

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

NOVEMBER, 1942.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Blood-vascular bundles in manatee and in certain cetaceans and edentates. D. W. Fawcett (*J. Morph.*, 1942, **71**, 105—133).—An account, based on three foetal specimens and one adult, of the blood-vascular bundles in *Trichechus latirostris* and a comparison of the findings with those described for cetaceans, edentates, and prosimian primates. The possible functional significance of blood-vascular bundles is discussed. J. D. B.

Lymphatic pathways from intestine in dog. L. W. Freeman (*Anat. Rec.*, 1942, **82**, 543—550).—Lymphatico-venous communications other than the left thoracic duct were found in 17 cases. It is suggested that cannulation of the thoracic duct within the thorax might insure a more adequate collection of lymph from the intestinal tract. Experimental interruption of the thoracic duct and other lymphatic paths at the venous angles induced enlargements of various types of lymphatico-venous communications. W. F. H.

Relation of lymph vessels to omental milk spots. R. L. Webb and P. H. Simer (*Anat. Rev.*, 1942, **83**, 437—447).—By means of intraperitoneal injections of trypan-blue the presence of lymph channels in omental milk spots of rats, guinea-pigs, dogs, and rabbits was confirmed. The arrangement of the lymph vessels pervading the spots in the various animals is described. W. F. H.

So-called interpleural opening in opossum, *Didelphys virginiana*. A. M. Russel (*Anat. Rec.*, 1942, **82**, 587—592).—No "interpleural" openings were found in pouch young or in older stages. The pleural cavities conform to the general mammalian type. The infracardiac lobe of the right lung lies in a special cavity of the mediastinum. W. F. H.

Stapedial connexions in *Ichthyopus glutinosus*. L. L. S. Ramaswami (*Current Sci.*, 1942, **11**, 106—107).—In embryonic and metamorphic stages the quadrate and stylus columellae are united and a trabeculo-columellar union is also recorded. The latter appears to be peculiar to Apoda and is unparalleled in the vertebrate series. W. F. H.

The Discoglossoid skull. L. S. Ramaswami (*Proc. Indian Acad. Sci.*, 1942, **16**, B, 10—24).—The cranial morphology of two Discoglossoid genera, *Bombina* and *Alytes*, is recorded and resemblances to Liopelmidæ are discussed. W. F. H.

Clinical aspects of dwarfing. E. K. Shelton (*Endocrinol.*, 1942, **30**, 1000—1014).—A review. V. J. W.

Lesions of intervertebral disc [and radiological appearances]. A. D. Wright (*Brit. J. Radiol.*, 1942, **15**, 170—173). E. M. J.

Congenital osteopathy. F. A. Henley (*Brit. Med. J.*, 1942, **1**, 326—327).—Case report with genealogical tree. C. A. K.

Incidence of hyperostosis frontalis interna in female patients admitted to a mental hospital. W. W. Eldridge and G. A. Holm (*Amer. J. Roentgenol.*, 1940, **43**, 356—359).—50 out of 200 unselected cases had localised thickening and increased density of the inner table of the frontal bone; there were no associated metabolic or neurological abnormalities. H. L.

Congenital lacunar skull (Lückenschädel). H. F. Bettinger (*Med. J. Austral.*, 1942, **1**, 526—529).—Description of a typical case with a review. F. S.

[Treatment of] oxycephaly. B. Woodhall (*J. Pediat.*, 1942, **20**, 585—595). C. J. C. B.

Congenital defect of scalp. N. P. Anderson and F. G. Novy, jun. (*Arch. Dermat. Syphilol.*, 1942, **46**, 257—263).—A review and report of 4 cases. C. J. C. B.

Appendicitis with complete situs inversus. C. W. Lawrence (*J. Kansas Med. Soc.*, 1940, **41**, 333—335).—The case report includes photographs of chest X-ray, Ba-enema, and e.c.g. E. M. J.

Right duodenal hernia. G. Gushue-Taylor and R. Hayward (*Anat. Rec.*, 1942, **83**, 389—399).—A report of a case of right duodenal hernia arising in the mesenterico-parietal fossa (Waldeyer). Torsion of the duodenum and ileum is described and held to be evidence in favour of the origin of the hernia in accord with views propounded by Moynihan. Theories of origin are discussed. W. F. H.

Two cases of double gall-bladder. M. Golob and J. L. Kantor (*Amer. J. digest. Dis.*, 1942, **9**, 120—123). N. F. M.

Skeletal abnormalities of short-spined turkeys. V. S. Asmundson (*Proc. Soc. Exp. Biol. Med.*, 1942, **50**, 120—123).—This deformity consists of a crowding of the vertebrae, which are normal in no. Ash % is low in scapula, ilium, and ischium, but normal in other bones. V. J. W.

Dehydration in embalmed specimens exposed to air. F. L. Hansen and N. C. Pervier (*J. Lab. clin. Med.*, 1942, **27**, 1078—1080).—The desiccation losses of aridly stored hog kidneys which had been arterially embalmed with aq. 2% formaldehyde solutions containing various concns. of non-volatile org. solutes were determined. Only slight differences in water loss were found between the different preps. so that very little can be done in reducing the water loss from embalmed bodies unless impracticably large amounts of hygroscopic agents are injected. C. J. C. B.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Origin of neural crest. J. L. Conel (*J. comp. Neurol.*, 1942, **76**, 191—215).—On the basis of observations on embryos of *Bdellostoma stouti* and *Squalus acanthias* it is concluded that the neural crest arises as an evagination of the dorsal part of the alar plate of the medullary folds or tube. The process of evagination occurs in a cephalo-caudal direction, the optic vesicle (which is regarded as a portion of the evagination and homologous to the neural crest) being the first portion to appear. J. D. B.

Development of ultimobranchial body of fowl. J. Dudley (*Amer. J. Anat.*, 1942, **71**, 65—97).—The sixth branchial pouch of the chick becomes the ultimobranchial body. The growth of the latter becomes accelerated about the 7th day of incubation. About the 13th day a central denser core can be distinguished around the lumen. The parenchyma of the mature body consists of fine branching strands of polygonal cells and the stroma of a reticular network. The blood supply comes from the common carotid. The nerve supply is mainly from the vagus. Nerve fibres from the ganglion nodosum may enter the body. The production of eosinophils is a characteristic feature from the 10th day of incubation and through the first months after hatching. From one to three accessory parathyroids may arise from the ultimobranchial parenchyma. W. F. H.

Delayed implantation in the long-tailed weasel (*Mustela frenata*), the short-tailed weasel (*M. cicognani*), and the marten (*Martes americana*). P. L. Wright (*Anat. Rec.*, 1942, **83**, 341—353).—The periods during which the embryos of the various animals lie dormant in the uterus as unimplanted blastocysts are given. The corpora lutea of the two weasels and of the marten are small and inconspicuous. The cells of the corpora in the weasels are non-vacuolated but those of the marten are highly vacuolated. W. F. H.

Spontaneous twinning in amphibia. J. L. Schwind (*Amer. J. Anat.*, 1942, **71**, 117—151).—29 cases of spontaneous anterior reduplication in *Rana sylvatica* and 5 cases in *Ambystoma punctatum* are recorded. The animals formed a graded series, the site of junction of the two components varying from the ventral lip of the blastopore to the region of the ear vesicle. Situs inversus cordis occurred in 3 twins, and one of these also had situs inversus viscerum. Attempts to produce twinning experimentally in *R. pipiens* by low temp., X-rays, and ultra-violet light failed. The inadequacy of the Newman-Stockard theory of reduplication is discussed. W. F. H.

Density studies on amphibian embryos with reference to mechanism of organiser action. M. G. Brown, V. Hamburger, and F. O. Schmidt (*J. exp. Zool.*, 1941, **83**, 353—372).—Determinations of densities (by a special apparatus which is described) of prospective neural tissue show that there is little change in density during cleavage, gastrulation, or neurulation. This is interpreted as showing that there are but slight changes in vol. or water content of the prospective neural tissue during early development. It is suggested that evocator action resulting in elevation and folding of the neural plate may operate through an increase in the "attractive" forces between mols. in the adjoining cell surfaces of pro-

spective neural tissue cells so that the area of contact is actively increased. J. D. B.

Establishment of tissue specificity in tadpoles of *Hyla regilla*. M. Harris (*J. exp. Zool.*, 1941, **88**, 373—397).—Tissue specificity was studied by homoplastic implantation of gastrular rudiments into tadpoles in graded stages of development. Compatibility between larval host and engrafted material was found to be dependent on the age of the host. In early tadpoles there was no reaction. Antagonistic responses in older larvae included lymphocytic infiltration, inflammatory vascular responses, and marked accumulation of connective tissue. It is suggested that innate biochemical differences between the cells of the graft and host are responsible for initiating these reactions. J. D. B.

Histological alterations in denervated non-regenerating limbs of urodele larvae. E. G. Butler and O. E. Schotté (*J. exp. Zool.*, 1941, **88**, 307—341).—Cellular dedifferentiation results in structural regression in nerveless limbs after amputation. Under conditions of prolonged absence of innervation, dedifferentiation of all limb tissues proceeds from any level of amputation proximally as far as the head of the humerus. No blastema is ever established in a completely nerveless amputated limb. When reinnervation of a dedifferentiating limb takes place a blastema is established. The blastema is regarded as playing a rôle, not only in the establishment of a regenerate, but also in the maintenance of a balance between the processes of dedifferentiation and differentiation which are associated in normal regeneration. J. D. B.

Production of developmental abnormalities in *Amblystoma*. S. R. Detweiler and W. M. Copenhaver (*J. exp. Zool.*, 1941, **88**, 399—411).—Subjection of *Amblystoma* embryos to low O_2 or to high CO_2 during "critical" stages of development did not produce double-headed monsters or twins such as Stockard obtained in fish embryos. Occasional head abnormalities (chiefly suppression of bilaterality) were obtained, however, and closely resembled those obtained by treatment with indolylbutyric acid. The suppression of bilaterality of head structures appears to result, irrespective of the agent used, from a direct effect of the agent on the prechordal mesoderm. J. D. B.

Effect of lysocithin on sea-urchin eggs. L. O. Öhman (*Naturwiss.*, 1942, **30**, 240).—Lysocithin (a lysolecithin-lysokcephalin prep. resulting from enzymic liberation of unsaturated fatty acids from lecithin and cephalin) in concns. of 6.6 mg.-% has a cytolytic effect, the histological changes due to which are described. A concn. of 0.66 mg.-% effects no morphological change in the eggs, the sensitivity of which to lysocithin decreases as development proceeds. Ca^{++} is an important factor in the extent of cytotoxicity. F. O. H.

Enzymes in ontogenesis. XX. Site of origin and distribution of protyrosinase in developing eggs of grasshopper. J. H. Bodine and T. H. Allen (*J. exp. Zool.*, 1941, **88**, 343—352).—Protyrosinase in the egg of *Melanophus differentialis* is probably synthesised by the serosa and secreted into a surrounding liquid-filled space. This fluid is swallowed by the embryo just before hatching. The functions of the protyrosinase within the egg are unknown since no melanin is produced until after hatching. J. D. B.

Effects of light and temperature on gametogenesis in *Apeltes quadracus*. D. Merriman and H. P. Schedl (*J. exp. Zool.*, 1941, **88**, 413—449).—Experiments described are interpreted as indicating that, in this stickleback, the joint action of temp. and light is probably essential before full maturity can be attained, but that these two factors do not act similarly on both sexes. Light influences the maturation of the oocyte, but does not affect spermatogenesis, while low temp. are essential to the completion of oogenesis but slow down spermatogenic activity. J. D. B.

Influence of natural and experimental conditions in determining shape and rate of growth of shell in Gastropods. W. R. Coe (*J. Morph.*, 1942, **71**, 35—51).—Data are given of rates of growth in seven species of *Crepidula* and of the effects of species, sex, age, season, and environmental changes on the growth. J. D. B.

Rupture of chromosomes. A. Camara and M. Valadares (*Arch. Port. Sci. Biol.*, 1938, **4**, 237—250).—X-Ray irradiation of chromosome *M* of *Vicia faba* demonstrates regions where ruptures easily occur. Chromatids of chromosome *M* unite on that segment of chromosome *M* bearing the nucleolar constriction. I. C.

Unusual integrations of chromatin in Acridid genera. E. R. Helwig (*J. Morph.*, 1942, **71**, 1—33). J. D. B.

Differential chromosomes in Orthoptera. Shih-ti Ch'en (*J. Morph.*, 1942, **71**, 77—103). J. D. B.

Early lethal action of homozygous Creeper factor in chick. J. M. Cairns (*J. exp. Zool.*, 1941, **88**, 481—503).—Observations and experiments suggest that the early lethal effect of the Creeper factor is localised in the vascular system. J. D. B.

Development of bristles in normal and mutant types of *Drosophila melanogaster*. A. D. Lees and C. H. Waddington (*Proc. Roy. Soc.*, 1942, **B**, 131, 87—110).—Development of normal macro- and micro-

chaetae of *D. melanogaster*, together with that of 12 mutant types, and the phenotypes of 20 combinations of these genes, are described. Each normal bristle is secreted by a single cell, the trichogen, which lies beneath a tormogen cell which secretes a socket. The bristle cells are first noticed in the epidermis approx. 15 hr. after puparium formation, when they have already divided to form a pair, and are slightly larger than the normal epidermal cells. Secretion of the bristles occurs most rapidly between 30 and 55 hr., during which time the bristle cells are very large and polyploid. The socket does not completely enclose the base of the bristle in the earliest stages. Development of the macro- is essentially similar to that of the micro-chaetae. The actions of the 12 genes on bristle development are described. J. N. A.

Selection of invisible mutations. K. Mather and L. G. Wigan (*Proc. Roy. Soc.*, 1942, **B**, 131, 50—64).—The rate of origin of hereditary variation by mutation on two characters, sternopleural and abdominal chaeta no., over periods of 21 and 53 generations respectively, is highly inbred strains of *Drosophila melanogaster* is determined. Selection was made for increase and decrease in chaeta no. in both positions. In one case the no. of sternopleural chaetae changed fairly smoothly with selection, but the response to selection for abdominal no. proceeded in the form of sudden steps separated by periods in which selection was ineffective. These sudden jumps are due to recombination of mutations to which individual polygenes have given rise. These mutations, masked by non-heritable fluctuations of character, having small individual effects, accumulate until recombinations give rise to more extreme variants, which fluctuation can no longer hide. Selection then becomes effective in producing a change in the character. J. N. A.

III.—PHYSICAL ANTHROPOLOGY.

Dakarkari peoples of Sokoto province, Nigeria. R. T. D. Fitzgerald (*Man*, 1942, **42**, 25—36).—A general account of the physical appearance of the tribes. W. F. H.

Application of Burt's multiple general factor analysis to delineation of physical types. W. H. Hammond (*Man*, 1942, **42**, 4—11).—An attempt to analyse 2 sets of physical measurements in order to see whether it is possible to distinguish a no. of physical types. The measurements demonstrate 2 well-marked complementary physical types. In addition to providing the type basis, the factorial technique is also able to demonstrate the degree of type conformity in any individual. W. F. H.

Length of pregnancy and foetal growth in man and primates. A. Portman (*Rev. Suisse Zool.*, 1941, **48**, 511—518).—Data are presented on length of pregnancy and the foetal growth curve. In the chimpanzee, gorilla, and orang the foetal growth curve terminates at birth but in man it extends into the first post-natal year. The factors which may be concerned in this proportionately longer human curve are discussed and it is suggested that it is a human characteristic. J. D. B.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Changes in fibrillar tissue of anterior pituitary of rat associated with advancing age. W. Lansing and J. M. Wolfe (*Anat. Rec.*, 1942, **83**, 355—365).—The fibrillar material in the anterior pituitary of the rat was mainly reticular and generally found only in intimate relation with the sinusoidal capillaries. A slowly progressive increase in the no. and thickness of the reticular fibrils occurs with advancing age. Transformation into collagen occurred only infrequently. W. F. H.

Sex differences in pigment content of Harderian glands of mice. L. C. Strong (*Proc. Soc. Exp. Biol. Med.*, 1942, **50**, 123—125).—At 75 days these glands show more grey pigment and contain 25% more protoporphyrins in females of C_3H strain than in males. At 250 days differences are less. V. J. W.

Origin of binucleate and large mononucleate cells in liver of rat. H. W. Beams and R. L. King (*Anat. Rec.*, 1942, **83**, 281—297).—Binucleate cells originate as a result of the failure of the two presumptive daughter cells to divide during mitosis although the nucleus divides. The binucleate cell is tetraploid. The nuclei of these cells show a high positive correlation in size. W. F. H.

Glycogen infiltration of liver-cell nuclei. H. D. Chipps and G. L. Duff (*Amer. J. Path.*, 1942, **18**, 645—655).—Peculiar vacuolated liver-cell nuclei with peripheral arrangement of the chromatin occurred in 123 of 315 cases in paraffin sections stained by hematoxylin and eosin of the liver from routine autopsy cases; the liver nuclei invariably contained glycogen. There was no relation to disease. (4 photomicrographs.) C. J. C. B.

Effect of extracts of heterologous adult tissue on cell growth in vitro and their use in wound healing. L. Doljanski, R. S. Hoffman, and E. Tenenbaum (*Nature*, 1942, **150**, 23—24).—Extracts of heterologous adult tissues stimulate cell growth in vitro. E. R. S.

Mitosis poisons and their relationship to natural substances. H. Lettré (*Naturwiss.*, 1942, 30, 34—40).—The mitosis-inhibiting activity of colchicine, its derivations, and substances of similar constitution (e.g., α -phenylmescaline), and of adrenaline, sympathol, etc. are discussed with reference to observations on chick embryo fibroblasts. F. O. H.

Histochemical studies of phosphatase distribution in developing teeth of rat. M. B. Engel and W. Furuta (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 5—9).—In teeth examined by Gomori's method (A., 1940, III, 274) phosphatase was found in the stratum intermedium, the enamel epithelium of the incisors, in the stellate reticulum about the 1st molar, and in the pulp near dentine calcification. There was none in ameloblasts or odontoblasts. V. J. W.

Cytological demonstration of phosphatase in chromosomes of mouse testes. E. J. Krugelis (*J. Cell. Comp. Physiol.*, 1942, 19, 376—379).—In testis sections examined for phosphatase by Gomori's method, the enzyme was found in all the tubule cells in 5-day-old mice, but at 83 days only in spermatogonia and spermatocytes and is localised on the chromosomes. V. J. W.

Electron microscope studies of insect cuticle. A. G. Richards, jun., and T. F. Anderson (*J. Morph.*, 1942, 71, 135—183).—An account of the application of electron optics to the study of insect cuticle which permits the use of naturally occurring sheets less than $1\ \mu$. and of sections less than $0.1\ \mu$. thick. J. D. B.

Nucleolar staining method applied to animal tissues. P. N. Bhaduri and C. S. Semmens (*J. Roy. Microsc. Soc.*, 1942, 62, 21—24).—Full details are given of the fuchsin-light-green method of staining nucleoli in animal tissues. The specificity of the staining is important in the study of the genetical significance of nucleoli. E. E. H.

Twenty years of micro-incineration. Cytological results. A. Policard (*J. Roy. Microsc. Soc.*, 1942, 62, 25—35).—A general review. Formation of ash granules depends on the nature and quantity of mineral matters in the protein substances, and on the constitution and form of the constituent macro-mols. Hence the method yields information as to ultra-structure and as to mineral distribution in the various cellular constituents. E. E. H.

Microscope in biology. A. Pijper (*J. Roy. Microsc. Soc.*, 1942, 62, 36—50).—An account of the function of the microscope followed by a discussion of the use and applications of the ultra-violet, infra-red, and dark-ground microscopes, of fluorescence microscopy, and of the electron microscope. E. E. H.

Preparing paraffin for imbedding purposes. W. Koch (*J. Lab. clin. Med.*, 1942, 27, 932—933).—A mixture of paraffin and beeswax is described which can be sectioned with ease; the m.p. hardly differs from that of the original paraffin. C. J. C. B.

V.—BLOOD AND LYMPH.

Blood. F. H. Bethell, C. C. Sturgis, R. A. Hettig, and O. T. Mallory (*Arch. intern. Med.*, 1942, 69, 1051—1126).—Review of recent literature. C. A. K.

Permeability of red cells to ions. R. B. Dean (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 162—165).—Diffusion vals. of various authors for rabbit, dog, and man are calc. in c.g.s. units and tabulated. The cell membrane is 2×10^{-6} times as permeable to cations as to anions. V. J. W.

Pharmacology of human blood after exposure to Roentgen rays. D. I. Macht (*Amer. J. Roentgenol.*, 1941, 45, 446—449).—Blood from patients with malignant and non-malignant conditions 24—48 hr. after X-ray treatment showed a marked toxicity to plant seedlings. Similar findings were obtained with blood from apparently healthy subjects engaged in X-ray clinics. H. L.

Mechanism of uptake of rose-Bengal by red cells. H. W. Gilbert and H. F. Blum (*J. Cell. Comp. Physiol.*, 1942, 19, 257—270).—Rate of uptake, equilibria, and temp. coeff. were determined. Data indicate that the process is not adsorptive, but that both distribution between immiscible solvents and chemical combination are concerned. V. J. W.

Osmometric behaviour of normal human erythrocytes. G. M. Guest and M. Wing (*J. clin. Invest.*, 1942, 21, 457—262).—Parallel measurements of the swelling and hæmolysis of erythrocytes suspended in hypotonic salt solutions were made by means of a modified Van Allen hæmatocrit tube with a bulb calibrated to contain 8.0 c.c. of fluid. The swelling of normal human erythrocytes thus measured followed closely that expected if they behave as perfect osmometers. The max. vols. attained agreed closely with predictions based on their mean surface area calc. from their initial mean vol. and thickness, thus supporting the view that the erythrocyte cannot distend beyond the limit set by its surface area. C. J. C. B.

Bone-marrow changes produced by specific antibodies. A. Nettle-ship (*Amer. J. Path.*, 1942, 18, 689—693).—A method is given for obtaining antibodies against rabbit bone marrow. The injection U 2 (A., III).

of these sp. antibodies causes an immediate reduction in circulating cells of bone marrow origin. The antibody acts not only on the circulating leucocytes but also directly on the bone marrow, producing hæmorrhage, areas of acute necrosis, hyperplasia of the remaining bone marrow, and finally extensive fibrosis and cyst formation. The changes resemble human osteitis fibrosa cystica. (4 photomicrographs.) C. J. C. B.

Bone marrow in anaemia. T. E. Wilson (*Med. J. Austral.*, 1942, I, 513—526).—The terminology of the cells in the blood and in the bone marrow in pernicious anaemia, in secondary hypochromic anaemia, and in conditions in which the marrow is megaloblastic is reviewed (89 references). Serial marrow smear examinations are described in 2 cases of pernicious anaemia and a probable case of subacute combined degeneration of the cord not associated with pernicious anaemia. It is concluded that after liver therapy in pernicious anaemia ripening of the abnormal megaloblasts occurs, but without the development of further megaloblasts, and that there occurs an initial temporary stimulation and then later a smaller, but more prolonged, stimulation of the definitive normoblastic cells. The reappearance of megaloblasts during an early relapse is due to megaloblasts which have persisted in the bone marrow. (15 photomicrographs.) F. S.

Hæmolysis by formaldehyde. C. A. Sagastume, C. Inda, and R. Níco (*Rev. Fac. Cienc. Quím., La Plata*, 1941, 16, 33—39).—The hæmolysis reported by Goto (*Mitt. Med. Acad. Kyoto*, 1939, 27, 421) is confirmed. F. R. G.

Occurrence of blood-group specific substances in gastric juice of patients with pernicious anaemia. E. Witebsky, N. C. Klendshoj, and S. L. Vaughan (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 633—636).—Secretion of sp. substance in gastric juice was unaffected by pernicious anaemia in 12 cases. V. J. W.

Agglutinogens in foetal erythrocytes. S. Bornstein and M. Israel (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 718—720).—Agglutinogens and Rh factor were found in blood of all fetuses (7—50 cm. in length) examined. V. J. W.

Salt concentration in blood-grouping technique. H. Sachs (*Lancet*, 1942, 242, 473—474).—Hæmagglutination with unheated serum or plasma is enhanced in a high salt concn. Cells for blood-grouping should be suspended in 2—3% NaCl solution, which helps to avoid false negative reactions in cross-matching tests. C. A. K.

Quantitative blood-group antigen in dead organs. R. B. Gragerova (*J. Méd. Ukraine*, 1940, 10, 1089—1094).—The amount of group antigen in red cells, serum, and tissue fluids was examined by the adsorption method in 23 cadavers. The amount of group antigen varies in different individuals; red cells contain most of the antigen, serum, muscle, and thyroid least. M. K.

Gelatin as substitute for blood after experimental hæmorrhage. H. Gordon, L. J. Hoge, and H. Lawson (*Amer. J. med. Sci.*, 1942, 204, 4—10).—Etherised dogs were subject to massive hæmorrhage and the blood drawn was replaced immediately with defibrinated blood, with a heat-sterilised solution of bone gelatin 8—10% in 0.9% NaCl, or with 5% glucose in 0.9% NaCl. All 3 solutions produced complete immediate recovery of arterial pressure. The restoration of pressure with defibrinated blood was still complete after 2 hr., with gelatin was complete after 1 hr. and 86% complete after 2 hr., with glucose-saline 62% complete after 30 min. The dogs restored with gelatin suffered no greater fall in pressure during a second hæmorrhage than did the dogs restored with defibrinated blood. The dogs restored with glucose-saline, however, were less able to withstand a second hæmorrhage. No toxic effects were observed with autoclaved gelatin solutions in 7 dogs receiving up to 20 c.c. per kg. without previous hæmorrhage or in 38 dogs receiving up to 90 c.c. per kg. after hæmorrhage. Anaphylactoid reactions were not seen in 2 dogs injected with 40 c.c. per kg. of gelatin solution 9—11 weeks after a sensitising injection of 40 c.c. per kg. No pathological changes were present on necropsy in any of the animals used. C. J. C. B.

Life-saving power of "safe" universal donor blood in exsanguinating hæmorrhage. A. S. Wiener and S. S. Pennell (*Amer. J. med. Sci.*, 1942, 204, 1—3).—Case report. C. J. C. B.

Major and minor indications of transfusion of conserved universal donor blood. R. Fischer (*Schweiz. med. Wsch.*, 1941, 71, 1024—1028).—A review. A. S.

Hazards of blood transfusion. L. E. H. Whitby (*Lancet*, 1942, 242, 581—585).—A lecture. C. A. K.

Continuous method of drying plasma and serum. J. F. Wilkinson, K. Bullock, and W. Cowen (*Lancet*, 1942, 242, 281—284).—A new apparatus for continuous spray-drying of plasma, serum, or plasma-saline under sterile conditions is described. The products are not denatured and yield clear solutions in water. The complement and anti-A and anti-B agglutinin titres are unchanged. C. A. K.

Post-transfusional complications. R. B. Gragerova and S. A. Korol (*J. Méd. Ukraine*, 1940, 10, 1095—1102).—No correlation

was found between post-transfusional reactions and the presence of high group antigen or change of hæmoagglutinin titre in 33 recipients. In one case serum of a universal donor with titre of 1:64 for standardised erythrocytes had a strong hæmolytic effect on erythrocytes of a group A recipient; the hæmolytic effect was still present at a dilution of 1:256. M. K.

Post-transfusional reactions and their causes. M. P. Fedjuschin (*J. Méd. Ukraine*, 1940, 10, 1103—1114).—A discussion. M. K.

Linear relationship between circulating red cell mass and venous hæmatocrit as determined with radioactive iron. P. F. Hohn and W. F. Bale (*Amer. J. Physiol.*, 1942, 136, 314—317).—When tagged Fe is given under such conditions that the absorbed Fe is utilised immediately for red cell formation the concn. of tagged Fe in the blood stream remains const. for many months. By use of the donor-tagged cell method for the determination of red cell vol. in dogs, it is shown that in the individual dog a linear relationship exists between red cell vol. and the jugular hæmatocrit over a range of 11—57%. Total plasma vol. as determined by commonly employed methods is not necessarily representative of the actively circulating plasma vol. M. W. G.

Simple sealed hæmatocrit tube. W. Meyerstein (*J. Physiol.*, 1942, 101, 5—6p). J. A. C.

Determination of volume of extracellular fluid of body with radioactive sodium. N. L. Kaltreider, G. R. Meneely, J. R. Allen, and W. F. Bale (*J. Exp. Med.*, 1941, 74, 569—590).—Simultaneous determinations were made of the fluid vol. available for the distribution of Na (Na space), of plasma vol. by an azo-dye method, and the extracellular fluid by Gregersen and Stewart's thiocyanate method. In man, up to 3 hr. after intravenous injection, radio-Na spreads from the plasma into a vol. of fluid constituting 25% of body wt. After 3—6 hr. it diffuses slowly into central nervous system and skeleton. Interstitial fluid forms 85% and plasma 15% of the Na space. Oedema delays diffusion equilibrium. Climate has little influence. The error of the thiocyanate and radio-Na methods is of the same order. A. C. F.

Effect of adrenaline on blood volume. N. L. Kaltreider, G. R. Meneely, and J. R. Allen (*J. clin. Invest.*, 1942, 21, 339—345).—In normal man injection of 1 c.c. of 1% adrenaline decreases plasma vol. (for at least 45 min.), and increases cell vol., blood-hæmoglobin and viscosity, serum-proteins, and systolic pressure; diastolic pressure fell slightly. In individuals with polycythæmia vera with splenomegaly, adrenaline causes a decrease in plasma vol. and an increase in cell vol., with little change in total vol. After injection of adrenaline into 2 individuals whose spleens had been removed, there was a decrease in both blood and plasma vols. accompanied by a slight decrease in the cell vol. The effects of severe exercise and of adrenaline on the components of the blood vol. are similar. C. J. C. B.

Determination of blood volume with T-1824. L. J. Davis (*Edinb. Med. J.*, 1942, 49, 465—483).—In 11 normal adult males the mean blood vol. was 5071 c.c. (S.D. ± 531); dye concn. was determined directly by the "Spekker" absorptiometer in serum obtained 10 min. after injection. In 5 normal adult males examined on more than one occasion variation did not exceed 2.7%. Results in one case of obesity, 3 of anæmia, and 5 of polycythæmia are discussed. H. S.

Evans-blue method for plasma volume determination. A. C. Crooke and C. J. O. Morris (*J. Physiol.*, 1942, 101, 217—223).—A simple and rapid method for the determination of this dye in human plasma is described. The average val. for plasma vol. of 5 normal males is 49.8 ml. per kg. or 1.82 l. per sq. m.; for 5 normal females the figures are 47.7 and 1.64, respectively. J. A. C.

Action of antipernicious anæmia principle on blood picture of opossum pouch-young and rat embryos. J. H. Last and E. E. Hays (*Amer. J. med. Sci.*, 1942, 203, 836—842).—Embryogenesis of blood in the opossum and rat is unaffected by the antipernicious anæmia principle; therefore neither opossum pouch-young nor rat embryos should be used to bio-assay anti-anæmia preps. C. J. C. B.

Nature of hæmopoietic enzyme of gastric mucosa. F. P. Mazza and C. Migliardi (*Schweiz. med. Wschr.*, 1941, 71, 344—346).—The intrinsic factor is an enzyme which can hydrolyse *dl*-polyglycine, prolyl-L-tyrosine, prolyl-L-glutamic acid, prolyl-L-histidine, prolyl- β -alanine, and glycyl-*dl*-proline. The enzyme is therefore classified as a prolinase and a prolidase. The enzyme attacks and disrupts the proline linkages present in the nucleoprotein mols. of the extrinsic factor, giving rise to polypeptides at optimum p_H 6. I. C.

Erythroblastic anæmia following splenectomy in cases of chronic familial hæmolytic anæmia. E. Stransky and A. C. Regala (*Amer. J. Dis. Child.*, 1942, 63, 859—874).—2 cases of erythroblastosis following splenectomy for chronic hæmolytic anæmia in children are described. There were persistent anæmia, jaundice, and all the symptoms of increased destruction of red cells in spite of splenectomy. C. J. C. B.

Acetylphenylhydrazine anæmia. Bile-pigment elimination and new hæmoglobin reconstruction in bile fistula dog. W. O. Cruz,

W. B. Hawkins, and G. H. Whipple (*Amer. J. med. Sci.*, 1942, 203, 848—854).—When red cells are destroyed by acetylphenylhydrazine in the healthy bile fistula dog, the bile-pigment output corresponds closely (88%) with the calc. amount derived from the liberated hæmoglobin. At the same time the dog produces almost max. amounts of new hæmoglobin and red cells, presumably utilising the Fe and perhaps globin from the destroyed hæmoglobin. The diet does not contribute significantly to the new hæmoglobin production. New pigment radicals (pyrrole aggregates) appear to be readily formed by the dog under these and other conditions. C. J. C. B.

Treatment of polycythæmia vera with lead compounds. E. H. Falconer (*Amer. J. med. Sci.*, 1942, 203, 857—866).—11 patients with polycythæmia vera were treated with Pb compounds orally and intravenously over 1—5 years. 9 were relatively free from symptoms during treatment and continued work. No serious toxic effects occurred. 6 patients who had previously received phenylhydrazine regarded this drug as more toxic and disabling than Pb. Colloidal Pb phosphate, administered intravenously in doses of 10 c.c. each, controls the symptoms and reduces the blood level. C. J. C. B.

Origin of ionised iron after action of acids on blood, and influence of carbon monoxide. G. Barkan and O. Schales (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 74—79).—The labile Fe derived from Fe-containing bile-pigment proteins in the red cells is not more than 2% of total blood-Fe. Fe is split off from the hæmoglobin mol by 48 hr. incubation with HCl of 2% or less, and this action is inhibited by CO. V. J. W.

Changes in retention of copper and iron in liver and spleen in chronic diseases accompanied by secondary anæmia. M. Sandberg, H. Gross, and O. M. Holly (*Arch. Path.*, 1942, 33, 834—844).—In chronic diseases accompanied by anæmia large stores of Cu and Fe may accumulate in the depot organs. In cancer accompanied by anæmia the marked increase in both Cu and Fe storage was out of proportion to the anæmia. In some cases of cancer, such increases took place even in the absence of anæmia, with cancer as the only apparent causative factor. The excessive Cu and Fe retention in the liver and the spleen encountered in cases of cancer is significantly higher in cases with extensive metastasis; abnormal liver-Cu vals. were found in only 16% of 150 cases. C. J. C. B.

Pharmacology of iron in parenteral treatment. G. Brownlee, H. W. Bainbridge, and R. H. Thorp (*Quart. J. Pharm.*, 1942, 15, 148—165).—30 complexes of the type represented by $FeNH_4$ tartrate were tested to determine the fate of the Fe when administered parenterally. The "max. availability index" is used to indicate the amount of Fe available to the organism, and this is the product of % absorption under the experimental conditions and the max. stable concn. in mg. per c.c. of the Fe complex. Sol. Fe compounds are well absorbed and have a high max. availability index. Many of the poorly absorbed compounds show encapsulation of the injected material; others show necrosis at the site of injection. There is a general correlation between % of Fe compound absorbed and its val. as a hæmoglobin producer. The chelidamate complexes are outstanding as hæmoglobin producers, the most suitable being Fe triethanolamine chelidamate. When this is injected into rabbits, the Fe is rapidly transported from the site of injection and stored in the liver, spleen, and kidney: there is no intestinal Fe excretion. The low renal threshold for Fe allows some urinary excretion when large amounts are in transport. Determination of the urinary porphyrin excretion and of the hæmoglobin level when 10 mg. of Fe is injected daily shows that Fe compounds in themselves are hæmopoietic. The Fe ion is extremely toxic to hypochromic anæmic rats; this may have a bearing on recorded dangerous reactions to injected Fe. J. N. A.

Standardisation of hæmoglobinometers. J. D. Hicks (*Med. J. Austral.*, 1942, 1, 486—488).—Of 6 different makes of hæmoglobinometers tested, 3 gave large overestimates of hæmoglobin content, 27% in one, and 20% in two. Before use, instruments should be compared with a hæmoglobinometer standardised by a reliable method such as the Van Slyke O_2 capacity method. F. S.

Emotion and leucocytosis in psychiatric patients. O. Diethelm, A. T. Milhorat, and S. M. Small (*Msch. Psychiat. Neurol.*, 1942, 105, 129—149).—Increase of leucocytes to 15,000—23,000 per cu. mm. was observed in cases suffering from acute fear, agitated depression, anxiety, or anger; mitigation of the emotional state by barbiturates was associated with decrease of leucocytes to normal vals. No leucocytosis was observed in mild depression and hypomania. H. L.

Measurements of phagocytic activity in diabetes mellitus. R. Richardson (*Amer. J. med. Sci.*, 1942, 204, 29—35).—Phagocytosis was normal in diabetic patients or in depancreatised cats with mild symptoms. Diabetic patients and depancreatised cats with acidosis or with uncontrolled diabetes showed a significantly decreased phagocytic power. The increase of phagocytic activity of blood leucocytes, which occurs in normal controls after typhoid vaccine, did not occur in diabetic patients. C. J. C. B.

Chemotaxis. M. McCutcheon (*Arch. Path.*, 1942, **34**, 167—181).—A review. C. J. C. B.

Biochemical factors in inflammation and diabetes mellitus. V. Menkin (*Arch. Path.*, 1942, **34**, 182—195; cf. A., 1942, III, 158).—In depancreatised dogs with a superimposed acute inflammation, there is augmentation of proteolysis at the site of inflammation. The products formed are responsible for a marked degree of local gluconeogenesis. Insulin represses both the increased proteolysis as measured in the exudate and the accompanying gluconeogenesis. C. J. C. B.

Hourly determinations of maturity of neutrophils of normal rabbits. G. H. Reifstein and M. F. Hilfinger, jun. (*Amer. J. Path.*, 1942, **18**, 363—368).—Each rabbit had a characteristic degree of neutrophilic maturity on each day on which counting occurred. Regardless of this degree, neutrophilic maturity was relatively constant during the successive hrs. of counting. C. J. C. B.

Neutrophilic maturity following intravenous injection of supernatant fluid from sterile exudate (rabbit). G. H. Reifstein, J. H. Ferguson, and H. G. Weiskotten (*Amer. J. Path.*, 1942, **18**, 369—378).—Some substance or substances, not NaCl, present in supernatant fluid fractions of sterile peritoneal exudates from rabbits produced neutrophilic "left shifts" when injected intravenously into other rabbits. Following repeated injections of supernatant fluid, there was an apparent "summation" of these "left shifts." These neutrophilic "left shifts" were effected by release of more immature neutrophils in greater nos., probably from the bone marrow. Metamyelocytes were observed very rarely, and no cells more immature than metamyelocytes were found in the circulating blood. C. J. C. B.

In vitro response of lymphocytes to minimal doses of X-rays. W. K. Stenstrom, A. F. Henschel, and J. T. King (*Proc. Soc. Exp. Biol. Med.*, 1942, **49**, 525—527).—Irradiation for 20 sec. at 155 r. per min. decreased migration rate in fragments of rabbit lymphatic node suspended in serum. V. J. W.

Motility of refractile granules of human pus cells. R. E. H. Simpson (*Brit. J. exp. Path.*, 1942, **23**, 188—190).—The motility of the refractive cytoplasmic granules of pus cells is not due to Brownian movement and their behaviour cannot be taken as evidence in favour of colloidal cytoplasm with reversible sol-gel potentialities. F. S.

Treatment of agranulocytosis with sulphathiazole. W. Dameshek and L. E. Wolfson (*Amer. J. med. Sci.*, 1942, **203**, 819—823).—2 cases of severe agranulocytosis were treated, in addition to transfusions, pentose nucleotides, and liver extract, with large doses of sulphathiazole. The ensuing recoveries may have been due, in part at least, to the effect of the sulphathiazole on the sepsis which was present, thus allowing spontaneous leucocytic regeneration in the bone marrow to take place. Sulphonamide drugs may be effective even in the complete absence of granulocytes. C. J. C. B.

Chloroleukæmia. H. Hartz and A. van der Sar (*Amer. J. Path.*, 1942, **18**, 715—722).—A case is described. The leukæmic cells were undifferentiated myelogenous elements, which invaded muscle fibres, blood vessels, lymphatics, and other tissues in the same manner as malignant tumours. (7 photomicrographs.) C. J. C. B.

Spleen in leukæmias. E. B. Krumbhaar and A. Stenger (*Arch. Path.*, 1942, **34**, 117—132).—A review of 209 cases. C. J. C. B.

Glucoside type of cerebroside in spleen in Gaucher's disease. I. S. Danielson, C. H. Hall, and M. R. Everett (*Proc. Soc. Exp. Biol. Med.*, 1942, **49**, 569—571).—The cerebroside from a fresh spleen, as shown by Halliday *et al.* (A., 1940, III, 315) for a spleen preserved in formalin, contained glucose instead of the normal *d*-galactose. V. J. W.

Sugar in spleen-cerebroside during Gaucher's disease. H. Lieb [with V. Günther] (*Z. physiol. Chem.*, 1941, **271**, 211—213).—Kerasin (lignoceryl sphingogalactoside) from the spleen did not contain *d*-glucose but probably *d*-galactose; cerebroside containing either of these sugars appear to be present in the spleen during Gaucher's disease. F. O. H.

Ganglioside and cerebroside from ox spleen.—See B., 1942, II, 351.

Chronic arthritis, associated with neutrophilic leucopenia, splenomegaly, and hepatomegaly ("Felty's syndrome"). L. M. Lockie, S. Sanes, and S. L. Vaughan (*Amer. J. clin. Path.*, 1942, **12**, 372—379).—Report of 2 cases. C. J. C. B.

New crystalline serum-globulin. C. G. Holmberg and A. Grönwall (*Z. physiol. Chem.*, 1942, **273**, 199—205).—The properties of a pathological protein which spontaneously crystallised from the serum and plasma of a 40-year-old woman are described. Solutions of the protein before and after electrophoresis give a positive Wassermann reaction. The protein, which is not identical with other serum-proteins, is homogeneous in the ultracentrifuge, and has a sedimentation const. of 6.4 and 6.8 $\times 10^{-13}$ in acetate buffer at pH 3.7 and 4.5. The ultra-violet spectrum is similar in form to that of a pseudoglobulin. J. N. A.

Hypoproteinaemia in surgical diseases: relation of serum-protein level to hepatic function and influence of transfusion of ascitic fluid. H. A. Davis and P. L. Getzoff (*Arch. Surg., Chicago*, 1942, **44**, 1071—1090).—A review with 58 references. F. S.

Influence of saline infusions on blood volume and serum-proteins of hypoproteinaemic dogs. E. W. Shearburn (*Proc. Soc. Exp. Biol. Med.*, 1942, **50**, 140—141).—Infusions of 200—350 c.c. of saline caused a large immediate increase in circulating protein in normal dogs, but a small and delayed one in dogs with low blood-protein from under-feeding. V. J. W.

Prothrombin estimation. S. Shapiro, B. Sherwin, M. Redish, and H. A. Campbell (*Proc. Soc. Exp. Biol. Med.*, 1942, **50**, 85—89).—Greater accuracy and sensitiveness are given by determination of the differences between clotting times of oxalated plasma and the same in 1:8 dilution by Link's method (A., 1941, III, 600) or of oxalated plasma and the same in 1:4 dilution by the viper venom method (Fullerton, *ibid.*, 75) than are given by any one determination separately. The difference is normally constant, but is increased in prothrombin deficiency and reduced by prothrombin excess or by anticoagulants. V. J. W.

Prothrombin formation following injury of bone marrow by Roentgen rays. W. A. Barnes (*Amer. J. Roentgenol.*, 1941, **46**, 356—361).—The plasma-prothrombin level in various mammals was not altered by bone irradiation producing aplastic changes. H. L.

Is presence of bile and food in small intestine necessary for formation of prothrombin? H. N. Sanford and I. Shmigelsky (*Amer. J. Dis. Child.*, 1942, **63**, 894—899).—3 infants, 1 with congenital absence of the gall-bladder and extrahepatic ducts and 2 with congenital atresia of the oesophagus, were studied. All showed normal production of prothrombin. C. J. C. B.

Prothrombin and thrombin. T. Astrup and S. Darling (*Naturwiss.*, 1942, **30**, 63).—The turbidity curves of an albumin-free prothrombin solution before and after activation with ox brain thrombokinase and Ca^{++} show the presence of an albumin fraction in the activated solution, pptd. by approx. 70% saturation with $(NH_4)_2SO_4$. P. G. M.

Hypoprothrombinæmia by methylenebis(hydroxycoumarin). J. Lehmann (*Lancet*, 1942, **242**, 318).—A synthetic anti-prothrombin 3:3'-methylenebis-(4-hydroxycoumarin), is described. Rabbit experiments showed that the prothrombin index of blood could be markedly lowered in non-toxic doses. Preliminary clinical studies in patients with venous thrombosis were satisfactory. C. A. K.

New method of administering heparin. L. Loewe, P. Rosenblatt, and M. Lederer (*Proc. Soc. Exp. Biol. Med.*, 1942, **50**, 53—55).—A prolonged anticoagulant effect was obtained by subcutaneous injection of heparin with vasoconstrictors in a gelatin base which solidified on injection. V. J. W.

Comparison of heparins of various mammalian species. L. B. Jaques, E. T. Waters, and A. F. Charles (*J. Biol. Chem.*, 1942, **144**, 229—235).—The isolation of heparin in the form of its Ba salt from dog, ox, pig, and sheep tissue is described. The heparins of these species show marked differences in biological activity, their anticoagulant potencies being in the order 10:5:2:1. This difference in activity is probably due to differences in chain-length of the mol. There is no chemical difference between the various heparins; they contain the same amounts of S and N, and have the same $[\alpha]$ and combining power for proteins. J. N. A.

Purpura due to vitamin-K deficiency in anorexia nervosa. P. M. Aggeler, S. P. Lucia, and H. M. Fishbon (*Amer. J. digest. Dis.*, 1942, **9**, 227—229).—A case report. N. F. M.

Effect of single dose of 3:3'-methylenebis-(4-hydroxycoumarin) on blood coagulation in man. D. Stats and J. G. M. Bullowa (*Proc. Soc. Exp. Biol. Med.*, 1942, **50**, 66—70).—0.4—0.6 g. of this substance by mouth caused prolongation of clotting time and lowering of prothrombin index which began in 24—72 hr. and lasted about 6 days. V. J. W.

Hæmorrhagic agent, 3:3'-methylenebis-(4-hydroxycoumarin). O. O. Meyer, J. B. Bingham, and V. H. Axelrod (*Amer. J. med. Sci.*, 1942, **204**, 11—21).—The administration of this compound to human beings prolongs prothrombin time and coagulation time. An initial oral dose of 5 mg. per kg. with subsequent daily oral doses of 1.5 mg. per kg. is effective in most patients. A single intravenous dose of 4 mg. per kg. was suitable and effective. This dose may be repeated when necessary. The administration of vitamin-K did not prevent or correct the prothrombin deficiency produced by the drug. C. J. C. B.

Reactions of 2-methyl-1:4-naphthoquinone ("menadione") with whole blood and plasma in vitro. J. V. Scudi (*Proc. Soc. Exp. Biol. Med.*, 1942, **50**, 16—17).—Menadione added to unclotted blood causes formation of methæmoglobin and is converted into an inactive substance. Vitamin-K₁ does not so produce methæmoglobin and is stable in blood. V. J. W.

Anticoagulant effects in rabbits and man of intravenous injection of salts of rare earths. S. B. Beaser, A. Segel, and L. Vandam (*J.*

clin. Invest., 1942, **21**, 447—453).—Nd, La, and Ce, administered intravenously, in appropriate dosage in rabbits and men, increase the clotting time of blood to the point of incoagulability. This effect persists in a diminishing degree for as long as 8 hr. after injection. Toxic manifestations, such as chills, fever, muscle pains, abdominal cramps, hæmoglobinæmia, and hæmoglobinuria, may occur. C. J. C. B.

Serum coagulation reaction; its clinical significance. M. Kraemer (*Amer. J. digest. Dis.*, 1942, **9**, 129—132).—The test is of greater val. than the sedimentation rate. N. F. M.

Polypeptidæmia. J. C. Arduino (*Rev. Fac. Cienc. Quím., La Plata*, 1941, **16**, 191—198).—The polypeptide-N contents of human corpuscles, plasma, and whole blood are 59.6, 28.6, and 41.3 mg. per l., respectively. The level is increased during post-operative shock. F. R. G.

Effect of antireticular cytotoxic serum on amount of cholesterol, fatty acids, and water in tissues of adult and senile rabbits. M. D. Gatzaniuk (*J. Méd. Ukraine*, 1940, **10**, 1069—1088).—Single injection of antireticular cytotoxic serum in stimulating doses (0.01 c.c.) induces in adult rabbits a decrease in blood-cholesterol and an increase in brain-cholesterol without change in muscle, lung, liver, or kidney. Three consecutive injections of the serum decrease cholesterol in all tissues except liver. Similar results are obtained in senile rabbits. Injections of antireticular cytotoxic serum increase the amount of fatty acids in blood, liver, kidney, and muscle, raise the water content of blood, and lower it in brain. Antimuscular and antihepatic sera give similar results. M. K.

Variations in serum-magnesium in health and disease. V. G. Haury (*J. Lab. clin. Med.*, 1942, **27**, 1361—1375).—A review. C. J. C. B.

Ultrafilterable serum-magnesium in hyperthyroidism. C. L. Cope and B. Wolf (*Biochem. J.*, 1942, **36**, 413—416; cf. Soffer et al., *A.*, 1941, III, 1003).—The proportion of protein-bound Mg in the serum of persons suffering from hyperthyroidism is the same as in healthy persons and is not affected by I administration or thyroidectomy. W. McC.

Unaponifiable matter. III. Unaponifiable matter of human serum. A. Dimter (*Z. physiol. Chem.*, 1942, **272**, 189—200).—After removal of cholesterol, the residual unaponifiable matter of human serum contains a substance (C 82.14, H 11.99%), m.p. 72°, resembling cholesterol (possibly a precursor) but not pptd. by digitonin, and an aliphatic alcohol (C 80.93, H 12.49%), m.p. 68°, which does not give the Liebermann-Burchard test. No squalene, heptene, or similar hydrocarbon is present (this holds also for serum of horse and ox). The unaponifiable matter of human depot fat contains saturated wax alcohols and probably also saturated hydrocarbons but no squalene or heptene. The findings suggest that, in the liver, saturated fatty acids are converted into heptene, which is transformed into substances not pptd. by digitonin but giving the Liebermann-Burchard test. Presumably these substances are transformed in the adrenal cortex into cholesterol and related compounds. W. McC.

Separation and determination of free and combined cholesterol in serum, without digitonin precipitation and hydrolysis. W. Trappe (*Z. physiol. Chem.*, 1942, **273**, 177—190).—The serum-proteins are pptd. by alcohol and lipins removed by extraction with light petroleum. The two cholesterol fractions are then separated by the method of "liquid chromatography" using Al_2O_3 and elution of the combined and free cholesterol with CCl_4 and $CHCl_3$ respectively. The cholesterol in both fractions is determined colorimetrically with $ZnCl_2$ -acetic acid-acetyl chloride under standard conditions so that the max. colour is produced at room temp. The cholesterol esters need not be hydrolysed because free and combined cholesterol give the same extinction coeff. J. N. A.

Blood-fat of dairy cattle. I. Volumetric method for determining blood-fat. II. Factors influencing fat content of plasma. N. N. Allen (*Minnesota Agric. Exp. Sta. Tech. Bull.*, 1938, No. 130, 1—17, 17—52).—I. Suitable technique is given for determining blood-fat on samples of plasma or serum as small as 0.25 c.c. Neutral fat, sterols, sterol esters, and lipochromes but not phospholipins are included in blood-fat. Cholesterol and cholesterol esters are determined on the separated blood-fat.

II. In over 100 cows of 4 breeds insignificant changes in blood-fat occurred during 2 years, although plasma was generally low in fat after parturition and relatively high 4 months later. The fat content of dry cows was increased by feeding concentrates as for heavy milk production. A. W. M.

Influence of hyperpyrexia on ascorbic acid concentration in blood. S. L. Osborne and C. J. Farmer (*Proc. Soc. Exp. Biol. Med.*, 1942, **49**, 575—578).—Raising body temp. to 104° F. for 4 hr. caused no change in blood-ascorbic acid. V. J. W.

Direct-reacting serum-bilirubin. A. Cantarow, C. W. Wirts, and G. Hollander (*Arch. intern. Med.*, 1942, **69**, 986—996).—Total and "direct" bilirubin concns. were determined in the serum of normal subjects and of patients with cirrhosis, hepatitis, biliary obstruction,

congestive heart failure, and sulphanilamide poisoning; in these abnormal states jaundice is a combination of the "regurgitation" and "retention" varieties. Determination of "direct" serum-bilirubin may help to detect liver damage when the total serum-bilirubin concn. is normal. C. A. K.

Blood-pyruvic acid in heart disease. Z. A. Yanof (*Arch. intern. Med.*, 1942, **69**, 1005—1009).—The normal blood-pyruvic acid, in 60 determinations, averaged 0.8 mg.-%. In 20 patients with congestive heart failure the mean val. was 2.15 mg.-% (range 1.2—3.4). The amount of rise was roughly proportional to the degree of failure. C. A. K.

Distribution of chlorides and bicarbonates in blood following addition of hydrochloric acid. F. L. Apperly and M. K. Cary (*Proc. Soc. Exp. Biol. Med.*, 1942, **50**, 49—53).—When blood- p_H is lowered by addition of HCl, the HCO_3^- of cells remains equal to HCO_3^- of serum at all p_H vals. The ratio cell-Cl⁻:serum-Cl⁻ rises, reaching unity at a p_H which is not const. but varies roughly with the red-cell count. V. J. W.

Acid-base equilibrium in the normal [blood]. F. C. d'Elseaux, F. C. Blackwood, L. E. Palmer, and K. G. Sloman (*J. Biol. Chem.*, 1942, **144**, 529—535).—The p_H of arterial blood of 18 young men in the basal state determined gasometrically is 7.42 ± 0.003 . Under basal conditions, fluctuations in arterial p_H of normal individuals are limited to changes of less than 0.01. J. N. A.

VI.—VASCULAR SYSTEM.

Progressive acceleration in embryonic hearts. R. S. Alexander and O. Glaser (*J. exp. Zool.*, 1941, **87**, 17—30). J. D. B.

Effect of exsanguination on heart of embryonic chick. A. Barry (*J. exp. Zool.*, 1941, **88**, 1—15).—An apparatus is described for recording movements of superficial regions of embryonic heart *in ovo* and measuring their time relations to within 0.001 sec. This apparatus was used for studying the slowing of the heart rate which results from partial and total exsanguination. The results suggest that the effect is due partly to interference with the inherent rhythmicity of the pacemaker and partly to interference with conduction of the contraction. J. D. B.

Relation between blood flow and heart rate in diving seal. S. W. Grinnell, L. Irving, and P. F. Scholander (*J. Cell. Comp. Physiol.*, 1942, **19**, 341—350).—Blood flow through dorsal muscles was measured by observation of the rate at which heat was abstracted from a warm resistance wire embedded in the muscle. During diving, blood pressure is maintained, in spite of extreme bradycardia, by decreased circulation through muscle. V. J. W.

Effect of anoxæmia on myocardium of isolated heart of dog. O. H. Lowry, O. Krayer, A. B. Hastings, and R. P. Tucker (*Proc. Soc. Exp. Biol. Med.*, 1942, **49**, 670—674).—Anoxæmia in a heart-lung prep. caused increase in Na^+ , Cl^- , and water, with decrease in K^+ , in the myocardium. Changes are attributed to oedema. V. J. W.

Effect of cholesterol on heart of frog and turtle. J. Ferguson (*Canad. Med. Assoc. J.*, 1942, **47**, 60—63).—Application of cholesterol to the heart of the frog and the turtle slightly increased the amplitude of the beat. Irregularities appeared after prolonged application. In the turtle after 135 min. the conduction time was lengthened by 50%. C. J. C. B.

Action of acetylcholine on isolated hearts of *Homarus* and *Caracinas*. J. H. Welsh (*J. Cell. Comp. Physiol.*, 1942, **19**, 271—279).—Acetylcholine accelerates the crab and lobster heart, especially after prolonged washing or treatment with eserine. Its effectiveness gradually increases from concn. of 10^{-9} to 10^{-3} , and since its action is on the cardiac ganglion, which contains only 9 cells, this graded action must be due to differential adsorption depending on concn. V. J. W.

Effect of high-voltage Roentgen rays on heart of adult rats. J. E. Leach and K. Sugiura (*Amer. J. Roentgenol.*, 1941, **45**, 414—425).—The lethal dose when the heart alone is irradiated is 10,000 r.; these animals showed myocardial hæmorrhage, round cell infiltration, degeneration, and necrosis. No pericardial or endocardial lesions were detected after irradiation with single doses up to 20,000 r. H. L.

Effect of exercise and drugs on normal human electrocardiogram. A. S. Hartwell, J. B. Burrett, A. Graybiel, and P. D. White (*J. clin. Invest.*, 1942, **21**, 409—417).—Exercise lowers the T waves of the normal e.c.g., with return towards normal in less than a min. During recovery the amplitude of T may be greater than normal. Adrenaline lowers T for 14—30 min. Ergotamine tartrate raises T up to 1 hr. Atropine lowers T; the effect is max. in 1 hr. but may last 90 min. Mecholyl lowers T and causes tachycardia without preliminary bradycardia. Right carotid sinus pressure elevates T. C. J. C. B.

Comparison of results of normal ballistocardiogram and a direct Fick method in measuring cardiac output in man. A. Courmand, H. A. Ranges, and R. L. Riley (*J. clin. Invest.*, 1942, **21**, 287—293).

—In 14 determinations cardiac output determined by the direct Fick method was larger by 18.5% than the val. calc. from the ballistocardiogram, using Bazett's tables for the internal cross-section of the aorta. Using vals. for aortic cross-section obtained by diodrast visualisation in 5 cases, cardiac output as calc. from the ballistocardiogram agreed closely with the vals. by the direct Fick method (average difference 3.5%). C. J. C. B.

Roentgen kymographic evaluation of size and function of heart. A. Keys, H. L. Friedell, L. H. Garland, M. F. Madrazo, and L. G. Rigger (*Amer. J. Roentgenol.*, 1940, 44, 805—833).—Methods are discussed for estimating systolic and diastolic frontal projection areas. Comparative data are given of heart vol. thus estimated and directly in 35 cadavers. An equation is derived for calculating heart vol. from the frontal projection area (corr. for distortion). From simultaneous kymography and acetylene rebreathing tests in normal and diseased subjects, a satisfactory const. relation was found between the kymographic change from diastole to systole and the true net stroke output. Experiments in which the stroke output was altered by drugs showed that relative changes in stroke output may be estimated with little regard for the precise vol. estimation. Study of cases with aortic regurgitation and patent ductus arteriosus showed that the differences in stroke vol. as measured by the kymographic and acetylene methods represent at least a rough estimation of the amount of leak. H. L.

Measurement of cardiac output: investigation of carbon dioxide method. M. Morrissey (*Med. J. Austral.*, 1942, 1, 543—555).—The technical difficulties are reviewed and a simple method is described for the determination, during one rebreathing only, of the "virtual" venous CO_2 tension. F. S.

Weight reduction and cardiac work in obese subjects. A. M. Master, J. Stricker, A. Grishman, and S. Dack (*Arch. intern. Med.*, 1942, 69, 1010—1018).—5 normal overweight subjects were given a 1200-calorie diet and body wt. was reduced by an average of 12%. There resulted a 16% fall in O_2 consumption, 24% increase in arteriovenous O_2 difference, and a decrease of 30% in cardiac output (Grollman's acetylene, and Wetzler-Boeger physical, methods). The calc. cardiac work was reduced by 35%. The heart rate was slowed and the blood pressure fell slightly; the vital capacity was increased by 10—12%. The importance of wt. reduction in obese anginal patients is emphasised. C. A. K.

Incomplete heart block due to vagal effect. W. Poel (*Arch. intern. Med.*, 1942, 69, 1040—1050).—A negro boy aged 15 years had a persistent functional heart block apparently due to vagal influence. This condition was found only once in 2400 e.c.g. done on normal subjects aged 12—20; 3 other cases in the literature are reviewed. C. A. K.

Auricular flutter. R. A. Miller (*Edinb. Med. J.*, 1942, 49, 496—507).—Description of two cases of 1:1 flutter in which the action of atropine was unusual in producing 1:1 auricular-ventricular response. In one case flutter was preceded by fibrillation. Four cases of flutter in whom atropine produced the usual 2:1 rhythm are also described. H. S.

Persistent tachycardia and pulse-temperature disproportion: relation to acute myocardial lesions. J. R. Lisa, C. Solomon, and D. Eckstein (*Amer. J. med. Sci.*, 1942, 203, 801—806).—In 100 cases presenting the phenomenon, acute lesions were present in 80, a chronic granulomatous lesion in 1. In 98 cases in which the phenomenon was absent, acute lesions were present in 19, a chronic granulomatous lesion in 1, and amyloidosis in 1. The relation between pulse and temp. offers a valuable index to the presence of acute myocardial damage in a high % of cases. C. J. C. B.

Age, sex, and race relationships of auricular fibrillation. C. F. Garvin (*Amer. J. med. Sci.*, 1942, 203, 788—792). C. J. C. B.

Heart in uræmia. C. Solomon, J. E. Roberts, and J. R. Lisa (*Amer. J. Path.*, 1942, 18, 729—732).—The hearts of 50 patients dying in uræmia are described; there is no characteristic uræmic lesion. C. J. C. B.

Pathological physiology of early manifestations of left ventricular failure. C. S. Burwell (*Ann. int. Med.*, 1942, 16, 104—112).—Isolated failure of the left ventricle without associated failure of the right ventricle is characterised by gallop rhythm, diminished vital capacity, prolonged pulmonary circulation time, X-ray signs of pulmonary congestion, and dyspnoea. A. S.

Effects on the cardiovascular system of fluids administered intravenously in man. Lung volume and pulmonary dynamics. M. D. Altschule, D. R. Gilligan, and N. Zamcheck (*J. clin. Invest.*, 1942, 21, 365—368).—Injection intravenously of 1800 c.c. of isotonic NaCl solution, at 39—185 c.c. per min., in normals produced slight decreases in vital capacity, its components, and total lung vol. owing to slight pulmonary vasodilatation associated with temporarily increased blood vol. C. J. C. B.

Standardising hæmorrhagic shock. C. J. Wiggers and J. M. Werle (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 604—606).—Irreversible shock in dogs could be caused for certain only if moderate hypotension (40—60 mm. Hg) was maintained by hæmorrhage for 90 min.

followed by extreme hypotension (30—40 mm. Hg) for 45 min. Less severe treatment involved some recoveries. Individual differences were very great. V. J. W.

Operative mechanism of errors in application of thermostromuhr method to measurement of blood flow. R. E. Shipley, D. F. Gregg, J. T. Wearer (*Amer. J. Physiol.*, 1942, 136, 263—274).—In the application of the d.c. thermostromuhr (Baldes and Herrick type) to the measurement of blood flow, factors other than the rate of flow influenced empirical flow readings. Mechanism of operation of the thermostromuhr was examined from the viewpoint of qual. and directional changes. Any calibration of a thermostromuhr unit is applicable to the operation of the unit only under environmental conditions identical with those under which the calibration is obtained; this also applies to internal environmental changes where the presence of zero flow or back flow in the flow pattern of the fluid metered renders worthless the empirical mean flow vals. as read from a conventional calibration. Turbulent flow and its influence on the operation of the thermostromuhr were examined under several abnormal conditions. M. W. G.

Anatomical study of closure of ductus arteriosus. B. V. Jager and O. J. Wollenman, jun. (*Amer. J. Path.*, 1942, 18, 595—605).—The mechanism of closure was studied in 71 ducts from 28-cm. fetuses to individuals 80 years of age. In a 28-cm. fetus the ductus has a well-defined internal elastic lamina which is subendothelial, except in several areas where there are low intimal mounds projecting into the lumen. The mounds consist of smooth muscle and fine elastic fibres and arise from the internal elastic lamina. Anatomical closure is mainly effected by an increase in size and in no. of these mounds, which become infiltrated with collagen. Anatomical closure of the lumen of at least a portion of the course of the vessel is usually effected by the 3rd or 4th week of life. A small slit-like, microscopical lumen may persist for several months or longer. (8 photomicrographs.) C. J. C. B.

Elastic properties of rabbit aorta in relation to age. J. A. Saxton, jun. (*Arch. Path.*, 1942, 34, 262—274).—With advance in age the rabbit aorta becomes more extensible, but there is no change in the capacity to retract after extension. The smooth muscle of the media is gradually replaced by collagenous tissue and there is an increase in fine elastic fibrils between the elastic membranes. C. J. C. B.

Macro- and micro-roentgenography in experimental vasographic investigations [with thorotrast]. F. P. Bogatirtschuk (*J. Méd. Ukraine*, 1940, 10, 1179—1190). M. K.

Effect of drugs on circulation in normal hands and feet. H. Montgomery (*Amer. J. med. Sci.*, 1942, 203, 882—890).—Measurements of digital blood-flow made in normal subjects given 6 different vasodilator drugs are tabulated. C. J. C. B.

Mechanical obstruction of brain capillaries. E. W. Hurst and B. T. Cooke (*Austral. J. Exp. Biol.*, 1942, 20, 125—128).—An emulsion of olive oil in egg-yolk, ovalbumin, and water is preferable to spores of *Stropharia stercoraria* for blocking cerebral capillaries with a min. of cerebral damage. P. G. M.

Occurrence of dyspnoea, dizziness, and precordial distress occasioned by pooling of blood in varicose veins. E. M. Chapman and E. Asmussen (*J. clin. Invest.*, 1942, 21, 393—399).—Tilting table experiments show that undue fatigue, shortness of breath, dizziness, fainting, and precordial distress may be occasioned by the pooling of blood in varicose veins. C. J. C. B.

Circulatory collapse, temporary anuria, and extrarenal azotæmia. O. Spühler and H. U. Zollinger (*Schweiz. med. Wschr.*, 1941, 71, 1013—1020).—Clinical and histological report of a case, developing in the course of severe alcohol intoxication. A. S.

Distribution of iodine in normal and sclerotic vascular wall. P. Masson (*Schweiz. med. Wschr.*, 1941, 71, 1042—1044).—Arteriosclerosis was produced in rabbits by feeding with cholesterol. Normal and sclerotic animals were given 0.2 g. of KI per day over 9 days. The I content of sclerotic aortæ was higher than normal. A. S.

Blood cultures from pulmonary artery and aorta in patient with patent ductus arteriosus. A. S. W. Touroff (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 568—569).—Cultures taken at operation showed "innumerable" colonies of *Strep. viridans* in blood from the pulmonary artery, and 51 colonies per ml. in blood from the aorta. V. J. W.

Aneurysm of pulmonary artery and fibrosis of lungs due to syphilis. S. de Navasquez (*J. Path. Bact.*, 1942, 54, 315—319).—A case report. C. J. C. B.

Effect of high-protein diets on experimental renal hypertension. H. Philipsborn, L. N. Katz, and S. Rodbard (*J. Exp. Med.*, 1941, 74, 591—600).—Out of 14 dogs with various degrees of experimental renal insufficiency and hypertension, only two showed a reversible rise in blood pressure following a high-protein diet. Renal excretory insufficiency and renal ischaemia are two separate processes. A. C. F.

Inability of purified renin to reduce blood pressure of hypertensive dogs. M. Friedman, H. E. Kruger, and A. Kaplan (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 56—58).—The reduction of blood pressure caused by crude renin (Wakerlin and Johnson, A., 1941, III, 562) is not produced by renin purified by the method of Helmer and Page (A., 1939, III, 560). V. J. W.

Early arterial hypertension. H. A. Schroeder (*Amer. J. med. Sci.*, 1942, 204, 62—73).—37 of 50 patients with slightly raised blood pressure were suffering from various diseases of the kidneys and 11 from nervous dysfunction. All the patients exhibited nervous tension. C. J. C. B.

Chronic hypertension in rat. A. Grollman and J. R. Williams, jun. (*Amer. J. med. Sci.*, 1942, 204, 73—79).—Experimental procedures are described. C. J. C. B.

Frequency of bilateral renal disease in persistent hypertension. J. R. Kahn and T. C. Laipply (*Amer. J. med. Sci.*, 1942, 203, 807—811).—In nearly all cases (456) of persistent hypertension with vascular disease the renal disease is bilateral. C. J. C. B.

Reduction of blood pressure associated with pyrogenic reaction in hypertensive subjects. H. Chasis, W. Goldring, and H. W. Smith (*J. clin. Invest.*, 1942, 21, 369—376).—Blood pressure was reduced significantly in 11 hypertensive subjects by the intravenous administration of pyrogenic material (pyrogenic inulin, triple typhoid vaccine, tyrosinase) and was maintained at reduced levels by repeated injections of this material. This hypotensive effect can be obtained without a rise in body temp. by premedication with amidopyrine. C. J. C. B.

VII.—RESPIRATION AND BLOOD GASES.

Oxygen uptake of serum. J. P. Goodrich (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 507—511).— O_2 uptake occurs in human serum if p_H is lowered below 7. This property disappears on dialysis, but, if serum is dialysed against an equal vol. of saline, both serum and saline have half the O_2 uptake of the original, and no change follows boiling this saline solution. V. J. W.

Resistance against diminished atmospheric pressure. N. N. Sirotin (*J. Méd. Ukraine*, 1940, 10, 1415—1431).—The highly organised animals were least resistant to O_2 deficiency. M. K.

Response of vago-insulin system to anoxia as demonstrated in adrenalectomised dogs. I. McQuarrie, M. R. Ziegler, and L. J. Hay (*Endocrinol.*, 1942, 30, 898—904).—Breathing of 5% O_2 causes in normal dogs a rise, and in adrenalectomised dogs a fall, in blood-sugar. In both there is a decrease in K and inorg. $PO_4^{''}$ of plasma. If the pancreas is removed as well as the adrenals anoxia causes no fall but occasionally a slight rise in blood-sugar, and no decrease in K or $PO_4^{''}$. V. J. W.

Effects of hyperventilation with special reference to aviation medicine. R. F. Rushmer, W. M. Boothby, and H. C. Hinshaw (*Proc. Staff Mayo Clin.*, 1941, 16, 801—808).—Extreme hyperventilation for 2 min. produced giddiness, tingling of fingers and of skin about the face, and slowing of co-ordination and cerebation in 8 of 10 healthy subjects. H. H. K.

Oxidising effects of acidified oxyhaemoglobin solutions [on vitamin-C]. R. Lemberg (*Austral. J. Exp. Biol.*, 1942, 20, 111—115).—Acidification of solutions of oxyhaemoglobin containing vitamin-C results in destruction of the -C, but this does not occur to the same extent when -C is added after acidification. Oxidation is best avoided in determinations of -C in blood by deproteinisation after reduction of oxyhaemoglobin or its conversion into carboxyhaemoglobin. Oxidation of biliverdin, unlike that of -C, does not occur mainly by means of the active O, but also as a result of the peroxidase activity of acid haematin. P. G. M.

Effects of barbiturate anaesthesia on respiratory control. C. A. Moyer and H. K. Beecher (*J. clin. Invest.*, 1942, 21, 429—445).—The breathing of dogs under light evipal is primarily regulated by CO_2 . Deeper evipal or pentothal anaesthesia can abolish the response to CO_2 but not to O_2 lack or pulmonary distension. Full muscular relaxation with evipal or pentothal involves the danger of respiratory arrest. C. J. C. B.

VIII.—MUSCLE.

Morphological effects of acute inanition on motor end plates. E. J. Carey (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 155—159).—Starvation in the rat causes detachment of end plate from muscle fibre and distension of the epilemmal axons. V. J. W.

Acetylcholine as transmitter to skeletal muscle. L. Jendrassik and G. Gelei (*Naturwiss.*, 1942, 30, 239—240).—Frog's sartorius muscle treated, *in situ* or as a separated prep., with acetylcholine of a concn. above 0.01 mg.-% shows a temporary contraction and the sensitivity subsequently diminishes; at higher concns. (10—100 mg.-%), the contraction is smaller and more transient; still

higher concns. have no effect. The hypothesis that acetylcholine is the neuromuscular transmitter is not applicable to frogs. F. O. H.

Prostigmine, adrenaline, ephedrine, and skeletal muscle. E. Bulbring and J. H. Burn (*J. Physiol.*, 1942, 101, 224—235).—If contractions of the gastrocnemius (cat) are elicited 4—6 times per min. by single max. shocks applied to the nerve, the increase of tension produced by the injection of prostigmine is much greater if adrenaline is given at the same time or some min. after. Adrenaline augments the effect of eserine much less than it does that of prostigmine. When the rate of stimulation is raised to 15—45 per min., prostigmine increases the tension but adrenaline then decreases it. Ephedrine has no action like that of adrenaline in relation to prostigmine, but after the injection of ephedrine, adrenaline has a greater effect than before. J. A. C.

Periodic dystonia. L. A. Smith and P. H. Heerema (*Proc. Staff Mayo Clin.*, 1941, 16, 842—846).—3 cases are reported in which periodic torsion spasm of the muscles occurred spontaneously unio- or bi-laterally. Neurological and laboratory examinations between attacks gave negative results. H. H. K.

Vitamin therapy of muscular dystrophy. W. A. Hawke (*Canad. Med. Assoc. J.*, 1942, 47, 153—155).—7 children with muscular dystrophies treated by moderate amounts of vitamin- B_1 , - B_6 , and -E showed no improvement. C. J. C. B.

Myasthenia gravis: treatment and relation to thymus. L. M. Eaton (*Proc. Staff Mayo Clin.*, 1942, 17, 81—87).—A discussion. H. H. K.

Orthostatic [muscular] tremor. L. A. Smith and L. M. Eaton (*Proc. Staff Mayo Clin.*, 1942, 17, 122—126).—Muscular tremor of the legs on standing still, accompanied by muscular weakness, was observed in four patients. The tremor was promptly relieved by walking, sitting, or lying down. No aetiological factor or satisfactory treatment was found. H. H. K.

IX.—NERVOUS SYSTEM.

Studies of human nervous and related tissue by Roentgen-ray diffraction method and petrographic microscope. L. Reynolds, K. E. Corrigan, and H. Hayden (*Amer. J. Roentgenol.*, 1940, 43, 81—92).—Nerve trunks with a highly specialised directional function are oriented. Grey and white cerebral matter show slightly different X-ray diffraction patterns, especially after drying. Extracted brain tissue gives a pattern similar to that of neuroproteins. Extracts of some types of meningioma show characteristics of both normal brain and dural tissue. Dural tissue is oriented, the degree of orientation varying with the part of the dura being considered. The dura proper and the periosteal layer have their own well defined orientation which may be parallel or at angles up to 90°. Colour photographs are given of petrographic microscope pictures of dura, brain, meningioma, basophil adenoma, and vagal nerve. H. L.

Use of biotin for stimulating growth of nerve tissue and other cells *in vitro*. H. L. Hamilton and H. Plotz (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 133—135).—Presence of 17—85 μ g.-% of biotin in Tyrode's solution caused increased growth of embryo chick and mouse nerve cells in hanging drop cultures as compared with controls. V. J. W.

Nerve terminals associated with knee joint of mouse. E. D. Gardner (*Anat. Rec.*, 1942, 83, 401—419).—Nerves were traced from the major trunks into the articular capsules. In the synovial membrane, some of the axons continued with the blood vessels. Other axons had free endings in the connective tissue. Pacinian corpuscles occurred only in the fibular periosteum, near articular or ligamentous attachments. W. F. H.

Cholinergic nature of nerves of electric organ of *Torpedo marmorata*. W. Feldberg and A. Fessard (*J. Physiol.*, 1942, 101, 200—216).—The organ yields on extraction 40—100 μ g. of acetylcholine per g. of fresh tissue. During stimulation of the nerves to the organ, perfused with an eserinated saline solution, acetylcholine appears in the venous effluent. Eserine lengthens the descending phase of the single nervous discharge from the perfused organ and causes rapid fatigue of the response to repetitive nerve stimulation. An arterial injection of acetylcholine into the perfused organ has an electrogenic effect. J. A. C.

Afferent impulses from viscera. R. J. S. McDowall (*J. Physiol.*, 1942, 101, 6p).—In the cat's spinal prep. devoid of shock, stretching the gut or holding the heart firmly causes marked limb movements; cutting the gut is without effect. J. A. C.

Reflex regulation of tone and chronaxie of subordination. G. Pupilli (*Schweiz. med. Wschr.*, 1941, 71, 409—410).—Injection of novocaine into gastrocnemius muscle of *Bufo* slightly increases the chronaxie of the IX ventral spinal root; a greater increase of chronaxie is found after removal of the skin from the homolateral or contralateral side, or from the whole body. The relationship between tonus and chronaxie of subordination is reviewed. I. C.

Central regulation of chronaxie of subordination: cerebellar activity of subordination. C. Bartorelli (*Schweiz. med. Wschr.*, 1941, 71, 410—411).—The experimental evidence of the influence of cerebellum on chronaxie of subordination is reviewed. I. C.

Effect of faradic stimulation of cerebellum on motor activity of cerebral cortex. G. Moruzzi (*Schweiz. med. Wschr.*, 1941, 71, 412—413).—In cats (light chloralose anaesthesia), faradic stimulation of the neo- and paleo-cerebellar lobules brings about localised or generalised activity of the motor area of the cerebral cortex, and consequently localised clonus or generalised convulsions. Faradic stimulation of the paleocerebellar lobules (pyramis, lobus anterior of Bolk) inhibits (1) clonus or epileptic convulsions due to discharge from the cerebral cortex, (2) clonus produced by strychnine applied to the cerebral cortex, (3) muscular activity produced by faradic stimulation of cerebral cortex, (4) postural tonus. The spinal cord is the site of these inhibitory actions. I. C.

Polarity of potentials recorded from superior colliculus. G. H. Bishop and J. L. O'Leary (*J. Cell. Comp. Physiol.*, 1942, 19, 289—300; cf. A., 1941, III, 855).—Changes after injury are confined to the superficial region of negative action potential, the positive region being apparently occupied by preganglionic axons of the optic tract. At the margin between the two regions the deflexion is diphasic. V. J. W.

Factors determining form of potential record in vicinity of synapses of dorsal nucleus of lateral geniculate body. G. H. Bishop and J. L. O'Leary (*J. Cell. Comp. Physiol.*, 1942, 19, 315—331).—Potential of a single probe electrode inserted near this nucleus and compared with a distant point is positive for pre- and post-synaptic deflexions when the electrode is anterior to the geniculate, and negative when posterior to it. As the electrode passes vertically through the cell layers, the pre-synaptic spike becomes diphasic as the electrode enters the cell layers, and triphasic as it passes the optic tract beyond. The post-synaptic electrode develops an initial negative deflexion to form a diphasic wave at the cell boundary, and remains negative into the medial geniculate. V. J. W.

Function of cerebellum. L. Ectors (*Confinia Neurol.*, 1942, 4, 181—212).—The cerebellum is regarded as an inhibitory centre to which the various motor systems are subordinated. Every movement effects a cerebellar stimulation which is responded by a contrary-directed retarding reaction. There are 3 main cerebellar reflex arcs, superimposed on the various motor reflexes (vestibular, spinal, cerebro-cortical) and connected at the respective motor centres. H. L.

Occurrence of a hexacosenoic acid among fatty acids of cerebrosides of brain.—See A., 1942, II, 297.

Histochemical studies on presence and distribution of vitamin-C in central nervous system of rat and guinea-pig. G. Wolf-Heidegger (*Confinia Neurol.*, 1942, 4, 121—147).—Intravenous injection of the Giroud-Leblond reagent showed presence of reduced ascorbic acid in nerve cells of all regions of the brain, in microglia, oligodendroglia, and walls of cerebral vessels; the reaction is more marked in the grey matter and absent in animals with scurvy. The characteristic Ag granules are never found intranuclearly; their cytoplasmic distribution is either focal or diffuse. In pyramidal and Purkinje cells granules were also found in the cone of origin and in the proximal part of the axon. Reduced ascorbic acid is not found in the basal epithelium of the choroid plexus (which contains oxidised ascorbic acid); it appears first in the Golgi apparatus in the distal epithelium. Ependymal cells of cerebral ventricles and aqueductus showed rarely, and peripheral nerves never, traces of ascorbic acid. H. L.

Heat narcosis of brain and striated muscle of frog. S. Feitelberg and E. P. Pick (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 657—660).—Immersion in water at 38—40° raises the threshold of striped muscle to electrical stimulation and causes a disappearance for 5—10 min. of the electroencephalographic rhythm. V. J. W.

Action of curare on brain of frog. S. Feitelberg and E. P. Pick (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 654—656).—Injection of curare into frogs causes a disappearance of electroencephalographic rhythm simultaneously with the onset of paralysis. The rhythm returns to normal after some hr. or days. V. J. W.

Effect of propazone on metabolism of rat cerebral cortex in vitro. F. A. Fuhrman and J. Field, 2nd (*J. Cell. Comp. Physiol.*, 1942, 19, 351—359).—This substance (Stoughton, A., 1942, III, 51) depresses O_2 consumption of rat brain slices in a min. concn. of 20 mg.-% to a max. of 350 mg.-%. 15% of the respiration is propazone-stable at 40°, and concns. which inhibit in glucose or pyruvate have little effect in succinate or *p*-phenylenediamine. Anaerobic glycolysis is not affected. V. J. W.

Stimulation of cerebral cortical-cell proliferation by growth hormone in albino rats. S. Zamenhof (*Physiol. Zool.*, 1942, 15, 281—292).—13 normal female rats were injected daily during the 7th—18th days of pregnancy with 1 ml. of growth hormone ("Phyone" or "Antuitrin G"). 127 new-born rats from these mothers showed

significant increases in body wt. (19%), cerebral-hemisphere wt. (36%), thickness of cerebral cortex (21%), vol. of cortex (70%), density of neurones (9%), and total no. of cells of cortex (87%), compared with controls. 18 of the offspring reached maturity (108—120 days) and still showed significant increases in cell density and total no. of cortical cells above control vals.; the other vals. had returned to normal. P. C. W.

Relation of cerebral dysrhythmia to eclampsia. G. L. Maltby and M. Rosenbaum (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 10—12).—Electroencephalographic records were made from 17 eclamptic women at 1 week to 5 years after eclampsia. Rhythm was abnormal in 13 and in 10 of them there was a family history of convulsive attacks. Out of 10 patients with toxæmia without convulsions there was only 1 case of abnormal rhythm and 1 with a convulsive family history. V. J. W.

Influence of bile on susceptibility to convulsions in rats. A. Frohlich and I. A. Mirsky (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 25—28).—Intraperitoneal injection of bile causes convulsions in rats up to 10 days old. In adults, injections to cause convulsions must be intracerebral. V. J. W.

Epilepsy after application of sulphathiazole to brain. A. C. Watt and G. L. Alexander (*Lancet*, 1942, 242, 493—496).—5 cases of epilepsy following application of sulphathiazole to the frontal region of the brain are reported. Experiments in cats and dogs showed that sulphanilamide, sulphapyridine, sulphadiazine, and sulphacetamide did not share this action of sulphathiazole. C. A. K.

Electroencephalographic changes induced by intravenous sodium amytal. R. Cohn and S. Katzenelbogen (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 560—563).—Injection of 0.1—0.5 g. of Na amytal in man causes the appearance of a 20—25 per sec. rhythm in place of the normal rhythm of 8—12 per sec. This effect is not sp. to barbiturates but generally accompanies depressed cortical activity. V. J. W.

Review of shock therapies for mentally ill. F. G. Ebaugh (*Amer. J. med. Sci.*, 1942, 204, 141—152). C. J. C. B.

Biochemistry in relation to psychiatry. E. F. Gildea (*Yale J. Biol. Med.*, 1942, 14, 505—517).—A general review with 27 references. F. S.

Treatment of schizophrenia with cytotoxic antireticular serum. A. A. Bogomoletz, J. P. Frumkin, R. B. Gragerova, and I. A. Mizruchin (*J. Méd. Ukraine*, 1940, 10, 1587—1603).—Three intravenous injections of antireticular serum were given with an interval of 2—3 days between each injection to 250 schizophrenics. Improvement is claimed in some. M. K.

Practical method of pilot selection. M. N. Walsh (*Proc. Staff Mayo Clin.*, 1942, 17, 65—69).—A discussion. H. H. K.

X.—SENSE ORGANS.

Laws of rotation of the eye. J. Rösch (*Compt. rend.*, 1942, 214, 187—189).—Donders' law may be extended to the statement: the 3rd parameter is a function of the first 2 parameters and of the convergence of the visual axes. Listing's law is interpreted by means of the definition of a coeff. of muscular excitation. An equation is derived giving isotonic curves which are straight lines passing through a fixed point; this agrees well with Beck's experimental findings, which may be used for the determination of the constants. H. L.

Retina and lenticular regeneration in urodeles. M. Zalokar (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 266—268).—Study of lenticular regeneration in larvae of *Triton cristatus* after (1) excision of both retina and lens, (2) excision of lens with excision and re-implantation of retina, and (3) transplantation of the anterior segment of the eye to the head after excision of lens and retina confirmed that regeneration of the lens after excision depends on the presence of retinal tissue. The effect of the latter appears to be exerted mainly during the first few days after operation. H. L.

Theory of colour vision. W. Franz (*Naturwiss.*, 1941, 29, 766—767).—On the basis of Goethe's theory, a 3-component theory of colour vision is proposed: perception of a primary colour is elicited when one of the 3 colour components is stimulated to a smaller degree than in white light of equal brightness. Stimulation of blue, purple, and yellow (mainly by the long-, medium-, and short-wave portions respectively of the visible spectrum) is summated in a centre for white (from where brightness is perceived as whiteness). This centre is in connexion with the 3 primary stimulation centres, "long," "medium," and "short," the respective pathways going via the perception centres for blue, purple, or yellow; the centre for blue is thus stimulated by the difference of the excitations "long" and "white," and purple or yellow by relative lack of "medium" or "short" excitation respectively. The theory is also thought to remove some difficulties inherent in von Studnitz' theory. H. L.

[Theory of colour vision.] G. von Studnitz (*Naturwiss.*, 1941, 29, 767—768).—Franz' hypothesis (A., 1942, III, 806) is critically discussed on the basis of the author's theory (which is derived from absorption curves for the 3 colours). H. L.

Effect of experimental avitaminoses on osseous labyrinth. Nager (*Schweiz. med. Wschr.*, 1941, 71, 832—833).—Guinea-pigs kept on a Sherman scurvy diet showed fibrous changes in the bone marrow of the periosteal layer and hæmorrhages. D-avitaminotic animals (MacCollum diet) showed rarefaction of the bone trabeculae in the periosteum and apposition of osteoid tissue; the latter was also found in the modiolus. E-avitaminotic animals (Nemôle-Karrer diet) showed small irregular exostoses in the peri- and end-osteum, hæmorrhages, and extensive purulent otitis media. A. S.

Sensory basis of obstacle avoidance by flying bats. D. R. Griffin and R. Galambos (*J. exp. Zool.*, 1941, 86, 481—506).—The evidence derived from many experiments points conclusively towards Hart-ridge's auditory theory in a slightly modified form, which is stated as follows: flying bats detect obstacles in their path by (1) emitting supersonic notes, (2) hearing these sound waves when reflected back to them by the obstacles, and (3) detecting the position of the obstacle by localising the source of this reflected sound. This localisation is presumably accomplished binaurally by an auditory mechanism similar in principle to that used by other mammals for sounds of ordinary frequencies. J. D. B.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Commercial endocrine preparations. E. L. Sevringhaus (*Endocrinol.*, 1942, 30, 912—921).—A review. V. J. W.

Rôle of thyroid in cyclopropane-adrenaline tachycardia. J. W. Stutzman and W. J. Meek (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 704—707).—Duration of tachycardia produced in dogs anaesthetised by cyclopropane by 0.01 mg. of adrenaline per kg. was decreased by thyroidectomy and increased by thyroid feeding. V. J. W.

Thioureas as goitrogenic substances. T. H. Kennedy (*Nature*, 1942, 150, 233—234).—20 mg. of allylthiourea were given by stomach tube daily to rats for 8 weeks. The average wt. of the thyroids was then 43 mg. (3—4 times normal). The glands showed hyperplasia and no colloid. 50-mg. doses for 10 days produced identical histological changes, but 30-mg. thyroids per 60 g.-body wt. These doses were not toxic. Similar results were obtained with 200-mg. doses of thiourea. The effects on thyroid and pituitary were similar to those produced by including rape seed in the diet. E. R. S.

Action of bromide on thyroid. G. Moruzzi (*Schweiz. med. Wschr.*, 1941, 71, 354—355).—In man average blood-Br % is 350 µg. Similar vals. have been found in human tissues and in blood and organs of ox, dog, and rabbit. In dogs treated with NaBr (0.20 g. daily per kg. body wt.) Br content of hypophysis, gonads, and thyroid increases; after prolonged treatment (over 90 days) the thyroid eliminates both the Br which has been deposited in the organ and its org. I, which falls from 60.9 even to 5—6 mg.-%. Following prolonged treatment with NaBr, growth of young dogs and rats is hindered or arrested; basal metabolism is 18—25% less than that of control animals, sex function is diminished or lost. Histological examination shows hypofunction of thyroid, anterior hypophysis, and gonads, and hyperfunction of adrenal cortex and thymus. I. C.

Treatment of toxic goitre. W. O. Thompson (*Endocrinol.*, 1942, 30, 1015—1020).—A summary. V. J. W.

Recurrent toxic goitre after subtotal thyroidectomy. F. W. Preston and W. O. Thompson (*Arch. intern. Med.*, 1942, 69, 1019—1039).—Postoperative thyrotoxicosis was seen in 39 of 294 patients who had subtotal thyroidectomy for toxic goitre. In most cases the condition was persistent rather than recurrent. Postoperative administration of I will not prevent regeneration of thyroid tissue. C. A. K.

Effects of Roentgen irradiation on experimental hyperthyroidism. L. H. Garland, W. C. Cutting, G. B. Robson, and W. W. Newman (*Amer. J. Roentgenol.*, 1941, 45, 692—695).—Hyperthyroidism induced by thyrotropic hormone injections in guinea-pigs was not influenced by Roentgen irradiation given during or prior to its induction. H. L.

Method for determining completeness of thyroidectomy using radioactive iodine. W. O. Reinhardt (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 81—84).—Thyroidectomised rats were injected with radioactive I and radioactivity of neck tissues was determined 44 hr. later, to test the presence of I-concentrating material. Results were inconclusive. V. J. W.

Assay of thyroid and its preparations. J. L. Deuble and J. Wilkinson, jun. (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 463—464).—The U.S.P. XI method is modified by standardisation of the fusion, partial neutralisation of the alkali after fusion, and the use of urea to eliminate HNO₂ before titrating the I. J. D. R.

Progressive iodination of serum-albumin. W. T. Salter and J. Muus (*J. Nutrition*, 1941, 21, Suppl., 14—15).—The product of iodination of horse serum-albumin in alkaline solution exhibits marked thyroidal activity and serves as a hormone in the treatment of human myxœdema. Activity is associated with a product containing not less than 6% of I (corresponding with the iodination of the tyrosine unit of the protein) and increases with I content up to 11%. In the course of this further iodination a thyroxine-like fraction is formed and separates on hydrolysis. A. G. P.

Pseudo-hypoparathyroidism, an example of Seabright bantam syndrome. F. Albright, C. H. Burnett, P. H. Smith, and W. Parson (*Endocrinol.*, 1942, 30, 922—932).—3 cases are described which showed symptoms of parathyroid deficiency but which failed to respond to parathyroid administration, presumably on account of an idiopathic resistance to that hormone. V. J. W.

Hyperparathyroidism in patient with acromegaly. J. Chasnoff, L. Friedfeld, and A. M. Tunick (*Ann. int. Med.*, 1942, 16, 162—175). A. S.

Humoral control of parathyroid secretion. H. M. Patt, E. Wallerstein, and A. B. Luckhardt (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 580—582).—Intravenous injection of 40 mg. per kg. of Na oxalate into dogs causes an immediate fall of blood-Ca, which returns to normal within 3 hr. in normal dogs but remains low in parathyroid-ectomised dogs. Decalcified blood perfused through the thyroid-parathyroid of one dog causes a rise in serum-Ca of 1.6—4.5 mg.-% in a second dog. V. J. W.

Bioassay of dihydrotachysterol. E. W. McChesney and H. Kocher (*Endocrinol.*, 1942, 30, 787—793).—There is a straight-line relation between log dose and serum-Ca 48 hr. after treatment in the rat. V. J. W.

Bomskov reports on thymus mediation of pituitary function. B. Wells, O. Riddle, and H. N. Marvin (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 473—476).—Results described by Bomskov *et al.* (*Pflügers Arch.*, 1940, 243, 611, 623, etc.) of injections of an ether-sol. constituent of thymus were not confirmed. V. J. W.

Tuberculosis and adrenal function. W. T. Munro, J. O. Westwater, and D. C. Ross (*Edinb. Med. J.*, 1942, 49, 508—515).—In 55 out of 169 consecutive cases of tuberculosis serum-Na was low; the lowest val. were found in seriously ill patients. In 35 cases low serum-Na was associated with low plasma-ascorbic acid and in 7 cases administration of ascorbic acid raised serum-Na. H. S.

Antagonistic effects of underfeeding on adrenal cortex of guinea-pig. H. T. Blumenthal and L. Loeb (*Amer. J. Path.*, 1942, 18, 615—628).—Marked inanition increases mitotic activity of the adrenal cortical cells; the max. effect in males is found after 4—7 days, in females after 10—12 days. The adrenal cortex shows a decrease in fatty vacuoles, an increase in the size of the cells, and the appearance of abnormal mitotic figures. The changes are reversible. When guinea-pigs are only slightly underfed for 4—10 days there is suppression of mitotic activity. (4 photomicrographs.) C. J. C. B.

Comparison of effects of adrenaline on blood pressure when injected into a vein and when injected into the marrow cavities of bone. M. E. Drake and C. M. Gruber (*J. Pharm. Exp. Ther.*, 1942, 75, 6—10).—No gross difference in the latent periods and durations of action on blood pressure were seen between injections of adrenaline into the vein and into the bone marrow of cats and dogs. Injection of small doses of adrenaline into the bone marrow produced an increase of blood pressure which is one third that caused by a like intravenous injection. A small part of the injected fluid remained in the marrow spaces. The increase of blood pressure is equal to that induced by an intravenous injection if a large vol. of a more dil. solution is injected into the marrow spaces. Oils and suspended particles in water when injected into the marrow of the tibial bone appear in the popliteal and deep femoral veins within 1 sec. after the beginning of the injection and they continue to be present as long as the injection lasts. This is due to a direct communication between the bone marrow and its venous circulation. H. H. K.

Assay of adrenals for lactogenic hormone. V. Hurst, J. Meites, and C. W. Turner (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 592—594).—No lactogenic hormone was found by pigeon assay in various commercial or laboratory adrenal extracts. V. J. W.

Functions of adrenal cortex. F. A. Hartman (*Endocrinol.*, 1942, 30, 861—869).—A review. V. J. W.

Mechanism of action of adrenal cortical hormones on carbohydrate and protein metabolism. C. N. H. Long (*Endocrinol.*, 1942, 30, 870—883).—A review. The action of œstrogens in increasing liver-glycogen and N excretion in rats is due to their stimulation of the adrenal cortex through the pituitary, since these effects do not occur in adrenalectomised or hypophysectomised animals. V. J. W.

Hormones of adrenal cortex. E. C. Kendall (*Endocrinol.*, 1942, 30, 853—860).—In an adrenalectomised pancreatectomised dog maintained on cortical extract and 14 units daily of insulin, daily administration of 10 mg. of 11-dehydro-17-hydroxycorticosterone

caused hyperglycaemia and glycosuria which were previously absent. Urinary N was not increased, so that this compound inhibits utilisation of glucose. V. J. W.

Deoxycorticosterone acetate [for shock]. F. R. Keating, jun., M. H. Power, and E. H. Ryneason (*Proc. Staff Mayo Clin.*, 1942, 17, 59—64).—Preoperative administration of deoxycorticosterone acetate to women undergoing radical amputation of the breast is without benefit in the prevention of surgical shock. H. H. K.

Absence of beneficial effects from injections of deoxycorticosterone acetate and of cortical adrenal extract in experimental anuria. A. W. Winkler, P. K. Smith, and H. E. Hoff (*J. clin. Invest.*, 1942, 21, 419—421).—In dogs with anuria following ureteral ligation, subcutaneous or intramuscular injections of deoxycorticosterone acetate and of adrenal cortical extract were useless and had no effect on K distribution. C. J. C. B.

Protective action of deoxycorticosterone acetate and progesterone in adrenalectomised mice exposed to low temperatures. M. Zarrow (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 135—138).—Mice which received 4 injections of 0.25 mg. or 0.5 mg. of deoxycorticosterone acetate or 0.5 mg. of progesterone during 3 days between adrenalectomy and exposure to 6° survived longer than controls. Mice receiving 0.2 c.c. of ground-nut oil survived a shorter time than those receiving 0.1 c.c. V. J. W.

Action of mixtures of soluble and protamine zinc insulins. A. R. Colwell, J. L. Tzzo, and W. A. Stryker (*Arch. intern. Med.*, 1942, 69, 931—951).—The action of mixtures of various proportions of sol. and protamine-Zn-insulins was studied in 5 diabetic patients. Effects intermediate between the two in promptness, intensity, and duration were obtained by suitable mixtures, but marked differences were obtained only when the amount of sol. equalled or exceeded the amount of protamine-Zn-insulin. These intermediate effects are due to reduction in the amount of protamine, Zn, or alkaline buffer. Single daily doses of such a mixture are more efficient than any other method of control in severe diabetics. C. A. K.

Evidence for existence of two antibodies for crystalline insulin. F. C. Lowell (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 167—172).—Serum of an insulin-resistant patient neutralised the effect of cryst. Zn insulin on mice but not the effect of human insulin, to which the patient was not resistant. She was allergic to both insulins, but the skin-sensitising antibody in her serum was destroyed in 2 hr. at 57° without destroying the insulin-neutralising factor. V. J. W.

Suprasellar tumours related to pars intermedia of hypophysis. W. G. MacCallum (*Arch. Path.*, 1942, 34, 13—18).—A review of 113 cases. (6 photomicrographs.) C. J. C. B.

Anorexia nervosa and Simmonds' disease. M. Roch and M. Monnier (*Schweiz. med. Wschr.*, 1941, 71, 1009—1011).—The differential diagnosis of the two syndromes is discussed. A. S.

Non-harmful effects of irradiation of pituitary region of rabbits. J. Kotz, J. F. Elward, and E. Parker (*Amer. J. Roentgenol.*, 1941, 46, 543—549).—Irradiation of the pituitary in adult female animals with excessive doses as compared with those used in man produced no disturbance in normal functions (body-wt., activity) and no histological changes in pituitary, ovaries, thyroid, and adrenals. H. L.

Influence of hypophysectomy on epithelialisation of wounds and on fibroplasia. C. B. Mueller and E. A. Graham (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 139—141).—No effect was noted. V. J. W.

Influence of pituitary and adrenal cortex in resistance to low environmental temperatures. R. Tiplowitz and E. B. Astwood (*Amer. J. Physiol.*, 1942, 136, 22—31).—Hypophysectomised young rats exposed to 0° were unable to maintain body temp. A slow development of cold-intolerance occurs; after 4 days permanent high sensitivity to cold is maintained. Crude pituitary extracts and purified corticotrophin increased cold-resistance, but did not restore a normal response to low temp; the extracts were ineffective in hypophysectomised-adrenalectomised rats but were active in hypophysectomised-thyroidectomised rats. Adrenal cortical extracts were effective in both groups. M. W. G.

Age factor in responsiveness of pituitary and adrenals to folliculoids. H. Selye and S. Albert (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 159—161).—Large doses (2 mg. daily for 10 days) of oestradiol cause pituitary and adrenal cortical hypertrophy in mature but not in immature (40—60-g.) rats whether castrate or normal. V. J. W.

Advance of knowledge of rôle of hypophysis in carbohydrate metabolism during the last twenty-five years. B. A. Houssay (*Endocrinol.*, 1942, 30, 884—897).—A review with bibliography. V. J. W.

Synergism between thyrotropic and growth hormones of pituitary. Weight increase in hypophysectomised rat. W. Marx, M. E. Simpson, and H. M. Evans (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 594—597).—In hypophysectomised rats, the effect on wt. of 80 µg. of growth hormone (A., 1940, III, 900) was greatly increased by simultaneous administration of 80 µg. of thyrotropic hormone, which by itself had no effect on wt. V. J. W.

U 3 (A., III.)

Biological properties of pituitary interstitial cell-stimulating hormone. M. E. Simpson, C. H. Li, and H. M. Evans (*Endocrinol.*, 1942, 30, 969—976).—In normal rats this hormone prolongs diestrus and pregnancy. In normal but not in hypophysectomised rats it increases luteal tissue and causes formation of placentomata about threads inserted in the uterus and some mucification of the vagina. In hypophysectomised males it repairs interstitial tissue and maintains sperm formation. V. J. W.

Standardisation of interstitial cell-stimulating hormone. M. E. Simpson, C. H. Li, and H. M. Evans (*Endocrinol.*, 1942, 30, 977—984).—The most sensitive quant. test is wt.-increase in testis of immature pigeons for which min. effective dose is 0.03 mg. Ventral prostate of the hypophysectomised rat responds to 0.05 mg., and chick testis to 0.5 mg. The most sensitive qual. test is the augmented effect of follicle-stimulating hormone on hypophysectomised female rats, which detects 0.001 mg. V. J. W.

Antihormones. C. A. Joël (*Schweiz. med. Wschr.*, 1941, 71, 1011—1013).—The properties of antigonadotrophic and antithyrotrophic substances and their clinical significance are discussed. A. S.

Posterior pituitary gland. W. A. Sodeman (*Amer. J. med. Sci.*, 1942, 204, 129—140).—A review. C. J. C. B.

Action of vasopressin and oxytocin in causing premature oviposition by domestic fowl. W. H. Burrows and R. M. Fraps (*Endocrinol.*, 1942, 30, 702—705).—Either hormones will cause expulsion of eggs, but the action is due mainly to vasopressin. 10 oxytocic units of pitocin are needed to equal 1 pressor unit of pitressin. V. J. W.

Cystine, tyrosine, and arginine content of high-potency pressor and oxytocic pituitary hormones. A. M. Potts and T. F. Gallagher (*J. Biol. Chem.*, 1942, 143, 561—562).—Highly active preps. of the oxytocic and pressor factors contain respectively cystine 18.3, 19.0%; tyrosine 14.2, 11.9%; arginine less than 0.8, 12.3%. Total S, 5.59%, in the oxytocic prep. agrees with the cystine content. Both probably have mol. wt. about 1300. R. L. E.

Comparison of pituitrin with antidiuretic substance found in human urine and placenta. G. C. Ham and E. M. Landis (*J. clin. Invest.*, 1942, 21, 455—469).—Whereas commercial pituitrin was dialysable through Cellophane, was not conc. by the ultracentrifuge, and increased Cl' excretion in the urine, the antidiuretic substance in urine did not pass through Cellophane, was conc. by the ultracentrifuge, and did not affect Cl' excretion in the urine. The placenta of patients with toxæmia of pregnancy contained larger quantities of antidiuretic substance than those from normal patients. C. J. C. B.

Antidiuretic action of minute amounts of pitressin; statistical analysis of results. W. A. Jeffers, M. M. Livesey, and J. H. Austin (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 184—188).—In rats made diuretic by administration of 8% of their wt. of water, with some alcohol as a sedative, the antidiuretic effect of 2×10^{-6} unit of pitressin can be observed. Analysis indicates that the method is 10 times as sensitive as Walker's rabbit method and is as accurate as Burn's multiple rat method. V. J. W.

Pituitary rôle in melanogenesis. C. M. Osborn (*Biol. Bull.*, 1941, 81, 352—363).—Hypophysectomy prevents new formation of melanophores by light on ventral surfaces of catfish. The possibility of a similar connexion of intermedin with human pigmentation is suggested. D. M. Sa.

Chromatophorotropism in *Limulus*. F. A. Brown and A. Cunningham (*Biol. Bull.*, 1941, 81, 80—95).—Extracts of various regions of the nerve cords caused dispersion of black pigment in *Uca pugnax*. By far the greatest concn. of extractable principle is in the posterior part of the circumoesophageal nerve ring. D. M. Sa.

Neurosecretory cells in *Limulus*. B. Scharrer (*Biol. Bull.*, 1941, 81, 96—104).—Though scattered neurosecretory cells of about 100 µ. diameter are found throughout the nervous system, their greatest concn. is in the posterior part of the circumoesophageal nerve ring. D. M. Sa.

Neuro-endocrine mechanism of colour change in *Bufo arenarum*. A. O. M. Stoppani (*Endocrinol.*, 1942, 30, 782—786).—Melanophore expansion is produced by secretion from posterior pituitary; contraction by secretion of adrenaline. Both are governed by nervous reflexes originating in the visual mechanism, the adrenals being stimulated by centres in the lobus infundibularis, but adrenaline has little effect on the hypophysectomised toad which has been darkened by pituitary extract, and probably acts through the hypophysis. V. J. W.

XII.—REPRODUCTION.

Chemical processes, especially metabolism of ammonia, of developing eggs of sea-urchin. A. Örström (*Z. physiol. Chem.*, 1941, 271, 1—176).—The metabolism of the eggs of sea-urchin (*Paracentrotus lividus*), before and after fertilisation by the sperm, was investigated. On fertilisation, the NH_3 content increases from an initial level of 1.26 to 1.80 µ-mol. per c.c. of eggs [all vals. are given as µ-mol. per

c.c. (equiv. to 1.1 g. wet wt.) of eggs] and decreases to 1.09 after 3 hr. Unfertilised eggs stimulated by hypertonic solutions have an NH_3 content dependent on the concn. of salt; at certain concns., NH_3 production, glycogenolysis, increase in respiration, and production of acid are of the same order as that following fertilisation by sperm. Fertilisation appears to cause formation of a glutamyl polypeptide. An investigation of the enzymic reactions of the eggs shows that, in the unfertilised egg, adenylic acid is hydrolysed to adenosine and PO_4''' , the adenosine then yielding inosine and NH_3 . This deaminase activity, which in the sperm is only approx. 10–20% of that in the eggs, is of the same order (adenylic acid as substrate) for fertilised and unfertilised eggs, is increased by addition of PO_4''' or sperm pulp, and is diminished by dialysis. The content of hydroxyurines of 3.46 is increased to 5.08 $\mu\text{-mol.}$ on fertilisation; the "uric acid" content, determined colorimetrically, also increases. The changes are probably due to metabolism of polynucleotides. The content of hydrolysable NH_3 in the unfertilised eggs (125.5) increases to 131.5 $\mu\text{-mol.}$ on fertilisation. Glutamine is synthesised in the fertilised egg, the max. rate of production being 8.2 $\mu\text{-mol.}$ per hr.; in both fertilised and unfertilised eggs, added glutamine is hydrolysed to glutamic acid and NH_3 . The eggs can store considerable amounts of NH_3 at p_{H} 9; at p_{H} 6, storage is not appreciable. Addition of NH_4Cl increases the respiration of the unfertilised eggs, the R.Q. attaining a val. of approx. 1 and then diminishing with high $[\text{NH}_4\text{Cl}]$. Low concns. of NH_4Cl have no effect on the R.Q. of fertilised eggs, whilst higher concns. decrease it. Storage of NH_3 by unfertilised eggs is also accelerated by addition of certain amino-acids, especially glutamic acid and histidine (the *L*- are as effective as the *D*-isomerides). The NH_3 formed from NH_4 salts and amino-acids is considered to accelerate carbohydrate metabolism. The morphological changes of the eggs in presence of NH_4Cl and amino-acids are described. The above phenomena are discussed with reference to the chain of reactions initiated by fusion of egg and sperm, and various points of parallelism with the reactions occurring during contraction of muscle are advanced. An extensive bibliography is appended. F. O. H.

Changes in lipid content of sea-urchin eggs during development. L. O. Ohman (*Naturwiss.*, 1942, 30, 240).—Fertilisation of the eggs results within 1–1½ hr. in decreases of approx. 17% in the free phosphatides (which subsequently increase) and 25% in the esterified cholesterol. F. O. H.

Changes in form of inositol during incubation of eggs. D. W. Woolley (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 540–541).—Total inositol of hen's eggs does not increase during incubation, but the portion which is free and can be extracted by water does so increase. V. J. W.

Effects of continuous green and red light illumination on gonadal response in English sparrow. A. R. Ringo (*Amer. J. Anat.*, 1942, 71, 99–116).—28-day male birds treated with green light showed no gonadal changes. Marked testicular enlargement with full spermatogenic activity was produced after 28-day red light treatment. Green light manipulation for 43 days elicited testicular enlargement with an increased no. of dividing spermatocytes. 43 days of red light produced pronounced gonadal hypertrophy and marked spermatogenesis. Red light is vastly more effective than green in accelerating gonadal development in the sparrow. Birds stimulated by red light acquired jet-black beaks. Darkening of the beak is indicative of hormone elaboration by the enlarged gonads. W. F. H.

External genital hypertrophy in infancy [associated with tumour of corpus mamillare]. H. Poston and A. H. Barber (*Lancet*, 1942, 242, 384–385).—A boy aged 19 months showed great genital hypertrophy. There was no evidence of precocious sexual activities and the androgen content of the urine was normal. Autopsy showed an astrocytoma of the left corpus mamillare. C. A. K.

Influence of oestrone on formation of heterophil antibodies. E. von Haam and I. Rosenfeld (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 710–711).—Administration of oestrone (22–38 mg.) increased titre of haemagglutinins in rabbits, and the increase was more marked in rabbits immunised with pneumococcal vaccines. V. J. W.

Excretion of oestrogen in bile. A. Cantarow, A. E. Rakoff, K. E. Paschkis, and L. P. Hansen (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 707–710).—After intravenous injection into bitches of 250,000 i.u. of oestrone, the greater part of it is found in bile from a fistula during the next 3 days. V. J. W.

Enzyme which inactivates oestrone. B. Zondek and J. Sklow (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 629–632).—The enzyme (estrinase) is pptd. from potato peel extract by 60% saturation with $(\text{NH}_4)_2\text{SO}_4$. It is destroyed in 45 min. at 70° at p_{H} 7.2, and at 65° at p_{H} 5.5 or 8. p_{H} 6–7 is optimal. It resembles tyrosinase but is not identical with it, since it is present in cauliflower but not in meal-worms. V. J. W.

Absorption of crystalline oestrogen from paraffin nodules in rat. M. J. Eisen (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 625–629).—

Oestrogen is incorporated in paraffin (m.p. 48°) and injected as liquid. 5 mg. in 0.1 c.c. was absorbed in 151 days. V. J. W.

Effects of diethylstilboestrol on plasma-phospholipins of birds. E. V. Flock and J. L. Bollman (*Proc. Staff Mayo Clin.*, 1941, 16, 783–784).—Daily administration of 1 mg. per kg. of diethylstilboestrol to mature cocks for 5 days during October to March produced increased plasma-phospholipins from 312±16 mg.-% to a max. val. of 1954±249 24 hr. after the last injection. When administration of the oestrogen was discontinued, a decrease to normal occurred in a few days. Both the cephalins and choline-containing phospholipins were involved in the rapid increases and decreases of total phospholipins. The increases of blood-lipins were much smaller when the drug was administered during May and June. H. H. K.

Isolation of stilboestrol monogluconide from rabbit's urine. A. Mazur and E. Shorr (*J. Biol. Chem.*, 1942, 144, 283–284).—After intramuscular injection of stilboestrol into rabbits, the urine contains at least 30% of the administered product in the form of stilboestrol glycuconide, m.p. 175°, $[\alpha]_D^{20}$ -56.6° (1.6% in alcohol). J. N. A.

Oestrogen-like action of deoxycorticosterone acetate on altered electrocardiogram seen in hypo-ovarian states. D. Scherf and T. H. McGavack (*Amer. J. med. Sci.*, 1942, 204, 41–52).—6 women with clinical manifestations of hypo-ovarianism and e.c.g. changes are described. In 4, oestrogens (14,000–50,000 i.u.) returned the e.c.g. to normal. In all 6 patients, the e.c.g. reverted to normal with decorticosterone acetate (total dose 30–60 mg.). C. J. C. B.

Transformation of males into intersexes by oestrogen passed from blood of ring-doves to their ovarian eggs. O. Riddle and H. H. Dunham (*Endocrinol.*, 1942, 30, 959–968).—Intramuscular injections of 0.5–1 mg. of oestradiol benzoate were given 26–34 hr. before discharge of an ovum from the ovary. Most of 17 male birds hatched from such ova were more or less feminised. V. J. W.

The oestrogens. E. A. Doisy (*Endocrinol.*, 1942, 30, 933–941).—A review. V. J. W.

Influence of various steroids on development of castration changes in hypophysis of rat. E. Clarke, S. Albert, and H. Selye (*Anat. Rec.*, 1942, 83, 449–455).—All folliculoid, testoid, corticoid, and luteoid compounds as well as pregnenolone inhibit the formation of castration cells in the hypophysis of the male or female gonadectomised rat. Hormonally inactive steroids have no such effect. The "castration-change-preventing" effect is a common action shared by all hormonally active steroids. W. F. H.

Experimental intersexuality: effects of combined oestrogens and androgens on embryonic sexual development of rat. R. R. Greene, M. W. Burrill, and A. C. Ivy (*J. exp. Zool.*, 1941, 87, 211–232).—The data presented demonstrate that oestrogens and androgens are reciprocally antagonistic in the sexual development of rat embryos; these sex hormones are mutually antagonistic in their effects on embryonic sexual development. J. D. B.

Effect of oestrogenic substance in *Lebistes reticulatus*. P. Berkowitz (*J. exp. Zool.*, 1941, 87, 233–243).—Oestrogenic feeding or injection of cryst. oestrogens produced inhibition of male and stimulation of female secondary sexual characters in the immature guppy fish. Testes of genetic males could be transformed into ovaries. J. D. B.

Oestrogenic transfer between parabiotic rats in relation to effect of *pp*-dihydroxy- α -diethylstilbene on secretion of gonadotropic complex. C. Biddulph, R. K. Meyer, and L. G. Gumbreck (*J. exp. Zool.*, 1941, 88, 17–24).—Data presented indicate that castration hypersecretion of the gonadotropic complex in rats can be prevented by diethylstilboestrol. J. D. B.

Autodetoxication of stilboestrol during pregnancy. B. Zondek and Y. M. Bromberg (*Lancet*, 1942, 242, 381–382).—In 4 patients during the early months of pregnancy stilboestrol in doses up to 270–445 mg. in 6 days was tolerated without side effects, whereas the same patients some months after childbirth showed nausea and vomiting after 2–5-mg. doses. The mode of this detoxication is not yet known. C. A. K.

Conversion of oestrone into oestriol in vivo. W. H. Pearlman and G. Pincus (*J. Biol. Chem.*, 1942, 144, 569–570).—After intramuscular injection into men of oestrone acetate dissolved in oil, the urine contains oestriol and α -oestradiol. J. N. A.

Parenteral and oral action of oestrone glucosides and free oestrone. L. Bennekou and K. Pedersen-Bjergaard (*Z. physiol. Chem.*, 1942, 272, 144–146).—Free oestrone, orally administered, is destroyed chiefly in the liver. Protection against destruction is achieved by converting into glucoside, oestrone glucoside (oestrone content, 62.5%) and oestrone glucoside tetra-acetate (oestrone content, 45%) being less efficient than free oestrone in causing cornification of the vaginal epithelium of the castrated rat when administered parenterally but much more efficient when administered orally. Similar results are obtained in tests with monkeys. W. McC.

Trimethylamine and sexual growth (rat). H. Wastl (*J. Physiol.*, 1942, 101, 192—199).—Whatever effect this substance may have on fishes and batrachians (cf. Havas, A., 1939, III, 412), it exerts no hormone-like sex-stimulating effects when injected into the growing white rat. J. A. C.

Progesterone effect on pituitary lactogen content and on mammary glands of ovariectomised rats. R. P. Reece and J. A. Bivins (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 582—584).—Daily injection of 15 mg. of progesterone caused some increase in pituitary lactogen and lobule-alveolar development in the mammary glands. It was less effective than 33 µg. of oestradiol benzoate in both respects. V. J. W.

Tolerance to large doses of anhydroxyprogesterone in hysterectomised and ovariectomised women. R. Wenner and C. A. Joël (*Schweiz. med. Wschr.*, 1941, 71, 1040—1041).—Anhydroxyprogesterone was given in doses up to 1 g. per day in 2 hysterectomised and ovariectomised women. Before and during treatment 1 l. of urine contained 0.1—0.2 mg. of pregnanediol and 0.2 mg. of androsterone. A. S.

Urinary sterol excretion following administration of anhydroxyprogesterone. M. W. Goldberg and E. Hardegger (*Schweiz. med. Wschr.*, 1941, 71, 1041—1042).—The urinary sterol compounds were hydrolysed by conc. HCl and extracted with benzene. Strong and weak acid and neutral fractions were found and the latter treated with Girard's reagent T. Ketones and ketone-free fractions were treated with digitonin. The cholesterol content of the urines was 2.3 and 2.8 mg. per l. A. S.

Effects of progesterone on sex organs and production of placenta in female guinea-pig. H. T. Blumenthal and L. Loeb (*Arch. Path.*, 1942, 34, 49—65).—Progesterone injected into immature ovariectomised and non-ovariectomised guinea-pigs produced a predecidual or decidual reaction in the uterine mucosa. Injections of anterior pituitary extract diminished the response to progesterone in animals with intact ovaries. Mechanical stimulation of the uterine mucosa intensified the reaction and led to production of placenta. Oestrogen administered before progesterone intensified the effects of the latter. Prolongation of progesterone injections diminished the uterine response and finally set up a refractory state. C. J. C. B.

Effects of gonadotropic hormone in fish *Xiphophorus helleri*. F. M. Baldwin and M. H. Li (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 601—604).—Administration of human pregnancy urine extract to 20 female fish caused development of a testis and secondary male characters in 4. Administration to males caused accelerated spermatogenesis and testicular exhaustion. V. J. W.

Urinary gonadotrophins in normal men. H. M. Evans and A. Gorbman (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 674—678).—The alcoholic ppt. is dialysed and dried while frozen. Assay was by rat uterus and ovary or mouse uterus. Content was 1—4.5 rat units or 6—20 mouse units per l. V. J. W.

Effect of chorionic gonadotropin on spread of particulate substances in skin of rabbits. M. B. Lurie and P. Zappasodi (*Arch. Path.*, 1942, 34, 151—165).—0.1 mg. of a highly purified extract containing the luteinising factor of human pregnancy urine when injected intravenously into rabbits enhanced the spread of India ink in the skin for 48 hr. after injection. C. J. C. B.

Hormonal augmentation of fertility in sheep. I. Induction of ovulation, superovulation, and heat in sheep. J. Hammond, jun., J. Hammond, and A. S. Parkes (*J. Agric. Sci.*, 1942, 32, 308—323).—Ovulation is induced in anæstrous sheep by gonadotrophic extracts, probably stimulating the ovary, and by oestrogens. Oestrogens induce heat in anæstrous animals, but gonadotrophins only do so in sheep with a regressing corpus luteum. Presence of an active corpus luteum suppresses ovulation and heat. Injection of horse pituitary just before regression of the corpus luteum causes up to 12 ovulations at the next heat. R. L. E.

Comparison of effects of gonadotropic and sex hormones on urogenital systems of juvenile terrapins. P. L. Risby (*J. exp. Zool.*, 1941, 87, 477—515).—An account of the results of experiments on the terrapin and a comparison with those obtained for other reptiles and vertebrates generally. The observations support the concepts of Witschi and Moore that the adult hormones are not the agents controlling normal sex differentiation. J. D. B.

Precocious gonadal development occurring in immature rats following short-time treatment with antigonadotropic serum. H. S. Kupperman, R. K. Meyer, and J. C. Finerty (*Amer. J. Physiol.*, 1942, 136, 293—298).—After treatment with antigonadotropic serum, there developed hypersecretion of gonadotropic hormone by the pituitary, resulting in precocious ovarian development, premature occurrence of the cyclic variations in the vaginal smears of the treated rats after discontinuation of the injections, and extreme basophilism of the pituitary. T. F. D.

Endocrine effects of certain dysontogenetic tumours of ovary. E. Novak (*Endocrinol.*, 1942, 30, 953—958).—A review of masculinising and feminising tumours. V. J. W.

Variations in size of corpora lutea in albino rat. C. K. Weichert and A. W. Schurgast (*Anat. Rec.*, 1942, 83, 321—334).—The size of the corpora lutea of ovulation, pseudopregnancy, normal pregnancy, and normal lactation is detailed. Injections of Antuitrin-S, oestrogens, and prolactin show that only with oestrogens is the typical ovarian picture of the latter half of pregnancy obtained in the non-pregnant rat. The size of corpora lutea produced by oestrogen treatment is directly correlated with the dose and length of time during which it is administered. W. F. H.

Causes of still-birth in pig: attempt to control it. S. A. Asdell and J. P. Willman (*J. Agric. Res.*, 1941, 63, 345—353).—The % of still-born pigs in the herd examined was 6.6. Mortality was greater in spring than in autumn farrowings and increased with the age of the sow and the size of the litter; it was the same for both sexes. The wt. of still-born pigs was less than the average and was more variable than that of pigs born alive. Disproportionate organ wts. and pathological conditions mainly contributed to mortality. Dead pigs were usually born late in the farrowing; injection of pituitrin to hasten birth was of doubtful benefit. A. G. P.

Calcium nutrition of fœtus. J. Duckworth (*Nature*, 1942, 149, 371).—Theoretical. E. R. S.

Is human placenta permeable to gonadotropic and oestrogenic hormones? J. Sklow (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 607—609).—Blood from the umbilical vein contained gonadotropic hormone 1.5—12.5% as much, and of oestrogenic hormone 27—100% as much, as maternal blood. V. J. W.

Fibrous connective tissue of artificially induced maternal placenta in rat. J. M. Wolfe and A. W. Wright (*Amer. J. Path.*, 1942, 18, 431—448).—The fibrillar elements in deciduomata of the rat ranged from fine fibrils to fibres 3 µ. in width. The fibrous material was derived from that of the normal endometrium which underwent marked changes during decidual growth. Under certain circumstances collagen may be transformed into reticulum. (29 photomicrographs.) C. J. C. B.

Placental permeability to cirrhogenic poisons. A. E. Sundareson (*J. Path. Bact.*, 1942, 54, 289—298).—CCl₄ and senecionine diffuse through the placenta of a pregnant rat and cause degenerative changes in the liver of the fœtuses. This passage through the placenta does not alter the permeability of the organ to trypan-blue, which normally does not pass through it. The same poisons injected into rat fœtuses *in utero* diffuse through the placenta and produce changes in the liver of the mother. Repeated administration of CCl₄ and of senecionine to the mated rat before the 12th day of gestation frequently results in failure to implant or causes increased intra-uterine and post-natal mortality. Injections after the 12th day of gestation induced premature delivery and increased the post-natal mortality. (9 photomicrographs.) C. J. C. B.

Amounts of glycogen in endometrium. L. M. Randall and M. H. Power (*Proc. Staff Mayo Clin.*, 1942, 17, 158—160).—The average glycogen content (g.-%) in 4 specimens of endometrium in the proliferative phase was 0.171. 3 specimens in the late proliferative and early differentiative phases contained 0.26, 0.43, and 0.36; 6 specimens in the normal early differentiative phase 1.09, and 17 specimens in the late differentiative phase 0.71. H. H. K.

Lobule-alveolar growth of mammary glands of hypophysectomised female rats. R. P. Reece and S. L. Leonard (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 660—662).—Daily injection of 0.3 mg. of testosterone propionate caused no mammary growth, but growth occurred if 0.5 c.c. of growth hormone (Squibb) was given in addition. V. J. W.

Mammogen and unilateral gland growth in rabbit. A. A. Lewis and C. W. Turner (*Endocrinol.*, 1942, 30, 985—989).—Oestrone or diethylstilbœstrol in olive oil applied to the abdominal skin of one side of male rabbits causes mammary growth on that side. Turpentine and other irritants do not. V. J. W.

Normal and experimental mammary involution in mouse as related to inception and cessation of lactation. W. L. Williams (*Amer. J. Anat.*, 1942, 71, 1—41).—Post-parturitional involution in the absence of suckling is a rapid atrophy of a non-secreting parenchyma. The degree of parenchymal atrophy following removal of the suckling young at the 10th and 21st day of lactation is described. Polymorphonuclear leucocytes were active during the early stages of post-secretory involution. Rapidly growing, loose, adipose stroma incorporated many necrotic parenchymal elements and served as a source of macrophages during involution. Ovariectomy had no effect on the course of involution. Hypophysectomy greatly accelerated involution which followed removal of the young on the 10th day of lactation. W. F. H.

Non-effect of massive doses of progesterone and deoxycorticosterone on lactation. S. J. Folley (*Nature*, 1942, 150, 266).—15 mg. of progesterone or 10 mg. of deoxycorticosterone acetate or 4 mg. of pregnenolone daily had no effect on the lactation of rats, as measured by the % of young weaned. E. R. S.

Nicotinamide in human milk. A. Lvov, M. Morel, and L. Digonet (*Compt. rend.*, 1941, 213, 811—813).—Nicotinamide may be detected in human milk using cultures of *Proteus*. Min. detectable amounts are 0.01—0.09 μ g. per ml. using 5 ml. of milk. Recently delivered, poor or middle-class Parisian women (3—8 days), fed on 600 mg. of supplementary nicotinamide until 1 month previous to delivery, had 0.07 mg.-% (average). Nursing women (95—420 days) on normal diet had 0.126 mg.-% (average). It is suggested that the first val. is not abnormal and retention of nicotinamide in milk is increased gradually after confinement. C. S.

Prolonging viability of spermatozoa in vitro. A. H. Frank, C. A. Smith, and A. Eichhorn (*J. Amer. Vet. Med. Assoc.*, 1941, 99, 287—288).—Bull semen preserved at 2° in embryonic tissue extract prepared from developing chick embryo contained motile spermatozoa for periods up to 46 days. Cows were successfully impregnated with semen suspended in the extract. E. G. W.

Hydrogen-ion concentration of semen of the bull. J. Anderson (*J. Agric. Sci.*, 1942, 32, 298—307).—Bull semen has a mean p_H of 6.73. Concn. of spermatozoa, vol. of ejaculate, and motility all decrease with rising p_H . Motility is retained best in semen which has initial p_H 6.4—6.6, decreasing with storage. R. L. E.

Influence of methyltestosterone on metabolism of normal, castrate, and thyroidectomized rats. A. E. Meyer and H. Danow (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 598—601).—Methyltestosterone, 0.5 mg. daily, caused some increase in basal metabolic rate of thyroidectomized castrate rats but not in controls. V. J. W.

Effect of androgen on metabolism of subcutaneous corn oil. J. C. Turner and B. Mulliken (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 585—586).—Rate of disappearance of injected corn oil in castrated mice is increased by injections of testosterone propionate amounting to 15 mg. per mouse. V. J. W.

Treatment of senile pruritus with androgens and oestrogens. S. Feldman, J. Pollock, and A. R. Abarbanel (*Arch. Dermat. Syphilol.*, 1942, 46, 112—1127).—10 mg. of testosterone propionate or 1 mg. of oestradiol dipropionate is a safe and effective dose. There are no ill effects except for uterine bleeding and painful nipples, which can be counteracted by combining an oestrogen with an androgen. C. J. C. B.

Use of testosterone propionate in gynaecology. E. F. E. Black (*Canad. Med. Assoc. J.*, 1942, 47, 124—128).—A lecture. C. J. C. B.

Androgenic action of pregnenolone on secondary sexual characters of *Lebistes reticulatus*. M. T. Régner (*Compt. rend.*, 1941, 213, 537—538).—The addition of 10 mg. of pregnenolone to 12 l. of aquarium water causes the appearance of male characteristics when the organisms are 3 weeks old (compared with the normal 3 months), which is much more rapid than that caused by 50 mg. of an oil solution of testosterone dipropionate. H. G. R.

Responses of testis to androgenic treatment. C. R. Moore and C. F. Morgan (*Endocrinol.*, 1942, 30, 990—999).—No consistent responses were obtained in the opossum from 16 days to 10 months of age. V. J. W.

XIII.—DIGESTIVE SYSTEM.

Clinical roentgenological review of literature for 1941, pertaining to digestive tract. M. Feldman (*Amer. J. digest. Dis.*, 1942, 9, 211—220).—A review with 166 references. N. F. M.

Simplified procedure for preparing an improved Pavlov pouch. J. E. Thomas (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 58—61).—A method is described for producing a pouch by a mucous membrane partition, the muscular coat between pouch and stomach being intact. V. J. W.

Fear and gastric acidity. F. Holzel (*Amer. J. digest. Dis.*, 1942, 9, 188—188).—A personal experiment showing a sustained rise of fasting gastric acidity during a period of 10 days, during which there was fear of being shot. N. F. M.

Relation of neurohypophysis to gastric secretion. E. G. Gross, W. R. Ingram, and N. W. Fugo (*Amer. J. digest. Dis.*, 1942, 9, 234—237).—Studies on gastric secretory response to histamine and food in dogs with Pavlov pouches and complete removal of posterior pituitary gland showed no alteration in the acidity of the gastric juice. N. F. M.

Effect of cream meal on acidity and neutralising ability of contents of duodenal bulb in normal dogs. J. E. Berk, J. E. Thomas, and M. E. Rehfuess (*Amer. J. Physiol.*, 1942, 136, 285—292).—Table cream (20% fat) diminishes acidity and increases the excess neutralising ability of the contents of the 1st part of the duodenum in the normal dog. This effect is only partly due to the inhibitory effect of the fat on gastric secretion. Acidity of the duodenal contents is largely determined by the type of food and is little related to the acidity of the gastric contents. M. W. G.

Relation of meal temperature to gastric motility and secretion. J. Gershon-Cohen, H. Shay, and S. S. Fels (*Amer. J. Roentgenol.*,

1940, 43, 237—242).—Gastric temp. in 24 healthy subjects, determined with sensitive thermocouples, varied between 97.4° and 99.6° F. With an ice-cold liquid meal, it dropped immediately to 70—75°, reaching the original val. after 35—45 min. After a liquid meal at 145—155° F., temp. rose by 6—10° and was back to normal after 15—20 min. With cold meals motility (observed by X-rays) was very high soon after ingestion whilst an initial slowing was noted after the hot meal. Gastric secretion was unaffected by very hot, but initially depressed by cold, meals. H. L.

Influence of drugs on rate of gastric emptying in normal man determined by intubation technique. J. H. Folley and W. O. Abbott (*Amer. J. digest. Dis.*, 1942, 9, 202—205).—Rate was unaltered by clinical doses of atropine, amphetamine, prostigmine, nitroglycerin, syntropan, acetyl- β -methylcholine, ergotamine, or NaHCO_3 . Morphine delayed gastric emptying. N. F. M.

Relationship between gastric motility, muscular twitching during sleep, and dreaming. H. B. McGlade (*Amer. J. digest. Dis.*, 1942, 9, 137—140).—In 3 persons, out of 25 tested, certain foot movements during sleep were regularly correlated with dreams and with relaxation of the pyloric sphincter. N. F. M.

Gastrointestinal response of average healthy children to test meals of barium in milk, cream, meat, and carbohydrate media. L. Reynolds, I. G. Macy, H. Hunscher, and M. B. Olsen (*Amer. J. Roentgenol.*, 1940, 43, 517—532).—Serial X-ray studies in children aged 4½—8 years showed that, compared with water-Ba meals, milk, cream, and carbohydrate meals were all initially delayed in the stomach; intestinal passage of milk meals was slightly, and of cream considerably, retarded. The meat meals containing 7% of protein and 3.5% of fat passed more quickly than the cream through stomach and small intestine but exerted at the terminal ileal loops a stronger gastric inhibition than the cream media. The carbohydrate meal filled the entire small intestine very rapidly; at the same time the stomach increased in size: this is attributed to a humoral mechanism bringing stomach contents rapidly to isotonicity by osmotic induction of water. H. L.

Effect of vitamin-B complex deficiency on gastric emptying and small intestinal motility. G. W. Heublein, W. D. Thompson, jun., and J. P. Scully (*Amer. J. Roentgenol.*, 1941, 46, 866—875).—Young adult dogs showed marked delay of gastric, and moderate delay of small intestinal, motility. Vitamin-B₁₂ administration effected temporary, and yeast complete, restitution. H. L.

Production of experimental ulceration of gastro-intestinal tract in cats. M. J. Schiffrin and A. A. Warren (*Amer. J. digest. Dis.*, 1942, 9, 205—209).—In cats (with and without anaesthesia), perfusion of a segment of the gastro-intestinal tract with pepsin in an acid medium produced more ulceration than perfusion with acid alone. Duodenum was more susceptible than jejunum or ileum. N. F. M.

Trichobezoar; report of case. J. S. Levy and R. T. Smith (*Amer. J. digest. Dis.*, 1942, 9, 198—200).—A case of gastric hair-ball compared with 173 others from the literature. N. F. M.

Total gastrectomy. W. B. Sealy and J. T. Priestley (*Proc. Staff Mayo Clin.*, 1942, 17, 89—92).—Report of a case. H. H. K.

Atrophic gastritis and gastric cancer. N. Shapiro, L. Schiff, M. M. Maher, and M. M. Zininger (*J. Nat. Cancer Inst.*, 1942, 2, 583—588).—Of 35 clinical cases of gastric cancer 28 showed evidence of atrophic gastritis. Achlorhydria and anaemia occurred more often in gastritis patients. E. B.

Acute perforated duodenal ulcer following metrazol therapy. J. A. Tuta and J. B. Batko (*Amer. J. med. Sci.*, 1942, 204, 107—111).—A case report. C. J. C. B.

Peptic ulcer in infancy and childhood. K. J. Guthrie (*Arch. Childh.*, 1942, 17, 82—94).—A review and description of 9 new cases. C. J. C. B.

Gastrojejunocolic fistula. J. J. Stein (*Amer. J. digest. Dis.*, 1942, 9, 192—194).—A clinical lecture with references. N. F. M.

Gastroscopic observations in pulmonary tuberculosis. J. Flexner and O. Baum (*Amer. J. med. Sci.*, 1942, 204, 101—105).—In 27 patients with pulmonary tuberculosis gastroscopy showed no sp. lesion though 5 patients had tuberculous enteritis. Chronic superficial gastritis was found alone and combined with chronic gastritis in 20 patients. The gastric abnormalities were not correlated with the duration, severity, or type of tuberculosis nor with the quantity of sputum expectorated. C. J. C. B.

Prevention of experimental gastrojejunal ulcer by enterogastrone therapy. A. P. Hands, H. Greengard, F. W. Preston, G. B. Fauley, and A. C. Ivy (*Endocrinol.*, 1942, 30, 905—911).—In dogs subjected to gastrojejunostomy with drainage of bile and pancreatic juice into the distal ileum intravenous injections of enterogastrone reduced incidence of fatal jejunal ulcers from 100% to 24%. V. J. W.

Intubation studies of human small intestine. Improved technique for study of absorption; its application to ascorbic acid. J. T. L. Nicholson and F. W. Chornock (*J. clin. Invest.*, 1942, 21, 505—

509).—Using the special intubation method described, it was found that the capacity of a short segment of the upper small intestine for the absorption of vitamin-C within 1 hr. is far in excess of the optimal daily requirement. C. J. C. B.

Action of drugs and sugars on isolated small intestine (rabbit). W. Feldberg and O. M. Solandt (*J. Physiol.*, 1942, 101, 137—171).—The effects of acetylcholine, muscarine, eserine, phloridzin, and atropine on the longitudinal and circular muscle layers of the isolated intestine suspended in Tyrode solution are examined in the presence and absence of glucose. The stimulation of the longitudinal muscle by glucose is not due to increased synthesis of acetylcholine or choline in the intestinal wall, but to the fact that glucose supplies the chemical energy necessary for the tonic and rhythmic activity of the muscle and makes it excitable to the acetylcholine and choline continuously released in the intestinal wall. The relative inability of glucose to stimulate circular muscle is due to the muscle not becoming depleted of its energy stores in the absence of glucose, because it lacks powerful spontaneous activity. Pyruvate, mannose, and galactose can replace glucose in its action on the intestine. The stimulating actions of lactate are direct effects. J. A. C.

Normal variation in gastrointestinal response of healthy children. I. G. Macy, L. Reynolds, H. J. Souders, and M. B. Olson (*Amer. J. Roentgenol.*, 1940, 43, 394—403).—Serial X-ray studies were made of 7 children, aged 6—10 years, to test meals of 2 oz. of BaSO₄ in 4 oz. of water or milk at body temp. Variation in response of different individuals, though wide, was not as great as the variation produced by the different media used. Milk stimulated tone and peristalsis and delayed passage through stomach and intestine, especially ileal loops. Mean gastric emptying of milk-Ba meal was 3.1 hr. (range 1.5—4.5) and of water-Ba meal 1.9 hr. (1—2.8). Jejunal emptying time was for the milk-Ba 3.4 and for water-Ba 2.4 hr. There were no consistent differences in the emptying of the colon. H. L.

Self-regulatory duodenal mechanism for gastric acid control; explanation for pathologic gastric physiology in uncomplicated duodenal ulcer. H. Shay, J. Gershon-Cohen, and S. Fels (*Amer. J. digest. Dis.*, 1942, 9, 124—128).—Test meals were performed on patients with 2 Rehffuss tubes, the specimens being withdrawn from the gastric tube while HCl was introduced via the duodenal tube. This procedure depressed gastric secretion in normal subjects but not in patients with duodenal ulcer. N. F. M.

Lipolytic analysis of duodenal contents. B. N. Craver and B. S. Walker (*Amer. J. digest. Dis.*, 1942, 9, 223—227).—The lipase content of the duodenal contents was studied in 50 normal subjects after stimulation with HCl. N. F. M.

Method of assaying trypsin suitable for routine use in diagnosis of congenital pancreatic deficiency. D. H. Andersen and M. V. Early (*Amer. J. Dis. Child.*, 1942, 63, 891—893).—A modification of the method of Fermi (A., 1906, i, 392) is described. C. J. C. B.

Deproteinized pancreatic extract in treatment of psoriasis. J. G. Downing, E. A. Glicklich, and S. J. Messina (*Arch. Dermat. Syphilol.*, 1942, 45, 1125).—Improvement was found in 7 of 13 cases. C. J. C. B.

Etiology of acute pancreatitis. H. L. Popper (*Amer. J. digest. Dis.*, 1942, 9, 186—187).—Enzyme estimations on bile aspirated from the gall bladder indicated the presence of a common channel from the bile and pancreatic ducts in 16 out of 18 cases of acute pancreatitis. N. F. M.

Abnormal accumulations of lymph follicles in digestive tract. P. Gruenwald (*Amer. J. med. Sci.*, 1942, 203, 823—829).—5 cases of circumscribed hyperplasia of histologically normal lymphoid tissue in the intestinal tract are described. C. J. C. B.

Influence of bile salts on active intestinal absorption of chloride. H. C. Peters (*Amer. J. Physiol.*, 1942, 136, 340—345).—2% commercial bile salts, 1.5% Na taurocholate, 0.2% Na glycocholate, or 0.2% Na deoxycholate decreased water and active Cl⁻ absorption in loops of lower ileum in anesthetized dogs (pentobarbital Na). Higher concns. produced greater effects. The net transfer of Cl⁻ or water was towards the intestinal lumen in some cases. 0.19% Na acetate, 0.75% glucose, or 0.042% NaHCO₃ did not decrease water or active Cl⁻ absorption. The results cannot be accounted for by reduction of original Cl⁻ and SO₄²⁻ concns., osmotic effects, *pH*, or buffering power. 0.15% saponin decreases water and Cl⁻ absorption. M. W. G.

Position of colon. A. Oppenheimer (*Amer. J. Roentgenol.*, 1941, 45, 177—186).—A roentgenological study of variations in position of the normal colon. H. L.

Diaphragmatic flexure. J. L. Kantor (*Amer. J. Roentgenol.*, 1942, 47, 417—426).—This term is introduced to describe a splenic flexure located directly under the left diaphragm; it occurs in 15% of cases. It is fixed in half the cases, is more frequent in sthenics than in asthenics, is often associated with a redundant colon, and may

cause heartburn, chest distress, and cardiac embarrassment, especially when associated with aerocolie. H. L.

Intravenous therapy in chronic ulcerative colitis. R. E. Benson, P. W. Brown, and T. H. Seldon (*Proc. Staff Mayo Clin.*, 1942, 17, 45—48).—A discussion. H. H. K.

Use of concentrated and purified antitoxic B. coli serum in treatment of indeterminate ulcerative colitis. A. Winkelstein and G. Schwarzman (*Amer. J. digest. Dis.*, 1942, 9, 133—136).—29 cases were treated with horse serum anti-toxic to B. coli, with great benefit in 20. N. F. M.

Cellulose-splitting micro-organisms in human faeces. N. Hirschberg (*Amer. J. digest. Dis.*, 1942, 9, 200—202).—111 strains of cellulose-splitting fungi were isolated from the 171 normal stools. N. F. M.

Proctoscopic cinematography. J. F. Pessel, J. M. Garner, and J. F. Nesselrod (*Amer. J. digest. Dis.*, 1942, 9, 140—141).—The technique is described (8 coloured plates). N. F. M.

Rumen gases and bloat in ruminants. R. W. Dougherty (*J. Amer. Vet. Med. Assoc.*, 1941, 99, 110—114; cf. A., 1941, III, 9).—Samples of rumen gases of cattle and sheep contained 0.0—0.17% of CO and up to 0.03% of H₂S. Feeding clover and lucerne increased the H₂S content of the rumen contents but did not affect the CO content. Insufflation of CO and H₂S into the rumen of normal sheep and of a cow with a rumen fistula produced toxic symptoms. Both *in vitro* and *in vivo* cystine, methionine, and inorg. S added to rumen contents caused increased H₂S production. In a heifer dying from bloat large amounts of H₂S were found in the rumen gases and ingesta. E. G. W.

XIV.—LIVER AND BILE.

Liver function test for small laboratory animals. A. O. Seeler and S. Kuna (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 528—530).—The bromsulphalein method of Rosenthal and White (cf. A., 1925, i, 101) is adapted for rats or mice by using glass tubes 0.9 mm. in diameter in place of pipettes. V. J. W.

Significance of dosage and time factors on value of bromsulphalein test for liver function. J. D. Helm and T. E. Machella (*Amer. J. digest. Dis.*, 1942, 9, 141—143).—5 mg. per kg. is the dose recommended, after which there should be no retention in the blood after 30 min. N. F. M.

Intravenous modification of hippuric acid test of liver function. R. H. Moser, B. D. Rosenak, and R. J. Hasterlik (*Amer. J. digest. Dis.*, 1942, 9, 183—186).—A review of 100 tests. The test was a valuable indicator of hepatic damage in cases where the kidneys were normal. N. F. M.

Intrahepatic circulation of blood.—See A., 1942, III, 734.

Influence of fasting, epinephrine, and insulin on the distribution of acid-soluble phosphorus in the liver of rats. N. Nelson, S. Rapoport, G. M. Guest, and I. A. Mirsky (*J. Biol. Chem.*, 1942, 144, 291—296).—Injection of insulin into normal and fasting rats causes an increase in the org. and inorg. acid-sol. P in the liver and a decrease in inorg. P in the blood plasma. Adrenaline causes little change in the acid-sol. P of the liver of fasted rats. The inorg. P of the liver is increased by 16—18 hr. fasting without change in the total acid-sol. P. H. G. R.

Behaviour of lipins during autolysis of liver and brain. W. M. Sperry, F. C. Brand, and W. M. Copenhaver (*J. Biol. Chem.*, 1942, 144, 297—306).—Cholesterol is unaffected by sterile autolysis of liver or autolysis in the abdominal cavity and is retained by the intact tissue though an apparent concn. is caused by a marked loss of tissue solids. A similar concn. of phospholipin also occurs since the rate of decomp. is proportionally less than the decrease in dry wt. of the tissue. During autolysis little destruction of the cells except at the periphery and a marked cell shrinkage are observed. No significant changes in the cholesterol and phospholipins of brain after incubation for 1 day are observed. H. G. R.

Oxygen consumption and ketone-body production in fatty livers due to carbon tetrachloride or phosphorus. A. H. Ennor (*Austral. J. Exp. Biol.*, 1942, 20, 73—80).—The O₂ consumption of isolated slices of fatty livers induced by CCl₄ or P poisoning is considerably above normal. There is possibly an increase in general metabolism, since the increase in O₂ consumption is greater than that required by the amount of acetoacetic acid that appears, and histological evidence of liver damage cannot be correlated with it. Oxidation of added substrate by fatty livers is not impaired. P. G. M.

Choline-oxidase activity of fatty livers. P. Handler and F. Bernheim (*J. Biol. Chem.*, 1942, 144, 401—403).—The ratio of the oxidation rates of choline and succinic acid is 0.6 in normal rat's liver and 0.2 in fatty liver caused by a low-methionine diet. R. L. E.

l(—)Cysteic acid decarboxylase of dog's liver. H. Blaschko (*J. Physiol.*, 1942, 101, 6—7p).—This new enzyme takes part in the formation of taurine in the dog's liver. Like l(—)dopa decarb-

oxylase, it is reversibly inhibited by cyanide, insensitive to octyl alcohol, and stereo-sp. J. A. C.

Riboflavin content of liver.—See A., 1942, III, 762.

Regeneration of rat liver at different ages. J. L. Norris, J. Blanchard, and C. Povolny (*Arch. Path.*, 1942, 34, 208—217).—Rat livers at all ages had a great capacity to regenerate after 65% hepatectomy, but the degree varied inversely with age. The rate of anaerobic glycolysis was in descending order in embryonal, neonatal, and normal adult rat liver. The high rates during the embryonal and neonatal periods were related to the haemopoietic tissue in the liver at these periods. The increase in anaerobic glycolysis of neoplastic over non-neoplastic tissue is due to differences inherent in the tissues. (4 photomicrographs.) C. J. C. B.

Effect of parabiosis on hepatic changes following obstruction of common bile duct in rats. R. A. Moore, L. M. Hellman, and H. Jacobius (*Arch. Path.*, 1942, 34, 196—198).—In parabiotic rats, products of biliary secretion are eliminated by the normal member after ligation of the common duct of the other. There is no accumulation of bile pigments or jaundice, but the ducts become dilated with clear, colourless secretion. Necrosis of the liver occurs in both parabiotic and control animals. Fibrosis subsequently takes place though less promptly than in control animals with ligated ducts and obstructive jaundice. C. J. C. B.

Latent liver disease in persons recovered from catarrhal jaundice and in otherwise normal medical students as revealed by bilirubin excretion test. A. Kornberg (*J. clin. Invest.*, 1942, 21, 299—307).—Persons long recovered from catarrhal jaundice showed an abnormal retention of bilirubin and possessed symptoms of liver dysfunction in 10 of 16 cases. C. J. C. B.

Portal cirrhosis with ascites; analysis of 200 cases, prognosis, and treatment. R. G. Fleming and A. M. Snell (*Amer. J. digest. Dis.*, 1942, 9, 115—120).—42 of the patients survived for an average period of 45.5 months. The group treated with high-carbohydrate, high vegetable protein and vitamin diet gave better results than the group receiving high-carbohydrate diet and diuretics. Omentopexy for ascites was a failure. N. F. M.

Cirrhosis of liver among rats receiving diets poor in protein and rich in fat. G. T. Webster (*J. clin. Invest.*, 1942, 21, 385—392).—Necrosis and cirrhosis of the liver and renal necrosis, fibrosis, and haemorrhage occurred among rats receiving diets poor in protein and choline and rich in fat. The lesions were prevented by an increase in protein and addition of molasses. A reduction in fat or addition of betaine diminished the severity of the lesions. Cystine (except for renal lesions) and cholesterol increased the severity of the fibrotic changes. The effect of cystine was counteracted by betaine. Thiamin and riboflavin were without influence on the disease. Yeast prevented the lesions, perhaps by providing extra protein and choline. Neoplasms occurred in 20% of the rats receiving added cystine. (9 photomicrographs.) C. J. C. B.

Influence of vitamin-B deficiency on experimental liver necrosis. R. M. Calder (*J. Path. Bact.*, 1942, 54, 355—368).—The dietary balance of choline and a thermolabile factor in the vitamin-B complex influences the degree of liver damage in rats following the subcutaneous injection of CHCl_3 . The thermolabile factor is not B_1 . It is present in yeast, is insol. in alcohol, and is destroyed by autoclaving. It may be identical with factor W, but for convenience it has been termed "factor-N." Deficiency of -N with adequate choline, or the converse, will increase liver damage as compared with animals in which both factors are adequate or both are deficient. These effects cannot be attributed to alterations in liver-fat or -glycogen. C. J. C. B.

Protective action of xanthine and other insoluble substances on liver. R. M. Calder (*J. Path. Bact.*, 1942, 54, 369—373).—The following substances, when injected subcutaneously, exert a protective action on rat liver against CHCl_3 necrosis in this descending order of efficacy: India ink, charcoal, xanthine, red cells, carborundum. There is an association between the degree of inflammatory reaction at the point of injection and the protection afforded to the liver. The protective action is not due to retention of the CHCl_3 by the substances injected, but may be due to general stimulation of leucopoietic tissue. C. J. C. B.

Nature of urobilin obtained after amalgam reduction of human fistula bile. C. J. Watson and S. Schwartz. Isolation of dextro-rotatory urobilin from human fistula bile. S. Schwartz and C. J. Watson. Formation of d -urobilin from mesobilirubinogen in human bile. S. Schwartz, V. Sborov, and C. J. Watson. Formation of (l)-stereobilin from mesobilirubinogen in human faeces. C. J. Watson, V. Sborov, and S. Schwartz (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 636—640, 641—643, 643—647, 647—651).—Amalgam reduction of bile yields no stereobilin. Infected bile yields a d -urobilin (hydrochloride, m.p. 142—144° from acetone, 128—131° from CHCl_3). Its solution in dioxan, acidified with HCl and kept at 100° for 2—5 min., gives a characteristic colour change from orange to violet, blue, and green. It is also produced by incubating bile with mesobilirubinogen, but if faeces are present stereobilin is produced.

It is suggested that bacterial reduction of bilirubin produces mesobilirubinogen, bile converts this into d -urobilin, and bile + faeces form stereobilin. V. J. W.

XV.—KIDNEY AND URINE.

Identification of amines in anaerobic kidney extracts. V. A. Drill (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 557—559).—Extracts prepared by the method of Victor *et al.* (A., 1940, III, 386) contain tyramine, isoamylamine, and probably phenylethylamine. V. J. W.

Renal blood flow, glomerular filtration rate, and degree of tubular reabsorption of glucose in renal glycosuria. M. Friedman, A. Selzer, J. Sugarman, and M. Sokolow (*Amer. J. med. Sci.*, 1942, 204, 22—29).—The effective renal blood flow and glomerular filtration in 5 cases of renal glycosuria were normal. The lessened tubular reabsorption of glucose in renal glycosuria is not due to an organic kidney defect, for at plasma-glucose levels above 200 mg.-%, normal tubular reabsorption of glucose occurs. C. J. C. B.

Renal blood flow in arterial hypertension.—See A., 1942, III, 735.

Renal concentration test employing posterior pituitary extract. W. A. Sodeman and H. T. Engelhardt (*Amer. J. med. Sci.*, 1942, 203, 812—818).—A more detailed account of work already noted (A., 1941, III, 1019). C. J. C. B.

Impaired renal excretion of sodium chloride in congestive heart failure. P. H. Fletcher and H. A. Schroeder (*Amer. J. med. Sci.*, 1942, 204, 52—61).—In 4 patients convalescent from severe congestive heart failure there was impaired renal ability to excrete Na and Cl when their serum concn. was artificially raised. Mercurial diuretics increased NaCl excretion. C. J. C. B.

Urea clearance of young premature and full-term infants. H. H. Gordon, H. E. Harrison, and H. McNamara (*J. clin. Invest.*, 1942, 21, 499—503).—The 24-hr. plasma clearance of urea was determined in 15 premature infants and in 9 full-term infants (8—65 and 7—73 days respectively). The urea clearance is lower in premature than in full-term infants; in both groups of young infants it is lower than that reported for older subjects. No relation exists between urine flow and urea clearance. C. J. C. B.

Stimulating influence of sodium citrate on cellular regeneration and repair in the kidney injured by uranium nitrate.—See A., 1942, III, 771.

Pathologico-anatomical changes of eclampsia. J. Sperl (*Magyar Orv. Arch.*, 1939, 40, 444—468).—Anatomical changes in the endothelial system of the kidneys in eclampsia are identical with those pathological changes due to proteins exerting a general effect. A. W. M.

Survival time of pregnant and non-pregnant rats after nephrectomy. E. W. Page and E. Ogden (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 511—513).—Differences were not significant. V. J. W.

Alcohol diuresis in man. M. G. Eggleton (*J. Physiol.*, 1942, 101, 172—191).—When vol. and other factors are maintained const., the diuresis following an alcoholic drink is proportional to blood-alcohol; variations in external temp. may affect this relationship. Onset is delayed 20—30 min. after the drink and the height of diuresis is unrelated in time to the peak of blood-alcohol concn. Post-pituitary extract completely inhibits the diuresis. The latter is initiated by the increase in blood-alcohol, but is not maintained if this concn. is kept steady even at a high level. The degree of diuresis varies widely in different subjects with a given dose of alcohol. The diuretic response is dependent on the duration of increasing blood-alcohol concn. and not on the rate of increase. The alcohol in urine is in equilibrium with that in the water in the plasma. J. A. C.

Antemortem and postmortem diffusion of alcohol through mucosa of bladder. A. R. Moritz and W. W. Jetter (*Arch. Path.*, 1942, 33, 939—947).—Alcohol may pass into the urine by way of the mucosa of the bladder if the concn. of alcohol in the bladder content is disproportionately low in relation to that in the blood, and out of the urine by the same route if the concn. of alcohol is disproportionately high. The passage of alcohol through the mucosa of the bladder may occur in either direction after death, as well as in life; the direction of diffusion is determined by the relative concns. of alcohol in blood and urine at the time of death. C. J. C. B.

Acidimetric determination of total alkali in urine. W. Hurka (*Z. physiol. Chem.*, 1941, 271, 214—220).—The urine (10 c.c.) is digested with H_2SO_4 — H_2O_2 , excess of H_2SO_4 removed, and the residue heated with aq. $\text{Ba}(\text{OH})_2$; the solution is then treated with CO_2 , boiled, cooled, and filtered, the residue being washed with 50% alcohol. The combined filtrates (containing the alkali metals as carbonates) are titrated with 0.1N-HCl to methyl-orange. F. O. H.

Excretion of vitamin-A in urine.—See A., 1942, III, 761.

Vitamin-B₁ content of urine of *Trichosurus vulpecula*.—See A., 1942, III, 761.

Urinary excretion of thiamin after test dose.—See A., 1942, III, 762.

Excretion of ascorbic acid in urine and its isolation after intake of the vitamin. Can hypovitaminosis-C be demonstrated in urine?—See A., 1942, III, 763.

Green pigment-producing compound in urine of pyridoxine-deficient rats.—See A., 1942, III, 762.

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

Nitrogenous constituents of tissue phosphatides. E. Chargaff, M. Ziff, and D. Rittenberg (*J. Biol. Chem.*, 1942, **144**, 343—352).—Distribution of ethanolamine (isolated as the 3:5-di-iodosalicylate) and choline (isolated as the HgCl₂ double salt) in purified phosphatides is determined by the method of isotope dilution. In pig liver phosphatides, 36.5% of the amino-N could not be characterised as ethanolamine or amino-acid; all of the non-amino-N in a hydrolysate of the phosphatide is present as choline. In ox brain phosphatides, all the amino-N is identified as ethanolamine and amino-acid, and 50% of the non-amino-N as choline. Pig heart phosphatides show 86.8% of amino-N as ethanolamine and amino-acid, and 49.3% of the non-amino-N as choline. Phosphatides from brain and lung have the highest amino-acid content, whereas egg yolk phosphatides contain none. Effect of storage of the phosphatides is studied; I val. and amino-N fall considerably, whereas P and total N are unchanged. A. T. P.

Behaviour of artificial collagenic thread in the homologous and heterologous organism. G. Kiszely (*Magyar Orv. Arch.*, 1940, **41**, 97—102).—The collagenic substance dissolved from rat's tendon or fish's airbladder was made into threads for sewing the wounds of rats. Rat collagenic thread showed after a month but was entirely fused into the surrounding tissue after a year. Fish collagen became encapsulated, the spaces of the fibres showing hyaline degeneration were filled with cells, and the foreign collagen disappeared altogether. A. W. M.

Palindromic rheumatism. P. S. Hench and E. F. Rosenberg (*Proc. Staff Mayo Clin.*, 1941, **16**, 808—815).—A new, oft-recurring disease of joints (arthritis, peri-arthritis, para-arthritis) apparently producing no articular residues. Report of 34 cases. H. H. K.

Rôle of vitamin-C and phosphatase in the formation of bone substance at the fracture callus. J. Roche and R. Martin-Poggi (*Compt. rend.*, 1941, **213**, 668—670).—Following fracture of the shaft of the guinea-pig radius, ascorbic acid accumulates in the callus during the formation of the conjunctive matrix. In the second phase, corresponding to the beginning of ossification, the phosphatase activity reaches a max. A. L.

Metaplastic ossification. S. A. Jacobson (*Proc. Soc. Exp. Biol. Med.*, 1942, **29**, 651—654).—Transplantation of portions of bladder into the rectus muscle caused minute islets of ossification in 5 out of 170 experiments in rats and in 18 out of 26 in guinea-pigs. V. J. W.

Reflex mechanism of sweating in man; effect of anaesthesia and sympathectomy. R. Gurney and I. L. Bunnell (*J. clin. Invest.*, 1942, **21**, 269—274).—No histological changes were seen in sweat glands deprived of their sympathetic nerve supply; the glands respond to intracutaneous injections of mecholyl and excessive local stimulation by heat. If anaesthetic regions are heated, a normal sweat response occurs in other areas. Heated blood acting on the central nervous system is probably the cause of generalised sweating. C. J. C. B.

Determination of p_H of skin of man and common laboratory animals. J. H. Draize (*J. invest. Dermat.*, 1942, **5**, 77—85).—Skin p_H determination is recorded for 51 white males, 52 white females, 25 negro males, and the guinea-pig, rat, rabbit, cat, dog, and monkey. C. J. C. B.

Isolation of a copper-containing protein from cow's milk. W. L. Dills and J. M. Nelson (*J. Amer. Chem. Soc.*, 1942, **64**, 1616—1618).—By fractional treatment with (NH₄)₂SO₄ and basic Pb acetate-acetone, adsorption on Al₂O₃ at p_H 6.8, elution with 0.1M-Na₂HPO₄, and dialysis, skimmed milk yields a protein containing N about 15% and Cu 0.19%, which has no enzymic activity. The Cu is shown by dialysis to be non-ionic. R. S. C.

Spongins. D. Ackermann and C. Burchard (*Z. physiol. Chem.*, 1941, **271**, 183—189).—During an examination of spongin preps. for I- and Br-carriers other than tyrosine, it was shown that tryptophan and histidine are to be excluded. The I and Br contents of 5 spongin from different species of sponge were 0.43—2.66 and 0—6.25%, respectively. F. O. H.

Unsuccessful search for dihydroxyphenylalanine (dopa) in protein hydrolysates. A. M. Sborov, L. Peters, and L. E. Arnow (*Proc. Soc. Exp. Biol. Med.*, 1942, **49**, 698—700).—No dopa was found in acid hydrolysates of egg-white, casein, edestin, fibrin, or velvet-bean protein, although it withstands prolonged boiling in acid. V. J. W.

Effect of alkalis on stability of keratins. B. Chiego and H. Silver (*J. Invest. Dermat.*, 1942, **5**, 95—103).—The cystine portion of the keratin complex of human hair is as readily decomposed by alkalis at the disulphide bond as is the cystine of the keratin of wool. Large amounts of keratin are decomposed at the S-S bond of cystine by alkalis at 37° (61.4% and 97.6% respectively for nail and wool on 20 hr. exposure). The alkali degradation of keratin is a primary factor in the causation of brittleness of the nails. C. J. C. B.

Constitution of kynurenine.—See A., 1942, II, 362.

Integument and moult cycle of *Tegenaria atrica* (Aranæ). H. C. Browning (*Proc. Roy. Soc.*, 1942, **B**, **131**, 65—86).—The integument of *T. atrica* consists of an outer exocuticular and an inner endocuticular chitinous layer. The former is impregnated with protein and pigment and may be birefringent. Its thickness and development of birefringence are related to the hardness of each region. The exocuticula is formed before, and the endocuticula after, the moult. The hypodermis appears to secrete chitin in both layers. The substances which impregnate the exocuticula are probably transported there by granular blood cells which remain in the hypodermis after the moult. The granulocytes responsible for the exocuticular secretion at the last moult migrate to the old integument as this separates from the hypodermis at the next moult. An ecdysial fluid is present and is absorbed by the time of the actual moult but there is very little digestion of the old integument. The chromatin of the hypodermal nuclei increases in amount up to beginning of secretion of the new integument, when it decreases sharply until after the moult and the cycle is resumed. There are 3 types of blood cell: granulocytes, leucocytes, and leberidocytes. The last-named have a single large vacuole and are formed from leucocytes. They appear only in relation to the moult and form 65% of total blood cells immediately afterwards. The digestive diverticula secrete a fluid which fills most of the alimentary canal at the time of the moult. The relative hardness of the exocuticula may be due to impregnation with proteins and phenols and to changes in mol. structure. It is suggested that the leberidocytes absorb water from the food, via the plasma, to increase the blood pressure for moulting and subsequent enlargement of the animal, and the filling of the alimentary canal is associated with this. The results and possible origin of a moulting hormone are discussed. J. N. A.

Substances secreted by common earthworm. F. Balzarek (*Z. physiol. Chem.*, 1942, **272**, 217—218).—Living earthworms, extracted successively with water and dil. HCl, yield a substance (N 8.8; P 0.6%; S) which at a concn. of 1:8000 causes hæmolysis; a water-insol. protein (S 3, P 0%) containing much arginine, histidine, and lysine together with glycine, alanine, glutamic acid, cystine, tyrosine, and tryptophan; a substance which, on distillation with Zn dust, gives C₁₁H₂₄, b.p. 229—230°; a water-sol. protein containing tryptophan but no tyrosine; and at least one other substance. In the worms, the water-insol. protein and the substance which yields the hydrocarbon exist in combination. The yield of secretions is at a max. during the reproductive period. W. McC.

XVII.—TUMOURS.

Kinetics of papilloma formation in benzpyrene-treated mice. D. R. Charles and E. M. Luce-Clausen (*Cancer Res.*, 1942, **2**, 261—263).—From certain assumptions as to the mechanism of carcinogenesis it is calc. that in mice painted with benzpyrene the square root of the average no. of papillomas per mouse should form a straight line when plotted against time after first painting. F. L. W.

Effect of visible light on development of tumours induced by benzpyrene in skin of mice. J. J. Morton, E. M. Luce-Clausen, and E. B. Mahoney (*Amer. J. Roentgenol.*, 1940, **43**, 896—898).—Two groups of Swiss albino mice were painted twice weekly with 3:4-benzpyrene for 17 weeks. One group was kept in complete darkness and the other for 12 hr. daily in visible light. Retardation of the carcinoma growth and diminution in the no. of animals which developed tumours were found in the 2nd group. H. L.

Visible light and skin tumours induced with benzpyrene in mice. J. J. Morton, E. M. Luce-Clausen, and E. B. Mahoney (*Cancer Res.*, 1942, **2**, 256—260; cf. preceding abstract).—C57 black mice developed more tumours when painted with 3:4-benzpyrene in complete darkness than when similarly treated in an environment of visible light for 12 hr. daily. F. L. W.

Influence of oestradiol benzoate on epidermal methylcholanthrene carcinogenesis. F. X. Paletta and P. F. Max (*J. Nat. Cancer Inst.*, 1942, **2**, 577—581).—The oestrogen accelerated the transformation of papillomata into carcinomata in virgin female Swiss inbred mice. E. B.

Spectrographic analysis of carcinogenic hydrocarbons and metabolites. I. Introduction. II. Determination of 1:2:5:6-dibenzanthracene and 4':8'-dihydroxy-1:2:5:6-dibenzanthracene in rat excreta. III. Distribution of 1:2:5:6-dibenzanthracene in rats following subcutaneous injection in olive oil. R. N. Jones (*Cancer Res.*, 1942, **2**, 237—244, 245—251, 252—255).—I. Applic-

ation of spectrographic methods to the quant. analysis of carcinogenic hydrocarbons and their metabolic products in tissue extracts is discussed. Background absorption limits the val. of the method, but a rapid method of estimating the degree of such interference is given.

II. Spectrographic analyses of the faeces and urine of rats injected with 1:2:5:6-dibenzanthracene showed that of 4.5 g. of hydrocarbon injected into 32 rats over a period of several weeks, only 231 mg. could be detected in the excreta unchanged and 43 mg. as 4':8'-dihydroxy-1:2:5:6-dibenzanthracene.

III. In rats injected with 1:2:5:6-dibenzanthracene in olive oil subcutaneously, considerable local storage of the hydrocarbon occurs in vesicles formed near the site of injection. 36% of injected hydrocarbon was thus accounted for. F. L. W.

Nutrition in carcinogenesis. C. P. Rhoads and C. J. Kensler (*J. Nutrition*, 1941, 21, *Suppl.*, 14).—Hepatic cancer was induced by administration of dimethylaminoazobenzene to rats receiving a diet of brown rice and carrots. Addition of yeast or liver extract to the diet prevented development of cancer. The protective factor is not a known constituent of the vitamin-B complex. One of the metabolic products of the carcinogen inhibits the activity of co-carboxylase and cozymase. The development of the mutation characterising the malignant tissue is associated with an oxidising enzyme system which is no longer susceptible to inhibition by the toxic metabolic product of the carcinogen. Oxidation of the normal liver from which the cancer is derived is very sensitive to inhibition by this product. A. G. P.

Early tumour formation in pure-line mice treated with carcinogenic compounds and the associated blood and tissue changes. L. D. Parsons (*J. Path. Bact.*, 1942, 54, 321—329).—Very early tumour development (16 days) in CBA mice treated with methylcholanthrene is described; the primary sarcomas are accompanied by a leucocytosis of leukæmic proportions and myeloid changes in the blood-forming tissues and liver and high splenic giant-cell counts. The mice before tumour development show early myeloid changes in the liver and spleen. Stock mice grafted with the methylcholanthrene sarcomas rarely develop tumours, but the introduction of the grafted tumour may lead to blood and tissue changes of a myeloid character similar to those noted in the grafted pure-line mice. The tumour has been successfully grafted in irradiated stock mice. (10 photomicrographs.) C. J. C. B.

Effect of carcinogenic agents on *Paramecium caudatum*. I. A. Tittler and M. Kobrin (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 95—96).—*Paramecia* in presence of these agents developed abnormalities and died out most quickly in 3:4-benzpyrene, next in methylcholanthrene, and last in schlarlach-red. V. J. W.

Oestrogenic hormones in genesis of tumours and cancers. E. Allen (*Endocrinol.*, 1942, 30, 942—952).—Prolonged treatment with large doses tends to cause neoplasms in experimental animals. Growths occur most frequently in gonads and mammary glands, but the pituitary and adrenals may also be affected, and new bone may appear in the medullary cavity in mice and birds. V. J. W.

Effect of weight on development of mammary carcinoma in various strains of mice. L. Loeb, V. Surtzeff, H. T. Blumenthal, and M. M. Kirtz (*Arch. Path.*, 1942, 33, 845—865).—Different strains of mice differ in average wts. at various ages; their wt. curves are not parallel to the hereditary tendency of these strains to acquire mammary carcinoma. The differences in wt. curves in various strains of mice are similar to those in normal animals and in animals treated with oestrogen. Within the various strains possessing a sufficient tendency to the development of mammary carcinoma, there exists a direct relation between the frequency of mammary carcinoma and the average wt., the latter being greater in tumour-bearing mice. C. J. C. B.

Effect of foster nursing on induction of mammary and testicular tumours in mice injected with stilbestrol. M. B. Shimkin and H. B. Andervont (*J. Nat. Cancer Inst.*, 1942, 2, 611—622).—Foster nursing of C₃H mice by mothers of strains with low tumour incidence (C57 Black or C) reduced the incidence of mammary tumours in both male and female mice receiving large doses of stilbestrol. Foster nursing of strain C mice by C₃H mothers increased mammary tumour incidence. Foster nursing does not affect body growth or the induction of interstitial-cell testicular tumours. E. B.

Effect of maternal influence on spontaneous leukæmia of mice. J. Furth, R. K. Cole, and M. C. Boon (*Cancer Res.*, 1942, 2, 280—283).—Reciprocal crosses and reciprocal foster nursings were made between a high-leukæmia stock, Ak, and a low-leukæmia, high-breast cancer stock, C₃H. The incidence of leukæmia in the C₃H/Ak hybrids was significantly lower than in the reciprocal F₁ generation and the difference was greater between the males. Foster nursing by low-leukæmia dams significantly lowered the incidence of leukæmia in the high-leukæmia stock but the next generation behaved as non-fostered mice. Thus this nursing influence is not transmitted to the offspring. The reciprocal nursing failed to be productive of leukæmia in the C₃H mice. Leukæmia tends to occur

at a later age in F₁ hybrids than in the pure high-leukæmia stock mice. F. L. W.

Relation of sex hormones to tumours of female reproductive system. R. R. Green and J. I. Brewer (*Amer. J. Roentgenol.*, 1941, 45, 426—445).—A review. H. L.

Pathology of rat hepatoma 31. J. White, A. J. Dalton, and J. E. Edwards (*J. Nat. Cancer Inst.*, 1942, 2, 539—554).—The tumour originally induced by feeding p-dimethylaminoazobenzene was transplanted through 16 generations. (23 photomicrographs.) E. B.

Pathology of transplantable spontaneous hepatoma in C₃H mouse. J. E. Edwards, A. J. Dalton, and H. B. Andervont (*J. Nat. Cancer Inst.*, 1942, 2, 555—563).—A well-differentiated tumour which arose in a male mouse is described. (10 photomicrographs.) E. B.

Mitochondria and Golgi apparatus of induced and spontaneous hepatoma in mouse. A. J. Dalton and J. E. Edwards (*J. Nat. Cancer Inst.*, 1942, 2, 565—575).—Induced hepatoma cells have filamentous mitochondria; spontaneous hepatoma cells have spherical mitochondria. Transplanted hepatoma have mitochondria resembling those of the primary tumour. The Golgi apparatus of hepatoma cells forms a juxtanuclear network. (13 photomicrographs.) E. B.

Growth of ascitic tumours in mice. H. Lettré (*Z. physiol. Chem.*, 1941, 271, 190—191). F. O. H.

Effect of tryptaflavin on ascitic tumours in mice. H. Lettré (*Z. physiol. Chem.*, 1941, 271, 192—199).—Tryptaflavin (intraperitoneally injected in doses of, e.g., 0.125 mg. daily for 5 days) inhibits the growth of the tumour and prolongs the life of the mice. Rivanol (3:9-diamino-7-ethoxyacridine) is ineffective. F. O. H.

Anaphylaxis and hæmorrhage in transplantable tumours. M. K. Barrett (*J. Nat. Cancer Inst.*, 1942, 2, 625—630).—Sarcomata 37 growing in mice sensitised to horse serum became hæmorrhagic and necrotic when the mice were injected with horse serum but not with rabbit serum. E. B.

Tumour of adrenal medulla in castrated male rat. W. C. Hueper and G. J. Martin (*Cancer Res.*, 1942, 2, 294—295).—An adrenal tumour was found in one of 30 castrated male rats on a vitamin-E-deficient diet. The location of the tumour in the gland, the presence of nervous tissue elements, and the occurrence of arteriolo-sclerotic lesions in internal organs indicated a medullary origin. F. L. W.

Spontaneous tumours in guinea-pigs. G. N. Papanicolaou and C. T. Olcott (*Arch. Path.*, 1942, 34, 218—228).—5 spontaneous tumours attached or adjacent to the stomach and 3 attached to the intestine of 7 guinea-pigs are described. (9 photomicrographs.) C. J. C. B.

Carcinoma of the prostate in dogs. C. F. Schlotthauer and J. A. S. Millar (*J. Amer. Vet. Med. Assoc.*, 1941, 99, 239—241).—A description of 3 cases of primary adenocarcinoma of the prostate among more than 500 dogs in which this organ was examined macroscopically and histologically. E. G. W.

Tumours of nerve sheaths in fish of snapper family (Lutianidae). B. Lucke (*Arch. Path.*, 1942, 34, 133—150).—A review of 76 tumours. (16 photomicrographs.) C. J. C. B.

Transplantable epitheliomas of lip and mouth of catfish. I. Pathology. Transplantation to anterior chamber of eye and cornea. B. Lucke and H. Schlumberger (*J. Exp. Med.*, 1941, 74, 397—408).—Epithelioma on lips and dental plates occurs in catfish and resembles labial epithelioma in man. Intense hyperæmia and atypical vascularisation of tumour site precede actual appearance of the tumour. Intra-optic transplants into the same species grow freely unlike transplants into other species. A. C. F.

Enzymic activity of transplanted adenocarcinoma of glandular stomach of mouse. J. P. Greenstein and H. C. Stewart (*J. Nat. Cancer Inst.*, 1942, 2, 631—633).—The tumour tissue showed no proteolytic activity at pH 1.4 or 5.0 but contained the same amount of thymonucleodepolymerase as normal gastric mucosa. A transplanted adenocarcinoma of the intestine had the same nucleodepolymerase activity as normal intestinal mucosa. E. B.

Riboflavin content of tumour tissues. W. v. B. Robertson and H. Kahler (*J. Nat. Cancer Inst.*, 1942, 2, 595—600).—Riboflavin was estimated fluorometrically. Hepatomata and foetal livers contained 20—30 µg. per g. of dry tissue. Normal and regenerating livers contained about 100 µg. per g. E. B.

Effect of dietary cystine on development of hepatic tumours in rats fed p-dimethylaminoazobenzene (butter-yellow). J. White and J. E. Edwards (*J. Nat. Cancer Inst.*, 1942, 2, 535—538).—Animals on a low-cystine diet developed tumours more slowly than those on a high-cystine diet. E. B.

Kidney- and blood-catalase activity of tumour-bearing animals. J. P. Greenstein, H. B. Andervont, and J. W. Thompson (*J. Nat. Cancer Inst.*, 1942, 2, 589—594).—The kidney-catalase of tumour-bearing animals is less reduced than is the liver-catalase. In some of these animals the kidney-catalase activity is higher than the

liver-catalase activity. The blood-catalase of rats bearing Jensen rat sarcoma is the same as that of normal rats although the red cell count and haemoglobin concn. are reduced. E. B.

Recent developments in chemistry of tumours. F. Kögl (*Naturwiss.*, 1942, 30, 46—47).—The evidence for the extent to which *d*-glutamic acid occurs in the proteins of tumour tissue is discussed. The protein of Brown-Pearce tumour contained approx. 32%, and that of a benzpyrene tumour approx. 11%, of the glutamic acid present as *d*-isomeride (cf. A., 1940, III, 317; Graff et al., *ibid.*, 590). F. O. H.

Lack of influence of di(hydroxymethyl) peroxide on incidence and growth of transplanted, induced, and spontaneous mouse tumours. I. Transplanted tumours. II. Tumours induced by cutaneous painting with benzpyrene. III. Tumours induced by subcutaneous injection of benzpyrene. IV. Spontaneous tumours in the *Db*a and *C₃H* strains. M. Belkin (*Cancer Res.*, 1942, 2, 264—268, 269—275, 276—279).—Di(hydroxymethyl) peroxide had no effect on the growth of inoculated mammary carcinoma in mice of the *ABC* albino strain.

II, III. Injections of the peroxide had no effect on tumour induction or tumour growth in *Bagg* albino mice painted or injected with benzpyrene.

IV. The peroxide had no influence on the no. or type of tumour arising in *C₃H* or *Db*a mice. F. L. W.

Association of blood cell factors with transplantability of the Brown-Pearce tumour. A. E. Casey, L. Pearce, and P. D. Rosahn (*Cancer Res.*, 1942, 2, 284—289).—The resistance of the rabbit to transplantation of the Brown-Pearce tumour is associated with optimal or modal pretransplantation levels of haemoglobin and total white blood cells. When the average level of either haemoglobin or total white cells is not modal the animals are susceptible. F. L. W.

Biocatalysts in cancer tissue. I. Cytochrome *c*. K. P. Du Bois and V. R. Potter (*Cancer Res.*, 1942, 2, 290—293).—The cytochrome *c* content of 9 types of experimental tumours was determined. The tumours contained from 10 to 20 µg. of cytochrome per g. of fresh tissue, regardless of aetiology. Liver tumours induced by feeding butter-yellow contained about $\frac{1}{2}$ as much cytochrome as normal liver. F. L. W.

Influence of extraneous protein and virus concentration on inactivation of rabbit papilloma virus by X-rays. W. F. Friedewald and R. S. Anderson (*J. Exp. Med.*, 1941, 74, 463—488).—Extraneous protein renders papilloma virus X-ray-resistant. The inactivating X-ray dose may be lowered by as much as 95% by differential centrifugation, or increased by the addition of protein. Foreign proteins protect antiviral antibodies similarly. Inactivation by X-rays may be indirect, due to ionisation of other mols. in the virus suspension. A. C. F.

Effect of Roentgen irradiation on blood vessels of repair tissue and Brown-Pearce rabbit epithelioma. V. Downing, F. W. Bishop, and S. L. Warren (*Amer. J. Roentgenol.*, 1940, 43, 249—261).—In 7 rabbits actively growing Brown-Pearce rabbit epithelioma with well-established circulation in tumour ear chamber and the control ear chamber were irradiated with 10,000 r. and the *in vivo* reaction of the blood vessels was studied. Within 1 hr. a red haze developed around both tumour and control vessels which became progressively more marked microscopically; gross erythema due to extravasation of blood only appeared on the 5th day. Within a few days the blood vessels in tumour and control sites became beaded and irregular in outline, and the flow restricted, many vessels remaining empty; responses to paling and flushing were normal. Blood vessel emptying and capillary dissolution began at the end of the 5th day with subsequent slow recovery; many vessels, however, never refilled with blood. Endothelial reaction was the same in both control and tumour vessels though vessel proliferation was more active at the tumour sites. All animals developed refractory states to re-inoculation after destruction of the tumour by irradiation. H. L.

Relation of phosphatase activity in bone tumours to deposition of radioactive phosphorus. H. Q. Woodard and J. M. Kenney (*Amer. J. Roentgenol.*, 1942, 47, 227—242).—In normal bone and in many areas of osteogenic sarcoma tissue deposition of radioactive P is a function of alkaline glycerophosphatase activity; it is prevented in some osteogenic sarcomata by unknown factors in spite of intense phosphatase activity; this latter condition seemed to be associated with high malignancy. No quant. relation was found between alkaline glycerophosphatase activity of any tissue and its capacity to store radioactive P. In specimens of spindle-cell sarcoma of muscle and of myositis ossificans phosphatase of bone type was found and storage of radioactive P was abundant. H. L.

Tumours in one of homologous twins. H. Charache (*Amer. J. Roentgenol.*, 1941, 46, 69—74).—2 cases of Hodgkin's disease and one of osteogenic sarcoma are reported. H. L.

Developmental abnormalities of lung and bronchiogenic carcinoma. N. A. Womach and E. A. Graham (*Arch. Path.*, 1942, 34, 310—318).—4 cases are described of primary cancer of the lung associated

with developmental pulmonary abnormalities of different types. (24 photomicrographs.) C. J. C. B.

Functioning islet cell carcinoma with metastases to liver. L. M. Gray (*Amer. J. Path.*, 1942, 18, 633—641).—Beta cells were demonstrated in the primary tumour, but not in the metastatic lesions. Pituitary basophilism also was found. (6 photomicrographs.) C. J. C. B.

Use of supravital staining technique in study of tumours of lymphosarcoma group. C. H. Hu and H. C. Pal (*Arch. Path.*, 1942, 34, 106—116).—By these methods differences in cells of lymphosarcomas could be made out. C. J. C. B.

Synovial sarcomasothelioma (sarcoendothelioma). H. R. Fisher (*Amer. J. Path.*, 1942, 18, 529—545).—A review and report of 2 cases. (9 photomicrographs.) C. J. C. B.

Diagnosis of multiple myeloma by sternal aspiration. L. H. Beizer, B. E. Hall, and H. Z. Giffin (*Amer. J. med. Sci.*, 1942, 203, 829—836).—8 cases in which the diagnosis was confirmed are described. (5 photomicrographs.) C. J. C. B.

Malignant lymphoma. E. A. Gall and T. B. Mallory (*Amer. J. Path.*, 1942, 18, 381—415).—A review of 618 cases. (21 photomicrographs.) C. J. C. B.

Rôle of vertebral veins in metastatic processes. O. V. Batson (*Ann. int. Med.*, 1942, 16, 38—45). A. S.

Colloidal vanadate reaction (Bendien reaction) in a series of cases of carcinoma of cervix. A. A. Gemmell (*Cancer Res.*, 1942, 2, 296—302). F. L. W.

XVIII.—NUTRITION AND VITAMINS.

Pre-war diet in Belgium : influence of restoration of imports on health of population. L. Brouha (*J. Nutrition*, 1941, 21, Suppl., 10).—A study of the insufficient and unbalanced diet of the Belgians during the period preceding the invasion. A. G. P.

Influence of diet on composition of weight gains in pre-school children. J. E. Hawks and G. Everson (*J. Nutrition*, 1941, 21, Suppl., 9).—Pre-school children gained in wt. faster when the protein content of the diet (otherwise equi-caloric) was 4 than when 3 g. per kg. body wt. Meat, milk, and whole egg added to the diet produced growth of muscle, fat, and bones. Egg-white and gelatin produced increases only in muscle and fat and also diminished the retention of Mg and K. Supplements of starch, sugar, or fat caused marked increases in live wt. consisting of fat and protein. The fat supplement did not increase Ca retention or bone growth. Carbohydrate additions induced greater N retention than did fat and also increased retention of Ca. High-caloric diets of all kinds diminished retention of Na, K, and Cl. A. G. P.

Influence of prenatal diet on mother and child. J. H. Ebbs, W. A. Scott, and F. F. Tisdall (*J. Nutrition*, 1941, 21, Suppl., 9).—The marked effects of good as compared with poor prenatal diets on the health of the mother during pregnancy, labour, and convalescence and on the health of the child are recorded. The relation of the diet to the development of dental caries is examined. A. G. P.

Tea leaves as maintenance food for animals. M. K. Wilson (*Nature*, 1942, 150, 199—201).—Adult rabbits can be maintained in good body condition on a ration in which 10—20% of conc. foods is replaced by spent tea leaves. No adverse effect on fertility was observed. E. R. S.

Quantitative dietary studies on *Phymata*. W. V. Balduf (*J. Econ. Entom.*, 1941, 34, 614—620).—*Phymata pennsylvanica americana*, Melin, were fed at different dietary levels on *Drosophila melanogaster* or *Musca domestica* and body wt. and length, longevity, sexual activity, and egg production determined. Insects on low-feed diets were less tenacious of life and probably succumbed to chemical insecticides more readily than did well fed insects. A. W. M.

Digestibility of high-extraction wheatmeals. T. Moran and J. Pace (*Nature*, 1942, 150, 224—226).—The lower digestibilities of the higher-extraction wheatmeals by man are due to the higher fibre contents of these wheatmeals. The % digestibilities of meals obtained at various retes of extraction are calc. from the fibre contents of the meals. E. R. S.

Influence of protein intake on growth, reproduction, and longevity at different calcium levels. H. C. Kao, R. T. Conner, and H. C. Sherman (*J. Nutrition*, 1941, 22, 327—331).—In two basal diets containing 0.61—0.64 and 0.77—0.81% of Ca, respectively, increase in protein content, in the range 14.4—25% in the dry mixture, caused increased growth of rats up to about 60 days of age. At age 6—12 months rats did not respond to more than 18.8% of protein in the ration. Higher protein intake was associated with slightly earlier maturity in females although the no. of young born and reared was not affected by dietary protein exceeding 18.8%. The average length of life and the term of reproductive life were unaffected by the level of protein fed, within the experimental range, at both levels of Ca intake. A. G. P.

Dietary production of cataracts in larval *Amblystoma tigrinum*. E. M. Patch (*J. Nutrition*, 1941, 22, 365—381).—Cataract induced in the salamander by diets of purified casein or separate beef proteins (cf. A., 1941, III, 569) was prevented by supplementary feeding of cystine but not by riboflavin. A second form of diet induced by high-haemoglobin diet was not prevented by riboflavin or cystine alone; a combination of the three constituent proteins of glutathione reduced early symptoms and checked the development of the disease without effecting complete prevention. A. G. P.

Nutritional importance of choline. W. H. Griffith (*J. Nutrition*, 1941, 22, 239—253).—A review. A. G. P.

Glycine requirement of chick. H. J. Almquist and E. Mecchi (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 541—543).—Optimal growth occurs when the diet contains 1.5% of free glycine or 1% when it is given in protein combination as gelatin, casein, or edestin. V. J. W.

Influence of certain organic compounds on perosis. T. H. Jukes (*J. Nutrition*, 1941, 21, Suppl., 13).—Perosis induced in chicks by a diet containing glucose, washed casein, gelatin (or creatine), yeast, gum arabic, salts, soya-bean and fish oils was prevented, and growth rates were doubled, by supplementary feeding of choline. Omission of Mn from the salt mixture prevented the curative effect. Triethylcholine had neither antiperotic nor growth-promoting activity; methyl-diethylcholine prevented perosis but did not promote growth. Betaine was inactive but betaine aldehyde had weak growth-promoting and antiperotic effects. Perosis was not caused by the basal diet if gelatin (or creatine) was omitted. A. G. P.

Effects on animal nutrition of the ingestion of mineral oil. M. C. Smith and H. Spector (*Arizona Agric. Exp. Sta. Tech. Bull.*, 1940, No. 84, 373—395).—Addition of 10% of mineral oil to a rat diet had no effect on the growth rate but affected the reproductive performance of the females. Mineral oil in the diet adversely affected the utilisation of vitamin-A and -D. Mineral oil ingestion by puppies prevented normal Ca and P retention and calcification of bones. Five times the min. dose of cod-liver oil for normal calcification did not provide for optimum retention of Ca and P when puppies received 10% of mineral oil in their diet. A. W. M.

Effect of oral administration of aniline and *p*-aminodimethylaniline on growth of rat. J. White and J. E. Edwards (*J. Nat. Cancer Inst.*, 1942, 2, 531—533).—The addition of the amines (0.8% of aniline or 1.2% of *p*-aminodimethylaniline) retarded growth on a low-protein diet. Normal growth occurred if methionine or cystine (but not the oxidation products of cystine) was added to the diet. E. B.

Calcium balances of young women on customary or self-chosen diets. H. McKay, M. B. Patton, M. A. Ohlson, M. S. Pittman, R. M. Leverton, and G. Stearns (*J. Nutrition*, 1941, 21, Suppl., 16—17).—Among 109 subjects the mean daily intake of Ca was 0.9538 and the mean balance was 0.0307 mg. Individual variations were considerable. Two thirds of subjects with intakes exceeding 0.699 and one third of those with intakes less than 0.699 mg. were in positive balance. Women aged 17—20 years utilised Ca more efficiently than did older women. A. G. P.

Mineral metabolism of sheep. I. Necessity to supplement cereal ration with calcium. M. C. Franklin (*J. Coun. Sci. Ind. Res. Australia*, 1942, 15, 85—93).—Weaners and adult sheep fed on rations consisting largely of cereal grains containing approx. 0.16% of CaO and 0.90% of P_2O_5 developed typical symptoms of severe hypocalcaemia. When the ration was supplemented with 1% of $CaCO_3$, growth and development were normal. R. H. H.

(A) Calcium and phosphorus balances with laying birds. (B) Calcium requirements of poultry with particular reference to needs for maintenance. C. Tyler and J. S. Wilcox (*J. Agric. Sci.*, 1942, 32, 43—61, 62—69).—(A) $CaCO_3$, $CaSO_4$, and Ca gluconate are compared as Ca sources. $CaSO_4$ and gluconate caused scouring. Retention of Ca was in the order Ca gluconate > $CaCO_3$ > $CaSO_4$. Best shells were obtained with $CaCO_3$, the worst with $CaSO_4$. The mechanism of utilisation of food- and bone-Ca for shell production is discussed.

(B) Relationships between intake and excretion of Ca indicate the maintenance requirement to be 0.10 g. of Ca for both laying and non-laying birds. The endogenous Ca val. is 0.05 g. A. G. P.

Nutritional anaemia and its prevention. O. D. Abbott and C. F. Ahmann (*Florida Agric. Exp. Sta. Bull.*, 1938, No. 328, 12 pp.).—Anaemia due to lack of Fe may be prevented by supplying at least 15 mg. of food Fe per day. A. W. M.

Effect of iron on ovary of hens. H. Tangl (*Magyar Orv. Arch.*, 1939, 40, 435—438).—Inclusion of Fe salts in the rations of laying hens increased production of larger eggs. Fe salts in alcohol were more effective than when dissolved in water. Increased egg size is regarded as due to greater secretion of the glands of the oviduct. A. W. M.

Influence of sex on iron assimilation in rats. S. W. Kletzien (*J. Nutrition*, 1941, 21, Suppl., 16).—No evidence was obtained of more

efficient assimilation of Fe by females than by males. The higher haemoglobin concn. produced by Fe administration in females probably results from their smaller growth requirement. The male produces a larger vol. of blood of lower haemoglobin content and retains more in the soft tissues. Ovariectomy or castration increases Fe assimilation and treated animals of both sexes then respond similarly to Fe feeding. Pregnant females show a greater capacity to assimilate Fe than do males or virgin females, but do not maintain pre-pregnancy levels of Fe retention. A. G. P.

Magnesium requirement of chick. H. J. Almquist (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 544—545).—Requirement during the first week of life is 400 p.p.m. of diet. V. J. W.

Effect of magnesium deficiency on dentine apposition and eruption in incisor of rat. J. Gagnon, I. Schour, and M. C. Patras (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 662—666).—In rats on a diet containing 1.8 p.p.m. of Mg, the rate of incisor eruption is reduced by $\frac{3}{4}$ and the laying down of dentine is progressively slowed, especially in the enamel-covered region. Alveolar bone formation is also slowed. V. J. W.

Zinc retention in childhood. A. Stern, M. Nalder, and I. G. Macy (*J. Nutrition*, 1941, 21, Suppl., 8).—The Zn content (determined polarographically) of Irish potatoes was 0.077 mg. per g., of cow milk 2.89 mg. per l., and of the daily composite food for children 15.6 mg. Children of 8—12 years excreted daily in urine and faeces 0.5 and 10.4 mg. of Zn respectively, i.e., 2.6—4.2 and 44.6—77.8% of the daily intake. Zn retention ranged from 17 to 53% of the amount ingested. A. G. P.

Histological studies of tissues of rats fed a diet extremely low in zinc. R. H. Follis, jun., H. G. Day, and E. V. McCollum (*J. Nutrition*, 1941, 22, 223—227).—In rats receiving a Zn-deficient but otherwise adequate diet the oesophagus showed extreme parakeratosis, the skin became hyperkeratinised with thickening of the epidermis, there was loss of hair follicles and persistence of sebaceous glands, and the cornea showed vascularisation and leucocytic infiltration similar to that occurring in riboflavin deficiency. A. G. P.

Comparative effects of iron, protein, ascorbic acid, and vitamin-B complex on haemoglobin formation in man. R. M. Leverton and A. G. Marsh (*J. Nutrition*, 1941, 21, Suppl., 8—9).—Supplementary feeding to 4 groups of college women of Fe, Fe + ascorbic acid, thiamin + riboflavin + nicotinic acid, protein from dried milk + cheese + peanuts, respectively, resulted in average increases in blood-haemoglobin of 1.0, 1.2, 1.0, and 0.7 mg. per c.c. In a further period the groups received ascorbic acid, ascorbic acid, thiamin, and egg yolk, respectively. Vals. in all cases declined though not to the original levels. A. G. P.

Effect of arsenic on the growth of bones. H. Tangl (*Magyar Orv. Arch.*, 1939, 40, 439—443).—Small amounts of As as Cu thioarsenite have a stimulating effect on the growth of bones in rats and hens, this effect being most marked when the % of protein in the ration is high. In fattening experiments with hens increasing the % protein in the ration stimulated growth of bone but not of muscle. A. W. M.

Reduction in experimental rat caries by fluorine. S. B. Finn and H. C. Hodge (*J. Nutrition*, 1941, 22, 255—266).—Inclusion of F (3 mg. as KF daily) in rat diets restricted the progress of caries, even on fractured cusps, and lowered the incidence of lesions. A. G. P.

Significance of lead in foods. L. G. Lederer and F. C. Bing (*J. Nutrition*, 1941, 21, Suppl., 8).—The amount of Pb in common foods is such that infants are unlikely to receive less than 0.25—0.33 mg. daily. Milk tends to prevent absorption of Pb as a result of its high Ca content. Dietary fat has no influence on Pb absorption. A. G. P.

Newer aspects of the chemical function of the vitamins. L. E. Booher (*Chem. and Ind.*, 1942, 388—392).—A lecture.

Hydratases and vitamins.—See A., 1942, III, 776.

Vitamin survey of normal industrial workmen. J. G. Schendorff, C. J. Weber, and L. Clendening (*Amer. J. digest Dis.*, 1942, 9, 188—191).—No case of clinical avitaminosis-A, -B, or -C was found in 1265 men, although 64% had plasma-ascorbic acid levels below 0.5 mg.-%. Saturation with ascorbic acid is not essential to health. N. F. H.

Effects of various vitamin supplements and of whole yeast on digestion and absorption of the carbohydrate of a complete diet. R. A. Russell and E. S. Nasset (*J. Nutrition*, 1941, 22, 287—294).—Fresh yeast stimulates gastro-intestinal motility in dogs. The effect is largely local and is accompanied by increased rates of digestion and absorption of carbohydrates. Dried yeast and a 50% alcohol extract of yeast did not affect motility but increased digestion and absorption. Supplements of riboflavin, thiamin, nicotinic acid, and pyridoxine in an already adequate basal diet had no effect on the gastro-intestinal tract. Part of the effect of yeast may be due to pantothenic acid. A. G. P.

Vitamin-A metabolism of college students. J. C. Ebbs and E. L. Batchelder (*J. Nutrition*, 1941, 21, Suppl., 15).—Massive doses of vitamin-A (91,000 i.u. as halibut-liver oil) increased dark adaptation and "rhodometer" vals. in a subnormal case. The effect was first apparent 2 hr. after administration and after 5 hr. increased to a max. which was maintained for 24 hr. after the massive dose and for several days without increase with a daily intake of 91,000 i.u. of -A. A. G. P.

Comparison of vitamin-A of liver biopsy specimens with plasma-vitamin-A in man. K. A. Meyer, H. Popper, F. Steigmann, W. H. Walters, and S. Zevin (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 589—591).—No parallelism was found between liver- and plasma-vitamin-A except that liver content was never abnormally low when blood content was high. V. J. W.

Relation of chemical analysis of liver to its vitamin-A potency. G. S. Fraps, A. R. Kemmerer, and R. Treichler (*J. Assoc. Off. Agric. Chem.*, 1942, 25, 529—532).—For liver containing 44 μ g. of spectro-vitamin-A per g., $I_u = 5.0S + 1.7C$, where $I_u =$ no. of i.u. per g., $S =$ spectro-A in p.p.m. (using extinction coeff. 1600), and $C =$ carotene in p.p.m. For less than 44 μ g. per g., tentatively $I_u = 1.5S + 1.7C$. A. A. E.

Effect of carcinogens on hepatic vitamin-A stores of mice and rats.—See A., 1942, III, 757.

Skin pigmentation due to vitamin-A deficiency. J. A. Tolmach and T. N. Graham (*Arch. Dermat. Syphilol.*, 1942, 45, 1156—1163).—Report of a case. Treatment with 25,500 U.S.P. units of vitamin-A daily resulted in marked diminution of the pigmentation and disappearance of the follicular keratoses. C. J. C. B.

Vitamin-A deficiency in Laennec's cirrheses. Relative significance of plasma-vitamin-A and carotenoid levels and dark adaptation time. C. Haig and A. J. Patek, jun. (*J. clin. Invest.*, 1942, 21, 309—317).—Compared with the mean normal level of 198 i.u. of vitamin-A per 100 ml. of plasma, the mean vals. for patients were: decompensated cirrhosis, 65; compensated cirrhosis, 122; miscellaneous diseases, 154. 92% of the patients with decompensated cirrhosis had vals. below the lowest normal. Compared with the mean normal level of 144 μ g. of total carotenoid per 100 ml. of plasma, the mean vals. for patients were: decompensated cirrhosis, 72; compensated cirrhosis, 88; miscellaneous diseases, 121. 50% of the patients with decompensated cirrhosis had vals. below the lowest normal. Compared with the mean normal dark adaptation time of 13.1 min., the mean vals. for the patients were: decompensated cirrhosis, 19.7; compensated cirrhosis, 17.3; miscellaneous diseases, 15.2. 79% of the patients with decompensated cirrhosis had vals. above the highest normal. Compared with the mean normal concns. of 766 i.u. per g. of -A and 13.6 μ g. per g. of carotenoid, 6 cirrhotic livers had concns. of 124 i.u. of -A and 4.3 μ g. of carotenoid. C. J. C. B.

Dark adaptation of children in relation to dietary levels of vitamin-A. L. J. Roberts, H. Oldham, K. MacLennan, and F. W. Schlutz (*J. Nutrition*, 1941, 21, Suppl., 7—8).—The mean rod thresholds for children were similar in spite of wide variations of vitamin-A intake. Subnormal adaptation was uncommon. No correlation was apparent between adaptometer readings and -A intakes even when the latter exceeded 1000 i.u. daily. Dietary supplements of -A produced slight improvements in mean rod plateaux especially when these were previously subnormal. The adaptometer does not measure the first signs of -A deficiency. A. G. P.

Vitamin-A for colour-blindness.—See A., 1942, III, 743.

Production of high-vitamin-A milk by diet. H. J. Deuel, jun., N. Halliday, L. F. Hallman, C. Johnston, and A. J. Miller (*J. Nutrition*, 1941, 22, 303—313).—Administration of shark-liver oil (700,000 i.u. of vitamin-A daily) to cows receiving a diet rich in lucerne caused a considerable increase in the -A content of the butter fat, the increase persisting throughout a 5-months' experimental period. Smaller doses of -A were ineffective. Shark-liver oil lowered the carotene content of the butter fat even when the dosage was insufficient to increase the -A content. Cows receiving heavy doses of -A (1,400,000 i.u.) remained in good nutritional condition. Milk colour was correlated with the -A content. A. G. P.

Carotene content of colostrum. J. Truka (*Magyar Orv. Arch.*, 1940, 41, 145—149).—Colostrum contains 13—26 μ g. and milk 3 μ g. of carotene per 100 g. A. W. M.

Isomerisation of β -carotene and its relation to carotene analysis.—See A., 1942, III, 787.

Vitamin-B complex and fat metabolism. J. C. Forbes (*J. Nutrition*, 1941, 22, 359—364).—Supplements of thiamin, riboflavin, pyridoxine, nicotinic acid, and Ca pantothenate to a fat-free, high-carbohydrate diet containing 10% of casein produced fatty livers of high cholesterol concn. in rats. With no nicotinic acid in the diet fatty livers of much lower cholesterol content resulted. Choline added to the diet had a lipotropic effect under all conditions examined but its effect was comparatively small in animals receiving nicotinic acid. A. G. P.

Influence of the vitamin-B complex on growth and deficiency symptoms in rats. H. Pfaltz (*Z. Vitaminforsch.*, 1942, 12, 193—220).—Vitamin-B₁ (10 μ g.), -B₂ (20 μ g.), -B₆ (20 μ g.), and Ca pantothenate (50 μ g.) added together daily to the diet produced almost normal growth. Lack of pantothenic acid gave rise to deficiency symptoms, such as adrenal haemorrhage, about the tenth week, together with achromotrichia in black rats. Lack of inositol, biotin, nicotinamide, and *p*-aminobenzoic acid did not give rise to deficiency symptoms but these factors augmented the effect of the -B complex. 3 mg. of choline per day were required to maintain normal fat metabolism; inositol partly replaced it. P. G. M.

Effect of vitamin-B deficiency on inactivation of ovarian oestrogen in liver.—See A., 1942, III, 750.

Psychosis associated with vitamin-B deficiency.—See A., 1942, III, 740.

Biotin, vitamin-B₁, riboflavin, nicotinic acid, -B₆, and pantothenic acid as growth factors for insects. G. Fraenkel and M. Blewett (*Nature*, 1942, 150, 177—178; cf. A., 1942, III, 540).—Flour beetle (*Tribolium confusum*) larvae were fed on a purified diet containing water-insol. yeast extract and 7 pure substances; groups of larvae were fed this diet with one pure substance omitted. No growth occurred when riboflavin, vitamin-B₆, or nicotinic acid was omitted, reduced growth occurred when -B₁ or pantothenic acid was omitted, and omission of *p*-aminobenzoic acid or choline chloride had no effect on growth. Water-sol. yeast extract increased the growth rate when used instead of the pure substances. 0.0625 μ g. of biotin methyl ester per g. of dry food had the optimal effect on growth; larger concns. reduced the growth rate. E. R. S.

Rôle of vitamin-B₁ in utilisation of different organic fractions of food. R. Lecoq (*Compt. rend.*, 1941, 213, 665—668).—The period of survival of pigeons fed exclusively on glucose or olive oil or peptone was considerably prolonged when a vitamin-B₁ supplement was also given. The blood-alkali reserve was also improved. A. L.

Alimentary interconversion of thiamin and cocarboxylase. E. S. Nasset and J. F. Waldo (*J. Nutrition*, 1941, 21, Suppl., 10).—Phosphorylation of thiamin *in vitro* by juices from stomach, pancreas, duodenum, or jejunum of dogs or by a mixture of juices and mucosa extract could not be demonstrated. The hydrolysis of cocarboxylase to thiamin was readily effected by duodenal or jejunal juice. *In vivo* the interconversion of thiamin and cocarboxylase occurred rapidly in the upper portion of the digestive tract. A. G. P.

Tissue-thiamin concentrations and urinary thiamin excretion. J. W. Ferrebee, N. Weissman, D. Parker, and P. S. Owen (*J. clin. Invest.*, 1942, 21, 401—408).—The concns. (μ g. per g.) of thiamin in human tissue are 2—3 for heart muscle, 0.5 for skeletal muscle, and 1 for brain, liver, and kidney. These vals. may be temporarily increased by thiamin therapy, or may be considerably reduced by inadequate diets. Deficient subjects excrete less thiamin than normal subjects. C. J. C. B.

Excretion of thiamin and its degradation products in humans. H. Pollack, M. Ellenberg, and H. Dolger (*J. Nutrition*, 1941, 21, Suppl., 10—11).—In addition to thiamin, human urine contains another substance, probably a pyrimidine, which stimulates fermentation of glucose by yeast. Deprivation of dietary thiamin for 10 days changed the ratio of urinary thiamin to pyrimidine from 9:1 to 1:9, the abs. amount of pyrimidine excreted remaining substantially unchanged. The 1-mg. "load test" was unaltered at the end of the 10-day period. Parenteral administration of 100 mg. of thiamin was followed by an enormous increase in urinary pyrimidine. No evidence was obtained of vitamin-B₁ deficiency during deprivation of thiamin. A. G. P.

Induced thiamin deficiency in man: thiamin requirement. R. D. Williams and H. L. Mason (*J. Nutrition*, 1941, 21, Suppl., 11).—The mental state and the extent of cardiovascular, gastro-intestinal, metabolic, and haematological disorders of women during moderate restriction of thiamin intake are examined. During subsequent supplementary feeding of thiamin the mental and physical condition of the women was correlated with the level of intake and with excretion of thiamin. A. G. P.

Measurement and metabolism of thiamin and of pyrimidine stimulating yeast fermentation found in blood cells and urine.—See A., 1942, III, 731.

[Biological assay of] vitamin-B₁. O. L. Kline (*J. Assoc. Off. Agric. Chem.*, 1942, 25, 451—455).—A modification of the A.O.A.C. method (A., 1941, III, 456) involving the growth response of rats was employed in collaborative tests on whole-wheat and enriched flour, the average vals. being 5.16 and 4.75 μ g. per g., respectively, corresponding max. deviations from the average being -18, +26, and -8, +15%. A. A. E.

Chemical determination of vitamin-B₁. O. L. Kline (*J. Assoc. Off. Agric. Chem.*, 1942, 25, 456—458).—A brief survey. A. A. E.

Study of riboflavin metabolism in American cockroach by fluorescence microscopy. R. L. Metcalf and R. L. Patton (*J. Cell.*

Comp. Physiol., 1942, 19, 373—376).—In the Malpighian system of this insect riboflavin from the diet reaches a concn. 40 times that found in ox liver. It gives a yellow-green fluorescence in ultra-violet light and is metabolised to a substance with a yellow-orange fluorescence probably identical with that observed by Ellinger (A., 1938, III, 307) in vertebrates. V. J. W.

Riboflavin as a food factor in economy of food utilisation. B. Sure (*J. Nutrition*, 1941, 22, 295—301).—Riboflavin-deficient rats showed an average live-wt. increase of 6.1 g. in 125 days as compared with 61.3 g. for those receiving 20 µg. of riboflavin daily. Deficient rats exhibit no marked complicating anorexia in the final stages of the disease; food intake is only moderately lowered and may be actually increased. Affected animals show alopecia, dermatitis at denuded areas of skin, rough hair, conjunctivitis, keratitis, and premature senility. Deficiency probably causes waste of metabolic products resulting in ultimate collapse of the animal. A. G. P.

Pathology of riboflavin deficiency in rat. J. H. Shaw and P. H. Phillips (*J. Nutrition*, 1941, 22, 345—358).—Severe riboflavin deficiency in rats causes partial paralysis of legs due to myelin degeneration of muscle sheaths. This is accelerated by high-fat rations. There is also atrophy of the testes, early involution of the thymus, and structural changes (described) in the thyroid and adrenals. A. G. P.

Pathological changes associated with riboflavin deficiency in mouse. S. W. Lippincott and H. P. Morris (*J. Nat. Cancer Inst.*, 1942, 2, 601—610).—The changes were dermatosis occasionally followed by dermatitis, myelin degeneration, and keratitis. (9 figures.) E. B.

Red staining of paws and whiskers as in vitamin-B₂-deficient rats after dehydration. S. G. Smith (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 691—693).—Deprivation of water causes red lachrymal secretion which becomes transferred to paws and whiskers; this has also been observed to follow deprivation of pantothenate or riboflavin. V. J. W.

Rat growth assay method for riboflavin. H. R. Street (*J. Nutrition*, 1941, 22, 399—408).—A modified assay procedure and a new riboflavin-deficient diet are described. Rice bran extract is used for supplemental feeding and wheat extract is discarded. The latter is not a suitable source of vitamin-B complex for this purpose. A. G. P.

[Determination of] riboflavin. A. R. Kemmerer (*J. Assoc. Off. Agric. Chem.*, 1942, 25, 459—464).—Collaborative work shows that both the microbiological and fluorometric methods are applicable to lucerne meal. For wheat flour the former method is preferred. Modifications in procedure are detailed. A. A. E.

Modification of the fluorimetric method for determination of riboflavin.—See B., 1942, III, 219.

Antibody response of persons with pellagra, beri-beri, and riboflavin deficiency. G. R. Morey and T. D. Spies (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 519—521).—Injection of killed *B. tularensis* caused less agglutinin formation than in controls. V. J. W.

Histopathology of skin in pellagra. R. A. Moore, T. D. Spies, and Z. K. Cooper (*Arch. Dermat. Syphilol.*, 1942, 46, 100—111).—The pathological changes found in both the clinically affected and the unaffected skin of patients with pellagra consist primarily of dyskeratosis and atrophy of the epidermis and inflammation of the cutis. (5 photomicrographs.) C. J. C. B.

Content of nicotinamide in human milk and requirement of the nursing infant. A. Lvov, M. Morel, and M. Bilhaud (*Compt. rend.*, 1942, 214, 244—246).—During the first 3—8 days after delivery human milk contains 0.07 µg. of nicotinamide, but after the 3rd week it contains an average of 0.16 mg. per 100 c.c. It is calc. that the child requires 0.78 mg. of nicotinamide per day, and this is supplied if 500 c.c. of milk is ingested. After the first few weeks more nicotinamide is needed than can be obtained from the milk. The amount in the latter is increased by ingestion of nicotinamide, or by supplying the mother with foods rich in nicotinamide. It is unnecessary to assume synthesis of nicotinamide by the growing baby. J. N. A.

Nicotinamide in the human foetus. A. Lvov, M. Morel, and L. Dignonet (*Compt. rend.*, 1941, 213, 1030—1032).—The human foetus has no reserve of nicotinamide, and all its organs, except the heart, have a lower content than the corresponding organs of the mother. P. G. M.

Nicotinic acid and co-enzyme content of tissues of normal and blacktongue dogs. W. J. Dann and P. Handler (*J. Nutrition*, 1941, 22, 409—414).—In normal dogs 50% of the nicotinic acid in livers, 20% of that in muscle, but none of that in kidney cortex was "unbound," i.e., not associated with co-enzymes I and II. In blacktongue dogs the total nicotinic acid of livers decreases to 86% of normal, nearly the whole of the decrease being in the "bound" fraction. In skeletal muscle the changes were similar but smaller. Excessive dosages of nicotinic acid to normal dogs did not increase the co-enzyme or total nicotinic acid contents of the tissue. A. G. P.

Excretion of specific fluorescent substances in urine in experimental nicotinic acid deficiency. V. A. Najjar, H. J. Stein, L. E. Holt, jun., and C. V. Kabler (*J. clin. Invest.*, 1942, 21, 263—267).—The fluorescent substances F_1 and F_2 in the urine of dogs with experimental nicotinic acid deficiency were extracted. Acute nicotinic acid deficiency in dogs is characterised by disappearance of F_2 and a rise in F_1 excretion. As the disease becomes more chronic, F_1 excretion likewise falls. Nicotinic acid reverses these changes. C. J. C. B.

Extraction and assay of nicotinic acid from animal and plant tissues. Comparison of methods. V. H. Cheldelin and R. R. Williams (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 671—675).—Digestion of foodstuffs with takadiastase or papain appears to liberate nicotinic acid completely from a variety of materials. Extraction of cereals with acid or alkali gives higher nicotinic acid vals. than does enzymic liberation alone; the increase by acid treatment is apparently due to the presence in cereals of some substances other than trigonelline which are convertible into nicotinic acid. The biologically active substance formed by hydrolysis of the hypothetical precursor is probably nicotinic acid. J. D. R.

Effect of *p*-aminobenzoic acid on microbiological assay for nicotinic acid. H. Isbell (*J. Biol. Chem.*, 1942, 144, 567—568).—When acid hydrolysates of caseinogen are treated with activated C for removal of traces of nicotinic acid, the resulting solution does not permit as great an acid production by *Lactobacillus arabinosus* 17-5 as do hydrolysates that are not treated with C. Addition (1 µg. per 10 ml.) of *p*-aminobenzoic acid to the solution results in max. growth and acid production. It is suggested that *p*-aminobenzoic acid is a true growth-factor for *L. arabinosus* and that it should be added to the medium whenever C-treated hydrolysates are used in the Snell-Wright assays for nicotinic acid or biotin (A., 1941, III, 685). J. N. A.

Mechanism of *p*-aminobenzoic acid action and parallel effects of ethyl carbamate.—See A., 1942, III, 779.

Effect of pantothenic acid deficiency in rat. M. Sullivan and J. Nicholls (*Arch. Dermat. Syphilol.*, 1942, 45, 917—932).—When young piebald rats were fed on a purified diet low in vitamin-B complex and supplemented with thiamin, riboflavin, pyridoxine, and nicotinic acid, growth was retarded and the following were observed: changes in the lustre and texture of the fur, mild generalised scaling, diffuse alopecia of the venter and preauricular regions, alopecia in the circumocular regions, scaling of the paws, scaling, ridging, and curling of the tails, and symmetric pattern greying of the fur of the hood. Histologically there were mild hyperkeratosis, acanthosis, slight oedema and vesiculation, and dilatation of the hair follicles. Pantothenic acid supplements promoted growth and prevented and cured the generalised dermatitis and the symmetric pattern greyness. They had no effect on the paws and tail. Liver filtrate preps. prevented or cured all the cutaneous signs. Corn oil prevented or cured the paws and tail but had no effect on the generalised dermatitis. C. J. C. B.

Microbiological assay of natural pantothenic acid in yeast and liver. Influence of Clarase digestion. E. Willerton and H. W. Cromwell (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 603—604).—Digestions of 0.5-g. samples of yeast and of liver preps. with 1.0 g. of conc. Clarase in 10 c.c. for 48 hr. at 37° is adequate for release of combined pantothenic acid. After this treatment the assay vals. by the microbiological method compared favourably with those obtained by the chick method, although they were somewhat lower. Digestion with Clarase produces or releases a substance which interferes with the metabolism of the test organism, *L. casei*, but this does not interfere in testing materials of high potency. J. D. R.

Bacterial inhibition by analogues of pantothenic acid.—See A., 1942, III, 778.

Cure of paralysis in rats with biotin concentrates and crystalline biotin. E. Nielsen and C. A. Elvehjem (*J. Biol. Chem.*, 1942, 144, 405—409).—Small proportions of egg white added to a synthetic ration cause a paralysis, which is cured by feeding biotin, but not by riboflavin, pyridoxine, or the two together. The paralysis is prolonged on a high-fat diet. The leg muscle of the paralytic rats is rich in creatine. R. L. E.

Factors affecting the increase in plasma-ascorbic acid after oral ingestion of vitamin-C. E. N. Todhunter (*J. Nutrition*, 1941, 21, Suppl., 12—13).—In college women the max. increase in plasma-ascorbic acid following breakfast was reached in approx. the same time when the same source of vitamin-C was used, but the abs. increase varied with the initial level. The time at which max. increase was attained was longer when strawberries or cauliflower than when orange juice or ascorbic acid served as -C source. Vals. returned to fasting level 3—4 hr. after the meal. Absorption of ascorbic acid was not affected by Fe^{II} or Fe^{III} salts or by a high fat intake. Ingestion of different levels (100—400 mg.) of ascorbic acid caused corresponding increases in the peak of the plasma absorption curve. A. G. P.

from the insensible loss of wt. Factors are described for use in accordance with the type of diet fed. C. J. C. B.

Influence of plane of nutrition and of environmental temperature on relationship between basal metabolism and endogenous nitrogen metabolism subsequently determined. R. Treichler and H. H. Mitchell (*J. Nutrition*, 1941, 22, 333—343).—The ratio, endogenous urinary N : basal heat for adult rats (2.0 mg. : 1 cal.) was disturbed under conditions affecting the two factors differently. A previously low environmental temp. increased endogenous N excretion irrespective of the plane of nutrition, but increased the basal metabolic rate only when accompanied by an increased caloric intake. The ratio may be unaffected by lowering of temp. if the plane of nutrition is increased proportionately to the energy requirement; it is always depressed by increased caloric intake without fall in environmental temp. A. G. P.

Influence of previous regimes of protein feeding on endogenous nitrogen metabolism of rats. R. B. French, J. I. Routh, and H. A. Mattill (*J. Nutrition*, 1941, 22, 383—389).—Rats used to ascertain the biological val. of proteins by the balance method tend to over-compensate for depletion of body-protein during realimentation after periods of deficiency. Such animals, when used again for N balance experiments, require a longer period on N-deficient diets before the urinary N falls to the accepted endogenous level and consequently suffer a greater loss of wt. than do normal controls. These effects are most marked in animals of 100—200 g. wt. A. G. P.

Influence of anterior pituitary extract on protein and carbohydrate metabolism.—See A., 1942, III, 747.

Specific dynamic action of amino-acids in infants. M. Dann, M. D. Kelly, H. McNamara, and J. C. Curtis (*Amer. J. Dis. Child.*, 1942, 63, 900—913).—Glycine in doses of 1 g. per kg. body wt. or more produced increased heat production in 15 infants (by 6—16%); 0.4—2 g. per kg. of phenylalanine or tyrosine was inactive. Excretion of N was significantly increased after ingestion of glycine but only slightly, when at all, after ingestion of the aromatic amino-acids. C. J. C. B.

Metabolism of amino-acids in diabetes mellitus. J. A. Luetscher, jun. (*J. clin. Invest.*, 1942, 21, 275—279).—12 patients with severe untreated diabetes mellitus had high fasting plasma-amino-acid levels, and increased urinary excretion of amino-acids. Administration of insulin caused a rapid return of blood levels to normal. On continued insulin therapy, the plasma-amino-acid was maintained at normal levels, despite the fluctuation of the blood-sugar. C. J. C. B.

Origin of acetic acid produced by *in-vivo* acetylation. II. Ingestion of sulphanilamide and deuteriosuccinic acid. K. Bernhard (*Z. physiol. Chem.*, 1941, 271, 208—210; cf. A., 1942, III, 258).—When sulphanilamide, together with dideuteriosuccinic acid, is fed to rabbits, the *p*-acetylsulphanilamide excreted contains practically no D. Succinic acid or one of its metabolic products, therefore, is unlikely to be the source of the detoxifying acetyl group. F. O. H.

Acetylation of amino-acids *in vivo*. K. Bernhard and H. Steinhäuser (*Z. physiol. Chem.*, 1942, 273, 31—38).—After feeding *d*-hexahydrophenylalanine to dogs it undergoes optical inversion and acetyl-*l*-hexahydrophenylalanine is excreted in the urine. This acetylation, which is a type of detoxication, results through direct acetylation by acetic acid, for when deuterio-acetic acid or -ethanol is fed with *d*- or *l*-hexahydrophenylalanine, deuterioacetyl-*l*-hexahydrophenylalanine is excreted. J. N. A.

Formation of cysteine from homocysteine and serine by liver tissue of rats. F. Binkley and V. du Vigneaud (*J. Biol. Chem.*, 1942, 144, 507—511).—Rat's liver converts a mixture of *dl*-homocysteine and *dl*-serine into *l*-cysteine. The reaction is scarcely inhibited by CN⁻. In absence of serine, only very slight formation of cysteine occurs, and methionine is not nearly so effective as is homocysteine. Only very small amounts of cysteine are formed when *d*-serine or *d*-homocysteine is used. The significance of the results in conjunction with the biological behaviour of the unsymmetrical thioether, *l*-S-(β -amino- β -carboxyethyl)homocysteine (cystathionine) is discussed. J. N. A.

Fate of dietary serine in body of rats. De W. Stetten, jun. (*J. Biol. Chem.*, 1942, 144, 501—506).—When *dl*-serine containing ¹⁵N is fed in small amounts to rats for 3 days under standard dietary conditions, it is incorporated into the body-phosphatides and -proteins. It is also decarboxylated and gives rise to ethanolamine. Cystine isolated from the proteins has a high content of ¹⁵N, and hence the C chain of serine is converted into cystine by the rat. J. N. A.

Isolation of lanthionine from various proteins. D. B. Jones and M. J. Horn (*J. Nutrition*, 1941, 21, Suppl., 13—14).—The isolation of lanthionine from hair, feathers, and lactalbumin is described. Conversion of cystine into lanthionine in the intestinal tract is indicated. A. G. P.

Bile and metabolism. I. Fate of cholic acid in the guinea-pig.—See A., 1942, III, 755.

Relation of fasting ketosis to nature of protein and fat content of preceding diet. E. M. MacKay, F. E. Visscher, and A. N. Wick (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 514—516).—Blood and urinary ketones are highest when rats have been fed on a "poor" protein (gelatin) which makes available less body-protein for catabolism and therefore less glucose. Ketone vals. were least after a serum-albumin diet, and intermediate after edestin or casein. Varying fat was without effect. V. J. W.

Hereditary nature of gout. C. J. Smyth and R. H. Freyberg (*Ann. int. Med.*, 1942, 16, 46—56).—The families of 2 patients suffering from gout were examined. 7 of 8 male members of these families have elevated blood-uric acid concns., 5 suffer from gout. No female member of these families suffers from gout or elevated blood-uric acid. In the males, gout existed in successive generations. A. S.

Rôle of phosphoric acid in dehydrogenation processes, and their biological importance. F. Lynen (*Naturwiss.*, 1942, 30, 398—406).—A review of the functions of H₃PO₄ in the metabolism of carbohydrates, and its importance in the cell-regulating mechanism. P. G. M.

Simplified method for determining aerobic glycolysis. K. Vietórisz (*Magyar Orv. Arch.*, 1940, 41, 396—399).—The method involves eliminating the total-CO₂ factor in Warburg's method, a source of error due to changes of the balance of dissociation of Ringer's solution, by adding various amounts of lactic acid. A. W. M.

Pantothenic acid and utilisation of glucose by living and cell-free systems. P. C. Teague and R. J. Williams (*J. Gen. Physiol.*, 1942, 25, 777—783).—Added pantothenic acid has no appreciable effect on fermentation of glucose when used with dialysed or acetone-ptd. yeast juice, and it does not affect the rate of phosphorylation of glucose or the rate of decarboxylation of pyruvic acid by yeast juice. Addition of pantothenic acid causes acceleration of fermentation by deficient yeast cells, which is accompanied by "binding" of the acid by the cells. This effect is not inhibited by N-(α -dihydroxy- β -dimethylbutyl)taurine (Snell, A., 1941, III, 685), and when large amounts of this are used, fermentation is actually accelerated. Pantothenic acid has no effect on O₂ consumption of homogenised chick tissues during utilisation of glucose, and neither the acid nor pantooyltaurine has any effect on the anaerobic glycolysis of pantothenic acid-deficient, homogenised chick tissues. Hence, pantothenic acid does not serve as a dissociable co-enzyme for the glycolytic systems investigated. J. N. A.

Effect of toxin of *Trimeresurus mucrosquamatus* (Cantor) on carbohydrate metabolism of rabbits. S. To and K. Chin (*Japan. J. Med. Sci.*, 1941, IV, 13, 207—243). H. H. K.

Factors controlling glucose formation in liver. P. Fantl, M. N. Rome, and J. F. Nelson (*Austral. J. Exp. Biol.*, 1942, 20, 121—124).—The liver-enzyme system which forms glucose from glycogen has an optimum *p*_H at 6.6. This is the same as for liver extracts in which the phosphatase is partly inhibited by high concn. of PO₄^{'''}. Breakdown of hexose 1- but not of 6-phosphate increases with acidity between *p*_H 7.6 and 5.6. Normal *in-vivo* concns. of glucose do not inhibit breakdown of glycogen. P. G. M.

Anterior pituitary in carbohydrate metabolism of eviscerated rat.—See A., 1942, III, 747.

Influence of diethylstilbœstrol on carbohydrate metabolism.—See A., 1942, III, 750.

Diet calculator for simplifying diet prescription in diabetes mellitus. T. G. Randolph (*Amer. J. med. Sci.*, 1942, 204, 111—119). C. J. C. B.

Galactose tolerance and thyroid disease. J. A. Rosenkrantz, M. Bruger, and A. J. Lockhart (*Amer. J. med. Sci.*, 1942, 204, 36—40).—Patients with hyperthyroidism, Bright's disease, upper respiratory infections, malignant disease, and those who have recently received sulphonamide therapy frequently show impairment in oral galactose tolerance. The impairment is most marked in thyrotoxicosis owing to increased rate of absorption of this sugar from the intestinal tract and hepatic damage. Patients with diabetes mellitus have a normal tolerance for ingested galactose. C. J. C. B.

Disagreement in results of two types of oral glucose tolerance tests. P. H. Langner, jun., and E. J. Dewees (*Amer. J. med. Sci.*, 1942, 204, 85—92).—Experience with 160 subjects suggests that the 1-dose glucose tolerance test is more reliable than the Exton-Rose procedure. C. J. C. B.

Metabolism of calcium and phosphorus as influenced by various activated sterols.—See A., 1942, III, 763.

Elimination of iron through kidney and salivary glands of guinea-pig. J. Odier (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 256—259).—After subcutaneous administration of just sufficient of a mixture of equal parts of K₂Fe(CN)₆ and Fe NH₄ citrate to cause renal elimination of Fe, no Fe appears in the saliva but a small

proportion appears when the dose is trebled. If the pedicle of the kidney is ligatured and no Fe is eliminated by the kidney or found in the urine, the Fe contents of the saliva, spleen, liver, and adrenal cortex increase. W. McC.

Influence of menstruation on carbohydrate tolerance in diabetes mellitus. H. I. Cramer (*Canad. Med. Assoc. J.*, 1942, 47, 51–55).—Of 36 treated and uninfected cases of diabetes with acidosis and coma, 17 showed the attack at the menstrual period. C. J. C. B.

Biochemistry of strontium. M. Fay, M. A. Andersch, and V. G. Behrmann (*J. Biol. Chem.*, 1942, 144, 383–392).—Sr given orally or intravenously may appear in the blood in diffusible or non-diffusible (combined with $\text{PO}_4^{'''}$ or protein) form. Administration of Sr lowers serum-Ca, although this is not due to a simple replacement. Serum-inorg. $\text{PO}_4^{'''}$ tends to be high, but there is no effect on serum-protein or -Mg. Sr given orally is mainly excreted in the faeces and, when given intravenously, in the urine. Much of the Sr may be retained in the body, and some is deposited in the bones. R. L. E.

XX.—PHARMACOLOGY AND TOXICOLOGY.

2-Sulphanilamido- α -D-glucose and derivatives.—See A., 1942, II, 351.

4:4'-Diaminobenzophenone and other sulphur-free compounds with sulphonamide activity.—See A., 1942, II, 362.

Ionisation of sulphonamides. C. L. Fox, jun., and H. M. Rose (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 142–145).—The degree of dissociation at p_H 7 of sulphanilamide, sulphapyridine, sulphathiazole, and sulphadiazine is inversely correlated with the min. effective bacteriostatic concn. and directly with the min. concn. of *p*-aminobenzoic acid necessary to inhibit bacteriostasis. V. J. W.

Mechanism of sulphonamide action. I. Acidic dissociation and antibacterial effect. F. C. Schmelkes, O. Wyss, H. C. Marks, B. J. Ludwig, and F. B. Strandkov (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 145–148).—Sulphonamides are more effective at a high p_H , where a proportionately larger fraction is present in an anionic species. V. J. W.

Penetration of sulphonamides through intact skin by iontophoresis and other means of local application. W. G. Clark, E. A. Strakosch, and C. Nordlum (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 43–48).—Penetration of Na sulphathiazole by iontophoresis and by wet dressings is equal up to 6 hr. Penetration from ointments, or by iontophoresis of saturated Ca sulphathiazole, is less in rats. Ca and Na sulphathiazole behave similarly in rabbits. V. J. W.

Percutaneous application of sulphanilamide in animals and men. B. Zondek, Y. M. Bromberg, and B. Shapiro (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 116–120).—Sulphanilamide, 15% in acetone, with glycerin and soap is readily absorbed through the rabbit's skin and blood concn. is equal to that obtained by oral administration. In man blood concn. is not equal to that obtained by mouth but vomiting is much rarer. V. J. W.

Bacteriostatic effect of sulphathiazole in various ointment bases. E. A. Strakosch and V. M. Olsen (*Arch. Dermat. Syphilol.*, 1942, 46, 44–53).—Na sulphathiazole is most rapidly effective when incorporated into bases of the water-in-oil type of emulsion which are rich in cholesterol. C. J. C. B.

Choice of media for in-vitro sulphonamide studies. M. L. Cooper and H. M. Keller (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 148–152).—Apparent inhibition of sulphonamide action may be due to the culture medium used being specially favourable to bacterial growth and vice versa. V. J. W.

Non-permeability of blood clot to sulphonamides at increased temperature. A. Kershbaum and L. Schwartz (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 165–167).—No penetration took place into clots *in vitro* even at temp. of 41° and in presence of heparin. V. J. W.

Effects of cozymase on growth of staphylococci and antistaphylococcal action of sulphonamides. W. W. Spink, J. J. Vivino, and O. Mickelson (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 31–36).—Max. growth took place in absence of nicotinic acid and presence of cozymase because the latter contained sufficient thiamin. With inocula of 60 organisms per c.c. inhibition of bacteriostasis by sulphapyridine or sulphanilamide was caused by cozymase but not by thiamin or nicotinic acid. V. J. W.

Effect of sulphonamides on staphylocoagulase. W. W. Spink and J. J. Vivino (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 37–41).—Sulphathiazole, sulphanilamide, and *p*-aminobenzoic acid accelerated clotting of citrated plasma by sterile broth staphylococcus filtrate. Clotting was inhibited by sulphadiazine. V. J. W.

Non-specificity of sulphonamides. O. Wyss, K. K. Grubaugh, and F. C. Schmelkes (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 618–621).—Relative efficiencies of various sulphonamides in neutralising *p*-aminobenzoic acid were const. irrespective of the test organism employed. V. J. W.

Inhibition of antimalarial action of sulphonamides by *p*-aminobenzoic acid. J. Maier and E. Riley (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 152–154).—*p*-Aminobenzoic acid inhibits the antimalarial action of sulphanilamide against *P. gallinaceum* but does not affect that of atebirin or quinine. V. J. W.

Antisulphonamide action of adenine. G. J. Martin and C. V. Fisher (*J. Biol. Chem.*, 1942, 144, 289–290).—Adenine sulphate (0.8 mg. per g.) completely inhibits the chemotherapeutic action of sulphanilamide, sulphadiazine, sulphapyridine, and sulphathiazole when administered (2–4 mg. per g.) to mice infected with *Strep. haemolyticus*. Guanine and uracil exhibit no antisulphonamide action. It is suggested that the action of sulphonamides against streptococci is due to their interference with the normal utilisation of adenine, an essential growth factor functioning in vital enzyme systems. J. N. A.

Phytopharmacological reactions of blood after sulphonamides. D. I. Macht (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 694–696).—Serum from rabbits or patients receiving full doses of various sulphonamides was only slightly more toxic to lupin seedlings than normal serum, in contrast with serum from pemphigus cases. V. J. W.

Inactivating effects of sulphapyridine on leucotoxic action of benzene. M. McCarty and W. S. Tillett (*J. Exp. Med.*, 1941, 74, 531–543).—Leucopenia developing in rabbits after subcutaneous injection of benzene (1 c.c. per kg. per day) is prevented by oral administration of sulphapyridine (1 g. per kg. per day). *p*-Aminobenzoic acid fails to inhibit the leucotoxic action of benzene. Sulphapyridine alone does not produce leucocytosis; sulphapyridine and benzene given together result in a lower total phenol and a relatively higher combined phenol excretion than that of animals given benzene alone. Sulphapyridine possibly influences the oxidation of benzene. A. C. F.

Sulphanilamide in treatment of rheumatism in children. J. Zahorsky and T. S. Zahorsky (*Arch. Pediat.*, 1942, 59, 361–364).—Prompt and permanent relief was produced in 4 cases by 2–4 days' sulphonamide treatment followed by salicylate. Sulphanilamide or sulphathiazole has no effect on the joints, but checks the prime source of infection. C. J. C. B.

Chemotherapy of pneumonia and immunity reactions. J. G. M. Bullowa, N. H. Shackman, and D. Stats (*Ann. int. Med.*, 1942, 16, 57–70).—If treated very early with sulphonamides, the pneumococci are attenuated or killed and immunity is established at the usual time as if the patient had recovered spontaneously from a mild pneumococcal infection. Fast pneumococci resisting chemotherapy may respond to type-sp. serum therapy. The diagnostic importance of acute phase or "C" protein and the causes of failure with chemotherapy are discussed. A. S.

Protective activity of normal human and animal sera for sulphapyridine-treated mice infected with pneumococci. S. Spicer (*J. clin. Invest.*, 1942, 21, 423–427).—Administration of normal dogs' or adult human sera increased the survival rate of sulphapyridine-treated mice, when tested against type I pneumococci. The sera of mice, rats, guinea-pigs, rabbits, and human infants were ineffective. Human adult sera protected mice against small doses of type III pneumococci but diminished the survival rate of sulphapyridine-treated mice infected with type III pneumococci. Absorption with homologous pneumococcus cultures destroyed the protective activity. Absorption with heterologous cultures left a variable fraction of protective activity, even when very large doses of culture were used for absorption. C. J. C. B.

Intraperitoneal sulphanilamide. R. V. Hudson and R. Smith (*Lancet*, 1942, 242, 437–440).—10–15 g. of sulphanilamide was applied intraperitoneally in cases of peritoneal contamination. 2 out of 24 cases died as compared with 10 out of 18 cases in whom no drug was used. C. A. K.

Effect of promin on blood of patients with tuberculosis. B. E. Hall, K. Pfuete, H. C. Hinshaw, and W. H. Feldman (*Proc. Staff Mayo Clin.*, 1942, 17, 24–27).—Oral administration of large doses (3.2 g.) for 8–10 days causes excessive destruction of blood with resulting haemolytic anaemia. Smaller doses administered for 4–6 months did not produce anaemia. H. H. K.

Cure of experimental staphylococcal meningitis. W. J. MacNeal, M. J. Spence, and A. Blevins (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 176–179).—9 out of 22 rabbits recovered when treated immediately after intra-cisternal inoculation with bacteriophage and sulphathiazole. V. J. W.

Sulphathiazole in staphylococcal septicæmia. W. S. Flowers, D. H. Collins, and K. H. Hardy (*Lancet*, 1942, 242, 470–473).—Two cases of *Staph. aureus* septicæmia were successfully treated with sulphathiazole, the total dosage being 232 and 169 g., respectively. C. A. K.

Sulphonamides and serum in pneumococcal meningitis. V. N. Leyshon (*Lancet*, 1942, 242, 352–354).—5 of 7 patients with pneumococcal meningitis recovered after treatment with soluseptasine, sulphapyridine, and type-sp. serum. C. A. K.

Sulphapyridine in pneumococcal meningitis. A. Sakula (*Lancet*, 1942, 242, 444—446).—A male infant of 17 months with primary pneumococcal meningitis was successfully treated with sulphapyridine. C. A. K.

Meningococcus infection treated with sulphonamide drugs. D. L. Klein (*Canad. Med. Assoc. J.*, 1942, 47, 143—150).—41 cases were treated successfully with sulphonamides alone. C. J. C. B.

Sulphonamides in meningococcal endocarditis. J. G. Cutts, G. Kraft, and P. H. Wilcox (*Lancet*, 1942, 242, 292—293).—A man with meningococcal endocarditis recovered after 90 g. of sulphanilamide + 130 g. of sulphapyridine + 560 g. of sulphathiazole given during 9 months. C. A. K.

Sulphapyridine in male gonorrhoea. S. M. Laird (*Lancet*, 1942, 242, 463—464).—Different schemes of dosage of sulphapyridine, with and without urethral irrigation, were tried in 784 cases of acute gonococcal anterior urethritis. The best results followed 4-hourly doses of 1 g. of drug for 4 days (24 g. total) + urethral lavage and high fluid intake. C. A. K.

Blood-sulphapyridine concentrations in treatment of gonorrhoea. R. W. Fairbrother and C. A. Aymer (*Lancet*, 1942, 242, 464—466).—Studies of blood concn. of sulphapyridine were correlated with clinical results in 140 cases of acute gonorrhoea. Initial massive dosage is unnecessary for effective treatment. C. A. K.

Stricture of rectum due to lymphogranuloma venereum; symptoms and treatment with sodium sulphanilylsulphanilate. J. G. Levy, E. C. Holder, and J. G. M. Bullock (*Amer. J. digest. Dis.*, 1942, 9, 237—239).—Favourable results are recorded in 102 cases. No surgical treatment other than dilatation was necessary, but the drug must be continued for several years. N. F. M.

Treatment of anorectal infections with suppositories containing sulphanilamide and local anaesthetic. H. Laufman and M. Diamond (*Amer. J. digest. Dis.*, 1942, 9, 144—146).—1% sulphanilamide plus metycaine in a gelatin base is recommended. N. F. M.

(A) Sodium sulphadiazine in treatment of experimental streptococcal infection. (B) Sulphadiazine in experimental streptococcal infection—effects of local implantation. B. McSwain and F. Glenn (*Arch. Surg., Chicago*, 1942, 44, 223—230, 231—233).—Na sulphadiazine given subcutaneously to rabbits in doses of 0.4 g. per kg. was bactericidal for β -haemolytic streptococci in the blood, and prolonged the life of rabbits with wounds inoculated with this organism.

(b) Sulphadiazine implanted in wounds in rabbits inoculated with β -haemolytic streptococci decreased the mortality rate, increased the survival time, and lowered % of positive blood cultures. F. S.

Sulphonamide-resistant streptococci. A. E. Francis (*Lancet*, 1942, 242, 408—409).—13 cases of wound infection by a sulphonamide-resistant strain of *Strep. pyogenes* type 12 are reported, and the origin was traced to a single infected case. The infection was eradicated in one case by local application of gramicidin. C. A. K.

Bactericidal action of sulphathiazole on *Strep. faecalis*. H. F. Helmholz (*Proc. Staff Mayo Clin.*, 1941, 16, 737—744).—The growth of the *Strep. faecalis* in urine is inhibited at p_H 4.9. Sulphathiazole has a greater bactericidal action on the streptococcus when the p_H of the urine is low, and is superior to sulphanilamide. H. H. K.

Use of sulphathiazole with primary mastoid wound closure. F. W. Shaver (*Canad. Med. Assoc. J.*, 1942, 47, 7—11).—Complete primary closure, using implanted sulphathiazole crystals, was carried out in 16 mastoidectomies. Primary healing of the wound took place in 10 cases. In 5 cases with slight separation of the skin edges primary healing was delayed up to the 16th day without infection. C. J. C. B.

Sulphaguanidine in ulcerative intestinal disease. J. M. Stickney, F. R. Heilman, J. A. Bargin, and W. H. Dearing (*Proc. Staff Mayo Clin.*, 1942, 17, 33—44).—46 patients were treated with sulphaguanidine. Some showed considerable improvement but others not. No correlation between bacteriology of the stools and clinical response could be made. Stools of 6 patients who improved clinically with sulphaguanidine, and 7 who did not, showed a decrease in *E. coli*, and the stools of 3 patients who improved exhibited no change in *E. coli*. Bacteriological studies on *Strep. faecalis* and *C. welchii* were likewise inconclusive. H. H. K.

Bacteriostatic properties of sulphanilamide and some of its derivatives. I. Succinylsulphathiazole, new chemotherapeutic agent locally active in the gastrointestinal tract. E. J. Poth, F. L. Knotts, J. T. Lee, and F. Inui (*Arch. Surg., Chicago*, 1942, 44, 187—207).—Succinylsulphanilamide and succinylsulphathiazole strongly inhibited coliform organisms in the gastrointestinal tract of the dog. They have relatively strong acid properties, liberating CO_2 from aq. solutions of inorg. carbonates and bicarbonates. Succinylsulphathiazole is relatively resistant to chemical hydrolysis, but is split by bacteria, yielding sulphathiazole. *In vitro* it has low bacteriostatic action against *B. coli*. Owing to its low absorption, a high concn. can be maintained in the gastro-intestinal tract in man,

giving a high bacteriostatic action. The stools became semifluid and relatively odourless. Concn. in the blood remains low for the drug is rapidly excreted by the kidneys. There are no severe toxic reactions in man. F. S.

Thiazole derivatives of sulphanilamide in monkey malaria. B. V. Patel (*Current Sci.*, 1942, 11, 187).—Parasites of *Plasmodium Knowlesi* disappear completely from the peripheral blood of monkeys in 4 days after treatment with 2-N'-sulphanilamido-5-ethylthiazole or N'-methylsulphathiazole (1 g. twice daily); the relapse observed with controls treated with atebirin does not occur. The blood of treated animals is not infective to normal animals after disappearance of the parasites and they are as susceptible to infection as normal animals. H. G. R.

Sulphathiazole in infectious coryza in fowls. J. P. Delaplane and H. O. Stuart (*J. Amer. Vet. Med. Assoc.*, 1941, 99, 41—42).—Sulphathiazole (0.25—1.0 g. per 30 g. of mash) prevented clinical symptoms in adult cockerels inoculated with virulent cultures of *Haemophilus gallinarum*. The organisms are only inhibited and protection ceased when treatment was discontinued. Blood of treated birds inhibited *H. gallinarum* in culture. E. G. W.

Sulphonamides in faeces. F. Hawking (*Lancet*, 1942, 242, 290—291).—The concns. of various sulphonamides in the faeces were studied in cats, mice, and men after oral administration. In men sulphaguanidine was excreted in higher concns. than sulphapyridine, sulphathiazole, sulphadiazine, or sulphanilamide. In mice sulphathiazole was more effective than sulphaguanidine in diminishing no. of bacteria present in faeces, but the doses required were toxic. C. A. K.

Lesions produced by sulphadiazine. B. Maisel, B. McSwain, and F. Glenn (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 715—717).—Subcutaneous injection of 0.1 g. per kg. twice daily for 6—21 days caused severe damage to the kidneys and some destruction of bone marrow. V. J. W.

Morphology of crystals in urine during administration of sulphanilamides. D. Lehr and W. Antopo (*Amer. J. clin. Path.*, 1942, 12, 200—209).—Photomicrographs of characteristic crystals in urine during treatment with sulphapyridine, sulphathiazole, sulphadiazine, and sulphaguanidine are presented. C. J. C. B.

Acute haemolytic anaemia, autoagglutination, toxic hepatitis, and renal damage following sulphathiazole therapy. I. Rothstein and S. Cohn (*Ann. int. Med.*, 1942, 16, 152—162).—The total dose of sulphathiazole administered in this case of type VII pneumococcal lobar pneumonia was 17 g. The patient recovered. A. S.

Antiseptic emulsions for superficial granulating areas. R. M. Heggie, E. A. Gerrard, J. F. Heggie, C. G. Bradbury, P. J. Morrison, and W. Stout (*Lancet*, 1942, 242, 347—350).—Simple, economical, buffered isotonic proflavine (0.2%) emulsions of water-in-oil and oil-in-water types are described. Superficial granulating areas, especially after 2nd degree burns, are best treated by saturated aq. Na_2SO_4 followed by the emulsion. 5 cases are described. C. A. K.

Chemical coagulants in burns. P. B. Medawar (*Lancet*, 1942, 242, 350—352).—The action of various chemical coagulants was studied on clotted cockerel blood plasma. Tannic acid and gentian-violet had the feeblest penetrating power and their coagulum was totally resistant to tryptic digestion. This suggests that neither of these substances produces fresh damage to tissues and that the coagulum forms an inert wound dressing. C. A. K.

Inactivation of pressor amines by quinones and related diketones. S. Soloway and K. A. Oster (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 108—111).—Aeration in presence of a quinone (*p*-benzoquinone), or of a quinone precursor (dihydroxyphenylalanine or pyrocatechol) + $CuSO_4$ as catalyst, abolished the pressor activity of tyramine, indolethylamine, and renin, and reduced it in the case of ephedrine and benzedrine. Simultaneous injection of $CuSO_4$ and dihydroxyphenylalanine reduces blood pressure in hypertensive rats. V. J. W.

Pharmacological behaviour of intraocular muscles. V. Action of yohimbine and ergotamine on dilator iridis. E. Sachs and F. F. Yonkman (*J. Pharm. Exp. Ther.*, 1942, 75, 105—110).—Yohimbine alone had no effect on the excised dilator iridis of the albino rabbit but antagonised (without reversing) the effect of adrenaline. Ergotamine alone had a slight inconst. stimulating effect; it strongly antagonised adrenaline and reversed the normal effect of a second application of the latter drug. Ergotamine in spite of its contracting effect on the dilator does not act synergistically with adrenaline. P. C. W.

Comparison of efficiency-increasing and toxic effects of theophyllinated scillaridin on isolated cat heart. V. Lorber, A. J. Greenberg, and M. B. Visscher (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 517—519).—In this substance the sugar moiety of squill glucoside is replaced by 2 mols. of theophylline. The ratio of cardiac irregularity dose to decreased diastolic vol. dose is 3.65 as against 2.46, 1.04, and 2 for ouabain, *K*-strophanthoside, and lanatosid-C respectively. V. J. W.

Action of drugs on coronary vessel calibre. Paredrine, angiotonin, renin, quinidine, insulin, coramine, magnesium sulphate, morphine, acid, and alkali. S. R. Elek and L. N. Katz (*J. Pharm. Exp. Ther.*, 1942, 75, 178—182).—The drugs were tested on the perfused coronary circuit in the isolated fibrillating dog heart (Katz *et al.*, A., 1939, III, 19). Paredrine, insulin, coramine, MgSO_4 , and morphine sulphate cause coronary dilatation. Renin and angiotonin give inconst. but usually dilator effects. Quinidine was without effect in non-toxic doses. HCl (pH 3.9—4.4) and NaHCO_3 (pH 7.4—7.8) both cause dilatation. P. C. W.

Treatment of constipation with senna glucosides. K. Kottmann (*Schweiz. med. Wschr.*, 1941, 71, 1093—1096).—"Pursennid-Sandoz" contains the two glucosides sennoside A and B. Sennosides are insol. in water and many org. solvents; they dissolve easily in NaHCO_3 ; they form glucose and an aglucone (an anthraquinone). The prep. was successfully used in cases of chronic constipation. A. S.

Comparison of gentian-violet and hexylresorcinol in treatment of pinworm infestation. H. L. Evans and H. Moore (*J. Pediat.*, 1942, 20, 627—631).—78% of 102 children in an orphan's home were infested with pinworms (*Enterobius vermicularis*). Patients tolerated gentian-violet better than hexylresorcinol. Gentian-violet was effective in 77% of the cases, hexylresorcinol in 50%. C. J. C. B.

Histidine and histamine shock. O. G. Edholm (*J. Physiol.*, 1942, 101, 252—256).—In cats after 28 daily subcutaneous injections of histidine the depressor action of histamine on blood pressure is diminished; so is the sensitivity to histamine of the uterus of guinea-pigs similarly treated with histidine. J. A. C.

Appearance of pentothal in human milk. C. W. Mayo and C. P. Schlicke (*Proc. Staff Mayo Clin.*, 1942, 17, 87—88).—0.75 mg.-% of barbiturate was detected in human milk 25 min. after intravenous injection of 45 c.c. of a 2.5% solution of pentothal Na. 2 mg.-% was found 14 min. after administration was discontinued.

Clinical use of sodium 5-ethyl-5-(α -methyl- Δ^2 -butenyl)barbiturate (vinbarbital sodium). J. P. Hendrix (*Amer. J. med. Sci.*, 1942, 204, 93—101).—A new short-acting barbiturate (vinbarbital Na) was administered to 465 patients. It was an effective sedative and hypnotic in a wide variety of disease states. No serious and few undesirable reactions were encountered. The usual dosage was 32 mg.—0.2 g. H. H. K.

Resuscitation after overdose with anaesthetic. W. B. Draper and R. W. Whitehead (*Lancet*, 1942, 242, 442—444).—Respiratory arrest was produced in dogs by measured doses of ether, divinyl ether, and CHCl_3 . Attempts to resuscitate were then made by artificial respiration and O_2 , and it was found that failures with CHCl_3 (10%) were more frequent than with ether (0.8%), divinyl ether being intermediate. Resuscitation can only occur when the circulation is still functioning, and is favoured by previous adequate oxygenation. Leptazol may be helpful but nikethamide appeared to be useless or even harmful. C. A. K.

Determination of local anaesthetic potency by observation of nerve action potentials. A. L. Bennett, J. C. Wagner, and A. R. McIntyre (*J. Pharm. Exp. Ther.*, 1942, 75, 125—136).—An empirical equation has been developed for assessing the relative potencies of local anaesthetics by observation of their effects on the α wave of the action potential of an isolated frog sciatic nerve. The block-time for a given nerve is, within limits, directly related to the square of the diameter of the nerve. For all local anaesthetics investigated the block-time for a nerve varied inversely with the log of the molar concn. P. C. W.

Animal standards for acute toxicity of spinal anaesthetic agents. Co Tui, A. L. Preiss, C. L. Burstein, and W. F. Ruggiero (*J. Pharm. Exp. Ther.*, 1942, 75, 137—144).—The intraspinal min. lethal concns. of procaine hydrochloride, nupercaine, and monacaine formate were determined in rabbits and cats. The spinal length formate in cat and rabbit is a consistent basis for the calculation of dosage. Monacaine formate appears to be as effective as and safer than procaine hydrochloride. P. C. W.

Spasmolytic and local anaesthetic action of derivatives of fluorene-carboxylic acid and related compounds. G. Lehmann and P. K. Knoefel (*J. Pharm. Exp. Ther.*, 1942, 74, 274—283).—41 compounds, esters of diphenylacetic acid and diphenyleneacetic acid and related compounds, were tested for ability to relax the spasm produced in isolated rabbit or guinea-pig intestine by acetylcholine (neurotropic activity), BaCl_2 , and histamine (musculotropic activities). Local anaesthetic activity was tested on rabbit cornea, and relaxation of intestines of rabbits, guinea-pigs, and dogs *in vivo* was also investigated. These activities and toxicity in mice were compared with those of atropine, syntropan, trasentin, and papaverine. Changes in structure gave wider variation in neurotropic activity than in musculotropic activity; anaesthetic potency was most closely related to the latter property. Tropic acid or tropine is not essential for spasmolytic activity, which is produced by the esterification of other org. acids with a basic alcohol. The diethylaminoethyl ester of diphenylacetic acid was no more active than

that of α -phenylvaleric acid, showing that the introduction of a second phenyl group into the acid conferred no special benefit; when there was a C-C bridge between the two benzene rings of the acid there was a marked increase in potency with little alteration in toxicity. Spasmolytic activity was reduced by increasing the distance between the carboxyl group and the aromatic nucleus, by substituents on the aromatic nucleus or increase in its size (anthracene-, or acridine-carboxylic or dinaphthylacetic acid), or by increasing the size of the aminoalkyl beyond that of diethylaminoethanol. The most promising compound tested was diethylaminoethyl fluorene-9-carboxylate. Its spasmolytic activity was 1/7th—20 times that of atropine according to the method of testing; atropine is 100 times as strong in mydriatic activity, 130 times as strong in antagonising the vascular activity of acetylcholine, and 5000 times as strong in suppressing salivation. Clinical trial of the compound is recommended. P. C. W.

Relationship between chemical structure and pharmacological activity of 43 new synthetic local anaesthetics. A. Gilman, L. Goodman, J. M. Thomas, G. A. Hahn, and J. M. Prutting (*J. Pharm. Exp. Ther.*, 1942, 74, 290—308).—43 synthetic compounds were tested for surface anaesthetic activity on the rabbit's cornea, for block anaesthesia by the frog urostyle method, and for toxicity in mice. Cocaine was used as a standard of comparison. All 15 members of a group of alkamine esters of diphenylacetic acid, diphenylpropionic acid, benzoic acid, and closely allied derivatives were active. There was usually an increase in toxicity and anaesthetic potency with increasing length of the alkylene or alkamine group; esters of benzyl-phenyl acids were very irritant and so was an ester of phenylethyl-phenylacetic acid. Similar esters of phenylalkyleneacetic acids were inactive unless there were at least 2 C atoms in the alkylene chain; in these esters and those of phenylalkylacetic acids, increase in the length of the alkamine chain decreased toxicity, which is the reverse of what occurred in the first group. Symmetrical alkaline esters of diphenylsuccinic acid had high thresholds of anaesthetic activity but were long-acting. 15 *p*-alkyl and alkamine carboxylates of alkamine benzyl ethers and diethylbenzylamine were tested. Diethylaminoethyl benzyl ether has weak local anaesthetic power. *para*-Substitution of carbethoxy and carbobutoxy progressively increases anaesthetic potency and decreases toxicity, but the diethylaminoethyl ester is inactive; activity is regained if the length of the alkylene or alkamine chain is increased (dibutylaminoethyl or diethylaminobutyl substituents). Diethylaminopropyl benzyl ether has diminished activity while dipropylaminoethyl benzyl ether has increased activity. *p*-Alkamine carboxylates of benzyldiethylamine are active only after the carboxylate has been increased in mol. wt. to the dibutylaminopropyl ester. P. C. W.

Action of opiates on intestine. H. F. Adler, A. J. Atkinson, and A. C. Ivy (*Arch. intern. Med.*, 1942, 69, 974—985).—Morphine sulphate in doses of 8—16 mg. intramuscularly, given to a man with ileostomy, increased the tone and amplitude of non-propulsive rhythmic contractions of segments of the distal part of the ileum. The propulsive activity, measured by the amount of contents discharged, was uniformly decreased. Dilaudid (1—2 mg.) acted similarly. Studies on 4 patients with colostomy gave similar results for the action of morphine on the colon, and when diarrhoea was present the drug decreased propulsive motility without reducing tone or non-propulsive motility. Atropine (0.7—0.8 mg. intramuscularly) alone decreased tone and both types of motility of the colon, and 0.7 mg. partly antagonises the effects of 8 mg. of morphine. Morphine delays the passage of the intestinal contents by causing dyskinesia of the small and large intestines, *i.e.*, by producing incoordination of the contractions of the adjacent segments of bowel. C. A. K.

Morphine, codeine, and their derivatives. XVI. Clinical studies of morphine, methyldihydromorphinone (metopon), and dihydrodeoxymorphine-D (desomorphine). L. E. Lee (*J. Pharm. Exp. Ther.*, 1942, 75, 161—173).—Min. effective analgesic dose of metopon is 5 mg. as compared with 10 mg. for morphine; that for desomorphine is 1 mg. Metopon, by oral or parenteral route, is superior to morphine in that patients develop tolerance and dependence less rapidly, lose tolerance rapidly during short periods of withdrawal, and have fewer side effects. It is contraindicated for pre-anaesthetic medication owing to its lower hypnotic potency and occasional dangerous respiratory depression observed when given in conjunction with an inhalation anaesthetic. Desomorphine is adequate for anaesthetic premedication but has no advantages over morphine and is very short-acting. P. C. W.

Pholedrine in major operations. H. Dodd (*Lancet*, 1942, 242, 498—501).—Pholedrine was effective in raising a lowered blood pressure in 89 patients during major operations; repeated injections (intramuscular or intravenous) in some cases raised the pressure to normal or above. In 126 injections no fall of blood pressure was observed. Leptazol alone was ineffective in such cases but it enhanced the action of pholedrine. C. A. K.

Uterine principle from *Viburnum prunifolium*. W. E. Evans, W. G. Harne, and J. C. Krantz (*J. Pharm. Exp. Ther.*, 1942, 75,

174—177).—A glucoside has been extracted from authenticated *Viburnum prunifolium*, N. F. In dilutions of 1/6000—1/15,000 it relaxes isolated rat and human uterine strips. The effect on the rat uterus is antagonised by cocaine and atropine but not by adrenaline. P. C. W.

Effects of potassium salts in man. N. M. Keith, A. E. Osterberg, and H. B. Burchell (*Proc. Staff Mayo Clin.*, 1942, 17, 49—52).—A considerable amount of several K salts may be ingested by normal persons without toxic effects. Paræsthesia in the hand and feet and reduced renal clearances of inulin and urea occurred when serum-K concn. exceeded 32 mg.-%. H. H. K.

Use of bismuth ethyl camphorate in early syphilis. L. J. Alexander and A. G. Schoch (*Arch. Dermat. Syphilol.*, 1942, 45, 876—884).—26 patients with early syphilis began treatment with Bi ethyl camphorate, 2 c.c. intramuscularly, at weekly intervals. The lesions began healing promptly after the second day of treatment and the spirochætes disappeared. C. J. C. B.

Massive arsenotherapy in early syphilis. L. Prunes and H. Hevia (*Arch. Dermat. Syphilol.*, 1942, 45, 894—896).—60 men with syphilis in the early stages were treated with neosarsphenamine given in massive doses by the drip method for 3 days followed by 1 injection of the same drug (0.9 g.) 1 week later. The total dose administered during treatment was 5.4 g. The immediate results were excellent. Only a few reactions were noticed and in 1 case polyneuritis. C. J. C. B.

Intravenous drip method in intensive arsenotherapy of syphilis. B. I. Kaplan (*Arch. Dermat. Syphilol.*, 1942, 45, 941—949).—No serious toxic reaction or fatality was observed in 192 patients so treated. C. J. C. B.

Encephalopathy following neosarsphenamine. J. A. Tuta and J. Stagman (*Amer. J. clin. Path.*, 1942, 12, 387—393).—Report of 2 cases. C. J. C. B.

Superficial ulcerative gastritis following trypanamide therapy for syphilis. I. H. Emsel (*Amer. J. digest. Dis.*, 1942, 9, 191—192).—A case report. N. F. M.

Systemic reactions to mercurial diuretics. E. M. Kline and W. B. Seymour (*Amer. J. med. Sci.*, 1942, 203, 874—879).—Reports of 5 cases. C. J. C. B.

Treatment of acute carbon tetrachloride poisoning. B. R. Allison (*Ann. int. Med.*, 1942, 16, 81—93).—2 cases of acute CCl₄ poisoning are reported. Symptoms of extensive damage to liver, kidneys, and gastrointestinal tract were predominant. One patient died. Immediate and continued treatment with Ca gluconate, glucose, and carbohydrate-rich diet is recommended. A. S.

Methyl alcohol poisoning. W. A. Merritt and A. E. Brown (*Proc. Staff Mayo Clin.*, 1941, 16, 666—669).—A case is reported which showed marked acidosis. Intravenous administration of NaHCO₃ solution resulted in marked general improvement and restoration of vision following primary improvement of sight. H. H. K.

Chills and fever produced by amidopyrine. W. C. Alvarez (*Proc. Staff Mayo Clin.*, 1942, 16, 760).—Administration of amidopyrine produced severe chill followed by high fever, headache, and pains in muscles and joints in a 30-year-old woman. H. H. K.

Histological evaluation of effects of ichthammol. C. D. Stewart, M. Goldman, and M. E. Obermayer (*Arch. Dermat. Syphilol.*, 1942, 45, 933—941).—After application to the skin little or no histological effects were noticed. C. J. C. B.

Contact dermatitis due to codeine. R. B. Palmer (*Arch. Dermat. Syphilol.*, 1942, 46, 82—86).—In the case described contact tests with powdered morphine and codeine gave negative results; those with aq. solution (1:100 and 1:1000) of morphine, codeine, ethylmorphine hydrochloride, and diacetylmorphine gave positive reactions. C. J. C. B.

Dermatitis from soap adherent to platinum ring. H. Hailey (*Arch. Dermat. Syphilol.*, 1942, 46, 285). C. J. C. B.

Vulvovagino-cervical eruption due to therapy with gold sodium thiosulphate. D. N. Barrows and E. T. R. Stone (*Arch. Dermat. Syphilol.*, 1942, 46, 250—253).—A case report. C. J. C. B.

Dermatitis from underwear shorts processed by resin finishes. M. J. Costello and J. E. Ryan (*Arch. Dermat. Syphilol.*, 1942, 46, 254—256).—Report of 20 cases. C. J. C. B.

Toxic effects of some basic proteins. E. Reiner, E. J. de Beer, and M. Green (*Proc. Soc. Exp. Biol. Med.*, 1942, 50, 70—74).—Of 3 proteins tested, protamine is more toxic than histone to mice, liver slices, and trypanosomes. Globin is non-toxic. V. J. W.

Aspiration of petrol. C. L. Cope (*Lancet*, 1942, 242, 469—470).—Aspiration of petrol in a man of 28 produced momentary loss of consciousness and subsequently there was a right pleural effusion with signs of pulmonary consolidation. Recovery occurred. The literature is reviewed. C. A. K.

Is phenothiazine poisonous to horses? H. Schmidt, T. T. Christian, and W. M. Smotherman (*J. Amer. Vet. Med. Assoc.*, 1941, 99, 225—228).—Illness occurred in horses given 30—60 g. of phenothiazine; 2 of 7 died. Of 4 yearling colts given 300 g. of phenothiazine as a group 3 died. Affected animals passed chocolate-coloured urine and showed evidence of renal damage. E. G. W.

Poisoning in sheep and goats by sacahuiste (*Nolina texana*) buds and blooms. F. P. Mathews (*Texas Agric. Exp. Sta. Bull.*, 1940, No. 585, 19 pp.).—Icterus and liver and kidney destruction were produced when the buds, blooms, and fruits were fed with hay. Addition of fresh grass to the ration made the affected animals photo-sensitive. Min. toxic dose of the fresh shoots for sheep is about 1% of the body wt. The toxic principle, which is not extracted with methyl or ethyl alcohol, is not the same hepatonephrotoxin found in lechuguilla. The leaf of the plant is not toxic to cattle. A. W. M.

Toxicity of menadione, menadiol, and esters. S. Ansbacher, W. C. Corwin, and B. G. H. Thomas (*J. Pharm. Exp. Ther.*, 1942, 75, 111—124).—Toxicity studies were made on 1:4-naphthoquinone, menadione, menadiol, 6 esters of menadiol, and phytlylmenadione (vitamin-K₁) in oily and/or aq. solution by oral, subcutaneous, intramuscular, or intravenous administration in mice, chicks, rabbits, cats, dogs, and monkeys. The oral toxicities of menadione, menadiol and its esters are 1/6th—1/15th of their subcutaneous toxicities. Menadione in oily solution was less toxic and more locally irritant than in aq. solution. Intravenous toxicities of menadione and menadiol in aq. solution are the same. The relative subcutaneous toxicities of the *n*-alkyl esters of menadiol decrease more rapidly with increasing mol. size than do their relative prothrombinogenic activities. The *n*-alkyl esters are more potent and toxic than the isoalkyl esters. Non-injurious doses of menadione given repeatedly to animals were 30—150 times the recommended human doses. The manifestations of chronic toxicity shown by some of the animals (anæmia, polycythæmia, or dark brown discoloration of the urine) resulted in no permanent ill effects and were due to changes in the circulating blood and not to injury to the hæmopoietic system. Death when present usually resulted from acute circulatory failure. The use of all the compounds in therapeutics is recommended. P. C. W.

Drug eruptions. R. R. Kierland and L. A. Brunsting (*Proc. Staff Mayo Clin.*, 1942, 17, 28—30).—A discussion. H. H. K.

Phosgene poisoning. J. P. Steel (*Lancet*, 1942, 242, 316—317).—2 cases of accidental COCl₂ poisoning are described. C. A. K.

Unusual case of quinine poisoning. A. E. McCulloch (*Canad. Med. Assoc. J.*, 1942, 47, 155—156).—A case of blindness caused by taking 120 grains of quinine in 6 hr. is reported. Although there was recovery of vision in a week, the visual fields were permanently contracted. C. J. C. B.

Drugs and mental disease. M. Moore, A. F. Raymond, and M. G. Gray (*Confinia Neurol.*, 1942, 4, 238—270).—A review of 841 cases of mental illness associated with excessive use of drugs. H. L.

Treatment of scabies with rotenone. E. Epstein (*Arch. Dermat. Syphilol.*, 1942, 45, 950—952).—50 ambulatory patients were treated by local application of 2% rotenone lotion with 15% of failures. 1/3 of the patients were under 10 years of age. C. J. C. B.

Attempted prophylaxis of measles with use of immune globulin (human). H. Goldstein (*Arch. Pediat.*, 1942, 59, 303—308).—90 of 105 contacts got the disease in a very mild form. C. J. C. B.

Treatment of the tuberculous woman during pregnancy. E. S. Mariette, L. M. Larson, and J. C. Litzenberg (*Amer. J. med. Sci.*, 1942, 203, 866—874).—From a study of 82 women allowed to go to term, treatment of the pregnant woman with tuberculosis by the most modern methods offers her as good a chance for recovery from her tuberculosis as though pregnancy did not exist. C. J. C. B.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Influence of work on physiological reactions to thermal environment. C. E. A. Winslow and A. P. Gagge (*Amer. J. Physiol.*, 1941, 134, 664—681).—2 undressed men pedalled on a stationary bicycle so as to increase their metabolism to over 300 kg.-cal. per hr. The results were compared with those in the subjects at rest in a semi-reclining position (metabolism 80—100 kg.-cal.). Radiation area is the same as in the resting subject (70% of the surface area). Convection const. on the stationary bicycle at rest is 20% less than at rest reclining. Pedalling at a rate of 30 revolutions per min. greatly increases the convection const., equiv. in cooling power to an air movement of 30—40 cm. per sec. Evaporative regulation in the working subject is so effective that skin temp. is const., actually being lower at a given operative temp. T_0 for the working than the resting body. With increasing metabolism at a given T_0 , skin temp. of the trunk falls. Rectal temp. rises under working conditions. Internal temp., not skin temp., controls the sweat-

secreting mechanism. Thermal sensation of pleasantness is produced in the working subject (metabolism 300–400 kg.-cal.) at T_0 16° instead of 28° with the resting subject. Max. comfort is experienced, in both instances, at 2° below the point where active sweat secretion begins. M. W. G.

Physiological effects of sirocco winds. E. Regener (*Naturwiss.*, 1941, 29, 30–31).—In addition to decrease in R.H., the increase in % content and partial pressure of O_2 in the air is a factor in the physiological effects of sirocco winds. F. O. H.

Organic compounds of silicic acid. II. Presence in pulmonary dusts. L. Holzapfel (*Naturwiss.*, 1942, 30, 185–186).—Comparison of goose-feather extracts (known to contain an orthosilicic ester and a homologue of cholesterol containing two OH groups) with alcohol-ether extracts of silicosed lungs by Debye-Scherrer diagrams and Si analyses shows remarkable similarity. C. S.

Determination of quartz content of industrial dusts.—See B., 1942, III, 224.

Combating chronic poisoning in industrial operations. W. M. Pierce (*Chem. Met. Eng.*, 1942, 49, No. 8, 80–81, 93).—A brief review.

New colorimetric method for determination of T.N.T.—See B., 1942, III, 224.

XXII.—RADIATIONS.

Effect of Roentgen rays on action of adrenalone on blood-sugar of rabbits.—See A., 1942, III, 745.

Action of different dosage rates of X-radiation on growth factors of mouse sarcoma.—See A., 1942, III, 758.

Lesions produced in gastro-intestinal tract by irradiation. R. M. Mulligan (*Amer. J. Path.*, 1942, 18, 515–526).—General review with case report. (4 photomicrographs.) C. J. C. B.

Treatment of cutaneous leishmaniasis (oriental sore) by grenz rays. A. Dostrovsky and F. Sagher (*Arch. Dermat. Syphilol.*, 1942, 45, 865–875).—72 patients with leishmaniasis nodosa and leishmaniasis ulcerosa as well as 12 patients with leishmaniasis recidiva were treated by exposure to grenz rays. For the nodular type the dose employed was 2 exposures of 800 r. with a half-val. layer of 0.027 mm. of Al, while for leishmaniasis recidiva it was 3000–11,000 r. with a half-val. layer of 0.02 mm. of Al. In cases of the nodular type the lesions disappeared in about 8 weeks and in cases of leishmaniasis recidiva in 6–8 months. C. J. C. B.

Absence of hypervitaminosis-D in mice subjected to ultra-violet radiation. H. F. Blum and S. W. Lippincott (*J. Nat. Cancer Inst.*, 1942, 2, 623–624).—Mice subjected to high doses of ultra-violet radiation (2537 or 3130 Å. and shorter) did not show hypervitaminosis-D. E. D.

Destruction of phenylalanine by ultra-violet radiant energy. L. E. Arnow (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 578–579).—If dry phenylalanine is irradiated for 10 days, at least 20% is destroyed. If it is irradiated in solution, some is converted into a phenol, probably tyrosine, and part of this is further changed to a catechol, probably dihydroxyphenylalanine. V. J. W.

Oxidation of tyrosine by ultra-violet irradiation. Influence of ascorbic acid on oxidation of tyrosine by ultra-violet irradiation. S. Rothman (*J. invest. Dermat.*, 1942, 5, 61–75).—The oxidation of tyrosine to melanin by exposure to ultra-violet radiation in presence of Fe^{II} salts may serve as a model of pigment formation by sunshine in human skin. Measurable amounts of dopa are formed by therapeutic doses of ultra-violet rays. Melanin formation follows after a latent period comparable with that of pigment formation by sunshine in man. The concn. of dopa may reach 1/8 of the original tyrosine concn. Continued irradiation of tyrosine- Fe^{II} salt mixtures leads to a dynamic equilibrium in which formation and destruction of melanin are kept in balance. Ascorbic acid further promotes the actinic transformation of tyrosine into dopa but inhibits any further oxidation if an excess of ascorbic acid is constantly present during the exposure to ultra-violet light. Melanin is reduced by ascorbic acid to water-sol. lighter products. C. J. C. B.

Relation of pernicious anaemia to solar radiation and skin cancer. F. L. Apperly (*Amer. J. med. Sci.*, 1942, 203, 854–856).—When the mortality rates of pernicious anaemia and skin cancer (corr. for other causes than exposure to sunlight) are correlated, the incidence of pernicious anaemia is closely related inversely to effective solar radiation. C. J. C. B.

Deterrent effect of light on incidence of spontaneous breast cancer in strain A mice.—See A., 1942, III, 758.

Current control in electro-shock therapy. M. S. Plesset (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 530–532).—An apparatus is described which gives a const. current val. irrespective of the resistance of the patient's tissues. V. J. W.

Electrical properties of tissues in shock therapy. F. Offner (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 571–575).—Resistance of tissues

to a low- (60-cycle) frequency-high-intensity current is the same as to a high- (7000-cycle) frequency-low-intensity current. Any desired current can therefore be applied by using a test current of high frequency giving a fixed fraction of the amperage required, and then using for treatment a low frequency with a voltage proportionally increased. V. J. W.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Polarographic investigations of proteins. IV. Effect of urea on protein solutions. C. Tropp and F. Geiger (*Z. physiol. Chem.*, 1942, 272, 121–133).—The lowering effects of urea on the polarographs of plasma, albumin, globulin, and fibrinogen and $CoCl_2-NH_4Cl$ -aq. NH_3 buffer solution are described. Only when the proportion of urea is great are they appreciable. Since the polarographs of the proteins regain their original height when urea is removed by dialysis, ordinary denaturation does not occur as a result of addition of even large proportions of urea. Except when the protein concn. is below the "crossing concn.," increase of temp. to 68° increases the height of the double-waves characteristic of proteins but they remain parallel to those obtained at room temp. The effect is most pronounced with high proportions of protein. Below the crossing concn., increase of temp. has little or no effect. W. McC.

Valency of corpuscular proteins. M. H. Gorin and L. S. Moyer (*J. Gen. Physiol.*, 1942, 25, 785–803).—Using two extreme models, viz., a hydrated sphere and an unhydrated rod, the valency (net charge) of corpuscular proteins is calc. from electric mobility data by the Debye-Hückel theory (modified to include the effect of ions in the ion atm.) in conjunction with the electrophoretic theory of Henry. Electrometric titration data for serum-albumin B, ovalbumin, and β -lactoglobulin are used to compare vals. for the valency calc. from titration, electrophoretic, and membrane potential data. Vals. for the net charge obtained for the two extreme models from electrophoretic data agree within 15–20%. Agreement between the cylindrical model and the titration data is somewhat better in each case than with the sphere. It is concluded that the above proteins are somewhat asymmetric and also hydrated. J. N. A.

Isolation and crystallisation of plant viruses and other protein macro-molecules by means of hydrophilic colloids. S. S. Cohen (*J. Biol. Chem.*, 1942, 144, 353–362).—Plant viruses and haemocyanins can be pptd., usually in cryst. form, by heparin and similar hydrophilic colloids. The method was used to isolate the viruses and to separate them in juices with mixed infection. Chemical combination is unlikely. R. L. E.

Spreading experiments with insect viruses. G. Bergold and R. Brill (*Kolloid-Z.*, 1942, 99, 1–6).—Purified protein solutions prepared from viruses form layers 6–125 Å. thick when spread on water surfaces. Up to pH 7 the thickness increases with the pH of the liquid, except for a temporary decrease in thickness on the alkaline side of the isoelectric point. C. R. H.

Ionic concentration gradients and their biochemical significance.—See A., 1942, I, 366.

XXIV.—ENZYMES.

Is muscle contraction essentially an enzyme-substrate combination?—See A., 1942, III, 736.

Eyzymes of the fig.—See B., 1942, III, 218.

Blood-enzymes in aged.—See A., 1942, III, 733.

Effect of diphosphopyridine nucleotide on rate of oxidation of betaine aldehyde. J. R. Klein and P. Handler (*J. Biol. Chem.*, 1942, 144, 537–539).—The rate of oxidation of betaine aldehyde by preps. of rat's liver, kidney, brain, and muscle is increased in presence of diphosphopyridine nucleotide, nicotinamide being present to delay inactivation of the nucleotide. The rate of oxidation of the aldehyde is unaffected by nicotinamide in absence of nucleotide, or by nucleotide in absence of amide. Dismutation of the aldehyde by the liver prep. does not occur. J. N. A.

Substrate-specificity and -affinity of *d*-amino-acid- and amine-oxidase. P. Holtz and H. Büchsel [with C. Strübing] (*Z. physiol. Chem.*, 1942, 272, 201–211).—Measurements of rate of O_2 uptake when amino-acids (alanine, phenylalanine, *dl*-3:5-dihydroxyphenylalanine, leucine, glutamic acid, aspartic acid) and amines (tyramine, tryptamine, phenylethylamine, amylamine) are treated with organ extracts (kidney, liver, intestine) from various animals (sheep, pig, ox, rabbit, guinea-pig, dog, rat, cat) show that *d*-amino-acid oxidase and amine oxidase are group-sp., but that their affinity for individual substrates varies with the animal species and organ from which they are derived. The variations are probably due to sp. differences in the structure of the carrier proteins of the enzymes. There is no evidence for the existence of a multiplicity of enzymes and the results of Karrer and Frank (A., 1940, III, 931) are probably erroneous. W. McC.

Amount and distribution of cytochrome oxidase in bull spermatozoa.—See A., 1942, III, 752.

Simplified apparatus for catalase determination.—See A., 1942, III, 788.

Activation of carbonic anhydrase. M. Leiner (*Naturwiss.*, 1942, 30, 240–242).—The enzyme is inactivated (denatured) by shaking (e.g., in Roughton's manometer). Data showing the marked effect of protective substance on the action of the enzyme (determined by means of Warburg's manometer shaken 60–70 times per min. for 10 min.) are given and these results, together with observations on the activating effects of glutathione, cysteine, etc., are compared with those of Kiese (A., 1942, III, 641). F. O. H.

[Purification of] carbonic anhydrase. D. A. Scott and A. M. Fisher (*J. Biol. Chem.*, 1942, 144, 371–381).—Purification of preps. of the enzyme by means of PO_4^{3-} buffers and org. solvents gave a product (ash 0.3, Zn 0.2, N 15.8%) with an activity of 10,000 units per mg. From this product, cryst. compounds (N 16.1–16.5%) with NH_3 , piperidine, and *iso*- and *n*-amylamine were prepared. These preps. were anisotropic, unstable, and lost all activity when dried. R. L. E.

Zinc and carbonic anhydrase content of the eye, other organs, and blood of vertebrates. M. Leiner and G. Leiner (*Naturwiss.*, 1941, 29, 763–765).—The Zn and carbonic anhydrase contents of various tissues of vertebrates (rat, rabbit, fish, hen, etc.) do not run parallel; in no case examined did the carbonic anhydrase account for all the Zn present. Enzyme-free serum still contains 1–3 μg . of Zn per g. P. G. M.

Azolesterase activities of electrophoretically separated proteins of serum. D. Glick, S. Glaubach, and D. H. Moore (*J. Biol. Chem.*, 1942, 144, 525–528; cf. A., 1942, III, 172).—Acetylcholine, atropine, tropacocaine, and cocaine-esterase in serum cannot be separated from one another by electrophoresis, although the latter does effect partial purification. In the α -globulin fraction, a purification of approx. 10–16 times for each of the above enzymes is obtained. The concns. of azolesterase are greatest in the α - and β -globulin fractions. J. N. A.

Choline-esterase activity of serum and neuromuscular transmission.—See A., 1942, III, 737.

Choline-esterase in human cerebrospinal fluid.—See A., 1942, III, 741.

(-)-Cysteic acid decarboxylase. H. Blaschko (*Biochem. J.*, 1942, 36, 571–574).—Extracts of dog, rat, pig, and guinea-pig but not cat, rabbit, and cod liver or dog, cat, and human kidney contain *l*-cysteic acid decarboxylase, which under anaerobic conditions forms 1 mol. of CO_2 from 1 mol. of cysteic acid. The enzyme is stereo-sp. for the *l*-isomeride, is reversibly inhibited by CN^- , and is insensitive to octyl alcohol. Extracts lose much of their activity when dialysed against water at 0–2° for 18 hr. The enzyme is similar to, but not identical with, *l*-dopa decarboxylase. J. N. A.

Behaviour towards enzymes of $\alpha\alpha$ -iminodicarboxylic acids and their derivatives. P. Karrer, H. Koenig, and R. Legler (*Helv. Chim. Acta*, 1941, 24, 861–868; cf. A., 1941, III, 587).—Racemic (both optically active C atoms having *d*-configuration) $\alpha\alpha$ -iminodipropionic acid (but not the corresponding monoamide and dinitrile) is deaminated, at a rate a little less than that at which *d*-alanine is deaminated, by aq. kidney extract (pig, sheep), 1 mol. of pyruvic acid and 0.5 mol. of NH_3 being produced. Presumably, each mol. of imino-acid is converted by loss of 2 H and addition of water into one mol. each of pyruvic acid and *d*-alanine, this being transformed, in the same way, into a second mol. of pyruvic acid and 1 NH_3 . Fresh liver pulp oxidises the imino-acid, the monoamide, and the mono- and di-nitrile at a rate slightly less than that at which it oxidises *l*-alanine. The mononitrile, m.p. 180–182°, is obtained from the dinitrile in abs. alcohol by treatment with dry HCl and the imino-acid by a modification of Dubsky's method (A., 1916, i, 636) in which the Pb instead of the Cu and Zn salt is used. The results are in accord with the trans-amination theory previously discussed. W. McC.

Protyrosinase and polar-non-polar cations and anions. T. H. Allen and J. H. Bodine (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 666–669).—Protyrosinase is activated by Na alkyl sulphates which yield anions. This activation is inhibited by alkylamine hydrochlorides which yield cations and give a ppt. with the alkyl sulphates. In mixtures of protyrosinase, alkyl sulphate, and alkylamine hydrochloride activation is little affected if the alkylamine is added last, but is greatly and equally affected if either the enzyme or the alkyl sulphate is added last. V. J. W.

Enzymic proteolysis. V. Liberation of cystine. M. Damodaran and T. K. Krishnaswamy (*Proc. Indian Acad. Sci.*, 1942, 15, B, 285–297).—No cystine is liberated by peptic digestion of edestin, gliadin, anacardein, watermelon globulin, casein, fibrin, ovalbumin, or serum-globulin, but it is rapidly liberated by trypsin. More complete and rapid liberation of cystine takes place from vegetable than from animal proteins. Some decomp. of cystine takes place during alkaline tryptic digestion (45–8% for caseinogen). The Folin-Marenzi reagent gives unreliable vals. owing to colour production by cystine complexes, not the free acid. P. G. M.

Plasma-phosphatase activity and blood-phospholipins in rats with obstructive jaundice. L. Weil and M. A. Russell (*J. Biol. Chem.*, 1942, 144, 307–314).—Plasma-phosphatase is decreased in rats with ligatured bile ducts but returns to normal on new bile duct formation or on the addition of 3% ox bile to the diet. Blood-phospholipin is increased in jaundiced rats in both cells and plasma, the relative increase in the latter being higher, though the abs. content of the cells is greater. This val. gradually returns to normal on formation of new bile ducts but is unaffected by the addition of ox bile to the diet. No difference is observed in the lipin and phospholipin contents of the liver or in the phospholipin content of the carcass of normal and jaundiced rats though there is a decrease in the total lipin of the carcass of the latter. Boyd's method for determining blood-plasma-phospholipins (A., 1936, 875) has been modified for use with 4–8 cu. mm. of material. H. G. R.

Ultra-violet absorption spectrum of bovine phosphatase in presence and absence of added substrate. I. W. Sizer (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 700–703).—Max. absorption is at 278 μ , and there is a min. at 253 μ . The curve resembles that of proteins and is not changed by addition of glycerophosphate. V. J. W.

Inhibition of fermentation by potassium cyanide and sodium fluoride. Metals as enzyme activators. L. Massart and R. Dufait (*Z. physiol. Chem.*, 1942, 272, 157–170).—The activation of yeast-phosphatase by Co^{++} is counteracted by KCN, which does not affect activation by Mn^{++} and Mg^{++} . NaF counteracts activation by Mg^{++} ; its apparent effect on activation by Mn^{++} and Co^{++} is due to the presence of Mg^{++} not removed by dialysis. 2:2'-Dipyridyl accelerates alcoholic fermentation of glucose and glycogen by yeast maceration juice in presence and absence of added hexose diphosphate. KCN inhibits alcoholic fermentation of glycogen, hexose mono- and di-phosphate, and phosphoglyceric and phosphopyruvic acid by the juice, retards, but does prevent, activation by AsO_4^{3-} of fermentation of hexose diphosphate, and does not affect production of phosphoglyceric acid from the diphosphate. Trans-esterification in the juice is activated by Mn^{++} , Co^{++} , Zn^{++} , and Cd^{++} . When non-dialysed juice to which iodoacetate is added is used, trans-esterification (substrates: glucose, phosphopyruvic acid) is inhibited by KCN and H_2S . Fermentation of phosphopyruvic acid is inhibited also by H_2S . The results support the view that many enzymes are metal-protein compounds. W. McC.

Arginylarginine.—See A., 1942, II, 350.

Protection against enzymic hydrolysis conferred by phosphate groups. Enzymic degradation of a phosphopeptide and a phosphorylated polyose. T. Posternak and H. Pollaczek (*Helv. Chim. Acta*, 1941, 24, 921–930; cf. A., 1935, 1549).—The phosphodi-peptide obtained by a modification of Levene and Hill's method (A., 1933, 1062) from caseinogen is not attacked by dipeptidase from pig's intestinal mucosa. After treatment with HNO_2 it yields 87% of the theoretical amount of glyceric acid and hence it is phosphoserine-glutamic acid. When PO_4^{3-} is removed from the acid by phosphatase, the residual dipeptide is attacked by dipeptidase. Since hexose monophosphate and the tetose monophosphate from potato starch behave in the same way it follows that PO_4^{3-} adjacent to a peptide or glucoside linking protects from attack by hydrolytic enzymes. W. McC.

Mechanism of conversion of β -glycerophosphoric acid into the α -form.—See A., 1942, II, 344.

Co-enzyme of fermentation. P. Ohlmeyer and L. Mehmke (*Z. physiol. Chem.*, 1942, 272, 212–216).—The production of creatine phosphate from creatine in muscle extract and in a mixture of muscle-protein, phosphopyruvic acid, creatine, and Mg^{++} is catalysed by the "fermentation complement" of yeast (which, by transference of PO_4^{3-} , converts hexose monophosphate into the diphosphate). Hence the complement acts in the same way as adenosine triphosphate although in muscle extract containing added phosphopyruvic acid, added adenosine monophosphate is phosphorylated whilst added complement is not. The complement also replaces adenosine diphosphate as co-enzyme in production of lactic acid from glycogen and hexose monophosphate. The behaviour of the complement depends on the fact that it contains 2 PO_4^{3-} , one of which is easily hydrolysed. W. McC.

Cocarboxylase and cozymase in eggs of *Arbacia punctulata*.—See A., 1942, III, 727.

Sap of the birch tree, *Betula papyrifera*, Marsh. I. The amylase system. E. Bois and W. O. Chubb (*Canad. J. Res.*, 1942, 20, B, 114–120).—The amylase system consists of a cellobiogenic and a glucogenic amylase. The optimum conditions vary between pH 5.5 at 4° and pH 6.3 at 60°, max. production of glucose and cellobiose occurring at 50°. Cellobiase and invertase are not present in the sap. H. G. R.

Purification of the amylase of *Bacillus macerans*. E. B. Tilden, M. Adams, and C. S. Hudson (*J. Amer. Chem. Soc.*, 1942, 64, 1432–1433).—This amylase is purified by pptn. by acetone, adsorption on Al_2O_3 at pH 4.8, elution by 0.01M- PO_4^{3-} , and (if desired, after repptn. by acetone) dialysis. The prep. then digests 1000 times its

wt. of starch in 30 min. at 40°, 1 unit of activity being equiv. to 0.029–0.034 mg. of solids. Solutions, but not the solid, are stable at 5°.

R. S. C.

Comparisons between bacterial amylase and α -malt amylase. Strength determination of amylase preparations.—See B., 1942, III, 216.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Mechanics of budding and conjugation in yeasts. W. J. Nickerson (*J. Cell. Comp. Physiol.*, 1942, 19, 379–382).—In budding yeast cells, the long axis of the bud is normal to the surface of the mother cell. In a conjugating pair this relation is not found. V. J. W.

Intercellular hormones. IV. Mechanism of production and release of proliferation-promoting factors by injured cells. J. R. Loofbrouwer (*Biochem. J.*, 1942, 36, 631–638).—There is no evidence of cytolysis during irradiation of washed suspensions of *S. cerevisiae* in distilled water, and the proliferation-promoting hormones must diffuse through the intact cell membranes. They are non-protein in nature (negative biuret test) although permeability of the cell membrane is increased during irradiation. Experiments with monochromatic light show that the 2650 Å. band is the most effective in releasing these hormones. Re-synthesis of the hormones occurs in damaged living cells at a rate comparable with their loss to the intercellular fluid. Ultra-violet absorption characteristics suggest that irradiation of cell autolysates produces nucleotide-like substances, but not all of these substances are involved in growth-stimulating activity; a large part of the inactive material of this nature may be yeast-nucleic acid. P. G. M.

Influence of metallic mercury on cell respiration. L. Selzer and J. P. Baumberger (*J. Cell. Comp. Physiol.*, 1942, 19, 281–287).— O_2 consumption of yeast cells suspended in glucose is completely stopped in 40 min. by stirring with finely-divided Hg. This does not occur in absence of glucose or if it is replaced by pyruvate or lactate. It is suggested that the inhibition is due to formation of a compound by Hg and a -SH group of the enzyme system of the cell. V. J. W.

Phosphorylation and absorption of aneurin by yeast. E. Sperber (*Naturwiss.*, 1941, 29, 765–766).—"Pyrimidyl" (Roche) almost completely inhibits the uptake and phosphorylation of aneurin by yeast at pH 5. The enzyme causing phosphorylation is identical with that which dephosphorylates cocarboxylase. P. G. M.

Artificial symbiosis of *Rhodotorula rubra* and *Mucor ramannianus*. Rôle of metallic catalysts. H. Uttiger and W. H. Schopfer (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 284–288).—The symbiosis proceeds when the N source in the culture medium is org. (asparagine) but not when it is inorg. $[(NH_4)_2SO_4$ or $KNO_3]$ unless the ash of asparagine or a mixture containing Li, Sn, Mo, U, Hg, and Al is added. $(NH_4)_2SO_4$ serves as N source for growth of each organism separately. Since *R. rubra* synthesises thiazole in presence of pyrimidine and *M. ramannianus* synthesises pyrimidine in presence of thiazole, it is suggested that each moiety of the vitamin mol. takes part in the synthesis of the other moiety and that if no org. N is supplied metallic catalysts must be added to obtain synthesis of the moieties from inorg. material. W. McC.

Germination of the conidia of *Sclerotinia fructicola* with special reference to the toxicity of copper. C. K. Lin (*Cornell Univ. Agric. Exp. Sta. Mem.*, 1940, No. 233, 33 pp.).—The conidia, which do not normally germinate in pure water, do so vigorously on the addition of a trace of glucose or ethyl alcohol. Concn. for max. germination are given. This seldom exceeds 90% unless $MgSO_4$, $MgCl_2$, $Mg(NO_3)_2$, $CaSO_4$, $CaCl_2$, or K_3PO_4 is present in small amounts. In a pure glucose solution, the "lethal dosage" of Cu to inhibit 90% of germination was 10–100 times lower than previously reported. Effectiveness of salts in antidoting the toxicity of Cu depends on the concn. and valency of the ions, and on the pH. This antidoting effect can apparently be explained on the basis of peptisation of the Cu-pptd. colloids of the conidia. A. W. M.

Experimental blastomycosis in mice. R. D. Baker (*Amer. J. Path.*, 1942, 18, 463–473).—The experimental disease in mice was characterised by the continued response of polymorphs to the growth of the fungus throughout the infected animal and by the necrosis of the blastomycotic masses. Repeated intraperitoneal injections of the blastomycotic masses. Repeated intraperitoneal injections of heat-killed *B. dermatitidis* were toxic for mice, and often lethal. Heat-killed and living blastomycetes provoked similar cellular responses in the peritoneal cavities of mice. Blastomycetic responses in the peritoneum repeatedly injected intraperitoneally caused cells of the phagocyte series to respond; this fraction was not responsible for the polymorph response and the necrotising effect related to the living organisms. In rabbits, single intraperitoneal injections of blastomycetic polysaccharide produced, in the first few hr., sterile peritonitis, retrosternal lymphadenitis, and changes in the blood

stream (leucopenia, lymphopenia, and increase in immature neutrophils). (8 photomicrographs.) C. J. C. B.

Tissue reactions in human blastomycosis. R. D. Baker (*Amer. J. Path.*, 1942, 18, 479–489).—The formation of abscesses was an impressive gross feature of 10 generalised cases and polymorphonuclear foci were present in all 23 cases. Giant cells were always present. Caseation was present in the generalised cases, but was not noted in the 13 cutaneous cases. The terminal stage of systemic blastomycosis in man corresponds closely to the experimental disease in the mouse. Masses of blastomycetes occurred with necrosis, producing a toxic effect on the patient. (9 photomicrographs.) C. J. C. B.

Radiation lesions in gastro-intestinal tract. S. Warren and N. B. Friedman (*Amer. J. Path.*, 1942, 18, 499–507).—The pathological findings in such cases are described in detail. (10 photomicrographs.) C. J. C. B.

Pinta. V. Pardo-Castello and I. Ferrer (*Arch. Dermat. Syphilol.*, 1942, 15, 843–864).—A complete review. C. J. C. B.

Relationship of coccidioidomycosis to calcified pulmonary nodules. J. D. Aronson, R. M. Saylor, and E. I. Parr (*Arch. Path.*, 1942, 34, 31–48).—Most Indians living on the Pima, San Carlos, and Sells agencies, in the arid region of southern Arizona, reacted to intracutaneous injections of coccidioidin, whilst among those examined roentgenologically on the Pima and San Carlos agencies a high incidence of calcified pulmonary nodules was noted in those who failed to react to tuberculin. Among Indians living on the Fort Apache agency, in the subtropical northern part of Arizona, few reacted to coccidioidin, and calcified pulmonary nodules were not observed in those who did not react to tuberculin. C. J. C. B.

Conditions affecting survival *in vitro* of a malarial parasite (*Plasmodium lophura*). W. Trager (*J. Exp. Med.*, 1941, 74, 441–462).—*Plasmodium* survives for 3 days in a medium containing high K, conc. red cells, chick embryo extract, glucose, glutathione, yeast, and liver extract at moderate O_2 tension and temp. 39.5–43°. A. C. F.

Inhibition by phospholipins of action of synthetic detergents on bacteria. Z. Baker, R. W. Harrison, and B. F. Miller (*J. Exp. Med.*, 1941, 74, 621–637).—The inhibition of bacterial metabolism and growth by synthetic detergents is prevented when they are mixed with phospholipins. The effect of other surface-active and non-surface-active substances is also discussed. A. C. F.

Action of sulphonamides on respiration of bacteria and yeast. Inhibition of bacterial and yeast carboxylases by sulphonamide drugs structurally related to cocarboxylase. M. G. Sevag, M. Shelburne, and S. Mudd (*J. Gen. Physiol.*, 1942, 25, 805–817).—The effects of sulphanilamide, sulphapyridine, sulphadiazine, sulphamethyl-diazine, sulphathiazole, sulphamethylthiazole, sulphanilamido-5-ethyl-4-thiazolone, and 2-amino-pyridine, -thiazole, and -pyrimidine on anaerobic decarboxylation of pyruvic acid by *Staph. aureus*, *Esch. coli*, baker's and brewer's yeast, and a carboxylase prepared from brewer's yeast are described. The sulphathiazole ring has a sp. inhibiting effect on the carboxylases of *S. aureus* and *E. coli*, and the most effective inhibitor is the above thiazolone. Sulphanilamide is the least active, whilst the inhibiting effect on yeast carboxylase is practically the same amongst all the above substances except sulphamethyl-diazine, which has no effect on the carboxylases of any of the organisms. The results support the hypothesis that sulphonamides exert their bacteriostatic action through chemical affinity for the carrier proteins of certain respiratory enzymes of the bacterial cell, and this affinity may be in part related to structural similarity between components of the drugs and the corresponding respiratory co-enzymes. J. N. A.

Antibacterial action and chemical constitution in long-chain aliphatic bases. A. T. Fuller (*Biochem. J.*, 1942, 36, 548–558).—The antibacterial activity of straight-chain ω -mono- and di-amines, -amides, -guanidines, and -quaternary bases in broth increases with chain length up to a max. and then decreases. In the case of diisothioureas there is an alternation of compounds with high and low activity. The increase of activity with chain length suggests that the activity is due to surface-active properties, and the drugs may act by denaturing some essential protein constituent. Gram-positive are usually more sensitive than are Gram-negative organisms and the bacteria fall roughly into the same order for related compounds. The less strongly basic amines have a relatively stronger action on Gram-positive, whilst the strongly basic guanidines and quaternary bases have a relatively stronger action on Gram-negative, organisms. The bacteriostatic are much lower than the trypanocidal titres, but variations of activity with chain length are similar in both cases. The same mechanism is probably responsible for both actions, and the drugs may act as general protoplasmic poisons. The di-substituted are generally more active than the mono-substituted drugs. The higher members are more active at equal chain length and are far less inhibited by serum, but they are more toxic. The compounds are active against sulphanilamide-resistant haemolytic streptococci but have no therapeutic action when applied systemically. J. N. A.

Selective bacteriostatic action of gentian-violet.—See A., 1942, III, 769.

p-Aminobenzenesulphonamide and the metabolism of bacteria. A. Illényi (*Magyar Orv. Arch.*, 1940, 41, 400—404).—Inclusion of 0.1% sulphanilamide, of horse blood, or of ascites fluid with agar in the media caused *B. prodigiosus* and *Staphylococcus* to consume less O₂. A. W. M.

Antagonistic effects of p-aminobenzenesulphonamide and xylose. A. Illényi (*Magyar Orv. Arch.*, 1940, 41, 405—409).—Growth of *B. prodigiosus* is stopped when the media contain 0.6% of sulphanilamide but restarted on adding 2% of xylose. A similar phenomenon occurs with streptococci at 0.3% of the sulphonamide. Vitamin-C production is decreased by the sulphonamide with consequent diminished metabolism. A. W. M.

Bactericidal radiation. A. Paulus (*J. Appl. Physics*, 1942, 13, 300—304).—The uses of ultra-violet radiation in destroying bacteria, and methods employed, are described. A. J. M.

Comparison of carbolfuchsin with fluorescent dye auramine for demonstration of acid-fast bacteria. L. Thompson (*Proc. Staff Mayo Clin.*, 1941, 16, 673—675).—The no. of positive results was greater with the auramine staining method than with carbolfuchsin. H. H. K.

Staining *Treponema pallidum*. N. E. Goldsworthy and H. K. Ward (*J. Path. Bact.*, 1942, 54, 382—384).—2 simple methods are described. C. J. C. B.

Error of the plate count. H. Barkworth (*Proc. Soc. Agric. Bact.*, 1941, 50). D. W. W.

Economy in peptone in wartime. H. Barkworth and J. G. Davis (*Proc. Soc. Agric. Bact.*, 1941, 49). D. W. W.

Mechanical method for obtaining uniform bacterial suspension. D. G. Edwards and M. van der Erde (*J. Path. Bact.*, 1942, 54, 386—391).—The effect is produced by atomisation and collection of the larger droplets in a suitable trap. C. J. C. B.

Bacterial morphology as shown by electron microscope. Structural differentiation within bacterial protoplasm. S. Mudd, K. Polevitzky, and T. F. Anderson (*Arch. Path.*, 1942, 34, 199—207).—Electron micrographs of bacterial cells show the differentiation of solid bacterial cell wall from the inner fluid protoplasm. Within the latter may be seen: discrete dense spheroidal or discoidal granules, e.g., in cells from the genera *Mycobacterium*, *Corynebacterium*, *Vibrio*, and *Spirocheta*, and dense areas of markedly differing size, shape, and position, not sharply circumscribed, e.g., in cells of *Eberthella typhosa* and *Fusobacterium*. (9 photomicrographs.) C. J. C. B.

Simple method for determining p_H on the surface of bacteria. G. Berencsi (*Magyar Orv. Arch.*, 1940, 41, 413—415). A. W. M.

Relation of pantothenic acid and succinic acid to growth of certain micro-organisms. L. Rane and Y. Subarrow (*J. Nutrition*, 1941, 21 Suppl., 17).—Strains of group A hæmolytic streptococci and types of pneumococci require the whole pantothenic acid mol. for growth. The β -alanine portion is essential for certain strains of diphtheria bacillus and the acid portion for strains of group D hæmolytic streptococci. Succinic acid isolated from liver extract had a greater growth-promoting effect on group D hæmolytic streptococci than had the synthetic product, probably through contamination with pantothenic acid. Addition of small and comparatively inactive concns. of pantothenic acid to synthetic succinic acid produced optimal growth of the organisms. A. G. P.

Oxidation and assimilation of glucose by root nodule bacteria. R. H. Burris and P. W. Wilson (*J. Cell Comp. Physiol.*, 1942, 19, 361—371).—The increased oxidation of glucose by *Rhizobium trifolii* produced by 2:4-dinitrophenol occurs whether the dinitrophenol is added initially or after glucose absorption is complete. It is unnecessary to assume an inhibition of absorption by dinitrophenol, which stimulates oxidation of storage products, probably gum. In presence of washed organisms grown on yeast extract medium, glucose disappears before oxidation is complete. V. J. W.

Are there obligate cellulose-decomposing bacteria? R. Y. Stanier (*Soil Sci.*, 1941, 53, 479—480).—Heat-sterilised sugar-mineral salt media contain substances toxic to cellulose-decomp. organisms. Media sterilised by filtration were not toxic and in such media the organisms developed freely with sugar as sole source of C. *Cytophaga hutchinsoni* oxidised glucose and cellobiose at the same rate as cellulose. Decomp. of cellulose by this organism probably involves initial breakdown to monosaccharide and its subsequent oxidation. A. G. P.

Origin and relationship of acetylmethylcarbinol to β -butylene glycol in bacterial fermentations. G. L. Stahly and C. H. Werkman (*Biochem. J.*, 1942, 36, 575—581).—Addition of Ca acetate to cultures of *Aerobacillus polymyxa* in glucose broth results in increased formation of both β -butylene glycol and acetylmethylcarbinol under aerobic and anaerobic conditions. Acetaldehyde is a probable intermediate compound. The glycol accumulates

with a low redox potential, and it is oxidised to the carbinol when the potential reaches a higher level. The carbinol and glycol form a reversible oxidation-reduction system. P. G. M.

Acetone-butyl alcohol fermentation. II. Intermediates in fermentation of glucose by *Cl. acetobutylicum*. III. Potassium as essential factor in fermentation of maize meal by *Cl. acetobutylicum* (BY.). R. Davies (*Biochem. J.*, 1942, 36, 582—596, 596—599).—II. Of a large no. of substances tested as possible intermediates in the fermentation of glucose by *Cl. acetobutylicum*, only acetoacetic and oxaloacetic acids are attacked with production of CO₂ and/or H₂. The former is probably not the precursor of butyric acid, since it is not reduced by cell suspensions which actively ferment glucose under conditions of slow decarboxylation. Ripe, but not young, cells rapidly produce acetone from acetoacetic acid. Glucose, or possibly triose phosphate, is the agent which reduces butyric acid to butyl alcohol. Acetopyruvic acid inhibits the fermentation of glucose, maize meal, and pyruvate. Formation of acetone from glucose or pyruvate is increased 4—5 times by 0.2M-acetate at p_H 5. III. K is essential to fermentation of maize meal, together with another factor, other than asparagine, *p*-aminobenzoic acid, or biotin. (Cf. A., 1942, III, 345.) P. G. M.

Configuration of mesoinositol, scyllitol, and an inosose (scyllo-mesoinosose) obtained biochemically.—See A., 1942, II, 364.

Inosose obtained biochemically.—See A., 1942, II, 363.

Potassium in bacterial fermentation. J. Leibowitz and N. Kupermintz (*Nature*, 1942, 150, 233).—*E. coli* was incubated with glucose, KCl, and Na phosphate buffer. The concn. of K fell to 5 mg.-% in 5 min. and then rose to 13 mg.-% in 70 min. Glucose disappeared in 30 min. With no glucose in the medium K concn. remained const. A non-reducing, hydrolysable polysaccharide was formed in the cells; this disappears in the later stages of the fermentation. E. R. S.

Effect of p_H of medium during growth on enzymic activities of bacteria (*Escherichia coli* and *Micrococcus lysodeikticus*) and biological significance of changes produced. E. F. Gale and H. M. R. Epps (*Biochem. J.*, 1942, 36, 600—618).—*E. coli* will grow in a casein digest over the range p_H 4.5—9. Two groups of enzymes have been investigated. Group I includes those the formation of which varies so that the activity per cell is const. at different p_H vals, e.g., catalase, urease, etc. Group II (e.g., hydrogenase, and various deaminases and decarboxylases) includes those which are formed best when p_H approaches that of optimum activity. These bacteria react to alteration in external environment by changes in enzymic constitution in such a way that a min. change occurs in their internal environment. P. G. M.

Influence of presence of glucose during growth on enzymic activities of *Escherichia coli*. Comparison with effect produced by fermentation acids. H. M. R. Epps and E. F. Gale (*Biochem. J.*, 1942, 36, 619—623).—The inhibition of the formation of amino-acid deaminases and some other enzymes by *E. coli* is not merely a function of the change of p_H of the medium, and neutralisation of the fermentation acids does not vary it. The normal enzyme constitution is restored in the absence of fermentable carbohydrate. Addition of 1% of glucose to the medium does not stimulate growth of *M. lysodeikticus*, nor does it cause any significant increase in the O₂ consumption or alter the p_H of the medium. Urease, catalase, and fumarase activities are unaltered. P. G. M.

Action of *coli* bacteria on dehydronorcholene.—See A., 1942, II, 364.

Pectin and galacturonic acid and intestinal pathogens. S. C. Werch, R. W. Jung, H. Plenck, A. A. Day, and A. C. Ivy (*Amer. J. Dis. Child.*, 1942, 63, 839—846).—The following intestinal pathogens do not liquefy pectin: *B. typhosus*, *B. paratyphosus A* and *B. dysenteriae*, Flexner, Shiga, and Sonne. The addition of any one of these to organisms known to liquefy pectin increases the rate of pectin decomp. Pectin, galacturonic acid, and their decomp. products have bactericidal as well as bacteriostatic activity on intestinal pathogens due to their acidity. Pectin does not detoxify the toxin of *B. dysenteriae*, Shiga. The observed detoxifying action of non-neutralised galacturonic acid is due to its acidity. C. J. C. B.

Use of benzidine media for identification of *Clostridium edematiens*. N. J. Hayward (*J. Path. Bact.*, 1942, 54, 379—382).—The blackening of benzidine unheated-blood agar is a sp. test for H₂O₂. Benzidine in the medium does not lessen its growth-promoting properties for *Cl. edematiens* or reduce the viability of colonies in air; the production of H₂O₂ is not sp. for *Cl. edematiens* even among anaerobes, but is effected equally by some strains of *Cl. multifementans* and to a lesser degree by some strains of *Cl. cochlearium*, *Cl. botulinum*, anaerobic streptococci, and others. All colonies of *Cl. edematiens*, even from a virulent strain, do not produce enough H₂O₂ to give a recognisable blackening of the medium. C. J. C. B.

Effect of p_H and presence of glucose during growth on production of α and θ toxins and hyaluronidase by *Clostridium welchii*. E. F. Gale and W. E. van Heyningen (*Biochem. J.*, 1942, 36, 624—630).—The

range in purity from 250 to 830 Lf per mg. N compared with 3.3—5.0 Lf per mg. N for the original toxoids and 3300 as probable val. for the pure toxoid. The method removes Martin's peptone and neopeptone but not Witte peptone from the toxoid when present in the crude material. The flocculation times of purified are less than those of the corresponding crude toxins. J. N. A.

Fluorescence microscopy for demonstrating *Mycobacterium tuberculosis* in tissues. F. H. Tanner (*Proc. Staff Mayo Clin.*, 1941, 16, 839—842).—Tissue blocks were stained with auramine and examined with the fluorescence microscope. The method is reliable and quicker to perform than the carbolfuchsin staining method.

H. H. K.

Cultivation of *Mycobacterium tuberculosis* in medium of minced chick embryo in Tyrode's solution. M. A. Soltys (*J. Path. Bact.*, 1942, 54, 375—377).—Primary cultures of the avian, bovine, and human types of *M. tuberculosis* can be obtained in a medium of 2% chick embryo made up in Tyrode's solution. The avian type can be subcultivated on this medium for a few generations, but the bovine and human types fail to multiply on subcultivation.

C. J. C. B.

Chromogenic, acid-fast, pathogenic bacilli found in cases of human tuberculosis. G. Groh (*Magyar Orv. Arch.*, 1940, 41, 420—424).—Two strains of bacteria forming yellow colonies were isolated from cases of tuberculosis of the lungs and of the kidneys. Both strains differed in all respects from those previously reported. Guinea-pigs were highly susceptible.

A. W. M.

Colloidal particle agglutinative tests in detection of antigen derived from tubercle bacilli. J. T. Riordan (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 622—624).—This method was more sensitive and accurate than the precipitin test, especially for detection of antibody.

V. J. W.

Standardisation of tuberculin using guinea-pigs sensitised by killed tubercle bacilli in liquid petrolatum. J. Freund and R. Y. Gottschall (*Arch. Path.*, 1942, 34, 73—74).—In standardising tuberculins, guinea-pigs sensitised with killed tubercle bacilli suspended in liquid petrolatum may be substituted for guinea-pigs infected with virulent tubercle bacilli.

C. J. C. B.

Isolation of a polysaccharide from amyloid-bearing tissues. G. Hass (*Arch. Path.*, 1942, 34, 92, 105).—A polysaccharide was isolated only from amyloid-bearing spleens and livers of patients with chronic pulmonary tuberculosis; the amount obtained was directly proportional to the estimated quantity of amyloid and constituted 1.5% of the amyloid matrix. The preps. were quantitatively and qualitatively similar to chondroitin-sulphuric acid obtained from infantile cartilage.

C. J. C. B.

Tuberculin treatment of acne vulgaris in tuberculous patients. M. R. Lichtenstein and A. W. Stillians (*Arch. Dermat. Syphilol.*, 1942, 45, 956—958).—Treatment with tuberculin for 3 months was beneficial to only 1 of 11 patients with acne.

C. J. C. B.

Preparation and testing of antigenic fractions from *Bact. typhosum*. J. Ungar, R. M. Jenner, and R. F. Hunwicke (*J. Path. Bact.*, 1942, 54, 331—340).—Motile smooth virulent strains of *Bact. typhosum* must be used for preparing antigenic fractions; Vi strains were not superior for this purpose. Phenol, merthiolate, and CHCl_3 all kill the organisms in a short period, causing the least alteration in the immunogenic constitution. Bacteria in suspension liberate much of their antigens into the supernatant fluid, but to a smaller degree in suspensions killed with merthiolate. Mice immunised with an antigen which gives a high serological response always show full protection against 10 times the lethal dose of the homologous organism.

C. J. C. B.

Infectivity of bacteriophage. A. D. Hershey and J. Bronfenbrenner (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 587—588).—Properties of phage are modified by sensitisation with antiserum, or by varying concns. of NaCl, or presence of dead bacteria, and determinations of potency must include consideration of all these factors.

V. J. W.

Effect of Roentgen rays on bacteriophage. A. J. Kendall and C. A. Colwell (*Amer. J. Roentgenol.*, 1940, 43, 262—265).—Irradiation with 240,000 r. in 30 min. had no effect on phages for *B. coli*, Flexner, and *Staph. aureus* (titre of 10^{-8}); the results were the same when the Petri dishes containing the phages were rotated during exposure.

H. L.

Complement fixation test in diagnosis of virus infections of central nervous system. J. Casals and R. Palacios (*J. Exp. Med.*, 1941, 74, 409—426).

A. C. F.

Ultra-violet light-inactivated antigens for complement fixation tests with central nervous system virus infections. J. Casals (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 501—504).—By irradiation with a Hg-vapour lamp antigens were rendered non-infective while retaining a high titre. Encephalitis and rabies were among those examined.

V. J. W.

Use of serum ultrafiltrate for propagation of viruses.—See A., 1942, III, 728.

Cultivation of hog cholera virus. C. TenBroeck (*J. Exp. Med.*, 1941, 74, 427—432).

A. C. F.

Comparative virulence of St. Louis encephalitis virus cultured with brain tissue from innately susceptible and innately resistant mice. L. R. Webster and M. S. Johnson (*J. Exp. Med.*, 1941, 74, 489—494).

A. C. F.

Concentration of dilute solutions of virus of mouse encephalomyelitis by pervaporation and ultracentrifugation. J. L. Melnick (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 553—557).—Virus preps. made non-virulent by $1:10^7$ dilution can be conc. to virulent strength in Cellophane tubes by exposure to air currents, or by the ultracentrifuge.

V. J. W.

Glandular fever. L. Feil (*Schweiz. med. Wschr.*, 1941, 71, 1071—1074).—Report of a case with positive Wassermann reaction at the height of the disease.

A. S.

Affinity of Newcastle disease virus to influenza virus group. F. M. Burnet (*Austral. J. Exp. Biol.*, 1942, 20, 81—88).—The activity of Newcastle disease virus bears a striking resemblance to that of influenza virus. Both are probably derived from a common ancestor, but there is no serological relation between the two.

P. G. M.

Neutralising antibodies in human serum after influenza A. Lack of strain specificity in immunological response. F. L. Horsfall and E. R. Rickard (*J. Exp. Med.*, 1941, 74, 433—440).

A. C. F.

Serum-proteins and measles antibodies. H. Bonnet and O. Leau (*Compt. rend.*, 1941, 213, 1032—1034).—The immunising substances from the serum of subjects convalescing from measles are associated mainly with the albumin fraction.

P. G. M.

Inefficiency of immune globulin in prophylaxis of measles during adolescence. J. R. Gallagher (*Amer. J. med. Sci.*, 1942, 203, 880—882).—8 c.c. of immune globulin given early in the incubation period does not prevent or modify measles in the age group 13—18.

C. J. C. B.

Natural history of human poliomyelitis. A. B. Sabin and R. Ward (*J. Exp. Med.*, 1941, 74, 519—529).—During the first 2 weeks of human poliomyelitis infection, virus cannot be recovered from oral or nasal secretion or urine, but can be demonstrated in the stools, especially in children under 8. There is no evidence that the virus in the stools originates from swallowed nasal secretions.

A. C. F.

Comparative pathology of epidemics of poliomyelitis occurring in Los Angeles County in 1934—1935 and 1939. E. M. Hall, R. M. van Wart, and C. B. Courville (*Arch. Path.*, 1942, 33, 817—833).—Despite the clinical differences the pathology was similar. (8 photomicrographs.)

C. J. C. B.

Protective value of antiviral serum in experimental rabies infection. C. H. Yen (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 533—537).—Rabbit antiserum, given intraperitoneally 10—15 min. after infection, prolonged life after intracerebral, and saved some lives after intramuscular, infection with several lethal doses.

V. J. W.

Sinusitis of turkeys and its treatment. D. E. Madsen (*Utah Agric. Exp. Sta. Bull.*, 1938, No. 280, 12 pp.).—Sinusitis in turkeys is transmitted by inoculation with sinus exudates but not controlled by vaccines. The syringe method of draining and treating the sinus with 2—4% AgNO_3 was better than the knife method.

A. W. M.

Therapeutic effect in guinea-pigs of hyperimmune epidemic typhus antiserum. R. W. G. Wyckoff and E. Bohnel (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 712—715).—Good results were obtained by administration of this serum (A., 1941, III, 631) as much as 5 days after infection.

V. J. W.

Morphological structure of virus of vaccinia. J. E. Smadel, T. F. Anderson, and R. H. Green (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 686—688).—The virus bodies can be seen by the electron microscope to be brick-shaped and to contain 5 areas of increased density. They have a limiting membrane and are laked by 0.02N-NaOH.

V. J. W.

Nucleoprotein antigen of vaccine virus. J. E. Smadel, T. M. Rivers, and C. L. Hoagland (*Arch. Path.*, 1942, 34, 275—285).—A nucleoprotein found in alkaline extracts of elementary bodies of vaccinia constitutes a hitherto unrecognised antigen of vaccinia. It is present in virus extracts in amounts equiv. to 40—50% of the wt. of the elementary bodies. Like S antigen of vaccinia, the nucleoprotein antigen is heat-stable. S antisera prepared by immunising rabbits with heat-inactivated elementary bodies also contain nucleoprotein antibodies in large amounts; the latter have been demonstrated in sera of vaccine-immune and vaccine-hyperimmune animals of several species.

C. J. C. B.

Relationship of agents of trachoma and inclusion conjunctivitis to those of lymphogranuloma-psittacosis group. G. Rake, M. F. Shaffer, and P. Thygeson (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 545—547).—Complement-fixing lymphogranuloma antigen gave positive results with sera from cases of chronic trachoma.

V. J. W.

Comparison of alkaline cleavage products of two strains of tobacco mosaic virus. C. A. Knight and M. A. Lauffer (*J. Biol. Chem.*, 1942, 144, 411—417).—Nucleic acid can be separated from tobacco mosaic viruses. The protein components of ordinary and rib-grass strains were examined and shown to differ in amino-acid composition; the two proteins, however, could not be separated by electrophoresis. The mol. wts. of the proteins, estimated from sedimentation consts., ranged from 5×10^4 to 7×10^5 . Particles of many sizes were detected by the electron microscope, some corresponding with those calc. from sedimentation data. R. L. E.

Mutation of tobacco mosaic virus and parallel mutation of tomato mosaic virus. G. Melchers (*Naturwiss.*, 1942, 30, 48).—Mutants of normal tobacco mosaic virus (var. *vulgare*) are described; they include var. *tenue* (from infected plants grown at 34°), var. *necroticum*, and, as a spontaneous mutant of subsp. *Dahlemense*, var. *luridum*. The nomenclature followed is an extension of that of Holmes. F. O. H.

Comparative characterisation of some mutants of tobacco mosaic virus. G. Schramm and L. Rebersburg (*Naturwiss.*, 1942, 30, 48—51).—The mutants var. *flavum* and var. *tenue* (cf. preceding abstract) are characterised and differentiated from var. *vulgare* by electrophoresis and ultra-violet absorption. The data obtained indicate differences in the nucleic acid and protein moieties of the viruses. F. O. H.

Preparation and use of tobacco mosaic virus containing radioactive phosphorus. W. M. Stanley (*J. Gen. Physiol.*, 1942, 25, 881—889).—The distribution of radioactive P in wash from sand and roots, press-cake from plants, protein and protein-free portions of ultracentrifuged juices, and purified virus isolated from diseased plants was determined for normal and mosaic-diseased tobacco plants grown in sand and fed a nutrient solution containing radioactive Na_2HPO_4 . Normal and diseased leaves contain the same amount of P. Approx. 30% of radioactive P absorbed by diseased plants is combined with the mosaic virus isolated from the plants. After inoculation of normal plants with radioactive virus, most of the radioactivity is associated with non-virus components, of which approx. 40% is in the inoculated, and 60% in the uninoculated, portions of the plants. It is not possible to determine the nature of virus reproduction using tobacco mosaic virus containing radioactive P. J. N. A.

Chick embryo antigen [for lymphogranuloma venereum]. G. E. Morris and O. Canizares (*Arch. Dermat. Syphilol.*, 1942, 45, 953—955).—Chick embryo antigen is not reliable as an intravenous test agent for the diagnosis of lymphogranuloma venereum but mouse brain antigen is reliable. C. J. C. B.

Antigenic behaviour of urinary extracts. C. A. Sagastume, V. Oliva, and V. Rivera (*Rev. Fac. Cienc. Quím.*, La Plata, 1941, 18, 97—98; cf. A., 1941, III, 710).—Human pregnancy urine, after removal of material insol. in approx. 70% alcohol at pH 4.5, has no antigenic power in rabbits. F. R. G.

Production of anti-M and anti-N immune sera by various methods. W. Molnár (*Magyar Orv. Arch.*, 1940, 41, 156—161).—Rabbits immunised by Olbrich's, Darány's, or Hilgermann's method all showed 50—60% immunity. Varying amounts of anti-M and anti-N immune sera were obtained from these differently immunised rabbits. A. W. M.

Changes in the structure of the antigen connected with [insect] metamorphosis. L. Borzák and L. Kató (*Magyar Orv. Arch.*, 1940, 41, 425—429).—Morphological changes occurring during metamorphosis of *Musca domestica* and *Bombyx mori* are accompanied by structural changes of the antigen. Some elements of the antigen structure are present at several stages of development, although the antigen structure of egg is considerably different from that of other stages. No differences were observed between alcohol- and water-sol. antigens. A. W. M.

Sensitisation to horse serum by means of adjuvants. J. Freund and K. McDermott (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 548—553).—Injection of horse serum mixed with killed tubercle bacilli and "aquaphor," a highly water-miscible lanolin, causes guinea-pigs to be more sensitised to later serum injections than does injection of serum alone. V. J. W.

Application of serological methods to study of crustacea. E. Clark and F. M. Burnet (*Austral. J. Exp. Biol.*, 1942, 20, 89—95).—Several distinct antigenic types exist within the Decapoda. The haemocyanin of *Jasus lalandi* is the dominant antigen of the body fluid, and this crustacean is not serologically related to any of the other species tested. *Pseudocarcinus gigas* (Brachyura) shows no affinity with the Palinura, Astacura, or Anomura. The antibody produced in rabbits with crustacean serum is absorbed by purified haemocyanin of the same species. P. C. M.

Serological specificity of particulate components derived from various normal mammalian organs. W. Henle, L. A. Chambers, and V. Groupe (*J. Exp. Med.*, 1941, 74, 495—510).—Particulate

organ-antigens obtained by high-speed centrifugation were tested serologically using the agglutination complement fixation technique. All, except those from pancreas, showed organ- and species-specificity, and, except those from brain, are destroyed at 100°. A heat-stable and an ether-sol. antigen were obtained from brain. Cross reactions were unrelated to red cell agglutination, Wassermann or Forssman antibodies. A. C. F.

Protein derivatives as factors in allergy. R. A. Cooke (*Ann. int. Med.*, 1942, 16, 71—80).—Normal non-allergic and allergic subjects react alike to intracutaneous injections of histamine (1—0.1 p.p.m.), or to subcutaneous administration of 0.01—0.1 mg. of histamine; there was no tolerance on prolonged treatment. No improvement was observed in 10 patients suffering from urticaria over periods of 4—12 weeks after continued therapeutic histamine injections. There was no increased blood-histamine (Code's technique) in 7 severely allergic patients. 5 of 39 allergic patients gave positive skin and passive transfer tests to primary and secondary proteoses but not to their original proteins. A. S.

Determination of adrenaline in blood during allergic reactions. A. Surányi and I. Zimányi (*Magyar Orv. Arch.*, 1939, 40, 429—434).—Adrenaline content of blood was determined in rabbits and children before and after sensitisation, inoculation, or vaccination with horse serum. Increased adrenaline content was observed during allergic reaction in all cases, and is regarded as a compensatory reaction of the organism against the poison causing shock. Local production of adrenaline by the sympathetic nerve endings on stimulation of the sympathicus is discussed. A. W. M.

Significance of reactions to intracutaneous tests performed with solutions of purified extracts of ragweed pollens. B. G. Efron and C. H. Boatner (*J. invest. Dermat.*, 1942, 5, 49—53).—Positive intracutaneous tests with the dilution 0.02—0.001% of purified ragweed pollen extracts were diagnostic of ragweed pollen allergic disease in $97 \pm 2\%$ of 45 cases. C. J. C. B.

Untoward reactions to patch tests. E. Epstein (*J. invest. Dermat.*, 1942, 5, 55—59).—6 cases of severe local or general reactions to patch tests are recorded. C. J. C. B.

Transfer of cutaneous sensitivity to simple compounds. K. Landsteiner and M. W. Chase (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 688—690).—Intraperitoneal injection of peritoneal exudate from guinea-pigs sensitised to picryl chloride caused sensitivity in normal guinea-pigs, due to the living cellular elements in such exudate. Similar results were obtained with serum from guinea-pigs sensitised to citraconic anhydride. V. J. W.

Dermatitis due to transparent adhesive tape. H. Keil and E. S. Bereston (*Arch. Dermat. Syphilol.*, 1942, 45, 1052—1065).—The cause of the contact eczema in the case reported was an ester gum (glycerinated wood rosin). C. J. C. B.

XXVI.—PLANT PHYSIOLOGY.

Physiology of incompatibility in plants. I. Effect of temperature. D. Lewis (*Proc. Roy. Soc.*, 1942, B, 131, 13—26).—Heterogamety, one of the two genetic systems of incompatibility between pollen and style, depends on the genotype of the individual pollen grain; the other, heterostyly, on the genotype of its parent. It is unknown whether the two types are physiologically related. The specificity of heterogamety indicates an immunity reaction. The effect of temp. on pollen tube growth in both systems in *Oenothera*, *Prunus*, *Primula*, and *Linum* is determined. Compatible pollinations, of both systems show increased rate of growth with increase of temp. until the lethal point is approached at approx. 35°, whilst incompatible pollinations show optimum growth rate at 15—20°. The physiological method of inhibition is probably related although its genetic basis is different. Different rate of growth at different temp. gives different total growth at inhibition, and at the most favourable temp. there may be no inhibition. In such plants there is no sp. inhibiting zone, although elsewhere the top of the style may provide a zone. Some genotypes of *Oenothera organensis* exhibit such pronounced incompatibility that there is apparently no sensitivity to temp. This extreme modification is determined by the pollen parent's genotype like the main action in heterostyly. In heterostyled plants thrum pollen has to grow down the longer pin style and it is adapted to this in two ways. In *Primula* it is larger, whilst in *Linum grandiflorum* it has a higher osmotic pressure. In two heterostyled *Primula* species thrum pollen grows faster down the long pin style than pin pollen does down the short thrum style. In illegitimate matings thrum pollen is more strongly inhibited. Hence there is a differentiation of the mechanism adapted to secure equal regularity of cross-fertilisation of the two types. J. N. A.

Relation of certain air temperatures and humidities to viability of seeds. L. V. Barton (*Contr. Boyce Thompson Inst.*, 1941, 12, 85—102).—Absorption of water by seeds of peanut, lettuce, flax, pine, tomato, and onion increased in the order named 'irrespective' of

storage temp. or R.H. Water absorption was not directly related to germinability although seeds of higher initial vitality were the more resistant to unfavourable temp. and R.H. during storage. Seasonal changes in water contents of seeds in open storage were considerable and probably contribute to seed deterioration under these conditions.

A. G. P.

Relations of temperature to potassium effect and bioelectric potential of *Valonia*. L. R. Blinks (*J. Gen. Physiol.*, 1942, 25, 905—916).—Over the ordinary tolerated range, the p.d. is lowest at approx. 25°, and increases towards both 15° and 35°. The time curves are also characteristic. The magnitude of the temp. effect is regulated by the concn. of KCl; compared with the normal concn. in sea-water (0.012M.), it is greatly reduced at 0.006M., increased at 0.024M., and greatly increased at 0.1M-KCl. Temp. controls the magnitude of the K effect, which is smallest at 25°. It is increased at 15° and considerably enhanced at 30°. J. N. A.

Hydrostatic pressure and temperature in relation to stimulation and cyclosis in *Nitella flexilis*. E. N. Harvey (*J. Gen. Physiol.*, 1942, 25, 855—863).—*N. flexilis* cells are not stimulated to "shock stoppage" of cyclosis by sudden removal or re-admission of air over the water, provided that the cells are not moved by currents against the walls of the vessel. Sudden increases (up to 5000 lb. per sq. in.) in hydrostatic pressure do not usually stimulate to "shock stoppage," but some cells are stimulated. Sudden decreases of pressure are more favourable for stimulation. In absence of stimulation, the rate of cyclosis at 23° decreases as pressure is increased by stages of 1000 lb. per sq. in. Cyclosis does not completely stop at 10,000 lb. per sq. in. and the pressure effect is reversible unless the cells have been maintained too long at high pressures. At 10° and 32—38°, pressures of 3000—6000 lb. per sq. in. cause only further decrease in rate of cyclosis without reversal of the temp. effect. Sudden increase and decrease in temp. can cause shock stoppage of cyclosis. J. N. A.

Accumulation of salt and permeability in plant cells. D. R. Hoagland and T. C. Broyer (*J. Gen. Physiol.*, 1942, 25, 865—880).—Comparison of the concns. of K and Br in exudates from barley roots and in expressed sap from roots, under conditions favourable for aerobic metabolism and immersed in aq. KBr, does not lead to the view that concn. of salt by living plant cells is explained by the "solvent capacity" of protoplasm, but to that of a secretory process being involved. Low concn. of CN⁻ prevents salt accumulation by barley roots, whilst methylene-blue destroys the ability to accumulate salt but does not decrease CO₂ production by roots. K and Br enter roots to only a slight extent under anaerobic conditions even with inward gradient of ionic concn. Lactate or alcohol under aerobic conditions does not prevent rapid accumulation of salt by root cells. Under the influence of N₂ or CO₂, the juice obtained from tomato roots shows that there is loss of salt-accumulating power and a probable effect on cell permeability. Using *Nitella* cells and radioactive Br, Br gradually enters the vacuolar sap until the concn. appears to exceed that of the protoplasm. Under anaerobic conditions, accumulation of salt does not occur in the vacuole. J. N. A.

Ecology of mangroves. III. Chloride content of sea-water, soil solution, and leaf cell sap of mangroves. F. R. Bharucha and B. S. Navalkar (*J. Univ. Bombay*, 1942, 10, B, Part 5, 97—106).—The Cl⁻ contents of sea-water, of aq. extracts of soil, and of the leaf sap of mangroves grown therein are directly dependent on atm. temp. and rainfall. A. G. P.

Plant nutrition and the hydrogen ion. I. Plant nutrients used most effectively in presence of a significant concentration of hydrogen ions. W. A. Albrecht and R. A. Schroeder (*Soil Sci.*, 1942, 53, 313—327).—Spinach and potato were grown in soils containing controlled levels of exchangeable nutrients but of different pH . Mobilisation of nutrients was greater in the more acid soils, the effect being shown in the higher concns. of many of the nutrients in plant tissues and in some cases by increased yields. The Ca, Mg, Sr, and Mn contents of spinach were greater in soils of pH 5.2 than in those of pH 6.8; the K and P contents were not similarly affected. A. G. P.

Periodic partial failures of Punjab-American cottons in the Punjab. III. Uptake and distribution of minerals in the cotton plant. R. H. Dastur and A. Ahad. **IV. Relation between nitrogen deficiency and accumulation of tannins in leaves.** R. H. Dastur (*Indian J. Agric. Sci.*, 1941, 11, 279—300, 301—315).—III. The mineral contents of leaves, stems, and roots of Punjab-American and *desi* cotton plants are determined at fortnightly intervals during growth. *Desi* plants contain relatively the greater proportions of K⁺, Ca⁺⁺, SO₄⁼⁼, and total mineral matter. The % of Ca and SO₄⁼⁼ in the dry matter of leaves, stems, and roots of both varieties remain practically const. throughout the growth period. During boll formation N, P, and Fe contents in leaves diminish: the decrease in K content of stems and roots exceeds that in leaves. The rate of intake of mineral matter is max. at the flowering stage and corresponds with max. increase in the dry wts. of plants. K, Mg, P, Fe, Al, and Cl tend to accumulate in leaves of the American but not in the *desi*

variety; the % of N in leaves and bolls is approx. the same in both varieties. The observations have a bearing on the occurrence of *tirak* disease in American cotton.

IV. Tannin deposits occurred in mesophyll cells of leaves which later showed symptoms of *tirak* disease: the deposits did not appear in plants receiving N fertilisers. In general positive tannin tests are associated with N contents not exceeding 2.5% of the dry matter. The presence of tannins in leaves at the flowering period serves as an index of N deficiency. A. G. P.

Effects of aluminium on copper toxicity as revealed by solution culture and spectrographic studies of citrus. G. F. Liebig, jun., A. P. Vanselow, and H. D. Chapman (*Soil Sci.*, 1942, 53, 341—351).—The stimulative effect of Al on growth of citrus may result from its antagonistic action on toxic amounts of Cu. In absence of Al 0.1 p.p.m. of Cu in culture media for orange and lemon cuttings was toxic. The toxicity was counteracted by 0.1 p.p.m. of Al. Larger proportions (2.5—5.0 p.p.m.) of Al stimulated root development but depressed top growth. Detoxification of Cu by Al occurs in the roots: Al does not prevent absorption of Cu by roots. Lemon cuttings obtain adequate supplies of Al from nutrients containing 0.005 p.p.m. A. G. P.

Importance of sodium for plant nutrition. III. Equilibrium of cations in beet. J. J. Lehr (*Soil Sci.*, 1942, 53, 399—411; cf. B, 1942, III, 128).—Beet were grown in an artificial soil in which the proportions of bases in the adsorption complex could be regulated. The distribution of the principal nutrient ions (K, Ca, Na dominating) in the beet was examined in relation to crop yields. Leaves and roots react differently to variations in the proportion of bases in the soil. In the equilibrium of ions in the foliage Na is an important factor; in roots K is of prime importance although Na is necessary for good yields. Na can replace K in roots to a considerable extent without affecting the yield. High proportions of Ca are detrimental to production of both roots and tops. In field practice Na is preferable as secondary ion in fertilisers. A. G. P.

Physiology of rice. I. Effect of phosphorus deficiency on growth and nitrogen metabolism in rice leaves. S. M. Sircar and N. K. Sen (*Indian J. Agric. Sci.*, 1941, 11, 193—204).—In sand-cultured rice deficiency of P is associated with corresponding diminution in height of plants and tillering. Positive growth responses were obtained by P additions made 12 weeks after sowing. The uptake of P was directly related to the [P] in the nutrient. In P-deficient plants protein synthesis was disturbed, amides accumulated, and the production of amino-acids decreased. Late applications of P increased the total N and protein content of grain. A. G. P.

Fate of chloral hydrate absorbed by growing plants of *Lagenaria leucantha*. L. P. Miller (*Contr. Boyce Thompson Inst.*, 1941, 12, 167—169).—When grown in media containing chloral hydrate the plants contained β - β' -trichloroethyl-d-glucoside. A. G. P.

Simultaneous formation of a β -gentiobioside and a β -glucoside in gladiolus corms treated with chemicals. L. P. Miller (*Contr. Boyce Thompson Inst.*, 1941, 12, 163—166).—Treatment of corms with ethylene chlorohydrin resulted in the formation of the β -glucoside by condensation with d-glucose. Treatment with o-chlorophenol caused the formation of the β -gentiobioside. The two glucosides were produced simultaneously in combined treatments. Neither β - β' -chloroethylgentiobioside nor β -o-chlorophenyl-d-glucoside could be detected. A. G. P.

Accumulation of carotenoids in a green alga. III. Role of nitrogen, magnesium sulphate, and phosphorus. IV. Death of the alga. E. Haag (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 288—291, 291—294; cf. A., 1942, III, 180).—III. The accumulation of carotenoid pigments in *Dictyococcus cinnabarius* is not prevented by deficiency of N, MgSO₄, or P and growth remains for long almost unaffected by P deficiency. The deficiencies result in production of red colour. MgSO₄ deficiency results in increase in N and P content, and P deficiency in increase in N content.

IV. The bleaching sometimes observed and the subsequent death result from extensive hydrolysis of the org. P compounds of the alga, the lipin, protein, and carbohydrate contents remaining unaffected. Change of colour from green to white by way of red is accompanied by decrease in the proportion of unsaponifiable matter in the lipins and red colour is a sign of ill health. W. McC.

Importance of carbon dioxide and photoperiodic illumination for flower formation in *Kalanchoe blossfeldiana*. R. Harder and H. von Witsch (*Naturwiss.*, 1941, 29, 770—771).—By maintaining one leaf of the plant (when undergoing short-day treatment) in a CO₂-free atm. blossoming was prevented. P. G. M.

Flowering in *Digitalis purpurea* initiated by low temperature and light. J. M. Arthur and E. K. Harvill (*Contr. Boyce Thompson Inst.*, 1941, 12, 111—117).—After subjection to low temp. (5°) for 4 months (June—Oct.) *Digitalis* plants flowered rapidly on transfer to long-day conditions in a warm greenhouse. Slow growth under cold conditions was best preserved by keeping in a darkened room

Soc., 1942, 64, 1283—1285).—Diosgenin is obtained (method: cf. Jacobs *et al.*, A., 1934, 896) from the following roots, yields being given as g. per lb. of undried root. *Chamaelerium carolinianum* 0.1, *Tofieldia graminifolia* 0.5, *Dioscorea quaternata* 2.0, *Helonias* —, *Trillium grandiflorum* and *T. sessile* 1.0, *Clintonia borealis* 0.5, *Dioscorea hirticaulis* 2.0. R. S. C.

Rhodeatoxin, a glucoside from the leaf of *Rhodesia japonica*, Roth.—See A., 1942, III, 769.

Preparation of mixed sterols of maize. H. F. Holden (*Austral. J. Exp. Biol.*, 1942, 20, 103).—After saponification of maize oil with alcoholic NaOH and removal of most of the alcohol, the mixture is poured into an excess of aq. 2% CaCl_2 . The Ca soaps and sterols are collected, washed, and dried. The sterols are then extracted with cold acetone, the solution is evaporated, and the residue re-crystallised from 90% alcohol. P. G. M.

Presence of a tannin-resin complex associated with protein in the bark of *Drimys winteri*, Forst. R. Lemesle (*Compt. rend.*, 1942, 214, 237—238).—Tannins are present in many elements of the bark. Young stems contain free ellagic and galloannic acids while in older stems the tannin has undergone partial oxidation and the tannin-resin complex formed fixes protein to give a product insol. in water, alcohol, and alkalis. W. C. J. R.

Isolation of polycopene and pro- γ -carotene from *Evonymus fortunei*. L. Zechmeister and R. B. Escue (*J. Biol. Chem.*, 1942, 144, 321—323).—11 mg. of polycopene and 0.5 mg. of pro- γ -carotene have been isolated from 1 kg. of the ripe seeds by chromatographic analysis. H. G. R.

Fruit of *Pyrantha angustifolia*: practical source of pro- γ -carotene and polycopene. L. Zechmeister and W. A. Schroeder (*J. Biol. Chem.*, 1942, 144, 315—320).—27.7 mg. of cryst. pro- γ -carotene and 28.4 mg. of polycopene have been isolated from 1 kg. of the air-dried fruit by chromatographic analysis. 7.3 mg. of a close stereoisomeride of polycopene have also been isolated and a mono-hydroxypro- γ -carotene has been observed in solution. H. G. R.

Chromatophores. III. Crystals, and red, ribbon- and rod-shaped bodies of carrot. W. Straus (*Helv. Chim. Acta*, 1942, 25, 705—717; cf. A., 1942, III, 722).—A method of separating the crystals (not carotene), rod-like bodies, and ribbon-like bodies from the grains (which are sparingly sol.) by "fractional dissolution" in water is described. The protein and lipid contents of material rich in the three substances are equal (approx. 40—45%) and the carotene content is approx. 4.8%. These vals. and the changes of form which take place when the three substances are dried indicated similarly between the substances and chloroplasts. W. McC.

***Sophora* alkaloids. IV. Alkaloids from seeds of the Chatham Islands species.** L. H. Briggs and W. E. Russell (*J.C.S.*, 1942, 555—556).—The alkaloids of the seeds consist of α -matrine, methylcytisine, and sophochrysin, which are found in the seeds of both *S. microphylla* and *S. tetraptera* but in different proportions. The chemical evidence tends to support the view that the species is identical with *S. microphylla*. F. R. S.

Identification of alkaloids of tobacco.—See A., 1942, II, 384.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Ultra-violet steriliser for celluloid tubes. E. G. Pickels (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 680—683).—The tubes are held vertically and radiation from 3 Westinghouse "Sterilamps" is reflected downwards into them by a metal surface. V. J. W.

Direct registering electro-encephalograph. M. Monnier and M. Marchand (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 259—263).—An inexpensive, simple apparatus is described. W. McC.

Simple method for measuring blood flow in animal experiments. P. Gömöri and L. Podhradzky (*Magyar Orv. Arch.*, 1940, 41 162—165).—A modified form of Ludwig's flow-meter is described. A. W. M.

Portable apparatus for continuous intravenous anaesthesia or blood transfusion. A. L. Sims and B. G. B. Lucas (*J. Sci. Instr.*, 1942, 19, 136—137).—An apparatus which is robust in construction and is easily sterilised in one piece is described and figured. A. A. E.

Localisation of radioactive dibromotrypan-blue in inflammatory lesions. F. D. Moore and L. H. Tobin (*J. clin. Invest.*, 1942, 21, 471—481).—This radioactive colloidal dye concentrates in inflammatory lesions to an extent detectable from outside the intact rabbit with a suitable counter. Using this radioactive dye, lesions in the periphery of the body were detectable in all cases, whereas abdominal lesions were detectable in 77% of instances. C. J. C. B.

Necessary precaution in use of takadiastase for determination of maltose. A. H. Bunting (*Biochem. J.*, 1942, 36, 639—640).—In the determination of small amounts of maltose by means of takadiastase it is necessary to use sterile solutions of the enzyme. These

may be obtained by using a Seitz filter; addition of toluene is not sufficient. Earlier low vals. compared with the theoretical were due to bacterial contamination of the takadiastase. P. G. M.

Separation of sugars, amino-sugars, and amino-acids.—See A., 1942, II, 350.

Colorimetric determination of glycogen of tissues with the step-photometer. C. Jung (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 237—240).—Glycogen (2—15 mg.) obtained from tissues by heating with 60% aq. KOH and pptd. with 95% alcohol + HCl in presence of KI is determined by measuring the depth of colour produced on addition of I in aq. KI. W. McC.

Colour test for [determining] tryptophan in protein hydrolysates. A. A. Albanese and J. E. Frankston (*J. Biol. Chem.*, 1942, 144, 563—564).—1 g. of protein is boiled for 20—22 hr. with 5 c.c. of 20% aq. NaOH, and the hydrolysate is neutralised to pH 7 with glacial acetic acid, filtered, and the vol. adjusted so that 2 c.c. contain approx. 1 mg. of tryptophan. 2 c.c. are mixed with 0.3 c.c. of aq. NaNO_2 and 0.1 c.c. of 10% acetic acid and shaken intermittently for 10 min., then 0.3 c.c. of 1% aq. K_2SO_4 , 0.5 c.c. of thymol (1% in 95% alcohol), and 5 c.c. of a mixture of 40% trichloroacetic acid and conc. HCl (3:2) are added in this order with thorough mixing after each addition. The mixture is then heated in boiling water for 5 min. and cooled in ice (5 min.). All except approx. 0.3 c.c. of the upper, colourless layer is removed and the red, lower layer is diluted to 5 c.c. with glacial acetic acid. The colour is determined in a photo-electric colorimeter and compared with that given by standard solutions of tryptophan. The reaction is given by various indole compounds, but only by tryptophan amongst the amino-acids of protein hydrolysates. J. N. A.

Use of sulphur as reagent for determining thiol groups in ovalbumin. J. D. Guthrie and J. Allerton (*Contr. Boyce Thompson Inst.*, 1941, 12, 103—109).— H_2S production by interaction with colloidal S is utilised in determining thiol groups in ovalbumin. Vals. obtained correspond with 0.6% of cysteine in the natural albumin. After denaturation with NaOH + KCN the thiol val. was equiv. to 1.29% cysteine. This accounts for all the cysteine + cystine in the albumin. Data accord with the presence of one -S- and two -SH groups in the ovalbumin mol. A. G. P.

Micro-determination of quinine in blood and tissues. F. E. Kelsey and E. M. K. Geiling (*J. Pharm. Exp. Ther.*, 1942, 75, 183—186).—The blood or tissue is digested with alkali; the digest is extracted with ether and the ethereal extract is extracted with 0.1N H_2SO_4 , and the extract compared fluorimetrically with a standard. The method is accurate, sp., and enables 0.1 μg . of quinine per g. of blood or tissue to be determined. P. C. W.

Determination of iodine in thyroid gland material. Examination of Kendall's combustion method. H. M. Doery (*Biochem. J.*, 1942, 36, 519—525).—NaOH-fusion methods, when carried out in Ni crucibles, give rise to loss of I by seepage into the irregularly pitted surface. Even with a max. temp. of 400°, a blank fusion is advisable where large amounts of I have previously been determined. Rigid temp. control at 450—550° is recommended. P. G. M.

Micro-determination of arsenic in biological materials. Electrolytic cell for production of arsine. W. A. Rawlinson (*Austral. J. Exp. Biol.*, 1942, 20, 97—101).—The electrolytic apparatus described involves the use of a Cellophane membrane between the anolyte and catholyte, and a Hg cathode capable of reducing As^+ to AsH_3 . At least four such cells may be used in series with a current of 2 amp., c.d. 180 ma. per sq. cm., and 230 v. d.c. The current drop between anode and cathode is approx. 5 v. A 2% solution of HgBr_2 in acetone is used (for less than 10 μg . of As) in which to soak paper strips, and a calibration curve obtained for the ratio of length of stain to μg . of As. P. C. M.

Determination of bromide in blood and urine. M. M. Friedman (*J. Biol. Chem.*, 1942, 144, 519—524).—Blood is deproteinised by trichloroacetic acid and the Br^- oxidised to BrO_3^- by NaOCl , which is determined iodometrically. Br^- in urine cannot be oxidised directly because interfering substances react with NaOCl . Br^- and Cl^- are pptd. as Ag salts, and the mixture is oxidised by NaOCl . J. N. A.

Micro-determination of bromide.—See A., 1942, I, 374.

[Determination of] mercury. E. P. Laug and K. W. Nelson (*J. Assoc. Off. Agric. Chem.*, 1942, 25, 399—403).—Separation of Hg in biological materials from Cu and other metals by means of dithione followed by photoelectric or visual spectrophotometric determination gave recoveries of 92—106 (average 100%). A. A. E.

Micro-determination of potassium in serum with the aid of electro-dialysis. A. E. Sobel, A. Hanok, and B. Kramer (*J. Biol. Chem.*, 1942, 144, 363—369).—After electro-dialysis to separate K^+ from org. matter and other ions, serum-K is determined by pptn. as cobaltinitrite and oxidation of the ppt. by $\text{Ce}(\text{SO}_4)_2$. R. L. E.

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