, grown on tomato, as much anabesine is formed by the scion as was in the control plant raised normally. A. T. P.

Effect of cations (K, Na, Ca) on transformation of sugars in plants. A. Kalinkevitch (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 251—253).—Pot experiments with kok-saghyz plants treated with $\text{Ca}(\text{NO}_3)_2$ or NaNO_3 with and without addition of KCl or K_2SO_4 show that, in leaves and flowers, Ca^{++} favours accumulation of glucose and other reducing sugars whilst Na favours that of fructose and sucrose. K^+ acts like Na^+ but less powerfully, the total sugar content being increased. Na^+ probably promotes conversion of fructose into glucose and then into sucrose. Glucose is the predominating monosaccharide of the high sugar content of the flowers. W. McC.

Origin and transformation of carbohydrates in plants. H. A. Spoehr (*J. Chem. Educ.*, 1942, **19**, 20—23). L. S. T.

Physiological activity of ascorbic acid in plant life. E. F. Kehman and D. R. Porter (*Science*, 1942, **95**, 608—609).—Cut tomato plants retained considerably more ascorbic acid than uncut controls. In the latter, the acid may be used up in some physiological process which is diminished in the cut plant. E. R. R.

Respiration and oxidase and catalase activity of apples in relation to maturity and storage. B. D. Ezell and F. Gerhardt (*J. Agric. Res.*, 1942, **65**, 453—471).—Respiration and oxidase activity of apples decreased during the growing season, whilst catalase activity increased. Fruit harvested when fully mature showed, during storage, greater respiratory and catalase activity and smaller oxidase activity than did fruit picked when less mature. R. H. H.

Response of various species of plants to length of day. H. A. Allard and W. W. Garner (*U.S. Dept. Agric. Tech. Bull.*, 1940, No. 727, 64 pp.).—The behaviour of wild and cultivated plants, native and introduced, under exposure to different const. light periods showed that both in long-day and short-day groups there is wide variation in sensitiveness to the day-length factor. Many plants fall within a narrow band of crit. day lengths, the long-day types tending to flower only under photoperiods in excess of this band and the short-day types only under photoperiods below it. Progressive change in duration of the photoperiod delays or reduces flowering,

but does not suppress it in certain plants. Knowledge of the photo-periodic responses of plant species helps their successful introduction to new regions. A. A. M.

Daily rhythm in action of invertase and its dependence on illumination. B. A. Rubin, E. V. Artzichovskaja, and N. S. Spiridonova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 917—920).—The normal rhythm of invertase and respiratory activity in young sugar-beet plants was changed by reversing the period of illumination. Synthetic activity adapted itself even more readily. R. H. H.

Photoperiodism of chlorotic plants. M. C. Tschajlaschjan (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 945—948).—Chlorotic plants with greatly decreased chlorophyll and yellow pigment contents were as responsive to variations in the length of photoperiods as were normal plants. R. H. H.

Plant content of minor growth substances as affected by vernalisation and photoperiodism. L. P. Shdanova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 584—587).—Young leaves of barley, mustard, and hemp contain less ascorbic acid when exposure to sunlight is curtailed. There is no such effect on sunflower, chrysanthemum, tobacco, and perilla. The bios content of perilla leaves varies similarly with exposure. Vernalisation and germination increase the bios content of winter and spring wheat. R. L. E.

Effect of nutrient cultures on reaction of maize seedlings to light. J. H. Kempton (*J. Washington Acad. Sci.*, 1942, **32**, 338—341).—Maize seedlings treated with distilled water and others with nutrient solution were grown in darkness for 4 days. Some of each series were then exposed to a Mazda lamp and received 100 ft.-candles illumination for 1 hr. Measurements of the length of mesocotyl and coleoptile, and the wt. of seedling parts, resulting from the 4 treatments are recorded and their significance is discussed. In general, the reaction to light was much greater in plants grown in the nutrient solution than in those grown in water. R. H. H.

Rate of photosynthesis in leguminous plants supplied with free or combined nitrogen. M. M. Gukova and V. S. Butkevitch (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 933—936).—The rate of photosynthesis of soya-bean plants given a low NO_3^- supply but inoculated with nodule bacteria was much greater than that of non-inoculated plants treated with a full nutrient solution. R. H. H.

Photosynthesis and respiration in sugar beet as influenced by staple element of root nutrition. G. P. Ustenko (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 658—660).—The rates of photosynthesis and respiration are increased when leaves on the plant are wetted with $0.1\text{N-NH}_4\text{NO}_3$, $-\text{Ca}(\text{H}_2\text{PO}_4)_2$, and $-\text{KCl}$. The yield of sugar is also increased, but there is no direct relationship between yield and rate of photosynthesis. N is the most effective element when applied in the phase of intensive leaf formation, whilst K is most effective during the period of intensive accumulation of sugar in the root. When the solutions are injected into detached leaves or the petioles are immersed, NH_4NO_3 and $\text{Ca}(\text{H}_2\text{PO}_4)_2$ increase whilst K decreases the rate of photosynthesis, but if K is administered as KNO_3 or KH_2PO_4 then there is an increased rate of photosynthesis. J. N. A.

Effect of mineral salts on photosynthesis in relation to amount of assimilates in the leaf. G. P. Ustenko (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 661—663).—When $0.1\text{N-NH}_4\text{NO}_3$, $-\text{Ca}(\text{H}_2\text{PO}_4)_2$, 0.01N-MgSO_4 , and $-\text{ZnSO}_4$ are injected into detached leaves of sugar beet there is increased rate of photosynthesis, which is only slightly greater than that observed when the leaves are kept in the dark. Since these salts contain elements indispensable for synthesis of org. material, especially proteins, it is concluded that while in the leaf tissue they hasten the use of carbohydrates for building purposes and cause removal of primary products from the photosynthetic mechanism, and thus increase the rate of photosynthesis. The greatest increase in rate of photosynthesis occurs when injection of salts and darkness act simultaneously, whilst the effect of these factors separately is considerably less. This shows that the rate of photosynthesis, accumulation of assimilates, and absorption of mineral elements by the plant are closely inter-related. 0.1N-KCl and $0.01\text{N-H}_3\text{BO}_3$ when injected into the leaf decrease photosynthetic activity. J. N. A.

Identification of selenium indicator species of *Astragalus* by germination tests. S. F. Trelease (*Science*, 1942, **95**, 656—666).—20 p.p.m. of Se (as Na_2SeO_3) are added to the culture solution. Indicator species are unaffected; the root development of non-indicator species is completely inhibited. Details of the technique and a list of species investigated are given. E. R. R.

Plant growth-substances in animal tissues. C. S. Koschojanz (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, **35**, 293—296).—Fertilised, but not unfertilised, eggs of the axolotl and frog contain auxin-like growth-substances, as determined by the bending effect on decapitated oat coleoptiles. The developing chick embryo shows a max. auxin content at the fourteenth day. The auxin-like substances of extracts of frog's muscle are appreciably thermo-labile at temp. above 35° and their activity is similar to that of the growth-substances of chick embryos. P. G. M.

Translocation of flowering hormones in the plant as affected by temperature and narcotics. M. C. Tschajlaschjan (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 949—952).—Increase of stem temp. up to 35° accelerated the budding and flowering of *Perilla nankinensis*. Punctured branch internodes treated with ether or CHCl_3 developed necrosis. The parts of the plant above the internodes remained fresh but failed to produce flowers or buds. Flowering hormones are translocated from cell to cell, transference being much slower than that of growth-substances. R. H. H.

Root-inducing activity of phenoxy-compounds in relation to their structure. A. E. Hitchcock and P. W. Zimmerman (*Contr. Boyce Thompson Inst.*, 1942, **12**, 497—507).—The variation from very low to very high root-inducing activity produced in cuttings of horticultural plants by phenoxy-compounds depended on the kind, no., and positions of substituents of the ring and on the length of the side chain. Compared with β -indolylbutyric or α -naphthylacetic acid, the activity of monohalogen-substituted acids was less, that of 2:4-dichloro- and -dibromo-phenoxyacetic acids equal or greater, and that of the corresponding α -propionic and α -butyric homologues 30—100 times greater. The order of the effect on *Eumonymus* cuttings of monosubstituted phenoxyacetic acids was: $p > o > m$; $o\text{-Cl} > i$; $m\text{-Cl} > \text{NH}_2 > \text{NO}_2$; $p\text{-Cl} > \text{Br} > \text{NH}_2$. All active phenoxy-compounds at slightly above optimum concns. induced marked fasciation and an initial delay in growth of roots. R. H. H.

Flowering habit and correlation of organs modified by tri-iodobenzoic acid. P. W. Zimmerman and A. E. Hitchcock (*Contr. Boyce Thompson Inst.*, 1942, **12**, 491—496).—Aq. solutions and lanolin preps. of tri-iodobenzoic acid sprayed on tomato and other plants or applied to the soil caused the formation of flower clusters from axillary buds which normally produced leafy shoots. The stems showed odd curvatures and the new leaves formed after treatment were modified. The main shoot lost the shoot-producing bud and terminated in flower clusters. Although cell elongation was not produced in the first few hr., the results more closely resembled those of true hormones than of auxins. R. H. H.

Association of tobacco leaf-spot bacteria with roots on crop plants. W. D. Valleau, E. M. Johnson, and S. Diachun (*Science*, 1942, **96**, 164).—Causal bacteria of wild-fire and angular leaf-spot diseases can maintain themselves on the roots of cover crops unrelated to tobacco. The bacteria may not be primarily tobacco pathogens. E. R. R.

XXVII.—PLANT CONSTITUENTS.

Distribution of minerals and vitamins in different parts of leafy vegetables. O. Sheets, O. A. Leonard, and M. Gieger (*Food Res.*, 1941, **6**, 553—569).—The green leaves of cabbage and lettuce contain 1.5—3 times as much Fe as the bleached leaves on the dry basis and 3 times as much Ca and somewhat less P. Green asparagus also contains more Fe than bleached asparagus. The leaves of collards, mustard, lamb's quarters, and pokeweed contain twice as much Fe as the petioles and stalks combined while the leaf blades of mustard and turnip tops contain 3—4 times the Fe of the petioles and midribs. The Ca content of leaf blades of turnip tops is approx. the same as and the P content $\frac{1}{4}$ — $\frac{2}{3}$ greater than that of the petioles and midribs on dry wt. The leaf blades of the different vegetables contain 96.3—99% and 76—86.6% of the total carotene and vitamin-C, respectively. Carotene and -C are 5—20 and 5—6.5 times more conc., respectively, in the leaf blades than in the petioles (dry wt.), the midribs having a higher concn. than the latter. Green leaves of cabbage contain 21 times more carotene and $\frac{1}{2}$ more -C than bleached inner leaves (dry wt.). H. G. R.

Cystine content of wheat and its determination. C. J. Gubler and J. E. Greaves (*Food Res.*, 1942, **7**, 405—413).—The Sullivan (Sullivan and Hess, A., 1930, 1604) and Folin and Looney (Shinohara, A., 1937, II, 478) methods were examined and several modifications in the former which caused more consistent and higher vals. are recommended. 17 varieties of wheat contain an average of 0.364% of cystine, corresponding to 54.4% of the total S. A correlation is observed between the cystine and both the N and S contents of the wheat and variations in cystine with the variety of wheat and the cultural conditions are observed. H. G. R.

Natural occurrence of 3-methoxypyridine. R. H. F. Manske (*Canad. J. Res.*, 1942, **20**, B, 265—267).—The dried whole plant (exclusive of roots) of *Thermopsis rhombifolia*, Nutt., yields about 0.25% of bases, 3% of which has been identified as 3-methoxypyridine [*picrate*, m.p. 139° (corr.)]. This base was also isolated from *Equisetum arvense*, L. F. O. H.

Chemical components of the roots of *Decalepis hamiltonii*. V. Use of 4-methylresorcyraldehyde as a preservative. P. B. R. Murti and T. R. Seshadri (*Proc. Indian Acad. Sci.*, 1942, **A**, **16**, 135—136).—4-Methylresorcyraldehyde present in the roots of *D. hamiltonii* and *Hemidesmus indicus* to the extent of 0.8% and 0.12%, respectively, is toxic to *Haplochloris panchax* within 4 min. at a concn. of 0.021% and arrests the growth of *B. coli* for over 7 days at a concn. of 0.041%. In these respects it is superior to vanillin or isovanillin but it is less sol. It is characterised at the 5-Br, m.p. 120 — 121° ,

and 3 : 5-Br₂-derivative-, m.p. 98°, and as 2 : 4 : 6-tribromoresorcinol methyl ether, m.p. 194—105°, which are obtained simultaneously by the action of excess of Br on the aldehyde in ether or acetic acid; their separation is described. H. W.

Chemical examination of Indian lichens. VII. Chemical components of *Parmelia abessinica* (Rathpuvvu). V. V. K. Sastry and T. R. Seshadri (*Proc. Indian Acad. Sci.*, 1942, A, 16, 137—140).—The isolation from *P. abessinica* of atranorin (1.1%), lecanoric acid (3.3%), salazinic acid (0.1—0.5), and isolichenin (3.4%) is described. Samples obtained in different years showed considerable variation in the content of salazinic acid but not of the other components. Methylation of lecanoric acid is effected as readily with methyl iodide and K₂CO₃ as with diazomethane. Pure salazinic acid is best obtained by crystallisation of the crude material from technical, pure acetone. H. W.

Essential oil of seeds of *Carum roxburghianum*, Benth. B. K. Malavya and S. Dutt (*Proc. Indian Acad. Sci.*, 1942, A, 16, 157—162).—The greenish-yellow oil obtained in 2.5% yield by steam-distillation of the seeds has *d*₂₀ 0.9488, *n*_D²⁰ 1.4880, *a*_D²⁰ +35.5°, acid val. 4.9 and sap. val. 49.1 (after acetylation, 7.42). It contains *d*-limonene (35.1%) a mixture of *d*-limonene and dipentene (2.5), *α*-terpinene (19.4), *d*-linalool (4.7), *dl*-terpineol (5.7), thymoquinol (0.2), thymol (1.7), *dl*-piperitone (13.6), *p*-isopropylbenzoic acid (0.4), unidentified ketonic acid C₁₅H₁₄O₃ (oxime, m.p. 117—118°; semicarbazone, m.p. 228—229°) (1.0), unidentified esters (5.9), and other unidentified material (9.8%). H. W.

Animal toxicity of a blue-green alga. R. E. Wheeler, J. B. Lackey, and S. Schott (*U.S. Publ. Hlth. Repts.*, 1942, 57, 1695—1701).—Freshly collected *Microcystis aeruginosa* was toxic to mice and guinea-pigs when given parentally but much less toxic when given by mouth. Frozen, or frozen and vac-dried, *M. aeruginosa* was much more toxic than freshly collected material for mice and guinea-pigs. The toxic substance withstands autoclaving but only in neutral solution, is dialysable, and sol. in alcohol. It survives the laboratory equiv. of a water purification process—alum-coagulation, chlorination, and filtration. It is adsorbed on C when used in large amounts. Three other blue-green algae were non-toxic to mice. C. G. W.

Potato fat. W. Kröner and W. Volksen (*Naturwiss.*, 1942, 30, 473).—The ethereal extract from potato tubers contains linoleic and linolenic acids. J. N. A.

Isolation of new antioxidants from vegetable fats.—See A., 1943, II, 54.

Structure of the dextrans isolated from maize syrup.—See A., 1943, II, 57.

Constitution of starch from the action on it of starch-splitting enzymes.—See A., 1943, II, 57.

Fructosan from *Yucca mohavensis*, Sarg.—See A., 1943, II, 57.

Hemicelluloses of maize stalks. H. D. Weihe and M. Phillips (*J. Agric. Res.*, 1942, 69, 401—406).—Maize stems, freed from fat, sugars, and pectic material, yielded a hemicellulose, pptd. by alcohol, to 5% aq. NaOH. *d*-Glucuronic acid, *l*-arabinose, and *d*-xylose (mol. ratio 2 : 7 : 19) were produced by acid hydrolysis of the purified hemicellulose. From the residual cellulose two other hemicelluloses were obtained; both yielded *d*-xylose and *l*-arabinose on hydrolysis. A. G. P.

Carotenoids of yellow maize grain. J. W. White, jun., F. P. Zscheile, and A. M. Brunson (*J. Amer. Chem. Soc.*, 1942, 64, 2603—2606; cf. A., 1942, III, 787).—Carotenoids from the grain of *Zea mays*, L., yield, by chromatography etc., luteol, *γ*-carotene, and a (?) hydroxy-*α*-carotene (absorption max. at ~4250, 3990, 3800, and 4500 Å., cf. lit.). Absorption spectra of neocryptoxanthol and two neozeaxanthols are recorded. R. S. C.

Carotenoids of telial galls of [the rust fungus] *Gymnosporangium juniperi-virginiae*, Lk. B. L. Smits and W. J. Paterson (*Science*, 1942, 96, 210—211).—*β*- and *γ*-Carotenes, the latter predominating, were the only carotenoids present. Xanthophylls were absent, and only traces of chlorophyll were found. The leaves of the juniper contained chlorophyll, *α*-, *β*-, and *γ*-carotene. E. K. R.

Phytoxanthins of dandelion blossoms. Flavoxanthin. P. Karrer and J. Rutschmann (*Helv. Chim. Acta*, 1942, 25, 1144—1149).—Extraction of the blossoms with acetone-light petroleum affords xanthophyll, relatively much flavoxanthin. m.p. 178° (vac.) (*diacetate*, m.p. 157°), but no taraxanthin. H. W.

Alkaloids in *Fagara coco* (Gill), Engl.—See A., 1943, II, 113.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Retaining oil between [microscope] slide and condenser. R. H. MacKnight (*Science*, 1942, 95, 588).—Most of the gap is filled with a piece of thin glass slide. E. R. R.

Method for investigating the thickness, chemical properties, and surface structure of thin biological objects. D. F. Waugh (*J. Opt. Soc. Amer.*, 1942, 32, 495—502).—The method, which is accurate to ±12 Å., depends on the modifications in reflectivity of a glass surface produced by the deposition of a thin transparent film, and is applicable to objects submicroscopic in one dimension and microscopic in other dimensions. J. W. S.

Production and use of high centrifugal fields for use in biology and medicine.—See A., 1943, I, 72.

Simple technique for time lapse cinematography. A. Pijper and L. B. Poole (*J. Lab. clin. Med.*, 1943, 28, 235—241). C. J. C. B.

Recent advances in photometric clinical chemistry. W. S. Hoffman (*Amer. J. clin. Path.*, 1942, 12, 449—457).—A review. C. J. C. B.

Adaptation of photoelectric colorimeter to determination of alcohol in blood and urine. J. Shapiro (*Amer. J. clin. Path. Tech. Sect.*, 1942, 6, 66—67).—A known amount of blood or urine is adsorbed on a small roll of filter-paper, and alcohol which it contains is absorbed into a K₂Cr₂O₇-H₂SO₄ oxidising mixture. The reading of this partly decolorised solution is compared with the reading of the dichromate reagent plus the reading of a totally reduced dichromate solution. C. J. C. B.

Rapid determination of respiratory gases. P. F. Scholander (*J. Biol. Chem.*, 1942, 146, 159—162; cf. A., 1942, III, 297).—In the apparatus described the gas samplers are two 5-c.c. syringes in adjustable holders and the absorbers two 25-c.c. burettes with levelling bulbs. The absorbers are 10% aq. KOH for CO₂ and 10% aq. KOH containing 15% of 10 : 1 Na₂S₂O₄-anthraquinone-2-sulphonate mixture for O₂. Analyses with the apparatus take 0.5—5.0 min., results being accurate to 0.5—1.0% of the total vol. analysed. W. McC.

Direct colorimetric method for determination of urea in blood and urine. A. A. Ormsby (*J. Biol. Chem.*, 1942, 146, 595—604).—The procedure described is based on the formation of a yellow colour by reaction of urea with diacetyl monoxime at 100° in acid (HCl) solution, which deepens to yellow-orange on oxidation at room temperature with 1% K₂S₂O₈. The time required for max. development of colour depends on the concn. of urea. 3 c.c. of blood filtrate are required. No interference is caused by the presence of NH₃. Results agree closely with those obtained by the Van Slyke-Cullen method (A., 1916, ii, 203). P. G. M.

Rapid Kjeldahl digestion method using perchloric acid.—See A., 1943, I, 99.

Kjeldahl nitrogen determination. Rapid wet-digestion method.—See A., 1943, I, 99.

Determination of hæmoglobin and related hæm pigments in faeces, urine, and plasma. E. B. Flink and C. J. Watson (*J. Biol. Chem.*, 1942, 146, 171—178).—The hæmoglobin or hæm pigments are obtained in aq. NH₃ solution and, by treating with pyridine and 2% aq. Na₂S₂O₄, converted into pyridine-ferrihæmochromogen, which is then determined in the Evelyn photoelectric colorimeter. The error in recovery of pigments from urine and plasma is at least 10%, whilst with faeces recovery is 75—95%. P. G. M.

Microchemical determination of yellow phosphorus. S. Kaye (*J. Lab. clin. Med.*, 1943, 28, 225—229).—The method depends on trapping the P as Ag phosphide, generating PH₃ by hydrogenation, and measuring the PH₃ generated on a HgBr₂ filter disc. The colour developed is a measure of the amount of P present and is determined by comparison with standards similarly prepared. C. J. C. B.

Examination of spectrographic plates taken in forensic work. L. C. Nickolls (*J.S.C.I.*, 1943, 62, 31—32).—A simplified method is described for identifying the lines on spectrographic plates of trace elements in complicated spectra. The method depends on projecting the spectra and registering the Fe lines on it with selected Fe lines on prepared sheets. On these sheets are certain ultimate and characteristic lines of all the elements. Direct comparison of the projected spectra with those lines shows which elements are present.

Determination of iron in three diets. R. A. Koenig and C. R. Johnson (*Food Res.*, 1942, 7, 130—134).—A wet ashing process is preferable but all org. matter must be destroyed and with the ferron method P₂O₅ must be converted into PO₄. In the thioglycolic acid method of Swank and Mellon (A., 1938, I, 158) P₂O₅ and PO₄ may be disregarded and preliminary separation of the Fe is not always necessary. Even after ClO₄ ashing, a considerable portion of the Fe will not react when the usual colorimetric methods are applied to the untreated acid solution. This is held in very firm org. combination. Available and total Fe may be determined on aliquots of the same ClO₄ digestion. H. G. R.

Micro-determination of lead by dithizone, with an improved lead-bismuth separation.—See A., 1943, I, 100.

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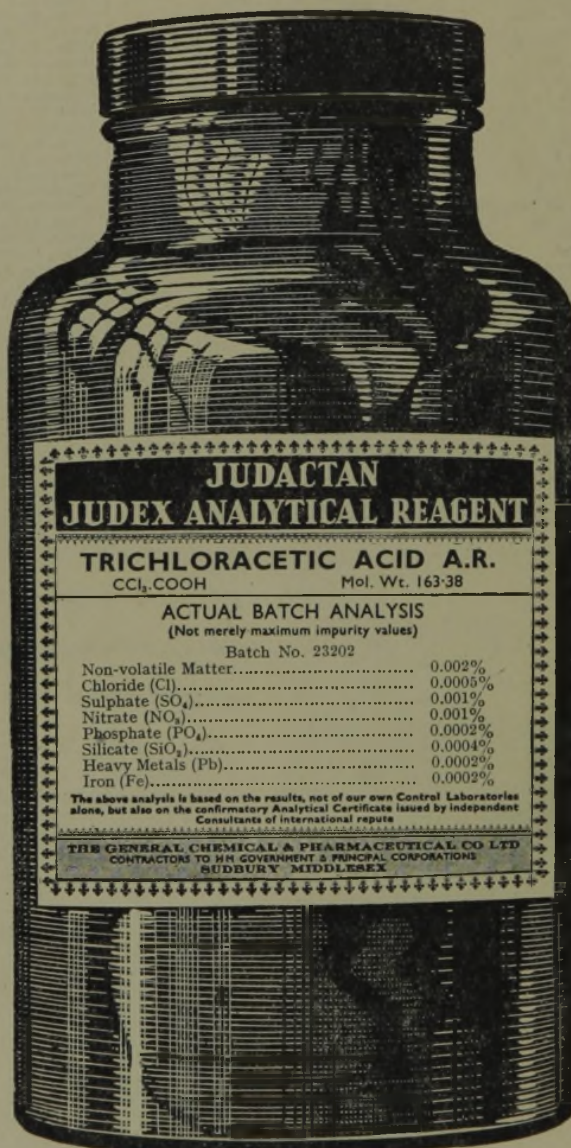
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