BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

AUGUST, 1941.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Papillary ridges of Chinese hand. W. W. King (*Z. Morph. Anthrop.*, 1939, **38**, 309—342). W. F. H.

Differences in arborisation of cutaneous nerves and veins of upper extremity in uniovular and binovular twins. D. Kadanoff (*Z. Morph. Anthrop.*, 1939, **38**, 73—89). W. F. H.

Succession of pharyngeal teeth in *Cyprinus carpio*. A. Belogurov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **29**, 155—159). J. D. B.

Post-embryonic growth of skeleton of *Oryctolagus cuniculus*. V. J. Brovar (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **29**, 160—164).—An analysis of the wet wts. of the different bones of the skeleton (excluding hyoid, clavicles, and sesamoids) of a strain of rabbits and a comparison of the results with those previously obtained for *Bos taurus*. The following conclusions were derived from the data: (1) The ratio of wt. of entire skeleton to wt. of whole body decreases during growth. (2) The axial skeleton increases in wt. less than the entire tody but the peripheral skeleton increases more (this is different from the findings in *B. taurus*). (3) The axial skeleton has an axial gradient of wt. growth. This is centred in the sacrum with a slow fall cranially and a rapid one caudally. (4) As distinguished from *B. taurus* the cranium as a whole in the rabbit grows less in wt. than any other directly weighed part or sum of parts. (5) The fore-limb has a gradient declining from the scapula distally. The hind-limb has one too, but centred in the femur and falling gently distally, more abruptly proximally. The general validity of results obtained in this way is discussed. J. D. B.

Vascularisation in brains of reptiles. I. *Chrysemys picta marginata*. E. H. Craigie (*J. Comp. Neurol.*, 1941, **74**, 247—264).—A detailed account of the blood supply to the brain in the painted turtle with quant. details of vessel diameter, surface area, and vol. in the different parts of the brain. J. D. B.

Blood vascular system of bursa Fabricii in *Anas domestica*. T. Uyematsu (*Japan. J. Med. Sci.*, I., 1941, **8**, 265—268).—The arteries run perpendicular to the axes of the early follicles and end just under the surface. The medullary substance has no blood vessels. W. F. H.

Growth pattern of human head from third month to eighth year of life. A. G. Brodie (*Amer. J. Anat.*, 1941, **68**, 209—262).—The method employed was "serial roentgenology" of the living. The anterior portion of the cranial base is longer than the posterior at the 3rd month but post-natal growth of the two is almost equal. The morphogenic pattern of the skull is determined by the 3rd month and thereafter does not change. Brain-case growth is slightly greater than face growth until 9 months, after which there is no change in the angular relation between anterior nasal spine, floor of the nose, and cranial base. The upper incisor prior to eruption has a forward movement greater than the anterior nasal spine, but following eruption this tooth and its permanent successor grow downwards and forwards in a straight line. The mental protuberance comes forward rapidly until the 4th year. There is no change in the gonial angle throughout the growth period studied. The mandible maintained by muscle tension is relatively const. in position and before the eruption of teeth the jaws are not in apposition at the gum pads. The lower 6-year molar is very const. in relation to the mandible. W. F. H.

Ætiology of cysts of developmental origin in premaxillary region. W. Brandt and H. T. Roper-Hall (*Brit. Dental J.*, 1941, **70**, 213—221). J. D. B.

Foot function. P. Schwartz and L. Heath (*N.Y. Sta. J. Med.*, 1941, **41**, 447—451).—A normal foot was seen in a patient who through complete severance of the sciatic nerve above the knee had been suffering from complete loss of muscle function and of sensation in foot and leg for 4 years. A girl of 9 with excellent development of muscles showed pronation of the foot after 4 years' training for ballet dancing. This pronation was absent on standing on the toes through reflex contraction of the tibialis posticus. This muscle is unable to prevent pronation under normal conditions of walking; it contracts for only 36% of the total stance phase of the step. The presence or absence of pronation is thought to be dependent not on muscular function but on the functional characteristics of the os calcis and cuboid and their physical relationship to astragalus and tibia. E. M. J.

Cleidocranial dysostosis. P. W. Miles (*J. Kansas Med. Soc.*, 1940, **41**, 462—468).—A survey of 6 new cases and 126 from the literature. E. M. J.

Cleidocranial dysostosis in newborn. B. Köhler (*Z. Kinderheilk.*, 1938—1939, **60**, 536—545).—A review and case report with *X*-ray findings. M. K.

Demineralisation of long bones after trauma as primary symptom of acrodystony and dystrophy. U. Frutiger (*Helv. med. Acta*, 1939, **6**, 480—494).—Acrodystony and dystrophy, which are characterised by demineralisation of long bones and various trophic, tonic, and vasomotor disturbances of skin, muscles, bones, and joints, occur after nerve injury or inflammation, trauma to bones and joints, and after thrombosis. The disease is attributed to a pathological irritation of the sympathetic-spinal parasympathetic system. M. K.

Myelogenous osteopathy. N. Markoff (*Helv. med. Acta*, 1939—1940, **6**, 598—604).—A lecture. M. K.

Changes in spinal column after tetanus. E. Feistmann-Lutterbeck (*Helv. med. Acta*, 1938, **5**, 519—520).—Post-tetanic kyphosis is attributed to disturbances in nutrition and blood supply of the tetanic muscles and not to a sp. toxic effect. M. K.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Morphogenesis of thyroid gland. K. E. Sgalitzer (*J. Anat.*, 1941, **75**, 389—405).—A description is given of the development of the thyroglossal duct, the pyramidal process, and the lingual duct of the thyroid gland in human embryos from the 4-mm. to the 65-mm. stage. The thyroid gland begins to develop in embryos of 17—18 pairs of somites. The thyroglossal duct is formed simultaneously with the gland; it lies ventral to the hyoid bone. During the migration of the gland it becomes longer and thinner and its lumen disappears. It is suggested that the duct lengthens not by active growth but by passive extension. The duct finally fragments at about its midpoint and the process is usually completed at the 10-mm. stage. In embryos between 7 and 10 mm. the lower part of the duct develops into glandular tissue; the process is at first median but later comes to lie lateral to the middle line. There is about an equal probability of the displacement being to the right or to the left. The lingual duct is described as being the upper part of the thyroglossal duct. The proximal part thickens and

the epithelium of the duct changes into that resembling the epithelium of the tongue. A variation in the thyroid anlage in two embryos is described; it consists of an invagination of the thyroid anlage into the pharyngeal cavity. W. J. H.

Presomite human embryo with a neurenteric canal (embryo R.S.). P. N. B. Odgers (*J. Anat.*, 1941, **75**, 381—388).—The embryo was found in a uterus removed by hysterectomy. The embryonic disc is roughly triangular in shape and shows a marked dorsal convexity in both planes; it measures 1·5 mm. by 1·36 mm. and is reckoned to be 22 days old. The primitive streak is typical for embryos at this stage of development. There is a short neurenteric canal which forms an almost vertical passage between the amniotic cavity and the yolk sac. In front of the neurenteric canal is a flattened chorda plate composed of cells of varying thickness; this plate is intercalated in the endoderm with which its edges are continuous. There is a distinct prochordal plate characterised by the presence of chromatophile granules. The cloacal membrane is directly caudal to the primitive streak. W. J. H.

Development of tractus solitarius. E. A. Wilson, W. F. Windle, and J. F. Fitzgerald (*J. Comp. Neurol.*, 1941, **74**, 287—307).—The tractus solitarius in young mammalian embryos (cat, rat, sheep, and human) receives contributions from petrosal and nodose ganglia of the glossopharyngeal and vagus nerves but not from superior and jugular ganglia until approx. the 15-mm. stage. Contributions of sensory fibres from the spinal accessory nerve to the caudal portion of the tract are clearly established in the embryo. At first the solitary tract lies on the periphery of the neural tube. Later it becomes buried by downgrowth of newer fibres from the trigeminal and vestibular nerves. The different methods of its termination in the embryo are described. J. D. B.

Development of hypophysis of armadillo. F. K. Oldham (*Amer. J. Anat.*, 1941, **68**, 293—315).—The buccal part develops entirely from Rathke's pouch. The neural part arises later than the buccal part as an outpouching of the diencephalon. Both buccal and neural portions are completely surrounded by a thick basement membrane and vascular mesenchyme. A typical pars intermedia is not developed. Two types of cells are present in the pars nervosa, one developing from ependymal cells of the infundibular recess, the other appearing at the periphery of the neural stalk and lobe. Their cytoplasm frequently becomes deeply basophilic. The pars tuberalis develops from the dorsal region of the paired lateral lobes; its cells are chromophobic and frequently arranged in small follicles. There is no evidence that Seessel's pocket, the notochord, or the prechondal plate takes part in the development of the hypophysis. W. F. H.

Amphibian metamorphosis. XIX. Development of tongue in *Rana sylvatica*, including the histogenesis of "premetamorphic" and filiform papillæ and mucous glands. O. M. Helff and M. C. Melliicker (*Amer. J. Anat.*, 1941, **68**, 339—369).—The macroscopic and histological appearance and differentiation of the 4 "premetamorphic" papillæ forming a transverse row across the tongue anlage is described. When the dorsal epithelium of the tongue has reached a max. of approx. 18 layers filiform papillæ and mucous gland rudiments appear. The epithelium then degenerates, probably as a result of general metamorphic influences. Filiform papillæ result from the fusion of two or more papillary epithelium rudiments. Papillary epithelium consists of a single layer of cells without cilia. Muscle fibres observed within the corium of filiform papillæ are regarded as normal constituents. Mucous glands differentiate subjacent to and continuous with the papillary rudiments. Then lumina are formed as the result of directional growth processes and not of cellular degeneration. W. F. H.

Sex differentiation of chick and duck gonads in homoplastic and heteroplastic host graft combinations. E. M. Bradley (*Anat. Rec.*, 1941, **79**, 507—529).—The rate of differentiation and growth characteristic of chick gonad primordium were maintained in both homoplastic and heteroplastic combinations. Duck gonad primordium maintained its own rate of differentiation in chick hosts. The experiments indicate that the testis produces hormones which influence the development of the grafted duck ovarian primordium, and evidence of the action of female sex hormones in the development of the testis and ovary was also obtained. In all experiments the grafted gonad was placed directly into the coelom of the host embryo. W. F. H.

Initiation and early development of thyrotropic function in incubating chick. F. M. Martindale (*Anat. Rec.*, 1941, **79**, 373—393).—Indication of early thyrotropic stimulation is adduced from the fact that the thyroid of the normal embryo begins to produce colloid 3½—4 days earlier than in the hypophysectomised chick. Thyrotropic hormone is produced not later than the 11th day of incubation and the evidence suggests self-differentiation of the thyroid in the initial stages of development. W. F. H.

Is it possible to prove or disprove mendelism by mathematical and statistical methods? E. Kolman (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **28**, 834—838).—A criticism of Kolmogorov's recent mathematical analysis of the statistical data provided by genetics. J. D. B.

Physiological discontinuance of ontogenesis and production of directed modifications. M. E. Lobaschov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **28**, 839—842).—A study of the percentage of occurrence of phenocopies in two lines of *Drosophila* following *X*-irradiation. Attention is directed to the general nature of physiological discontinuity in ontogeny and to the importance of a synchronous run of sensitive periods in a given population of organisms for the production of directed non-hereditary variations. J. D. B.

Recapitulation in development of feather colour in birds. G. A. Maschtaler (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **29**, 150—154).—A study of the development of feather colour in birds with particular reference to the author's earlier work on the evolution of animal colour in general. J. D. B.

Mutation in *Drosophila* under natural conditions. A. I. Zuitin and M. T. Pavlovetz (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **29**, 483—486).—A study of mutational variation in some wild populations of *D. melanogaster*, taking into account the main factors of microclimate, temp., and humidity changes. Marked differences in mutation rates were found at different stations and could be correlated with microclimatic differences. The possibility that these may be due to differences in the genotypical plasticity of separate geographical races rather than to the climatic differences is discussed. J. D. B.

Parallel variation in plumage colours of various breeds of domestic fowl. S. G. Petrov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **29**, 487—490).—Colour variations are tabulated for a total of 48 breeds and 179 varieties of normal fowl and bantams. Identical breeds and varieties are found in normal fowl and bantams and a no. of plumage colour types reoccur in the varieties of the majority of breeds. J. D. B.

Effect of temperature on mutation rate of unstable gene in *Portulaca grandiflora*. G. H. Beale and A. C. Fabergé (*Nature*, 1941, **147**, 356—357).—An unstable gene produces coloured spots on the petals and stem of *Portulaca grandiflora* (Ikeno). 4 clones were grown at 25°, 30°, 35°, and 40° for 6 weeks. There was a consistent and statistically significant apparent reduction in mutation rate (no. of mutations per cm. length of stem of 2 mm. diam.) with increasing temp. Vals. proportional to mutation rate per cell are also given and show the same effect of temp. Higher temp. produces less acid cell sap in *Portulaca*. E. R. S.

III.—PHYSICAL ANTHROPOLOGY.

Skeleton of a female pygmy. A. J. P. Broek (*Z. Morph. Anthrop.*, 1939, **38**, 122—169). W. F. H.

Upper eyelid fold in Europeans. E. Bühler (*Z. Morph. Anthrop.*, 1939, **38**, 56—62). W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Structure of epithelial tissues in pharyngeal region of Teleostei. H. Schereschevski (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **29**, 165—168).—A histological study of the syncytial cells found in the gill region of the pharyngeal wall of the cyprinodont, *Lebistes*. From the general appearance of this tissue and the form and heterogeneity of its cells it is concluded that the syncytial mass is a glandular structure

which may be homologous to the parathyroids of higher vertebrates. J. D. B.

Microscopic anatomy and physiology of living transilluminated mammalian spleens. D. W. Mackenzie, A. O. Whipple, and M. P. Wintersteiner (*Amer. J. Anat.*, 1941, **68**, 397—456; cf. A., 1940, III, 709).—An "open" type of intermediary circulation exists in the spleens of mice, rats, rabbits, guinea-pigs, and cats, there being no intact wall connexions between the arterial and venous systems. The pulp interstices function as a filter, separating red cells from plasma. Pulp phagocytes remove foreign particulate matter from the blood and phagocytosis of red cells occurs in normal spleens. Rhythmical trabecular and capsular contractions together with intermittent constriction of the afferent vessels of the pulp are the main factors controlling the circulation in the spleen. The periarterial sheaths in the cat appear to act as plasma filters but there is no evidence for this in the mouse, rat, rabbit, and guinea-pig. The "ampulla of Thoma" is the site at which whole blood first comes in direct contact with pulp cells. No blood storage or other cyclical function can be ascribed to the venous sinuses and intralobular veins. The emergency responses of the spleen to exercise, hæmorrhage, temp. changes, stimulation of nerves, etc. are contraction with arterial constriction which produce evacuation of blood from the pulp interstices into the general circulation. A Knisely's improved, fused quartz living-tissue illuminator was used in the investigation. W. F. H.

Structure of Bowman's capsule as index of age and sex variations in normal mice. C. Crabtree (*Anat. Rec.*, 1941, **79**, 395—413).—The parietal layer of Bowman's capsule in the mouse may be partly or wholly composed of cuboidal cells instead of the more usual squamous epithelium. Cuboidal cells are similar to those of the proximal convoluted tubule and exhibit a high capacity to store trypan-blue. Capsules can change from the "low-cell" type to the "high-cell" type and the numerical relationship between these is a reliable index of age and sex changes. Cuboidal cell capsules occur normally in both sexes of all age periods but their relative no. remains low until degeneration of the *X*-zone of the adrenal gland occurs. After puberty their incidence increases particularly in the male, and it is suggested that this increase is a sp. response to endocrine factors. W. F. H.

Cytological changes in senility in trigeminal ganglion, spinal cord, and brain of mouse. W. Andrew (*J. Anat.*, 1941, **75**, 406—418).—The cells of the trigeminal ganglion and of the ventral horn of the spinal cord show qual. differences in young and senile mice. Other changes in senility are more or less sp. for different regions. The changes found in the nerve cells in all regions are a decrease in Nissl material, increasing paleness of the nucleolus, and increased basophilic properties of the nucleus. The regularity of the cell outline is lost and there are degeneration and death of some of the nerve cells. In the ventral horn cells the most characteristic change is the accumulation of pigment in almost 100% of the cells. In the trigeminal cells the characteristic changes are vacuolar degeneration of the cytoplasm. There is an increase of the interstitial elements around degenerating cells in all regions except in the layer of Purkinje cells. The interstitial elements consist of oligodendroglial cells in the central nervous system and of amphicytes in the ganglia. The astrocytes show no degenerative changes; the oligodendroglial cells show polymorphism. W. J. H.

Chemoreceptors in abdomen of adult mice. W. H. Hollinshead (*J. Comp. Neurol.*, 1941, **74**, 269—285).—Structures identical in appearance with the carotid body are found related to the intra-abdominal vagus nerves of the mouse. In quantity this tissue in the abdomen may equal or exceed that of the carotid bodies. The tissue possesses a rich nerve supply which experiments indicate to be derived from dorsal root ganglia by way of the splanchnic nerves. Abdominal bodies of this nature are found in mice and rats but not in animals with well-developed supracardial bodies. Physiological experiments suggest that the abdominal bodies may have some influence on respiration. J. D. B.

Nerve supply of mammalian ductus arteriosus. J. D. Boyd (*J. Anat.*, 1941, **75**, 457—468).—Most of the material was obtained from the rabbit. Reference is made to variations in the nerve supply to the ductus arteriosus in other mammals. In all the embryonic and fœtal rabbit material branches of the "depressor" nerve can be traced beyond the aortic arch to the ductus. In many specimens it is possible to trace sympathetic fibres to the depressor nerve. The ductus also receives fibres from the left vagus. These nerves terminate in endings which are similar to those found in the carotid sinus and aortic arch. The fibres which are medullated are for the most part restricted to the media but some may pass more deeply. Finely medullated fibres are also found; they terminate in relation to the muscle wall of the ductus by simple endings which resemble the endings of vasomotor fibres in other blood vessels. These fibres are, presumably, motor. The findings in the other mammalian species examined are essentially similar to those of the rabbit. The nerve supply of the ductus arteriosus is discussed in relation to the behaviour of the ductus at birth. W. J. H.

Ductus arteriosus of guinea-pig in relation to its method of closure. J. A. Kennedy and S. L. Clark (*Anat. Rec.*, 1941, **79**, 349—371).—Compared with the pulmonary artery or the aorta the ductus arteriosus has a thicker but looser wall containing relatively more smooth muscle and less elastic and collagenous tissue. The media is composed mainly of smooth circular muscle bundles. There is an abrupt histological transition between the ductus and adjoining vessels but the adventitia is essentially the same as that of the great arteries. The lumen closes immediately after birth. The changes which transform the duct into a fibrous ligament involve mainly the intima and central part of the media, which are replaced by collagenous and elastic fibres. The first signs of degeneration occur about the 3rd day. The nerve fibres reaching the ductus from the aortic depressor area appear to have been derived from myelinated fibres, and finer fibres suggesting unmyelinated postganglionic efferents were also found. This function of the nerves was not interpreted. W. F. H.

Innervation of heart. II. Afferent nerve endings in large arteries and veins. J. F. Nonidez (*Amer. J. Anat.*, 1941, **68**, 151—189).—The fibre components of the aortic nerve and the structure and distribution of aortic pressor-receptors in the puppy are described. The terminations in the ligamentum arteriosum are discussed and the belief that they function during fœtal life is questioned. Some of the nerve endings in this ligament are possibly terminations of parasympathetic postganglionics. Receptors in the large veins increase in complexity and become more scattered with age. In the cat nerve endings in the superior and inferior venæ cavæ persist after cervical and upper thoracic sympathectomy but subendothelial and perimuscular endings in the pulmonary veins degenerate. Two types of afferent endings in the pulmonary veins of the puppy are described and the rôle of nerve arborisations in these sites is discussed. W. F. H.

Silver nitrate for histochemical demonstration of ascorbic acid. S. A. Barnett, G. Bourne, and R. B. Fisher (*Nature*, 1941, **147**, 542—543).—Atypical deposits were observed in bone fixed in acid $AgNO_3$. These were cleared by 10—15 min. treatment with 5% aq. NH_3 The histological picture of rat adrenals fixed with acid $AgNO_3$ was not affected by this NH_3 treatment. It is suggested that the specificity of $AgNO_3$ in demonstrating ascorbic acid histochemically is increased by this NH_3 treatment. E. R. S.

V.—BLOOD AND LYMPH.

Growth of blood of sucking mouse. H. Grueneberg (*J. Path. Bact.*, 1941, **52**, 323—329).—The blood vol. per unit wt. in the mouse drops steeply after birth; this decline is followed by a gradual rise to a second max. which is reached at or shortly after weaning age. Beyond this max. a very slow decline with increasing body-wt. sets in. C. J. C. B.

Autohæmolysis in familial acholuric jaundice. J. V. Dacie (*J. Path. Bact.*, 1941, **52**, 331—339).—The erythrocytes in familial acholuric jaundice undergo hæmolysis more rapidly than normal cells when kept *in vitro* at 37°. Lysis may occur after 5 hr. and is often well marked after 24 hr. incubation. The rate of autohæmolysis is reduced in the absence of plasma or serum, but is more rapid than that of washed normal cells. It is independent of the presence of complement and is not inhibited by normal plasma. The increased rate of hæmolysis depends on an abnormality of the erythrocytes, possibly due to increased *in-vivo* adsorption of lysolecithin. C. J. C. B.

Hæmoglobinisation of erythroblasts. M. C. G. Israëls (*J. Path. Bact.*, 1941, **52**, 361—365).—5 cases are described in which complete or almost complete hæmoglobinisation occurred in the normoblasts of the bone marrow at an exceptionally early stage of development while the cells still had their distinctive nuclear pattern and were still capable of mitosis. This phenomenon is characteristic of megaloblasts, but occurs also in cells of the normoblast series when unusually sustained or sudden demands are made on erythrocyte production. Early hæmoglobinisation should therefore not be used as a criterion for distinguishing the normoblastic and megaloblastic series of cells. C. J. C. B.

Blood count in infantile beriberi, infantile pre-beriberi, and infantile *B*-avitaminotic dyspepsia. M. Shindo (*Tôhoku J. exp. Med.*, 1940, **38**, 403—413).—The red cell count and hæmoglobin content were diminished; there was an increased thrombocyte count, neutropenia, lymphocytosis and eosinophilia (in some cases), nuclear shift to the right, and an increase in neutrophils with appearance of pathological granules. On administration of vitamin-*B*, the white cell and thrombocyte counts return to normal before improvement of the anæmia. A. S.

Bone-marrow smears in normal and pathological pregnancies. N. Markoff (*Z. Geburtsh. Gynäkol.*, 1939, **119**, 13—30).—Typical bone-marrow changes in normal pregnancy are increased no. of large erythroblasts, anisocytosis of the promyelocytes with formation of very large myelocytes, frequently eosinophilia of the marrow, and increased no. of reticular plasma-cell elements with many nuclei per cell. There is general marrow hyperplasia in osteomalacia. 3 types of anæmia are distinguished: hypochromic pregnancy anæmia, pseudo-pernicious anæmia with normo- and erythroblastosis of the bone marrow (the latter type responds to liver extracts and disappears after delivery), and pernicious pregnancy anæmia with megaloblastosis of the bone marrow and typical pernicious anæmia changes of blood and marrow smears. A. S.

Classification of pregnancy anæmias. A. Alder (*Z. Geburtsh. Gynäkol.*, 1939, **119**, 44—52).—Normocytic (colour index 1), microcytic (colour index less than 1), and macrocytic anæmias (colour index more than 1) of pregnancy are distinguished. A. S.

Icterus gravis neonatorum with erythroblastosis. H. McKinley (*Arch. Dis. Child.*, 1941, **16**, 63—66).—A review. C. J. C. B.

Rapid absorption of substances injected into bone marrow. L. M. Tocantins (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 292—296).—Blood or glucose solution injected into the medullary cavity of the rabbit's tibia or human sternum rapidly enters the circulation. V. J. W.

Hæmoglobin and plasma-protein. Simultaneous production during continued bleeding as influenced by diet-protein and other factors. F. S. Robscheit-Robbins, S. C. Madden, A. P. Rowe, A. P. Turner, and G. H. Whipple (*J. Exp. Med.*, 1940, **72**, 479—498).—Some dogs with sustained anæmia, fed abundant Fe and restricted protein, maintained both hæmoglobin and plasma-protein formation, but others developed hypoproteinæmia. This preference for hæmoglobin formation is given with any of the proteins tested. The ratio of plasma-protein to hæmoglobin varies from 40 to 60%. The total new-formed blood-protein may amount to as much as 30—40% of the total dietary protein intake. A. C. F.

More sensitive bio-titration of optimum erythrocyte maturation in human anæmic states. B. C. Houghton and C. A. Doan (*Amer. J. clin. Path.*, 1941, **11**, 144—162).—It has been shown in hæmolytic jaundice, thrombocytopenic purpura, and pernicious anæmia that the quant. reticulocyte response in blood under varying pathological and therapeutic conditions is not necessarily an accurate and dependable index of erythrocytopoietic activity or efficiency in the marrow. Determinations of variations in plasma-Fe level under basal conditions, and serial differential marrow-cell studies, provide more sensitive and dependable criteria of marrow activity and integrity. C. J. C. B.

Is chromodacryorrhœa a diapedesis of red corpuscles? S. Tashiro, E. Badger, and W. Younker (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 377—381).—The red tears caused in rats by "dacryorhetin" or acetylcholine do not contain hæmoglobin. The rounded coloured bodies present are not red cells but fat globules stained with the red pigment which is probably allied to porphyrin. V. J. W.

Cell opacity method for determination of cell volume on single drop of rat blood. A. T. Shohl, K. D. Blackfan, and L. K. Diamond (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 383—387).—Cell vol. is given by readings of an Evelyn colorimeter at 660 mμ. compared with a standard curve relating such readings to hæmatocrit vals. Hæmoglobin is given by readings after hæmolysis at 540 mμ. V. J. W.

Vegetative regulation of red-cell count. H. Kinkel and G Kinkel-Diercks (*Mschr. Kinderheilk.*, 1939, **77**, 153—189).—The effect of sympatho- and parasympatho-mimetic drugs on reticulocyte count in 47 various forms of micro-, normo-, and macro-cytic anæmia was investigated. The drugs were injected subcutaneously at intervals of 10 min. over a period of 1½—2 hr. Pilocarpine increased the reticulocyte count; the first increase (of 60—75%) occurred 30 min. after injection; the second increase after 70—90 min. was on a smaller scale. Atropine and adrenaline diminished the reticulocyte count by 50% after 30 min.; the vals. returned gradually to normal after 60—90 min. Ergotamine increases reticulocyte count by 25%. These changes in blood are attributed to increased or decreased elimination of reticulocytes from their places of origin in the bone marrow, and to the erythropoietic activity of bone marrow. M. K.

Effect on blood picture of 15-day embryo of liver extract injected into pregnant rat. J. H. Last and E. E. Hays (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 194—197).—% of non-nucleated cells in blood-smear did not differ significantly in fœtuses from untreated mothers, and those from mothers receiving active liver extract from 6th to 14th days of pregnancy. V. J. W.

Ilium puncture, a simple method for obtaining bone marrow in dogs. E. A. Ho, H. J. Chu, and I. C. Yuan (*Chinese Med. J.*, 1940, **58**, 679—681).—A No. 17 hypodermic needle with stylet is inserted at an angle of 50—80° to the horizontal at the longitudinal mid-line of the ilium 1 cm. below the level of the crest, the point being directed ventro-posteriorly. After penetrating the skin and gluteal muscles the needle is gradually pushed with a screwing movement into the anterior lamina of the bone. A sudden yield of resistance indicates entry into the marrow cavity and after removal of the stylet gentle aspiration with a syringe produces a drop of marrow fluid. The method is also applicable to cats and rabbits. W. J. G.

Effect of gastric juice on erythrocytes of newborn rats. T. A. Noble, H. S. Wigodsky, and A. C. Ivy (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 373—375).—Intraperitoneal or oral administration of human gastric juice to pregnant rats had no effect on red-cell diameter in the offspring. V. J. W.

Relation of concentration of red blood cells to sensitivity of isoagglutination reaction, its importance in demonstration of agglutinin in dried bloodstains. H. Lund (*Arch. Path.*, 1941, **31**, 458—466).—Increasing sensitivity results from the use of diminishing final concns. of erythrocytes in the reaction of isoagglutination. Final concns. of 0·0625% are 8 times as sensitive as the usual 0·5—1% suspensions and concns. of less than 0·007% are 32 times as sensitive. C. J. C. B.

Isoimmunisation in pregnancy and varieties of isoagglutinins observed. P. Levine and E. M. Katzin (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 343—346).—11 cases are outlined in which women developed during pregnancy agglutinins for red cells resulting in severe reactions to blood transfusions. Antigenic activity is attributed to fœtal tissues. Hæmolytic and agglutinative effects varied in some cases with temp. V. J. W.

Atypical warm isoagglutinins. P. Levine, E. M. Katzin, and L. Burnham (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 346—348).—Agglutinins which were active at 37° and not at 20° were observed in blood of 5 patients of whom 4 were pregnant and the 5th had received repeated transfusions (cf. preceding abstract). V. J. W.

Blood-type identification cards. R. Tessman (*Amer. J. clin. Path. Tech. Suppl.*, 1941, **5**, 89—90).—A convenient card is illustrated. C. J. C. B.

Subdivisions of group *A* and group *AB*, with special reference to so-called agglutinogen A_3. A. S. Wiener and I. J. Silverman (*Amer. J. clin. Path.*, 1941, **11**, 45—53).—The

present knowledge of the subgroups in groups *A* and *AB* is reviewed, including the extremely rare subgroups A_3 and A_3B. The occurrence of blood of subgroup A_3 in a mother and her one-year-old child is reported. C. J. C. B.

Basophil granulocyte, basophilocytosis, and myeloid leukæmia, basophil, and "mixed granule" types. C. A. Doan and H. L. Reinhart (*Amer. J. clin. Path.*, 1941, **11**, 1—31).—The occasional acute termination of chronic myelogenous leukæmia with therapy-resistant myeloblastosis and predominant basophil myelocytosis in blood and tissues is emphasised and exemplified; one case terminating with many "mixed granule" cells each containing both eosinophilic and basophilic granules within the same myeloid cell is described, together with 3 further cases of primary, progressive sp. hyperplasia of basophil granule leucocytes. (9 photomicrographs.) C. J. C. B.

Acute monocytic leukæmia. L. M. Meyer and E. D. Flanagan (*Amer. J. clin. Path.*, 1941, **11**, 68—73).—A case report. C. J. C. B.

Specific substances in urine of leukæmia patients. F. R Miller and W. A. Hause (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 387—388).—Urine is hydrolysed by boiling at p_H 2 and extracted with $CHCl_3$. Conc. extracts from patients with myeloid and lymphoblastic leukæmias caused, on injection into guinea-pigs, myeloid lesions and lymphadenopathy respectively. V. J. W.

Influence of methylcholanthrene on age incidence of leukæmia in several strains of mice. A. Kirschbaum, L. C. Strong, and W. U. Gardner (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 287—289).—In mice of *F* strain, in which myelogenous leukæmia commonly occurs at 300—700 days, painting twice weekly with methylcholanthrene causes its appearance in 97—200 days. In a non-leukæmic strain, only 3 out of 94 treated mice developed the condition. V. J. W.

Effects of irradiation on leukæmic cells in marrow cultures. E. E. Osgood (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 131—135).—Leukæmic progranulocytes are more sensitive to *X*-rays than normal cells, but curves of cell decrease are similar, and it is suggested that the mechanism is by prevention of cell division. V. J. W.

Hodgkin's disease in children. D. J. M. McCausland (*Arch. Dis. Child.*, 1941, **16**, 59—62).—Analysis of 7 cases. C. J. C. B.

Blood volumes in hypertensive partially nephrectomised rats. J. R. Beckwith and A. Chanutin (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 66—69).—In such rats plasma vol. is increased, red-cell vol. decreased, and total blood vol. is unaltered. V. J. W.

Error in measuring changes in plasma volume after exercise. R. V. Ebert and E. A. Stead, jun. (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 139—141).—Exercise causes an increase in serum-protein concn. This alters the optical properties of the serum, so that changes in photoelectric colorimeter readings do not depend only on changes in dye concn. V. J. W.

Preservation of blood. O. F. Denstedt, D. E. Osborne, M. N. Roche, and H. Stansfield (*Canad. Med. Assoc. J.*, 1941, **44**, 448—461).—Among the factors that influence stability of corpuscles during storage are the concn. of the diluent or preservative and the degree to which blood is diluted. Optimal preservation is obtained with an isotonic citrate–glucose diluent using 1 vol. of blood to $\frac{1}{2}$ of diluent as follows: blood 5 parts; isotonic (3·2%) Na citrate 1 part; isotonic (5·4%) glucose 1·5 parts. Good preservation is usually obtained over a range of dilutions, between 1 : $\frac{1}{4}$ and 1 : 1, but the 1 : $\frac{1}{2}$ mixture was most satisfactory. Blood diluted with more than an equal vol. of citrate–glucose undergoes no more hæmolysis during storage than in lower dilutions, but is more fragile to normal saline or fresh plasma. Since it is impossible to tell from the appearance of stored specimens how stable or fragile the corpuscles are, it is recommended that samples be tested against compatible plasma or a suitable hypertonic saline solution. The O_2-carrying capacity of hæmoglobin remains unchanged during the feasible period of storage. C. J. C. B.

Use of concentrated pooled human serum and pooled lyophile serum in treatment of shock. B. Rose, P. G. Weil, and J. S. L. Browne (*Canad. Med. Assoc. J.*, 1941, **44**, 442—448).—13 cases, 5 of shock, were treated with pooled conc. human serum, and 1 additional case received conc. typed human serum. Reactions to the serum were observed in 5, and death followed in 2. In the 9 cases with no reaction the results of serum therapy were beneficial in 7. Because of the frequency and nature of the reactions the use of this type of serum is contraindicated in shock. 16 patients, not in shock, were given transfusions of pooled lyophile serum; no severe reactions were observed. C. J. C. B.

Separation of serum in bulk. G. A. Harrison and L. E. R. Picken (*Lancet*, 1941, **240**, 536—537).—Technical description. C. A. K.

Technical precautions before blood transfusions. A. H. Wells (*Amer. J. clin. Path. Tech. Suppl.*, 1941, **5**, 9—19).—A review. C. J. C. B.

Controlled fluid therapy. C. R. Drew, J. Scudder, and J. Papps (*Surg. Gynec. Obst.*, 1940, **70**, 859—867).—Four simple tests are described for determining and regulating the water balance of acutely-ill patients. They are: (i) the determination of the cell vol. of venous blood by means of the hæmatocrit; (ii) determination of the sp. gr. of the whole blood; (iii) determination of the sp. gr. of the plasma; (iv) calculation of the plasma-proteins from the plasma sp. gr. by a simple formula. With the data obtained it is possible to determine degrees of dehydration, to differentiate shock from shock complicated by hæmorrhage, and to predict the approach of an œdema level of the plasma-proteins. F. F. R.

Therapeutic value of transfusion of derivatives of blood (*Proc. Roy. Soc. Med.*, 1941, **34**, 257—266).—L. E. H. Whitby: The order of preferment for blood derivatives used for blood vol. restoration is: citrated plasma, serum, hæmoglobin–Ringer, gum saline, red cells in saline suspension, isotonic saline and glucose. The clinical advantages of plasma over serum are undecided, but the prep. of the latter is easier. Transfusion of large vols. is sometimes necessary since at least 50% of the vol. lost must be restored; the effects must be controlled by blood-pressure measurements and clinical judgment. It is advantageous to use a proportion of blood with plasma when large vols. are transfused. J. Vaughan and H. Brown: Plasma, serum, and blood are equally effective in the treatment of shock, but it is usually desirable to give some red cells with the former; for burns, plasma or serum is indicated during the first 24 hr.; local œdema may be reduced by the use of conc. serum. Fresh blood should be given in septic conditions. Conc. serum in nephritic œdema has been disappointing. Conc. red cells are of val. in anæmia with normal blood vol., and in anæmia in the aged and in the septic patient. W. J. G.

[Blood] transfusion reactions. A. S. Wiener, B. H. Oremland, M. A. Hyman, and A. A. Samwick (*Amer. J. clin. Path.*, 1941, **11**, 102—121).—Reactions in a series of 3000 blood transfusions are analysed. In 2 patients transfusions of incompatible blood were unintentionally given, one resulting in a hæmolytic reaction. In both cases the transfused blood was quickly eliminated from the body, and this was followed by the appearance in the patient's serum of immune isoantibodies of high titre. In a patient of group *AB*, subgroup A_1B, who received 2 transfusions of group *O* blood, anti-*O* agglutinins appeared in the serum. Production of immune anti-*O* isoantibodies may be a factor to consider in repeated transfusions of blood from universal donors. There was no difference in the frequency of chills following transfusions of unmodified blood by the syringe-valve method or citrated blood by the gravity method. Urticarial reactions occurred once in 100 transfusions. C. J. C. B.

Malaria transmission by blood transfusion. J. C. Thoroughman (*Chinese Med. J.*, 1940, **58**, 682—686).—There is danger of malaria transmission when professional donors of the lower economic class, apparently malaria-free, are used in areas where the disease is endemic. Quinine, 0·3 g. thrice daily for 3 days, is an effective prophylactic for recipients of blood. W. J. G.

Thermostability of heat-stable components of complement. E. E. Ecker, L. Pillemer, and A. O. Kuehn (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 115—116).—Addition of 10% NaCl diminishes the heat-stability of the 4th component, which is inactivated at 65°, more than that of the 3rd component, which is inactivated at 62°. The latter is therefore more closely associated with the serum-proteins, and it is suggested that complement should be inactivated at 54° rather than at the usual 56°. V. J. W.

Effect of lipin solvents on fourth component of complement. L. Pillemer, S. Seifter, and E. E. Ecker (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 130–131).—Ether and $CHCl_3$ destroy complement but have no sp. effect on the 4th component, which is therefore not in association with serum-lipins. V. J. W.

Stabilisation of high-vacuum-dried guinea-pig complement before drying and after restoration with water. F. Boerner, E. W. Flosdorf, and M. Lukens (*Amer. J. clin. Path.*, 1941, **11**, 122—127).—By addition of a stabilising solution, containing 12 g. of anhyd. Na acetate and 4 g. of boric acid per 100 c.c. of sterile distilled water, the complementary activity of guinea-pig serum may be rendered sufficiently stable to simplify the initial prep. of large uniform pools prior to desiccation from the frozen state. After restoration of this dry product the standard activity may be relied on to be retained uniformly without loss for a period of a few days during storage of the restored liquid in the refrigerator. C. J. C. B.

Hæme pigments of cured meats. I. Preparation of nitric oxide-hæmoglobin and stability of compound. W. M. Urbain and L. B. Jensen. **II. Application of Van Slyke–Neill manometric gas apparatus to determination of oxygen capacity of dilute hæmoglobin solutions. III. Variation of absorption spectrum of methæmoglobin in p_H range 1—8.** W. M. Urbain and D. A. Greenwood (*Food Res.*, 1940, **5**, 593—606, 607—616, 617—624).—NO-hæmoglobin is prepared by shaking hæmoglobin solution with NO in absence of O_2. The spectrum is const. over a p_H range of 5—8. It is a stable compound in absence of O_2 but is readily oxidised by air, the oxidation being inhibited by an increase in p_H and augmented by rise in temp.

II. Diluted whole blood or purified hæmoglobin is oxygenated with air in the Van Slyke–Neill apparatus, a correction being applied for the solubility of O_2 from air in water, which has been determined. Micro-organisms cause a loss in the O_2-carrying capacity, probably due to the formation of methæmoglobin, but dil. oxyhæmoglobin solutions are stable for at least 2 months under aseptic conditions if properly oxygenated.

III. The absorption spectra indicate the presence of several absorbing components derived one from the other as the p_H changes. Complete conversion of alkaline into acid methæmoglobin occurs at p_H 6, and a third compound has its max. concn. at p_H 4·5; below 4·5 another compound, probably acid hæmatin, appears, and below 2·75 there is evidence for a fifth compound or a colloidal effect such as aggregation. H. G. R.

Porphyrins. I. Chemical constitution, properties, and methods of investigation. Chemical study of porphyrins of excreta, bile, and blood of case of chronic porphyria. M. Grinstein (*Anal. Asoc. Quim. Argentina*, 1940, **28**, 232—260).—A review of the literature. A case of chronic porphyria showed in the urine large amounts of uroporphyrin III and more than the normal of coproporphyrin III. Coproporphyrin I and III were found in the fæces and bile, whilst the blood-globulin and -plasma contained traces of uroporphyrin III. F. R. G.

Presence of non-carbon monoxide-combining (inactive) hæmoglobin in blood of normal persons. E. Ammundsen (*J. Biol. Chem.*, 1941, **138**, 563—570).—"Inactive" hæmoglobin is estimated by the increase in the CO-combining capacity of the blood after treatment with $Na_2S_2O_4$, determined by a modification of the Van Slyke and Hiller method, using conc. urea solution to dilute the blood. Increases, which exhibit day-to-day variation up to 2·5-vols.-% of CO capacity, are recorded and O_2 or CO capacities cannot be used as accurate measures of the total hæmoglobin of the blood. No correlation between high "inactive" hæmoglobin and any sp. disease was observed. H. G. R.

Increase in blood coagulability by oxalate. Y. Noda (*Tohoku J. exp. Med.*, 1940, **39**, 205—210).—Blood coagulation time is shortened by 22% of the original val. 1 hr., and by 15% 2 hr., after intravenous injection into rabbits of 0·025 g. of Na oxalate per kg. body-wt. The thrombocyte count and the blood-fibrinogen and -thrombin contents increase. The coagulation time was increased by P poisoning from 269 to 473 sec.; Na oxalate had no effect on coagulation time, thrombocyte count, and blood-fibrinogen and -thrombin concns. in animals poisoned with P or $CHCl_3$. Coagulation time was shortened by Na oxalate in rabbits previously treated with subcutaneous injections of 0·12 g. of veronal or 0·5 mg. of ergotamine per kg. body-wt. A. S.

Heparin as anti-coagulant in sedimentation tests. S. W. Sappington and L. M. Gillis (*Amer. J. clin. Path.*, 1941, **11**, 83—101).—Heparinised blood has a greater sedimentation rate than citrated or oxalated blood, but the differences in rates are less marked in pathological than in normal cases. In pneumococcal pneumonia there is usually a reversal of the heparin–citrate or heparin–oxalate comparative rates. C. J. C. B.

Inhibition of tryptases by heparin. A. J. Glazko and J. H. Ferguson (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 43—46).—Tryptic activity, determined by casein digestion or by inactivation of thrombin, was decreased by addition of heparin. V. J. W.

Delayed blood coagulation and absence of clot retraction in collodion-lined vessels. J. S. Hirschboek (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 122—124).—Coagulation time is greater in collodion-lined tubes than in paraffin-lined tubes, although adhesion of water to glass or collodion is positive, and adhesion of water to paraffin is negative. The clot adheres firmly to the collodion and does not retract. V. J. W.

Coagulation of placental blood. H. Dyckerhoff, F. Biedermann, and R. Marx (*Z. ges. exp. Med.*, 1940, **107**, 543—550).—Placental blood coagulates more slowly than ordinary blood. Its thrombase and fibrinogen content is diminished; it contains no thromboplastin. There are no anti-coagulant substances in placental blood and defibrinated placental blood does not delay the coagulation of ordinary blood. Placental tissue extracts contain small amounts of thrombase and considerable amounts of thromboplastin; these extracts increase coagulability of ordinary blood. Placental tissue, extracted with acetone and ether, contains only traces of thrombase and thromboplastin; these extracts do not delay the coagulation of ordinary blood. A. S.

Gynæcological and obstetrical significance of thrombopenic purpura. J. Batizfalvy (*Z. Geburtsh. Gynäkol.*, 1939, **119**, 65—95).—Several cases of severe uterine bleeding due to thrombopenic purpura are reported. The hæmorrhages were closely related to the menstrual cycle and produced severe anæmia. Repeated blood transfusions, abrasion of the uterine mucous membrane, and *X*-irradiation of the shaft bones were successful. Thrombopenic purpura was observed in various stages of pregnancy. If treatment of the condition is unsuccessful, pregnancy has to be interrupted and at the end of term hysterectomy may be necessary; blood transfusions before and after the operation are essential. A. S.

Coagulation of fibrinogen by simple organic substances as model of thrombin action. E. Chargaff and M. Ziff (*J. Biol. Chem.*, 1941, **138**, 787—788).—Triketohydrindene hydrate produces typical fibrin clots in fibrinogen solutions or plasma in the absence of Ca and thromboplastic factors. Alloxan and salicylaldehyde have a similar but less marked effect, and other compounds tested have no effect. E. M. W.

Comparison of fibrinogen and prothrombin levels of maternal and cord blood at delivery. A. Rush (*Surg. Gynec. Obst.*, 1940, **70**, 922—924).—The fibrinogen content of plasma of cord blood is normal, but the prothrombin content is reduced. Fibrinogen and the prothrombin contents of maternal blood at the time of delivery are above normal. F. F. R.

Stability of prothrombin in presence of thrombin. J. H. Ferguson (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 80—83).—Thrombin and citrated prothrombin can coexist in solution with no more decrease of either than when they are kept separately. The prothrombin loss described by Mertz *et al.* (A., 1940, III, 10, 284) is due to the presence of a tryptic enzyme. V. J. W.

Determination of plasma-prothrombin; variations in normal men and women. W. A. Hause and L. M. Tocantins (*Amer. J. clin. Path.*, 1941, **11**, 54—59).—An addition to the Quick method is presented for determining prothrombin concns. above 100%. Plasma-prothrombin of 3 normal women did not change during the phases of the menstrual cycle. Some normal men have consistently high plasma-prothrombin concns. This fact makes it desirable to employ 2 or more persons as controls when determining the prothrombin % of abnormal plasmas. C. J. C. B.

Effect of intramuscular injection of sodium citrate on prothrombin time of blood. B. G. P. Shafiroff, H. Doubilet, and Co Tiu (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 136—139).—Injections of 0·125—0·5 g. per kg. of Na citrate in dogs halved the coagulation time of the blood, and reduced the prothrombin time, by Quick's method, by up to 50% after 1 hr. V. J. W.

Comparative activities of certain antihæmorrhagic compounds. H. J. Almquist and A. A. Klose (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 55—59; cf. A., 1939, III, 853, 923, 996).—Activities of a no. of derivatives of 2-methyl-1 : 4-naphthaquinone, assayed by methods previously described (A., 1939, III, 770), are compared and tabulated. V. J. W.

Development of vitamin-*K* and its clinical uses in neonatal period. H. Savage (*Arch. Dis. Child.*, 1941, **16**, 67—70).—A review. C. J. C. B.

Relation of copper to cytochrome oxidase and hæmatopoietic activity of bone marrow of rats. M. O. Schultze (*J. Biol. Chem.*, 1941, **138**, 219—224).—Cytochrome oxidase activity of the bone marrow of rats is very low in Cu deficiency but responds immediately to Cu therapy. It is rapidly increased in normal rats by hæmatopoietic stimuli. Cu-deficient rats do not respond to Co, Fe, or Mn. E. M. W.

Blood changes in chronic copper-intoxication of rabbits. S. Chiba (*J. Orient. Med.*, 1939, **30**, 45).—The red-cell count and hæmoglobin concn. increase after an initial decrease and later decrease again gradually. The white-cell count is increased. Continuous intravenous administration of small doses of Cu produces a pathological blood picture. M. K.

Rise in serum-copper following oral administration of copper sulphate. A. Sachs, V. E. Levine, A. Schmit, and R. Hughes (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 192—193).—Administration to dogs of 2—16 mg. of $CuSO_4,5H_2O$ per kg. caused increase in serum-Cu reaching a max. in 2—3 hr. V. J. W.

Decrease of raised blood-iron after stopping ferrous carbonate feeding. N. Hayashi (*J. Orient. Med.*, 1939, **30**, 257).—Blood-Fe returns to normal within 14—16 days of stopping of Fe feeding in rabbits. Blood-Fe after continuous feeding of 0·6 g. of $FeCO_3$ for 10, 20, and 30 days is never more than 3 times normal. M. K.

Winckel's disease. J. Glaser and J. Epstein (*Amer. J. Dis. Child*, 1940, **60**, 6, 1375—1380).—A case report and review of the literature. [The malady is of unknown origin with a symptom complex of jaundice, cyanosis, and hæmoglobinuria.] C. J. C. B.

Formol-gel test during rheumatic fever of childhood. Comparison with sedimentation rate and Weltmann reaction. R. I. Klein, S. A. Levinson, and C. K. Stulik (*J. Pediat.*, 1941, **18**, 327—356).—The formol-gel test is the least sensitive index of the rheumatic state; the corr. sedimentation rate is the most sensitive. The Weltmann reaction gives unique information in that it helps to indicate the pathological state of the rheumatic process, whether exudative or proliferative. C. J. C. B.

Meinicke's flocculation reaction in forensic medicine. F. Naville and R. Herrmann (*Schweiz. med. Wschr.*, 1941, **71**, 74—76).—Meinicke's serum flocculation reaction is reliable if blood is obtained up to 30 hr. after death. A. S.

Mester's rheumatism test. L. Mosonyi (*Klin. Woch.*, 1940, **19**, 280).—Mester's test (fall in the no. of white cells after intracutaneous injection of salicylic acid solution) was positive in 70% of 23 cases of rheumatism. M. K.

Increase of blood-non-protein nitrogen in diphtheria. C. Bennholdt-Thomsen and R. Dieckerhoff (*Z. Kinderheilk.*, 1938—1939, **60**, 565—569).—Non-protein-N vals. in blood increased with the severity of the disease (often to 35 mg.-% and over) and are of prognostic significance. M. K.

Quantitative studies of direct serum-bilirubin [and liver function]. A. Cantarow, C. W. Wirts, jun., and G. Hollander (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 253—256).—"Direct" bilirubin vals. of over 50% of total bilirubin at 5-min. readings, or over 75% at 30-min. readings, by Malloy and Evelyn's method (*Physiol. Abs.*, 1937, **22**, 995) indicate impairment of liver function when serum-bilirubin concn. is normal. V. J. W.

True uric acid in hyperuricæmia of pre-eclampsia and eclampsia. N. K. Schaffer and H. J. Stander (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 180).—Differentiation by the Blauch and Koch method (A., 1940, III, 13) of true uric acid from other phosphotungstate reducing substances shows that 89—96% of the blood-uric acid in eclampsia is true uric acid. V. J. W.

Variations in concentration of certain electrolytes of blood serum during induced hyperpyrexia. W. D. Paul and C. R. Kemp (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 427—431).—Artificial hyperthermia up to 103·4—105·8° F. caused no changes in concn. of K, Na, Ca, or sugar in serum in 10 patients. V. J. W.

Spectrochemical determination of sodium in blood serum. L. T. Steadman (*J. Biol. Chem.*, 1941, **138**, 603—609).—A d.c. C arc is used with Cd as internal standard. A rotating sector gives spectrum lines of length proportional to the intensity of emission. Na can be determined in 0·5 ml. of blood without ashing, with a standard error of ±3%. R. L. E.

Plasma-phosphatase activity during embryonic and tumour growth. L. Weil (*J. Biol. Chem.*, 1941, **138**, 375—380).—Plasma-phosphatase is low in embryonic and young rats and in placental blood, but rises sharply at about 1 month old. It is unaffected by development and regression of tumours. R. L. E.

Cholesterolytic property of serum. G. Schönholzer (*Helv. med. Acta*, 1939—1940, **6**, 692—696).—Cholesterolytic property (tendency of serum to keep cholesterol in solution) decreases with age. A decrease was found in arteriosclerotics and in a case of xanthoma. 5 c.c. of chophytol (active principle of artichokes, *Cynara scolymus*, in cryst. form) were injected intravenously daily for 12 days. In 14 of 15 aged arteriosclerotics increase of cholesterolytic power of serum was observed after treatment. M. K.

Determination of blood-cholesterol. A. R. Rose, F. Schattner, and W. G. Exton (*Amer. J. clin. Path., Tech. Suppl.*, 1941, **5**, 19—23).—A colorimetric method for determining cholesterol is described in which the more stable and distinct Tschugaeff rose colour is used in place of the indefinite transient colour developed by the Liebermann–Burchard reaction. C. J. C. B.

Phospholipins (lecithin, kephalin, and sphingomyelin) of blood in pernicious anæmia and lipæmia. H. H. Williams, B. N. Erickson, S. S. Bernstein, and I. G. Macy (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 151—153).—Vals. obtained in 4 cases by methods already described (A., 1938, III, 368) are tabulated. V. J. W.

Relation between cerebroside and neutral fat contents of blood plasma, erythrocytes, and stroma. B. N. Erickson, H. J. Souders, M. L. Shepherd, D. M. Teague, and H. H. Williams (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 153—156).—By a modification of Kirk's method (A., 1938, III, 861) cerebroside in plasma was found to average 15 mg.-% and in red cells 47 mg.-%. In pernicious anæmia these vals. are increased, reaching 47 mg. and 131 mg. respectively, the latter decreasing in periods of remission. Vals. of cerebroside and neutral fat content are also tabulated for cases of diabetic lipæmia, polycythæmia, and Schüller–Christian diseases. V. J. W.

Endocrine control of [blood-]lipin metabolism of birds during pubescence and annual rest. I. L. Chaikoff, F. W. Lorenz, and C. Entenman (*Endocrinol.*, 1941, **28**, 597—602).—Blood-lipins increase abruptly at the time when the oviduct of the White Leghorn chick reaches a wt. of 15—18 g. They are not correlated with appearance of yolk in developing ova. When laying ceases blood-lipin vals. decrease to the level of immaturity. V. J. W.

Influence of increased environmental temperature on blood-sugar of dogs following administration of carbohydrates. M. A. Rafferty and P. L. MacLachlan (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 392—394).—Room temp. of 100—104° F. with humidity of 77·5% for 90 min. had no effect on blood-sugar. V. J. W.

Action of vagus [and drugs] on intermediary carbohydrate metabolism [blood-sugar and -lactic acid]. I, II. M. Miura (*Tohoku J. exp. Med.*, 1940, **39**, 278—288, 289—318).—I. The hyperlactacidæmia after intravenous injection of Na lactate into rabbits is more marked and considerably prolonged after double vagotomy.

II. Intravenous injection of pilocarpine (3 mg. per kg.

body-wt.) increases the lactic acid content of arterial, hepatic, and portal vein blood; this effect is potentiated by double vagotomy. Injection of atropine (0·5 mg. per kg. body-wt.) increases the sugar content in hepatic vein and diminishes it in portal vein and arterial blood; this effect is more marked after vagotomy. Injections of adrenaline (0·5 mg. per kg.) or of ergotamine (1·0 mg. per kg.) increase the sugar and lactic acid contents of arterial, portal, and hepatic vein blood; this is more marked after vagotomy. A. S.

[Blood-sugar :] effect of electrically induced convulsions on vago-insulin and sympathetico-adrenal systems. M. Kessler and E. Gellhorn (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 64—66).—Convulsions in the rat cause max. hyperglycæmia when the vagi are cut below the diaphragm; a smaller hyperglycæmia in controls; no change in blood-sugar if the vagi have been cut and the adrenals removed; hypoglycæmia if the adrenals have been removed and the vagi are intact. V. J. W.

[Blood-sugar :] vago-insulin and sympathetico-adrenal systems. Reaction to cocaine and bulbocapnine. J. Feldman, R. Cortell, and E. Gellhorn (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 157—160).—Cocaine or bulbocapnine, injected subcutaneously, causes hyperglycæmia in normal rats and hypoglycæmia in adrenalectomised rats. If the vagi are cut below the diaphragm blood-sugar remains unaltered by either drug. V. J. W.

VI.—VASCULAR SYSTEM.

Right atrium preparation for studying pace-maker activity and amplitude of contraction. C. R. Spealman (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 189—190).—A method is described with diagram for perfusing the isolated right auricle of the guinea-pig. V. J. W.

Influence of local applications of potassium chloride on action current of mammalian heart. H. E. Hoff and L. H. Nahum (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 263—265).—If wick electrodes are placed on the dog's heart, and one is moistened with KCl in place of NaCl, no e.m.f. changes take place under this electrode and the e.c.g. becomes monophasic. V. J. W.

Electrocardiographic analysis by means of vector diagram and electrical field. R. Burger and F. Wuhrmann (*Schweiz. med. Wschr.*, 1941, **71**, 65—72).—The *QRS* complex in lead 1 and 2 of a patient with infarction of the anterior wall and of the apex region of the heart was W-shaped. The voltage in all peripheral leads was low. The vector diagram and the potential fields at different points of the *QRS* complex were constructed from the peripheral leads and the significance of vector diagrams is discussed. The vector diagram, constructed from the peripheral leads, is the projection of the resultants of p.d. in a frontal plane. A. S.

Effect of inhalation of high oxygen concentrations, with and without carbon dioxide, on electrocardiogram. A. L. Barach and A. Steiner (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 175—179).—Inhalation of pure O_2 increased the size of the *T* wave. With inhalation of 97% O_2 with 3% CO_2, the *T* wave was increased to a smaller degree. V. J. W.

Electrocardiogram in rheumatic fever. E. T. Heffer (*J. Pediat.*, 1941, **18**, 363—370).—Abnormalities were noted in 39% of e.c.g. of 181 patients with Sydenham's chorea in the absence of clinical or other laboratory findings of cardiac involvement. The more significant of these abnormalities was the prolongation of the *PR* and the *QT* intervals. C. J. C. B.

Electrocardiogram during electric shock treatment of mental disorders. S. Bellet, A. Kershbaum, and W. Furst (*Amer. J. Med. Sci.*, 1941, **201**, 167—177).—The alterations in e.c.g. during 100 convulsive treatments produced by electric shock were recorded in 50 patients; 65 were major, and 35 minor, seizures. The changes were of a minor degree in 98 treatments and included sinus arrhythmia, sinus bradycardia, sino-auricular heart block (35), auriculoventricular nodal rhythm (2), shifting pacemaker (2), auricular extrasystoles (1). Slight changes in *T* and *ST* in lead II were observed in 18 instances. In only 2 instances were more serious results encountered in unusual circumstances in older patients, ages 47 and 54 respectively. The 1st consisted of the production of inverted *T* waves in leads I and II following a delayed convulsive seizure and the 2nd of idioventricular rhythm with widest ventricular complexes and ventricular extrasystoles following electric shock after curare. C. J. C. B.

Electrocardiography in infancy. A. Nádrai (*Z. Kinderheilk.*, 1938—1939, **60**, 285—358; cf. A., 1941, III, 421).—250 e.c.g. of 100 newborn showed characteristic features. The changes were marked during the first days of life. Pulse frequency was 125 against 140 in the 2nd week, rate of impulse conduction was increased, *P* wave high and broad, *ST* interval depressed, and *QT* interval often prolonged. These signs suggest dilatation of auricles and ventricles which are attributed to mechanical factors during and after birth (disturbance of circulation, congestion, compression) and to a central nervous factor (stimulation of vegetative centres due to intracranial pressure). 270 e.c.g. of 50 healthy premature infants and 42 e.c.g. of 20 debilitated infants shortly before death showed similarity with the e.c.g. of newborn, with the exception of generally lower oscillations and a relative preponderance of negative waves. 430 e.c.g. of 250 healthy sucklings closely resembled the e.c.g. of adults except for right ventricular preponderance. M. K.

Symposium on angina pectoris—treatment, gastrointestinal disorders, and cardio-vascular factors. A. S. Hyman, J. B. Wolffe, W. M. Swalm, L. M. Morrison, and V. Digilio (*Rev. Gastroent.*, 1939, **6**, 35). W. J. G.

Effort syndrome. A. Abrahams (*Lancet*, 1941, **240**, 437—438).—The chief features of the effort syndrome are discussed. Physical treatment is generally of little val. and most cases are of psychological origin. C. A. K.

Limitations of myocardial recovery from fibrillation through countershock. P. Dow and C. J. Wiggers (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 355—357).—If the dog's ventricle is thrown into fibrillation by a short tetanising current, attempts to restore normal rhythm by a series of a.c. countershocks are successful only if the fibrillation has lasted less than about 1 min. V. J. W.

Anatomical basis for auricular fibrillation. W. C. Hutcheson (*Arch. Path.*, 1941, **31**, 369—372).—Auricular fibrillation in patients with chronic rheumatic heart disease may be due to substitution of auricular smooth muscle for striated cardiac muscle. (3 photomicrographs.) C. J. C. B.

Premonitory symptoms of acute coronary occlusion. A. M. Master, S. Dack, and H. L. Jaffe (*Ann. int. Med.*, 1941, **14**, 1155—1165).—Premonitory symptoms were present in 44% of 260 patients with acute coronary occlusion. Substernal or precordial pain occurred in 49 out of 115 patients. Other prodromata were fatigue, weakness, gastric distress, dyspnœa, palpitation, nervousness, and dizziness. The attack of occlusion was frequently preceded by a typical anginal syndrome or by sudden exacerbation of a previously existing anginal attack. The premonitory symptoms usually occurred 24 hr. before the occlusion; in some cases they began several weeks before. Their duration varied from a few min. to several hr. They occurred during rest in 28% of the cases, during mild or moderate activity or walking in 68%, and during strenuous effort in 3%. They were not associated with clinical evidence of myocardial infarction (*e.g.*, fever, tachycardia, fall in blood pressure, leucocytosis, changes in the e.c.g.). The premonitory symptoms are due to gradual occlusion of the coronary artery by progressive or recurrent intramural hæmorrhage or by primary thrombosis on an arteriosclerotic plaque. A. S.

Cardiac hypertrophy and coronary arteriosclerosis in hypertension. J. R. Kahn and E. S. Ingraham, jun. (*Arch. Path.*, 1941, **31**, 373—377).—A statistical analysis was made of 1000 cases of prolonged hypertension to determine whether coronary arteriosclerosis plays a part in the development of cardiac hypertrophy. Except for the group aged 25—34 years and that aged 75—84 there was in all age groups a significantly greater cardiac wt. in those with moderate and marked coronary sclerosis than in those with slight or no coronary sclerosis. C. J. C. B.

Clinical studies on patients with cardiac infarction. R. Levi (*Schweiz. med. Wschr.*, 1941, **71**, 54—65).—3 stages in the course of cardiac infarction are distinguished; there is increased sympathetic tone with angina pectoris, elevated arterial blood pressure, followed by increased parasympathetic tone and signs of incipient cardiac insufficiency with lowered blood pressure, sweating, nausea and vomiting, frequent

micturition and defæcation; lastly, there is marked cardiac insufficiency. The course of e.c.g. changes after infarction of the anterior or posterior wall of the heart is discussed in detail. W-form of the *QRS* complex in extremity and chest leads is diagnostically important. Body temp. and leucocyte count are usually normal after two weeks. Blood sedimentation rate reaches its max. between the 6th and 10th day; its return to normal takes many weeks. There was glycosuria in many cases and fasting blood-sugar levels up to 180 mg.-% were observed in non-diabetic patients. Weltmann's coagulation band was frequently shortened, especially in severe cases. There was frequently an increase in blood-non-protein-N. 59 out of 71 patients with cardiac infarction were males. 45 patients died (20 within the 1st week). Infarction took place in 31 cases in the region of the anterior ramus descendens, in 9 cases in the left circumflex, in 9 cases in the right circumflex rami, and in 6 patients in the region of the posterior ramus descendens. (Illustrated.) A. S.

Spontaneous rupture of posterior papillary muscle of heart. F. C. Lowry and C. G. Burn (*Arch. Path.*, 1941, **31**, 382—385).—The rupture of the papillary muscle followed infarction of the posterior myocardial wall. The rupture was probably the result of excessive strain caused by the hypertrophied myocardium and shortened chordæ tendineæ of the thickened mitral valve. C. J. C. B.

Cardiac disorders of menopause. E. May, H. Bloch-Michel, and A. Prin (*Ann. d'Endocrinol.*, 1939, **1**, 257—269).—9 cases are described with cardiac weakness in which the symptoms were aggravated by the menopause. The chief symptoms were vasomotor disturbances such as Raynaud's syndrome, hemiplegia, and convulsive crises. Arterial and venous pressure and blood vol. were little altered. The phenomena are ascribed to autonomic nervous disturbance. Prognosis is bad with rapid development of heart failure. Endocrine and cardio-tonic treatment had little effect. P. C. W.

Case of Pick's syndrome as basis for study of hypoproteinæmia. H. Stadler and D. Stinger (*J. Pediat.*, 1941, **18**, 84—94).—No protein was lost in the urine. The child retained N when the dietary protein was sufficiently high; although the protein loss through paracentesis was far less than the amounts administered in transfusions, all efforts to increase the level of plasma-albumin were unsuccessful. Other liver functions were normal as judged by functional tests. C. J. C. B.

Böttner's and Kaufmann's tests of cardiac function in children. K. Kummer (*Mschr. Kinderheilk.*, 1939, **77**, 203—214).—Kaufmann's and Böttner's diuresis tests (modifications of Volhard's water test, performed at rest and during physical exertion) carried out 88 times in 43 children with and without valvulary diseases proved of little val. M. K.

Gravimetric intestinal oncometry in dog. H. Lawson (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 5—8).—A loop, 6—10 cm. long, is isolated, leaving its blood supply intact, and a rod passing through its lumen is attached by threads to a spring lever. Changes in wt. of the loop are thus continuously recorded. A balloon can be placed in the lumen to record intestinal movements. V. J. W.

Effects of spinal anæsthesia on venous pressure in men. J. Adriani and E. A. Rovenstine (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 415—417).—Spinal anæsthesia high enough to cause intercostal paralysis reduces venous pressure by 25%. Below this level results are not const. V. J. W.

Vitamin-*P* and capillary fragility. H. G. Rapaport and S. Klein (*J. Pediat.*, 1941, **18**, 321—327).—Capillary fragility in 100 allergic children was studied by means of a positive pressure test; 49% had abnormal capillary fragility. 12 children with repeated abnormal capillary fragility tests were given vitamin-*P* and followed periodically for at least 6 months; capillary fragility became normal in all cases. C. J. C. B.

Gangrene as complication of scarlet fever [from panarteritis]. A. L. Hoyne and L. Smollar (*J. Pediat.*, 1941, **18**, 242—247).—Report of a case with panarteritis. C. J. C. B.

Maintenance of life during experimental occlusion of pulmonary artery followed by survival. J. H. Gibbon, jun., (*Surg. Gynec. Obst.*, 1939, **69**, 602—614).—A method is described by which life can be maintained in animals when the flow of blood through the heart and lungs is completely stopped by clamping the pulmonary artery. The method consists of the continuous withdrawal of blood from a peripheral vein, its oxygenation, and the continuous return of the oxygenated blood to the animal's arterial system through a peripheral artery. F. F. R.

Pulmonary embolism. W. N. Graves (*Surg. Gynec. Obst.*, 1940, **70**, 958—963).—A statistical review of the occurrence of pulmonary embolism in 105,284 patients. F. F. R.

Nervous factor in traumatic shock. V. Lorber, H. Kabat, and E. J. Welte (*Surg. Gynec. Obst.*, 1940, **71**, 469—477).—Shock was produced in the cat by traumatising a perfused hind limb separated completely from the general circulation and connected with the body by its nerves alone. This could be demonstrated under ether or chloralose anæsthesia. F. F. R.

Action of sex hormones on vasopressin sensitivity of vascular system. V. Dubrauszky and A. Blazsó (*Z. Geburtsh. Gynäkol.*, 1939, **119**, 188—195).—The blood-pressure reaction of decapitate ovariectomised rabbits, previously treated with various doses of follicle hormone (progynon B oleosum), progesterone, or gonadotrophic anterior pituitory hormone (luteoantin, lutokrescin), was tested after intravenous injection of vasopressin. Small doses of follicle hormone (1800 i.u.) increase, large doses (10,200—102,000 i.u.) diminish, the blood-pressure-raising action of vasopressin. Treatment with progesterone has no effect; gonadotrophic anterior pituitary hormone depresses the vasopressin action on blood pressure. A. S.

Rôle of gonadal and adrenal cortical hormones in production of œdema. G. W. Thorn and K. Emerson, jun. (*Ann. int. Med.*, 1940, **14**, 757—769).—Normal women, kept on a const. diet and fluid intake, frequently gain wt. in the pre-menstrual phase; urinary vol. and NaCl excretion diminished. Transient œdema in the pre-menstrual phase was observed in women suffering from chronic glomerular nephritis; urinary vol. increased, the œdema rapidly disappeared, and there was marked loss of wt. shortly after the onset of menstruation. These changes were not observed in ovariectomised women. Testosterone propionate treatment in castrated men produced striking retention of Na, Cl, and water, and gain in wt. Withdrawal of testosterone was followed within 48 hr. by an increase in urinary excretion of Na, Cl, and water and loss of wt. Deoxycorticosterone acetate (10—15 mg. per day) produced retention of Na and Cl in normal subjects and in patients suffering from Addison's disease. The average gain in wt. in normal subjects on a const. diet was 1·5 kg. after 4 days' treatment. A. S.

Effect of F. 933 and cocaine on hypertension produced in atropinised animals by acetylcholine. U. Lombroso (*Compt. rend. Soc. Biol.*, 1940, **133**, 551—553).—Large doses of F. 933 (10—15 mg. per kg. intravenously) in the atropinised dog reverse the hypertensive response to acetylcholine. Cocaine does not increase the hypotension produced by the combined injection of acetylcholine and F. 933. The results do not oppose the view that the hypertension is due to liberation of adrenaline. P. C. W.

Reduction in blood pressure of renal hypertensive dogs by hog renin. G. E. Wakerlin and C. A. Johnson (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 104—112).—Daily intramuscular injections of 1 c.c. per kg. of hog renin prepared by Grossmann's method (A., 1939, III, 152) lowered by about 50 mm. Hg the blood pressure of hypertensive dogs. No toxic results were produced, and injections of dog renin were ineffective. V. J. W.

Effect of angiotonin on gall-bladder and duodenum. S. P. Harrison and A. C. Ivy (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 112—114).—Angiotonin causes contraction of guinea-pig gall-bladder *in vitro*, and of the gall-bladder and duodenum of the dog, in doses of 0·26—0·64 mg. per kg. V. J. W.

Resting peripheral blood flow in hypertensive subjects. D. I. Abrahamson (*Proc. Soc. Exp. Biol. Med.*, 1940, **44**, 127—129).—Blood flow in the arm, in c.c. per min. per 100 c.c. arm vol., averaged 3·1 c.c. (1·4—4) in 28 hypertensive patients, and 1·8 c.c. (0·9—3·3) in 38 controls. V. J. W.

Assay of renin. J. W. Remington, W. D. Colling, H. W. Hays, and W. W. Swingle (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 470—473).—Blood-pressure peaks in response to small doses (0·1—0·2 mg. per kg.) give the most const. results in dogs. Tests can be repeated indefinitely on the same dog at 72-hr. intervals, and are not affected by nembutal anæsthesia.

With small doses results are not affected by starting pressure differences. V. J. W.

Antipressor effect of normal blood in experimental hypertension. G. Freeman (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 185—188).—Blood of normal dogs reduces the blood pressure of dogs made hypertensive by renal ischæmia. It has no effect on other normal dogs, and blood from hypertensive dogs does not produce the effect. V. J. W.

Effect of renin on cardiac output. E. Somkin (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 200—204).—Cardiac output per min. of dogs anæsthetised by morphine was not changed by either renin or tyramine. V. J. W.

Blood pressure in polycystic kidneys. Hollo and Kolbenheyer (*Klin. Woch.*, 1940, **19**, 302—303).—9 of 36 patients with polycystic kidneys showed hypertension. Ischæmia caused by pressure of the cysts is the probable cause. M. K.

VII.—RESPIRATION AND BLOOD GASES.

Malformations of lung. G. E. Gruenfeld and S. H. Gray (*Arch. Path.*, 1941, **31**, 392—407).—A general review. C. J. C. B.

Influence of cervico-thoracic ganglionectomy and cervical vagotomy on phagocytic cells in lungs of rabbits. I, II. S. Baba (*J. Orient. Med.*, 1939, **30**, 160—161, 166—167).—I. Intratracheal or intravenous injection of carmine or Chinese ink was made into rabbits 3 weeks after the operation. Phagocytosis of the foreign particles in the lung tissue on the sympathectomised side was markedly increased, except in animals injected with carmine intravenously. After unilateral vagotomy phagocytosis in the lung was markedly decreased, as was the case in rabbits which underwent the double operation.

II. Similar results were obtained 6 weeks after the operations, except that in animals which underwent both operations phagocytosis was greatly increased. M. K.

Anoxia and oxygen therapy in head injury. J. G. Schnedorf, R. A. Munslow, A. S. Crawford, and R. D. McClure (*Surg. Gynec. Obst.*, 1940, **70**, 628—631).—Mild to severe anoxæmia accompanied cerebral concussion with or without fractured skull in the dog. O_2 therapy restored the blood-O_2 saturation to normal and decreased hyperpyrexia. F. F. R.

Helium–oxygen inhalation. G. Delfs (*Arch. Dis. Child.*, 1941, **16**, 52—54).—A review. C. J. C. B.

Cardiac adaptations in acute progressive anoxia. C. J. Wiggers (*Ann. int. Med.*, 1941, **14**, 1237—1247).—Lightly anæsthetised dogs rebreathed air from a system from which CO_2 was absorbed. In a state of hypoxia (O_2 of inspired air lowered to 12%) heart rate accelerated, systolic and diastolic blood pressures rose; venous pressure was slightly diminished. These changes preceded respiratory alterations. Cardiac acceleration is due chiefly to progressive reduction in vagal tone; some increase in heart rate still occurs after double vagotomy. Limb and kidney vols. increase, that of the spleen diminishes; cerebral blood flow is augmented. During anoxia (O_2 in inspired air below 12%) acceleration of the heart reaches a max. Left ventricular and aortic pressure curves in vagotomised animals with diastolic aortic pressure and heart rate kept const. rise to a higher level though the initial tension of the ventricle does not increase. Cardiometer studies at 6% O_2 in N_2 in inspired air show an increase in diastolic size and stroke vol. in 1—2 min. If the anoxia is maintained at this level or intensified arterial pressures fall rapidly, pulse pressure is reduced, the ventricles dilate enormously, systolic discharges diminish, venous pressures rise. This circulatory crisis is essentially an acute congestive failure of the ventricles; there is no evidence of failure of the peripheral circulation. Slowing of the heart through central vagal action, disturbances of conduction and impulse initiation take place. Myocardial depression sets in when the increasing coronary flow due to dilatation of intramural branches cannot keep pace with the decreasing vol. of O_2 in the blood. A. S.

Respiration of porpoise, *Tursiops truncatus*. L. Irving, P. F. Scholander, and S. W. Grinnell (*J. Cell. Comp. Physiol.*, 1941, **17**, 145—168).—The resting porpoise breathes once per min., inhaling about 10 l. O_2 consumption is 1 l. per min. Tidal air is about 80% of lung vol. Alveolar air at expiration contains 8% of CO_2 and after inspiration 2%. Experimental submersion was not safe for more than 2 min., and in such a test the heart-rate slowed by 50%. V. J. W.

Respiration and diving of Florida manatee. P. F. Scholander and L. Irving (*J. Cell. Comp. Physiol.*, 1941, **17**, 169—191).—The resting manatee breathes 6—8 times per 10 min., tidal air being about half that of the porpoise, and about half of lung vol. O_2 consumption is about $\frac{1}{5}$ that of man or porpoise. CO_2 of alveolar air is 6—9%, and ventilation is only about doubled when 5% CO_2 is inhaled. During diving there is no increase in blood-lactic acid, but a sharp increase occurs in early recovery. O_2 stores are small for the size of the animal, but O_2 consumption is still smaller. V. J. W.

Irritation of respiratory tract and its reflex effect on heart. L. C. Reid and D. F. Brace (*Surg. Gynec. Obst.*, 1940, **70**, 157—162).—A variety of cardiac irregularities was noted electrocardiographically in patients under anæsthesia during the passage of an intratracheal tube. Under light anæsthesia reflex cardiac disturbances may result from stimulation of the respiratory tract and the passage of tubes is not without danger in lightly anæsthetised patients. F. F. R.

Blood-sugar, insulin, and dextrose tolerance in rat treated with carbon monoxide. E. Smith and K. E. Penrod (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 222—224).—In acute CO poisoning blood-sugar is raised in proportion to CO-hæmoglobin present. Insulin tolerance is not altered, but glucose tolerance is slightly decreased, in chronic poisoning, the fasting blood-sugar being slightly decreased. V. J. W.

Mercury valve for obtaining alveolar air samples. R. J. Main (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 207—209).—A gas chamber communicating with a nasal catheter is filled with Hg the level of which can be rapidly lowered by an electric contact. Air from the region of the uvula is thus obtained for analysis. V. J. W.

Influence of the gas mask on respiratory movements. K. Yuasa (*J. Orient. Med.*, 1939, **30**, 106—107).—Frequency of respiration was high in 20 healthy subjects wearing respirators and was more pronounced in the seated than in the recumbent position. The respiratory depth of the thorax increased in the recumbent posture, but was unchanged in the seated position. The respiration curve is irregular in the seated posture. Respiratory movements of the chest decreased, while abdominal respiration increased. Similar results were obtained during physical exertion in 4 subjects. Respiratory movements were recorded by the photogram and pneumogram. M. K.

Problem of blast injuries (*Proc. Roy. Soc. Med.*, 1941, **34**, 171—192).—S. Zuckerman: A blast wave is a single pulse of increased pressure followed by a phase of suction, resembling a single pulse of a large-amplitude sound wave. Animal experiments show that without causing external injury blast may produce hæmorrhagic lesions of internal organs, most conspicuously the lungs, but also of abdominal organs, the submucosa of the upper trachea, around the spinal roots especially in the thoracic region, and pial and ventricular hæmorrhages on and in the brain. Rupture of the ear-drums may occur. Pulmonary hæmorrhages take the form of superficial spots, patches of hæmorrhage, or hæmorrhage of the entire lung surface, according to the severity of the blast. These thoracic and abdominal lesions result from the impact of the pressure component of the blast wave on the chest wall, and not from suction acting through the upper respiratory passages. A very small % only of those injured are affected by blast as described. G. Hadfield: Lesions observed in human blast casualties resemble those described in animals. The hæmorrhages frequently are deep in the lung with few signs at the surface. The blood lies mainly in the alveoli and is derived from the alveolar capillary network; there is much generalised dilatation and congestion of the alveolar capillaries, with little blood in the airways. In fatal cases the damage varies widely, and is more marked the longer the survival period. The major clinical manifestations are due to capillary dilatation rather than to hæmorrhage. Following exposure to detonation lung hæmorrhage may continue for days, and treatment should be by immobilisation as after recent large hæmoptysis. W. J. G.

VIII.—MUSCLE.

Creatine-creatinine excretion in neuromuscular diseases treated with α-tocopherol and with testosterone. W. Fleischmann (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 94—97).—No change in creatine or creatinine excretion was caused in 2 cases of progressive muscular dystrophy and 1 of amyotonia congenita by 100—200 mg. daily of α-tocopherol or 25—50 mg. of testosterone propionate. V. J. W.

Vitamin-*E* in treatment of muscle disorders of infancy and childhood. S. Stone (*J. Pediat.*, 1941, **18**, 310—316).—Two cases of pseudo-hypertrophic muscular dystrophy and 2 of myotonia congenita showed improvement. C. J. C. B.

Microscopic lesions without functional impairment of striated muscles of suckling vitamin-*E*-low rats. I. R. Telford, G. A. Emerson, and H. M. Evans (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 135—136).—Daily administration to mothers of 6 mg. of α-tocopherol from the beginning of lactation caused typical lesions of muscular dystrophy in the young with no functional impairment. Doses of 10 mg. prevented these lesions. V. J. W.

IX.—NERVOUS SYSTEM.

Deplanted and deranged nerve centres in amphibians. P. Weiss (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 14—15).—Fragments of larval or adult spinal cord, of anterior or posterior horns, grafted into the dorsal fin, and provided with grafted limbs as effectors, show periodic outbreaks of spontaneous activity and reflex responses. Similar results were obtained with fragments of medulla. Activity was increased by exercise of the host's body (cf. A., 1940, III, 843). V. J. W.

Degenerate versus multipolar neurons in sensory ganglia. R. C. Truex (*Amer. J. Path.*, 1941, **17**, 211—217).—Serial preps. of the spinal ganglia of the chicken, rat, cat, monkey, and man did not show multipolar neurons. Degenerate sensory neurons often simulate multipolar cells. These two cell types may be distinguished from each other by the length, branching, varicosities, and staining of their respective processes. Osmic acid and Nissl techniques are inadequate methods with which to classify nerve-cell types, owing to structural variations of sensory neurons in senile and pathologic ganglia. (20 photomicrographs.) C. J. C. B.

Neural maturation of infant as exemplified in righting reflex or rolling from dorsal to prone position. M. B. McGraw (*J. Pediat.*, 1941, **18**, 385—394).—Four phases are described. (1) The newborn phase; the newborn infant is unable to turn from a supine to a prone position, but may roll from a dorsal to a lateral position. (2) The spinal extensor phase develops in the course of a few weeks; the baby turns the face laterally and extends the neck dorsally; this raises the shoulder on the side towards which the occiput is turned. Gradually the extension expands caudad until it embraces the entire vertebral column, resulting in a dorsal curvature of the spine, as the foot on the occiput side pushes against the surface and lifts the pelvis. As this phase develops, the extremities, both upper and lower, on the occiput side are lifted and carried over towards the chin side. The shoulder and hip are raised until the infant is lying practically in a lateral position. Ordinarily the rolling movement is initiated in the shoulder girdle. At such times the infant may flex his neck ventrally in an effort to complete the roll. (3) The automatic rolling phase: when the child is able to complete the roll but has no need for the movement to carry on some other function, such as assuming a sitting position, he has reached this phase. (4) The deliberate phase: the child uses the act of rolling over to complete some deliberate performance. C. J. C. B.

Circling in guinea-pigs with lesions in brain-stem. A. R. Buchanan (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 389—391; cf. A., 1941, III, 181).—Experimental lesions in Deiters' and descending vestibular nuclei produced circling movements to the side of the lesion; those in the medial vestibular nucleus, medial reticular formation, and medial longitudinal fasciculus caused circling towards the opposite side. V. J. W.

Labyrinthine disregard after removal of caudate. F. A. Mettler and C. C. Mettler (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 473—475).—Destruction of the labyrinth in cats causes impairment of movement with ataxia and coarse tremors. Removal of heads of both caudate nuclei abolishes these effects, and the animals resemble those with caudate nuclei removed but labyrinths intact. V. J. W.

Abolition of mating behaviour by hypothalamic lesions in guinea-pigs. J. M. Brookhart, F. L. Dey, and S. W. Ranson (*Endocrinol.*, 1941, **28**, 561—565).—Females with lesions in the anterior part of the hypothalamus (Dey *et al.* A., 1940, III, 809) had in many cases normal œstrous cycles but were not sexually receptive at any stage. Receptiveness could not be induced by ovarian or pituitary hormones, alone or in combination. V. J. W.

Gustatory afferent impulses. C. Pfaffmann (*J. Cell. Comp. Physiol.*, 1941, **17**, 243—258).—Single fibres of the chorda tympani and glossopharyngeal nerves were connected with an oscillograph. Test solutions were applied to the tongue of the cat. The apex and antero-lateral margins are most sensitive to NaCl, the base and postero-lateral margins to quinine, and all the tongue except the mid-dorsum responded to acid. 3 types of fibre were found, one that responds to acid only, one to both acid and NaCl, and one to both acid and quinine. Increased intensity of stimulation caused increased frequency of response up to a max. V. J. W.

Effects of body temperature and of pentobarbital on brain damage produced by insulin shock. D. B. Tyler (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 117—119).—In cats receiving 15—20 units of insulin per kg., incidence of permanent cerebral damage was greatly increased if the animals' temp. was maintained at 36—39° instead of being allowed to fall to 31—34°. Preliminary medication with 10 mg. of pentobarbital per kg. slightly reduced the incidence of damage. V. J. W.

Changes in cerebral blood flow and arterio-venous oxygen difference during insulin hypoglycæmia. H. E. Himwich, K. M. Bowman, C. Daly, J. F. Fazekas, J. Wortis, and W. Goldfarb (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 468—469).—Rate of blood flow in the internal jugular vein is usually decreased during hypoglycæmia in man, and the decrease in arterio-venous O_2 difference can therefore not be due to increased cerebral circulation. V. J. W.

Intracranial collections of iodised oil following lumbar myelography. L. H. Garland and E. J. Morrissey (*Surg. Gynec. Obst.*, 1940, **70**, 196—210).—Two thirds of a group of patients who had lipoidol injected into the lumbar theca showed collections of lipoidol intracranially after 1—14 years. Retention of the iodised oil did not give rise to symptoms. Droplets of oil tend to be fixed but collections of 2—5 c.c. of oil remain movable even after years. The latter were found particularly in the spinal theca. F. F. R.

Tryptophan in cerebrospinal fluid of patients with tuberculous meningitis. M. Jequier and J. L. Roten (*Schweiz. med. Wschr.*, 1941, **71**, 95—97).—15 c.c. of conc. HCl and 2—3 drops of 2% formaldehyde are added to 3 c.c of c.s.f.; after 5 min., 2 c.c. of 0·06% $NaNO_2$ are added; tryptophan is present if a violet ring forms. The reaction was positive in 78% out of 51 patients suffering from tuberculous meningitis; in these cases the diagnosis was already certain from other clinical and serological signs. It was also positive in other neurological diseases (*e.g.*, cerebral tumour, polyneuritis). A. S.

Use of egg-albumin as protective protein in spinal fluid Wassermann test. F. Boerner and M. Lukens (*Amer. J. clin. Path. Tech. Suppl.*, 1941, **5**, 71—74).—The amount of egg-albumin recommended is 0·1 c.c. of a 50% solution in 0·85% saline for the Boerner-Lukens and 0·2 c.c. for the Kolmer techniques. C. J. C. B.

Effects of magnesium on nervous system in relation to its concentration in serum. H. E. Hoff, P. R. Smith, and A. W. Winkler (*Amer. J. Physiol.*, 1940, **130**, 292—297).—Concns. of Mg at which neuromuscular transmission failed and concns. at which various reflexes disappeared were determined in the cat. The reflexes with slow frequencies of discharge disappear first, those with higher frequencies later. If the characteristic rates of discharge of the different reflexes are compared with the Mg concns. at which neuromuscular tetani of the same rate fail good correlation is disclosed. Thus twitch-like reflexes fail when twitches fail, slow tetanic reflexes fail with slow neuromuscular tetani, and rapid tetanic reflexes and rapid neuromuscular tetani disappear altogether when much higher levels are attained. Reflexes

fail because of neuromuscular block rather than from an action of Mg on the central nervous system. M. W. G.

Tissue specificity of brain and medullated nerves as shown by passive anaphylaxis in guinea-pigs. G. H. Bailey and R. E. Gardner (*J. Exp. Med.*, 1940, **72**, 499—510).—Anti-sera to both broth and bacteria are produced in rabbits by prolonged immunisation with sedimented, heat-killed vaccine of *Pasteurella boviseptica*, grown in broth prepared from rats' brain. Guinea-pigs showed passive sensitisation after intra-abdominal injection of these anti-sera, developing severe anaphylaxis, when injected intravenously with autoclaved extracts of brain or carcinoma 256. The brain antigen, which is present in the white matter of the central nervous system or the sciatic nerve, but is absent in fœtal rats and rabbits, is organ-sp. The amount of sp. brain antigen is dependent on the length of the gestation periods, the stage of development of the animal at birth, and the degree of myelination of the central nervous system. The anaphylactogen of brain broth is sol. in water, insol. in alcohol, thermostable in neutral or slightly acid medium, but thermolabile in alkali. A. C. F.

Availability of sodium pyruvate for human brain oxidations. W. Goldfarb and J. Wortis (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 121—123).—In 2 out of 14 trials patients in hypoglycæmic coma were slightly roused by 4—8 g. of Na pyruvate. In the other 12 no change was produced, this contrasting markedly with the effect of glucose (A., 1940, III, 843). V. J. W.

Convenient electroencephalographic electrode. C. W. Darrow (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 301—302).—The electrode consists of a metal ring through which a wisp of hair is passed and twisted up by a clip placed above the ring as a cross-piece. V. J. W.

Control of normal and "convulsive" brain potentials. R. W. Gerard and B. Libet (*Amer. J. Psychiat.*, 1940, **96**, 1125—1152).—The olfactory bulb of the isolated frog brain in Ringer's solution at room temp. shows a regular rhythm of 6 beats per sec. and 100 μv. amplitude. This rhythm can be greatly modified in frequency, regularity, amplitude, and wave-shape by changes in the medium surrounding the tissue. The potential of the isolated bulb is that of the individual neurone. The rhythm is controlled by (1) cell metabolism and (2) a trip mechanism. Increased metabolism results in increased frequency with const. or increased amplitude, but when the trip mechanism alters, frequency and amplitude vary inversely. Of the factors affecting (1) in the isolated frog brain, O_2 lack and narcotics abolish brain potentials, iodoacetate produces a feeble rapid rhythm, and nicotine (which blocks lactic acid oxidation) produces slow skew waves of great amplitude. Iodoacetate abolishes the nicotine waves. Trip mechanism control, presumably connected with the cell membrane, is affected by alterations in osmotic pressure, $Na^{\cdot}$, $K^{\cdot}$, $Ca^{\cdot\cdot}$, $Mg^{\cdot\cdot}$, and $H^{\cdot}$, also by stimulation of the olfactory nerves, direct faradisation of the bulb, or polarisation by a const. current. The rate and amplitude of the waves are affected by, in addition to (1) and (2), the degree of cell synchronisation. The latter is augmented by increased temp., $Ca^{\cdot\cdot}$, const. currents (external polarisation or injury potentials), by decreased $Na^{\cdot}$, $K^{\cdot}$, or inflow of nerve impulses, also by nicotine and caffeine. Caffeine produces large repeated waves which may travel along a hemisphere. They continue to spread when neural transmission is excluded by blocking the synapses with nicotine, and cross a complete transection of the hemisphere when the halves are in apposition. Also, a caffeinised brain can augment the activity of an untreated one in contact with it. Hence electrical potentials can spread through brain tissue independently of anatomical conducting pathways. Explanation of this involves postulation of maintained potential gradients in the brain. The existence of these in the frog brain has been established experimentally. G. D. G.

X.—SENSE ORGANS.

Effects of silver salts on eye. H. O. Calvery, H. D. Lightbody, and B. Rones (*Arch. Ophthal., N.Y.*, 1941, **25**, 839—847).—Solutions of Ag salts were instilled into the eyes of albino rabbits and the effects, immediate and remote, observed. In equiv. Ag concns. Ag NH_4 salts were more injurious than $AgNO_3$. W. T. A.

Practical applications of dynamic retinoscopy. J. I. Pascal (*Arch. Ophthal., N.Y.*, 1941, **25**, 859—862).—Uses of the retinoscope in estimating refraction are described. W. T. A.

Fifty years' experience in ocular motility. I. W. B. Lancaster (*Amer. J. Ophthal.*, 1941, **24**, 485—496).—A review of the anatomy and physiology of the extrinsic eye muscles and of eye movements. W. T. A.

Occlusion hypertropia. F. H. Verhoeff (*Arch. Ophthal., N.Y.*, 1941, **25**, 780—795).—This condition (upward deviation of a covered eye) is due to a congenital conjugate insufficiency which may be unilateral or bilateral and usually affects the superior oblique, sometimes the inferior rectus, or both muscles. It is usually associated with other ocular motor defects. It is important to allow for it in treating squint or heterophoria. W. T. A.

Preservation of convergence with paralysis of all lateral movements in a case of intramedullary tumour of the pons. W. S. Reese and J. C. Yaskin (*Amer. J. Ophthal.*, 1941, **24**, 544—549).—A case report. The syndrome is of val. in localising lesions to the pons. W. T. A.

Characteristics of sensitometric refraction. M. Luckiesh and F. K. Moss (*Arch. Ophthal., N.Y.*, 1941, **25**, 576—581).—Refraction in a typical emmetropic adult was studied in detail by the sensitometric method. The subject showed a myopia of 0·75 D for distant vision, as is normally found by this method. Results showed that during ordinary vision at distances of 6 m. and over distinct vision was obtained by negative relative accommodation; from 6 m. to 0·5 m. extra plus power was obtained partly by diminishing the negative relative accommodation and partly by convergence accommodation, from 0·5 m. to 0·2 m. by convergence accommodation only. W. T. A.

Significance of accomodotonia following cerebral trauma in pathogenesis of other ocular symptoms in post-traumatic encephalopathy. A. Franceschetti and V. Bischler (*Schweiz. med. Wschr.*, 1941, **71**, 433—436).—2 cases are reported; both had had cerebral trauma without loss of consciousness. The first showed unilateral accomodotonia (change in fixation from far to near objects taking 28—30 sec. and from near to far objects 48—50 sec.) with spasmodic myopia, concentric narrowing of the visual field, and decreased dark-adaptation of the same eye, all symptoms disappearing after 18 months. The other had attacks of complete amaurosis lasting several min. during the first few weeks after the accident, followed by difficulties of fixation and judging distances. 11 months after the trauma, bilateral accomodotonia was found with weakness of convergence (progressing later to complete paresis), relative arterial retinal hypotension, concentric narrowing of the visual field, decreased dark-adaptation, and absence of opto-kinetic nystagmus; later diplopia for far vision appeared with nearly complete disappearance of the amplitude of fusion. The range of accommodation was normal in both cases and there was no pupillotonia. It is thought that the accomodotonia is due to a supranuclear lesion near the oculomotor nuclei and that the disturbance of both dark-adaptation and visual field in cases of cerebral trauma are also due to lesions in the diencephalic–mesencephalic regions; the latter suggestion is partly based on E. Frey's finding of a dorsal hypothalamic root of the optic nerve which appears to play a rôle in the sympathetic innervation of the pupil and in the regulation of retinal function. H. L.

What subluxated lenses reveal about the mechanism of accommodation. W. H. Luedde (*Amer. J. Ophthal.*, 1941, **24**, 40—45).—In cases of congenital and traumatic subluxation of the lens the iridodenesis, present on looking at distant objects, ceases completely during active accommodation to recur in a smaller degree only when the max. accommodation had been reached, while other cases show, under the action of miotics, displacement of the subluxated lens towards the intake sector of the zonule and this effect is thought to be due to a concentric impact of the periphery of the vitreous against the zonule and posterior surface of the equatorial zone of the lens during ciliary contraction. From a consideration of such cases it is inferred that Helmholtz' hypothesis of relaxation of the zonule as the primary factor in accommodation can no longer be maintained. H. L.

Cataracts in *Amblystoma tigrinum* larvæ fed experimental diets. E. M. Patch (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 205—207).—Cortical cataract is produced by a diet of purified casein and by diets of the separate muscle-proteins. This cataract is rarely detectable in its early stages and ends with a marked final shrinkage. Addition of cystine to the diet prevents cataract formation. Another type of cataract, characterised by early zoning and large fluid content at maturity, was caused by diets with a high hæmoglobin content. Even addition of cystine, glutamic acid, and glycine does not completely prevent the formation of these cataracts. A. GL.

Secondary glaucoma due to the lens. P. Heath (*Arch. Ophthal., N.Y.*, 1941, **25**, 424—437).—Classification of types of glaucoma secondary to abnormalities of the lens. A. GL.

Genetic linkage of macula with both iris and ocular pigment in man. A. Vogt (*Schweiz. med. Wschr.*, 1941, **71**, 432—433).—Examination with red-free d.c. arc light shows that total albinism, albinism of the posterior part of the ocular bulbus ("albinism solum bulbi"), and aniridia are always associated with absence of the macula as a histologically differentiated area. Whereas total albinism is transmitted recessively, bulbar albinism follows sex-linked recessive inheritance (males only affected); aniridia is irregularly dominant. The pedigree of a family affected with aniridia is given and a case of this family reported in which absence of the macula was also proved histologically. It is suggested that the genes for macula and iris may be situated in neighbouring chromomeres. H. L.

Size and location of blindspot of Mariotte as computed from one hundred angioscotometric records. C. R. Hopkins (*Arch. Ophthal., N.Y.*, 1941, **25**, 811—813).—Detailed measurements are given. W. T. A.

Drusen of the optic papilla. B. Samuels (*Arch. Ophthal., N.Y.*, 1941, **25**, 412—421).—Microscopic study of 20 eyes with drusen of the papilla. A. GL.

Treatment of angiomatosis retinæ. H. Kaye (*Arch. Ophthal., N.Y.*, 1941, **25**, 443—444). A. GL.

Correlation biophotometer test results with vitamin-*A* content of human blood. H. L. Caveness, G. H. Satterfield, and W. J. Dann (*Arch. Ophthal., N.Y.*, 1941, **25**, 827—832).—Determinations were made of the content of vitamin-*A* and carotene in the blood of 71 healthy persons, while the dark-adaptation of each was tested with a biophotometer. In 9 cases blood determinations and eye tests were made both before and after a 5-day period, during which the subjects received a daily supplement of 25,000 i.u. of -*A*. In only 3 of a total of 80 cases did the correlation coeff. between -*A* in the blood and the readings obtained for light- and dark-adapted visual thresholds significantly differ from zero. This is so low that it is impossible to predict the -*A* content of the blood from the dark-adaptation data or vice versa. It is concluded therefore that the biophotometer is unlikely to be a suitable instrument for measuring the degree of avitaminosis-*A* of human subjects. The mean and standard deviation vals. per 100 c.c. of plasma were: carotene 138 ± 62 μg., -*A* 263 ± 96 U.S.P. units, and total biological activity 493 ± 200 U.S.P. units. D. M. S.

Dark adaptometer readings of subjects on diet deficient in vitamin-*A*. W. J. Dann and M. E. Yarbrough (*Arch. Ophthal., N.Y.*, 1941, **25**, 833—838).—Two subjects were kept for 35 days on a diet estimated to contain less than 200 U.S.P. units of vitamin-*A* per day, following a preliminary period on a diet rich in -*A*. Their visual thresholds were measured at intervals by the adaptometer of Hecht and Schlaer, and on each occasion determinations of the -*A* and carotene content of samples of fasting blood were made. Neither subject showed a significant impairment of dark adaptation during the period of experimental deficiency, nor was there any fall in the blood vals. of -*A* or carotene. One subject, however, showed a rise in blood vals. after returning to a normal diet. These findings are discussed in relation to other work on experimental human -*A*-deficiency, and the need for re-defining the criteria of deficiency is stressed. The adaptometer is not considered a sufficiently sensitive instrument for detecting mild states of avitaminosis-*A*. D. M. S.

Termination of optic fibres in lateral geniculate body of monkey. P. Glees and W. E. LeG. Clark (*J. Anat.*, 1941, **75**, 295—307).—In 5 monkeys one optic nerve was sectioned and the relation of the degenerated optic fibres to cells in the lateral geniculate body studied. Each main optic fibre commonly terminates in a spray of 5—6 branches and is thus related to 5—6 geniculate cells. Crossed optic fibres end in laminæ 1, 4, and 6 of the lateral geniculate body, whilst uncrossed fibres end in laminæ 2, 3, and 5. A. GL.

Regulatory mechanisms of ear. E. Lüscher (*Schweiz. med. Wschr.*, 1941, **71**, 430—432).—The following mechanisms serve to protect the ear against noises of great intensity. (1) Reflex contraction of the stapedius muscle, occurring already (as conditioned reflex) on expectation of sound perception and increasing with increasing sound intensity; the contraction never lasts longer than 60—70 sec. but the muscle may contract again after an interval of some min. (2) Decrease of irritability of the inner ear ("aural fatigue"), setting in shortly after disappearance of the stapedius reflex. (3) Mechanical interruption of sound conduction by change of the vibrations of the shapes (v. Bekesy). The first reflex protects the ear against sudden increases in sound intensity whilst the second mechanism serves to adapt the ear to noises of long duration; the third phenomenon comes into play only when sounds of very high amplitude fall on the ear. H. L.

Sense of hearing in fishes. M. Graham (*Nature*, 1941, **147**, 779).—The hearing of a bicycle bell in fishes, as described by Williams (cf. A., 1941, III, 439), was due to conditioning. The degree of hearing varies from species to species, the acoustic region of the brain showing varying degrees of development even within one family; the structure of the inner ear is simple in most fishes. H. L.

Sense of smell in forensic medicine. F. Schwarz (*Schweiz. med. Wschr.*, 1941, **71**, 428—430).—Criteria are given for the post-mortem assessment of the olfactory sense of persons who may have died from an odorous poison. Poisoning with such a substance may frequently be proved by the odour of the heart-blood and cardiac puncture should therefore be performed in such cases; the cause of death could sometimes also be established by the particular odour of organs when their chemical analysis had been inconclusive. H. L.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

History of endocrinology. A. P. Cawadias (*Proc. Roy. Soc. Med.*, 1941, **34**, 303—308). W. J. G.

Comparison of body, adrenal, thyroid, and pituitary weights of emotional and non-emotional rats. E. H. Yeakel and R. P. Rhoades (*Endocrinol.*, 1941, **28**, 337—340).—Rats of an "emotional" strain (which defæcate promptly when placed in unfamiliar surroundings) have heavier thyroids in both sexes. Males have heavier adrenals, and females have heavier pituitaries. V. J. W.

***In vitro* maintenance of mammalian endocrine organs.** I. Levenstein, A. S. Gordon, and H. A. Charipper (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 184—187).—Tissue cultures by Parker's method (fluid medium and daily introduction of O_2–CO_2 mixture) were maintained for 4—5 days in the case of thyroid, testis, and anterior pituitary of guinea-pigs and rabbits. Ovary was uncertain and adrenal cortex and medulla all failed. V. J. W.

Effect of thyroidectomy on sexual behaviour of the bull. W. E. Petersen, A. Spielman, B. S. Pomeroy, and W. L. Boyd (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 16—17).—By 60 days after thyroidectomy mating reactions towards œstrous cows disappeared. They were restored in 3 days by administration of 25 g. of dried thyroid, or in 12 hr. by 5 g. of dinitrophenol, or by 300 mg. of testosterone propionate given over 13 days. Benzedrine sulphate was ineffective. Spermatozoa were normal throughout. V. J. W.

Iodine and cholesterol metabolism in myxœdema. A. M. Greene (*Arch. intern. Med.*, 1941, **67**, 114—128).—In 9 cases of primary myxœdema the blood-cholesterol was raised, and returned to normal after treatment with thyroid extract. The blood-I was low (both inorg. and org.) and tended to vary inversely with the cholesterol level. C. A. K.

Circumscribed myxœdema. H. J. Schwartz and R. F. Maddren (*Arch. Dermat. Syphilol.*, 1941, **43**, 375—380).—Reports of 2 cases. C. J. C. B.

Increased susceptibility to chloroform poisoning in rat produced by thyroxine. M. A. McIver (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 201—206).—Daily injection of 0·1—0·2 mg. of thyroxine for 7—20 days increased mortality and diminished survival time following injection of 0·8—1·5 c.c. of $CHCl_3$ per kg. V. J. W.

Variations in alkali reserve of plasma and excretion of total titratable urinary acid in hyperthyroidism. W. Bartlett, jun. (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 196—200).—Recovery from hyperthyroidism is accompanied by a rise in CO_2-combining power of the plasma, and a decrease of 25—50% in titratable urinary acid. V. J. W.

Resting blood flow in extremities in hyperthyroid subjects. D. I. Abramson and S. M. Fierst (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 39—41).—Rate of blood flow in forearm, determined by venous occlusion plethysmograph method, is increased in hyperthyroid subjects. V. J. W.

Exogenous tumours of thyroid gland. C. W. Mayo and C. O. Schlicke (*Amer. J. Path.*, 1941, **17**, 283—288).—19 cases in which the thyroid gland was involved by a malignant tumour that arose elsewhere in the body are described. Metastatic tumours occurred more commonly in the adenomatous thyroid gland than in the normal thyroid gland. C. J. C. B.

Insulin treatment of neuralgic pains. B. Huschke (*Klin. Woch.*, 1940, **19**, 328).—Non-diabetic as well as diabetic neuralgia disappeared after 1—3 injections of 6—8 units of insulin. M. K.

Crystalline insulin of low zinc content. M. Sahyun (*J. Biol. Chem.*, 1941, **138**, 487—490).—The prep. of cryst. insulin containing 0·15% Zn, 0·0001% Co, 0·0004% Ni, and 0·001% Cd is described. The prep. had 22 i.u. per mg. A. L.

Clinical experiments with mixtures of standard and protamine-zinc-insulin. H. Ulrich (*Ann. int. Med.*, 1941, **14**, 1166—1179).—A mixture of 3 parts of standard insulin and 2 parts of protamine-Zn-insulin was successfully used. Predictability of the effect on blood-sugar was as good as with separate injections of the two insulins. The effect begins more quickly than with protamine-Zn-insulin alone and lasts longer than after administration of standard insulin. It is recommended in patients who require additional standard insulin during protamine-Zn-insulin treatment and in cases where the latter alone does not prevent marked post-prandial hyperglycæmia. A. S.

Time-activity curves of protamine-zinc-insulin. H. E. Martin and P. O. Greeley (*Arch. intern. Med.*, 1941, **67**, 194—206).—The activity of protamine-Zn-insulin was measured in diabetic dogs and patients by measuring the amount of glucose required intravenously per hr. to keep the blood-sugar const. These time-activity curves show that protamine-Zn-insulin is slow in onset with a delayed peak of activity and has a prolonged action. C. A. K.

Subcutaneous administration of insulin by pellets. W. C. Cutting, M. C. Morton, and R. B. Cohn (*Endocrinol.*, 1941, **28**, 679—680).—Pellets of cholesterol and 200 units of insulin, implanted in depancreatised dogs, controlled glycosuria for as long as 13 days, but in other cases there was severe hypoglycæmia which caused death in 3 out of 6 animals. V. J. W.

Hypertrophy and hyperplasia of islets of Langerhans of fœtus and newborn infant. E. L. Potter, H. P. G. Seckel, and W. A. Stryker (*Arch. Path.*, 1941, **31**, 467—482.)—From the study of 14 cases and the literature it is concluded that hyperplasia and hypertrophy of the islets of Langerhans of the pancreas of the fœtus or the newborn infant may be found in association with maternal diabetes or may be present although the mother is non-diabetic. The condition is occasionally found in infants suffering from erythroblastosis. In most cases there is no correlation between the increase of islet tissue and the severity of the diabetes, the state of control, or the change in sugar tolerance of the mother during pregnancy. There is also little correlation between the amount of islet tissue found at autopsy and the blood-sugar levels determined before death in those infants who succumb during the neonatal period. (5 photomicrographs.) C. J. C. B.

Effects of experimental chronic hyperparathyroidism on kidney of dog. P. R. Leberman (*Surg. Gynec. Obst.*, 1940, **70**, 925—934).—Dogs injected with parathormone develop marked elevation of the serum-Ca. No bone changes were demonstrable but vesical calculus developed in 10% of the dogs. At autopsy omental and gastric hæmorrhage, visceral engorgement, and marked renal damage were noted. Almost all the dogs showed intratubular deposits of Ca microscopically. F. F. R.

Two new signs in tetany. P. Sainton (*Ann. d'Endocrinol.*, 1939, **1**, 294—296).—Accentuated postural reflex of the leg (increased muscular tone in response to change in position of movable articulation) and disturbance of voluntary muscular contraction shown by inability to shut mouth for some time after yawning are described in cases of parathyroid tetany. P. C. W.

Psychosis in hypoparathyroidism. J. A. Greene and L. W. Swanson (*Ann. int. Med.*, 1941, **14**, 1233—1236).—5 out of 18 patients suffering from hypoparathyroidism developed a psychosis of the toxic delirium type in the first few months. Delusions and hallucinations were marked. Sexual hallucinations were present in 2 patients. Psychic disturbances may be the only manifestation of parathyroid insufficiency. The psychosis persists for some weeks after commencement of treatment. The prognosis is good. A. S.

Idiopathic hypoparathyroidism. K. Emerson, jun., F. B. Walsh, and J. E. Howard (*Ann. int. Med.*, 1941, **14**, 1256—1270).—2 cases of idiopathic parathyroid deficiency are reported. In a boy of 15 the bones were of far greater density than normal. The middle-aged second patient showed greatly decreased bone density. The boy showed slight lens changes; the elderly patient developed cataracts. The sensitivity to parathormone was normal in both cases. A. S.

Determination of adrenaline in blood. W. R. Bloor and S. S. Bullen (*J. Biol. Chem.*, 1941, **138**, 727—739).—A modification of the Whitehorn (A., 1935, 642) and Shaw (A., 1938, III, 162) method using a photo-electric colorimeter is described. Recovery from blood is as complete as from blood extracts. Other substances in blood reacting similarly to adrenaline but stable to alkali are taken into account. The adrenaline content of venous blood of man and dog is less than 0·001 p.p.m. E. M. W.

Rôle of liver in depression of plasma-potassium level by adrenaline. G. Brewer (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 266—267).—During infusion of 1 : 75,000 adrenaline in cats for 45 min. at 1 ml. per min., the K concn. of portal blood is greater than that of hepatic vein blood. V. J. W.

Adrenaline output from adrenal glands in experimental hyperthyroidism. J. M. Rogoff and R. Cortell (*J. Lab. clin. Med.*, 1941, **26**, 981—987).—Experimental hyperthyroidism was produced in dogs by feeding desiccated thyroid for periods of 3 weeks to 3 months. At the end of these periods the animals were sacrificed for determination of the rate of adrenaline liberation from the adrenal glands; this proved to be within normal limits. C. J. C. B.

Effectiveness of priming doses of deoxycorticosterone acetate in protecting adrenalectomised dog against water intoxication. W. W. Swingle, J. W. Remington, H. W. Hays, and W. D. Collings (*Endocrinol.*, 1941, **28**, 531—534).—After adrenalectomy, dogs go readily into convulsions on administration of large quantities of water by mouth (70—150 c.c. per kg.). Administration of cortical extract, or of 3 doses of 5 mg. of deoxycorticosterone acetate in oil, prevents these symptoms, which appear to be due to impaired renal output of water. V. J. W.

Effect of deoxycorticosterone acetate on early pregnancy. H. O. Burdick and E. J. Konanz (*Endocrinol.*, 1941, **25**, 555—560).—2 mg. daily, begun on the day of mating, prevented embryo implantation in mice. The same dose, begun a day later, allowed normal implantation and development, but as soon as it was discontinued death of embryo occurred. V. J. W.

Effect of deoxycorticosterone and testosterone on water and chloride metabolism. H. Selye and L. Bassett (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 272—277).—In the rat, deoxycorticosterone acetate causes diuresis and increased Cl′ excretion, but not increased urinary Cl′ concn. Blood-Cl′ is decreased. In the hypophysectomised rat it causes still greater diuresis but does not affect blood-Cl′. Like testosterone it causes renal hypertrophy, but testosterone causes no diuresis. V. J. W.

Curative effect of pantothenic acid on adrenal necrosis. R. C. Mills, J. H. Shaw, C. A. Elvehjem, and P. H. Phillips (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 482—484).—Young rats on a diet containing thiamin, vitamin-B_6, riboflavin, and nicotinic acid developed adrenal necrosis which was completely prevented by 25 mg. daily of Ca pantothenate. The condition was aggravated by increased choline. V. J. W.

Carbohydrate stores in adrenalectomised rats given various levels of sodium chloride. E. Anderson, V. Herring, and M. Joseph (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 488—493).—Daily administration of 650—940 mg. of NaCl causes adrenalectomised rats to store dietary glucose as well as controls. Dosage outside these limits impairs storage faculty. V. J. W.

Androgenic assay of human fœtal adrenal. W. H. Carnes (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 502—505).—No androgenic hormone could be found in acetone–ether extracts applied to the chick comb. V. J. W.

Sodium and chloride balance in cats as affected by diabetes insipidus, adrenal insufficiency, and pitressin. C. A. Winter, W. R. Ingram, E. G. Gross, and D. G. Sattler (*Endocrinol.*, 1941, **28**, 535—544).—Interruption of the supraoptico-hypophyseal tracts causes polyuria, and the sudden increase in urine vol. causes a transient increase in NaCl output. Injection of pitressin causes a strongly negative $Na^{\cdot}$ and Cl' balance, less in diabetes insipidus than in normals, though urine vol. is more affected in the latter. In adrenalectomised cats there is a lowering of serum-NaCl concn., but in adrenalectomised polyuric cats serum-NaCl concn. is not altered owing to the fluid loss. V. J. W.

Vitamin-*B* complex and adrenalectomy. W. G. Clark (*Endocrinol.*, 1941, **28**, 545—554).—No change was brought about in survival time or health of adrenalectomised rats by large doses of thiamin or its pyrophosphate, by riboflavin or its Na phosphate ester, by Na nicotinate, pyridoxine, a grass concentrate rich in factor *W* and vitamin-B_6, or a liver concentrate rich in nicotinic acid, riboflavin, pantothenic acid, and filtrate fraction. V. J. W.

Effect of adrenalectomy on intestinal absorption involving osmotic work in rats. L. Stein and E. Wertheimer (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 172—174).—In adrenalectomised rats, maintained on NaCl, absorption of NaCl from the small intestine is much less than in normal rats, and does not occur against the concn. gradient. Injection of 1 mg. of deoxycorticosterone causes a return to normal. V. J. W.

Biological assay of adrenal cortical hormone by its effect on potassium metabolism of rats. G. B. West (*Quart. J. Pharm.*, 1941, **14**, 26—39).—Rats are fed on a diet (dextrin, caseinogen, yeast, K-free salt mixture) of low K content (0·178% of dry diet) and the urinary excretion of K is measured before and after administration of the cortical extract to be tested. The log of dose–response curve is a straight line. A "cross-over" test could possibly be advantageously employed. The use of deoxycorticosterone acetate as a standard is suggested, whilst the applicability of the cobaltinitrite method for determining K to materials containing 0·2—0·5 mg. of K is made possible by modifications in the Jacobs–Hoffman method (A., 1932, 102). F. O. H.

Thymus and lymph nodes following adrenalectomy and maintenance with sodium chloride in rat. W. O. Reinhardt and R. O. Holmes (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 267—270).—In rats adrenalectomised at 60 days and maintained for 45 days on NaCl, the thymus is heavier than in controls. The somatic lymphatic glands are more increased than the thymus, but the mesenteric glands are only slightly affected. V. J. W.

Involution of thymus during pregnancy in young mice. E. C. Persike, jun. (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 315—317).—In mice mated as soon as they were sexually mature, pregnancy caused a decrease in thymus wt. of 45—80% as compared with non-pregnant litter-mate controls. V. J. W.

Thymus of rat and sex hormones. M. A. Ross and V. Korenchevsky (*J. Path. Bact.*, 1941, **52**, 349—360).—In rats after gonadectomy the thymus becomes larger, owing to delayed involution and hyperplasia of thymic tissue (shown especially by greater development of the cortex as compared with the medulla). Androgens and œstrogens decrease the size of the thymus, in proportion to strength of hormone and size of dose. Œstrogens also increase the no. of plasma cells in the thymic tissue, and cause sp. hyperplasia of the epithelial cystic structures. Simultaneous injections of androgens and œstrogens produce changes typical for each hormone separately, but hyperæmia, severe atrophic changes, and the development of inter- and intra-lobular connective tissue are more pronounced, especially with large doses. Simultaneous injections of androgens and œstrogens do not prevent the appearance of numerous hyperplastic epithelial structures in the thymus. The histological similarity of some epithelial structures in thymomas and in the thymus of rats treated with œstrogens suggests an œstrogenic hypersecretion as a possible factor in the production of thymomas. (10 photomicrographs.) C. J. C. B.

Corticotropic, thyrotropic, and parathyrotropic factors. J. B. Collip (*J. Amer. Med. Assoc.*, 1940, **115**, 2073—2079).—A review. C. A. K.

Anterior pituitary and intermediate metabolism. D. L. Thomson (*J. Amer. Med. Assoc.*, 1940, **115**, 2169—2174).—A review. C. A. K.

Lactogenic and mammogenic hormones. O. Riddle (*J. Amer. Med. Assoc.*, 1940, **115**, 2276—2281).—A review. C. A. K.

Anterior pituitary and other endocrine glands. P. E. Smith (*J. Amer. Med. Assoc.*, 1940, **115**, 1991—1995).—A review. C. A. K.

Electrical conveyance of melanophore hormone. J. C. Mussio Fournier, O. Conti, and J. C. Laborde (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 493—495).—The hormone moves in solution towards the cathode. If the anode is placed on a frog through which 1 ma. is passed for 15 min. a corresponding dark patch is produced lasting for several hr. V. J. W.

Effects of syngenesiotransplants and of extracts of the anterior lobe of bovine hypophysis on age changes in long bones and joints of mice. M. Silberberg and R. Silberberg (*Amer. J. Path.*, 1941, **17**, 189—210).—Anterior hypophyseal hormone exerts in mice primary effects of a transitory nature on the growth of the epiphyseal cartilage and permanent effects on cartilage and bone. Following syngenesiotransplants the proliferation of the epiphyseal cartilage is at first inhibited, followed by a prolongation of the period during which growth takes place. Intraperitoneally injected, bovine anterior pituitary extract first causes a stimulation of proliferation of the epiphyseal cartilage, followed by a sharp decline and by diminution in the duration of the growth period. The later effect of both syngenesiotransplants and bovine anterior hypophyseal extract is an acceleration of skeletal ageing, leading to accelerated epiphyseo-diaphyseal union, premature absorption of the bony tissue of the shaft of the long bones, and increase in incidence and degree of arthropathic lesions. (10 photomicrographs.) C. J. C. B.

Antagonism by pituitary extract in absence of thyroid. G. K. Smelser and L. Levin (*Endocrinol.*, 1941, **28**, 233—236).—Gonadotrophic substances are antagonised by pituitary extracts slightly more when these are given subcutaneously than when given intraperitoneally, and this antagonism is not affected by previous thyroidectomy. Both these results are inconsistent with the views of Tolksdorf and Jensen (A., 1940, III, 402). V. J. W.

Metabolism of dogs with permanent diabetes produced by anterior pituitary extract. F. C. Dohan, A. H. Chambers, and C. A. Fish (*Endocrinol.*, 1941, **28**, 566—579).—In these dogs (cf. A., 1941, III, 439) severity of diabetes is not correlated with blood-glucose concn. Concn. of serum-fatty acids is increased, and when persistent is accompanied by acetonuria. Feeding with meat caused excretion of more glucose and N than was fed, and more ketonuria than feeding with fat. O_2 consumption was raised in diabetes, and R.Q. was 0·68 instead of 0·73. V. J. W.

Effects of hypophysectomy and replacement therapy on thyroid and adrenals of male ground squirrel. M. Zalesky, L. J. Wells, M. D. Overholser, and E. T. Gomez (*Endocrinol.*, 1941, **28**, 521—530).—Hypophysectomy abolishes the annual summer activity of the thyroid and causes atrophy of the adrenals, especially of the cortex. Antuitrin-*S*, prospermin (Squibb), and gonadin (pregnant mare serum) prevented the

adrenal atrophy, but only gonadin had any stimulating effect on the thyroid. Testosterone was ineffective. V. J. W.

Influence of anterior pituitary extracts on rate of oxidation and reduction of glutathione in tissues. A. H. Ennor and C. M. Anderson (*Austral. J. Exp. Biol.*, 1941, **19**, 69—71).—Oxidised glutathione is present in the livers of normal and adrenalectomised rabbits treated with anterior pituitary extracts. The rates of reduction of the oxidised form in the livers of normal or adrenalectomised rabbits and of rabbits receiving anterior pituitary extract or diphtheria toxin show no significant difference. F. O. H.

Seasonal changes of gonadotropic potency of pituitary glands in fishes. N. L. Gerbilski (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **28**, 571—573).—Pituitary glands of bream lose their gonadotrophic potency after spawning, but the effect of autumn glands does not differ from that of glands collected during the period of max. secretory activity. In the pike-perch, the glands collected in September showed a far lower activity, indicating that accumulation of gonadotropic hormone is connected with transition of the organism from summer to winter, and lowering of metabolic processes. M. K.

Anti-gonadotrophic substances in man following treatment with pregnant mare serum. J. W. Jailer and J. H. Leathem (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 506—508).—Three women, who received total dosages of 4800—8900 r.u. of "gonadin" during 4—12 months, developed anti-bodies causing 1 c.c. of their serum to neutralise 5 r.u. of "gonadin" when tested on female mice. V. J. W.

Retention of water by pituitary extract in winter frogs. E. M. Boyd, M. E. Clarke, E. L. Clarke, and A. L. Segal (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 20—23).—Inhibition of loss of normal body-water by pituitary extract (A., 1939, III, 379) does not occur in winter, but inhibition of loss of injected water (A., 1939 III, 678) takes place, though to a smaller degree than in summer. V. J. W.

Identity of prolactin with water drive factor in *Triturus viridescens*. C. S. Chadwick (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 335—337).—Pure prolactin (Eli Lilly) causes normal, thyroidectomised, or gonadectomised land phases to take to the water in 10 days. It causes repeated moulting in normal, but not in thyroidectomised, newts, and also the rapid assumption of adult characters. V. J. W.

Specificity of lactogenic hormone in initiation of lactation. A. J. Bergman and C. W. Turner (*J. Dairy Sci.*, 1940, **23**, 1229—1237).—Injection of lactogenic hormone resulted in the initiation of lactation; the "thyrotropic and other hormone" fraction was unable to initiate lactation but could augment it when established. J. G. D.

[Mammotropin in] post-partum urine. C. S. Lu and H. A. C. Lin (*Chinese Med. J.*, 1940, **58**, 612—615).—Mammotropin was detected in the urine of women on the 5—7th days post-partum by its effect on the growth of the mammary ducts of male albino mice. Œstrogens were absent from the urine prep. used in the experiments. W. J. G.

XII.—REPRODUCTION.

Androgens and uterine weight in immature rat. R. R. Greene and S. C. Harris (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 34—37).—Administration of 0·5 mg. of testosterone or dehydroandrosterone increased uterine wt., 6 hr. later, by 22·8% and 16·6%, respectively, and may thus interfere with œstrogen assay. V. J. W.

Isolation of *iso*androsterone from urine in case of virilism. H. Hirschmann (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 51—53).—From this urine which contained 100 i.u. of androgens per l., androsterone, *iso*androsterone, but no dehydro*iso*androsterone, were isolated. V. J. W.

Androgen in woodchuck hibernating gland. J. E. Sweet and W. H. Hoskins (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 60—62).—These glands contain 100 μg. of androsterone in 50 g. of tissue. V. J. W.

Influence of androgen therapy on growth rate of hypogonadal adolescent boys. B. Webster and W. Hoskins (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 72—75).—Testosterone propionate, 25 mg. 3—5 times weekly, was given to 8 such boys. Average growth rate increased from 1·36 cm. to 3·6 cm. per 100 days and fell to 1·56 cm. when treatment ceased. V. J. W.

Consistency in lengths of post-ejaculatory quiescent periods in adult male rats. C. P. Stone, L. W. Ferguson, and C. Wright (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 120—121).—Copulation in rats lasts for several hr. and consists of periods of activity, ending with ejaculation, each succeeded by a quiescent period. There is close correlation (0·65—0·83) between the durations of these quiescent periods in all rats examined. V. J. W.

Oral effectiveness of testosterone propionate plus bile acid. J. A. Wells, M. W. Burrill, and R. R. Greene (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 452—453).—1 mg. daily of testosterone propionate by mouth causes increase in wt. of the rat's prostate, and no change is caused in effects of this or smaller dosages by simultaneous administration of 0·5 mg. of deoxycholic acid. V. J. W.

Effect of testosterone propionate on regenerating anal fin of adult *Platypœcilus maculatus* females. C. Grobstein (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 484—486).—Weekly injections of 0·125—1·25 mg., begun within 20 days of amputation of the anal fin, caused the regenerated fin to resemble the male fin more than if such injections were made into intact females or were begun later. V. J. W.

Chick comb response to androgens. P. A. Duff and H. H. Darby (*Endrocrinol.*, 1941, **28**, 643—647).—The response to androsterone, applied locally or by injection, on 1-day- or 7-day-old chicks is so variable that the methods are useless for assay. V. J. W.

Use of chick for assay of androgens. D. R. McCullagh and R. Guillet (*Endocrinol.*, 1941, **28**, 648—650).—Response of the chick's comb to androsterone inunctions is so variable that only rough assay vals. can be obtained. V. J. W.

Baby cockerel test for androgens. W. H. Hoskins, G. W. Beach, J. R. Coffman, and F. C. Koch (*Endocrinol.*, 1941, **28**, 651—653).—Application to comb and by injection of testosterone or androsterone gave such variable results that assay is impossible by these methods. Untreated controls are also found to vary widely in duplicate groups. V. J. W.

Dosage-response equation for androgen assay by chick comb method. F. Hollander, E. Klempner, and R. T. Frank (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 1—5).—An equation is suggested relating dose to comb wt., body wt. at beginning and end of administration, and nos. of males and females used. V. J. W.

Effect of dosage on morphogenetic action of testosterone. H. Selye (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 142—146).—Young male rats received daily doses of 0·1—25 mg. With increasing dosage wt. of body, pituitary, thyroid, and thymus decrease, and of seminal vesicle, prostate, and epididymis increase. Inhibitory effect on testis and adrenal is max. at 0·5—1 mg. daily, and larger doses may stimulate growth of these glands. V. J. W.

Influence of testosterone on distribution and excretion of creatine. M. Williamson and A. Gulick (*Endocrinol.*, 1941, **28**, 654—658).—Daily administration to male rabbits of 2·5 mg. of testosterone propionate daily causes a marked fall in urinary creatine with no change in blood-creatine. After injection of 0·1 g. of creatine, blood-creatine returns to normal in 3 hr. in both control and hormone-treated animals. The hormone has no effect on creatinine metabolism. V. J. W.

Response of preputial glands of female mouse to testosterone propionate. H. O. Burdick and E. Gamon (*Endocrinol.*, 1941, **28**, 677—679).—Daily injection of 2 mg. for 7 days into adult mice caused the preputial glands to increase 28 times in wt. and 21 times in vol. V. J. W.

Carbon dioxide tension and its relation to quiescence of spermatozoa *in vivo*. L. B. Shettles (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 318—322).—CO_2 tension in testis, epididymis, and vas deferens of rats is less than in liver and muscle, and less than that necessary to immobilise spermatozoa *in vitro*. V. J. W.

Effect of "prospermin" on immature and mature hypophysectomised and normal male rats. J. H. Leathem (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 493—499).—Extract of normal male urine caused testis enlargement and sperm formation in hypophysectomised but not in normal males. It caused

enlargement of seminal vesicles in all cases. Dosage was 0·5—2 mg. daily. V. J. W.

Spermatozoal antibodies and infertility in fowl. W. F. Lamoneux (*J. exp. Zool.*, 1940, **85**, 419—430).—Repeated intravenous injection of fowl semen into laying hens produces a high titre of spermatozoal antibodies in the blood stream. Infertility could not be induced by single or repeated subcutaneous or intravenous injection of semen or by intramuscular injection or percutaneous application of testosterone propionate. A. G. P.

Age as factor influencing breeding efficiency in a dairy herd. G. A. Bowling, D. N. Putnam and R. H. Ross (*J. Dairy Sci.*, 1940, **23**, 1171—1176).—More services were required for first conceptions than for later, bulls under 4 years of age being more efficient than older animals. For females of all ages, bulls decreased in efficiency as they became older, this difference being significant at 6 years of age and very marked at 13 years and over. J. G. D.

Experimental production of glandular cystic hyperplasia in castrated macaques. R. Cleveland, D. Phelps, and J. C. Burch (*Endocrinol.*, 1941, **28**, 659—663).—6 animals received 2500—5000 r.u. daily of progynon-*B* for 3 months. 3 of them had previously had 4—6 uterine biopsies and had very little endometrium left. These developed a glandular cystic hyperplasia of the endometrium, while the remaining 3 did not. V. J. W.

Excretion of œstrogenic and androgenic substances by female and male chimpanzees with known mating behaviour records. W. R. Fish, W. C. Young, and R. I. Dorfman (*Endocrinol.*, 1941, **28**, 585—592).—Vals. for man, chimpanzee, and *rhesus* were compared. In chimpanzees, œstrogenic excretion is intermediate between those of man and *rhesus*. It is max. at time of max. genital swelling, and again before menstruation. Androgenic excretion by chimpanzees is approx. the same as that of *rhesus*. It is twice as great in males as in females. V. J. W.

Percutaneous administration of œstrogens followed by progestin in inducing sexual receptivity in spayed guinea-pigs. J. A. Leighty, H. J. Wick, and B. E. Jeffries (*Endocrinol.*, 1941, **28**, 593—596).—Progestin dissolved in oil, or alcohol with glycerin, and rubbed on to the shaved skin, is $\frac{1}{3}$—$\frac{1}{2}$ as effective after œstrone, and $\frac{1}{8}$—$\frac{1}{6}$ as effective after stilbœstrol, in inducing sexual receptivity as when injected as previously described (A., 1940, III, 213). V. J. W.

Rate of absorption of androgens and œstrogens in free and esterified form from subcutaneously implanted tablets. C. W. Emmens (*Endocrinol.*, 1941, **28**, 633—642).—Tablets of testosterone, œstradiol, their esters, and œstriol are absorbed at const. rates, the esters more slowly than the steroids with the exception of œstradiol dipropionate. Absorption of diethylstilbœstrol and its esters is less regular and tends to increase with time. Sudden increases of dosage are sometimes produced by disintegration of the tablets. V. J. W.

Response of sex characters of adult female starling to synthetic hormones. E. Witschi and N. W. Fugo (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 10—14).—In both castrated and normal birds, the oviducts hypertrophy in response to both androgens and œstrogens. Hypertrophy of Wolffian ducts and yellow coloration of the bill are produced only by androgens. Progesterone (0·5 mg. daily) is without effect. V. J. W.

Excretion of androgens and œstrogens in males with mammary carcinoma. N. Yolton and C. Rea (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 54—55).—Excretion in 2 cases, determined colorimetrically, did not differ significantly from that of controls. V. J. W.

Effect of removal of ovaries and adrenals on opening of vagina in rat. N. J. Wade and L. A. Haselwood (*Endocrinol.*, 1941, **28**, 624—628).—Removal of ovaries or adrenals delays only slightly the time of vaginal opening. Removal of both glands increases age at time of opening from 50 days to as much as 116 days, the ages being greater when the operation was performed earlier. V. J. W.

Photometric determination of œstrogens. III. Determination of œstrogens of pregnancy urine. C. Bachman and D. S. Pettit (*J. Biol. Chem.*, 1941, **138**, 689—704).—The ether extract of hydrolysed urine in benzene solution is fractionated by extracting with Na_2CO_3 to give the œstriol fraction, the œstrone–œstradiol fraction remaining in the benzene. On purification both fractions give colours with Kober's reagent similar to those of pure hormones and free from urinary contaminants. The efficiency of extraction and accuracy limits are discussed. E. M. W.

Total 24-hour urinary excretion of œstrogens in normal and toxæmic pregnancies. C. S. Lu (*Chinese Med. J.*, 1941, **59**, 131—142).—The urinary excretion of œstrogens was diminished in pre-eclampsia, eclampsia, chronic nephritis, and mild toxæmia of pregnancy; the excretion was also diminished in a pregnant patient receiving corpus luteum. There was no diminution in vomiting of pregnancy. W. J. G.

$\Delta^{5:7:9}$-Œstratrien-3-ol-17-one from pregnancy urine.—See A., 1941, II, 229.

Effects of pregneninolone and related steroids on sexual development in fish. W. J. Eversole (*Endocrinol.*, 1941, **28**, 603—610).—This steroid, fed to *Lebistes reticulatus*, has a purely masculinising effect in both sexes. It inhibits development of all female characters and causes precocious maturation of gonads, followed in males by exhaustion and atrophy. Testosterone injected has a similar effect except that development of male coloration is inhibited as by œstrogens. Progesterone, pregnanediol, and adrenal cortex had no effects. V. J. W.

Anæsthetic effect of steroid hormones. H. Selye (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 116—121).—50% of female rats became anæsthetised by intraperitoneal injection of 5 mg. of deoxycorticosterone acetate, 15 mg. of progesterone, or 50 mg. of andro-, testo-, or methyltesto-sterone. Anæsthesia lasts some hr. and no toxic results were noticed after recovery. Partial removal of the liver increases susceptibility and males are much less sensitive than females. V. J. W.

Production of azoospermia in man by α-œstradiol benzoate. N. J. Heckel and C. R. Steinmetz (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 174—176).—After receiving injections amounting to 631,000 r.u. during 129 days a 72-year-old man developed azoospermia. V. J. W.

Breaking strength of femurs of mice receiving œstrogens. W. U. Gardner (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 230—232).—Femora of œstrogen-treated female mice (16·6 μg. weekly throughout life) had a breaking strength of 844 g. more than controls. V. J. W.

Colour reaction for phenolic steroids (naturally occurring œstrogens).—See A., 1941, II, 197.

Mammary carcinomas in mice following oral administration of stilbœstrol. M. B. Shimkin and H. G. Grady (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 246—248).—Male mice received either 0·125 mg. or 0·375 mg. of stilbœstrol twice weekly. Out of 11 mice in group I, 4 died within 17 weeks and 4 developed tumours in 23—25 weeks. Out of 10 mice in group II, 5 died in 17 weeks and 3 developed tumours in 20—26 weeks. V. J. W.

17-Monocaprylic ester of œstradiol, a highly active tumorigenic œstrogen. A. Lipschütz, L. Vargas, jun., H. Baeza-Rosales, and H. Baeza-Herrera (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 76—78).—Esterification with octoic acid at position 17 increases 100—200 times the fibroid-producing activity of α-œstradiol. Typical tumours were produced by a total of 76 μg. given over 3 months. V. J. W.

Zoological specificity of tumoral reaction to œstrogens in rats. A. Lipschütz, E. Egana, I. Szabo, and S. Lecannelier (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 161—164).—α-Œstradiol mono-octoate, of which 2 μg. causes abdominal tumours in guinea-pigs, fails to cause them in rats in doses of 80 μg., but does cause an atypical proliferation of the endometrium and anterior hypophysis. V. J. W.

Comparative conjunctive tumorigenic action of three different esters of œstradiol. A. Lipschütz, P. Bellolio, J. Chaume, and L. Vargas, jun. (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 164—167).—Production of uterine fibroids in castrate guinea-pigs by œstradiol benzoate, dipropionate, and mono-octoate is compared. 40 injections of 5—10 μg. during 3 months usually cause tumours, the mono-octoate being the most effective. V. J. W.

Continuous and discontinuous treatment with œstrogens in experimental tumorigenesis. A. Lipschütz, F. Rodriguez, and L. Vargas, jun. (*Endocrinol.*, 1941, **28**, 664—668).—20

μg. of œstradiol monobenzoate, injected into female guinea-pigs three times a week, causes after 47 injections uterine bleeding, fibroids, and polyps. If the same quantity is given over a year, a week of treatment being followed by 2—3 weeks' rest, these toxic effects are not produced. V. J. W.

Prevention of experimental uterine and extra-uterine fibroids by testosterone and progesterone. A. Lipschütz and L. Vargas, jun. (*Endocrinol.*, 1941, **28**, 669—675).—Production of fibroids (see preceding abstract) is prevented by injection with the œstradiol of 50 times as much testosterone propionate, or 150 times as much progesterone. Implanted œstradiol tablets, capable by themselves of causing fibroids (A., 1939, III, 492), lose this potentiality when a progesterone tablet is implanted simultaneously. V. J. W.

Effect of stilbœstrol in early pregnancy. H. O. Burdick and H. Vedder (*Endocrinol.*, 1941, **28**, 629—632).—Daily subcutaneous injections of 1 mg. in mice, begun 8—10 hr. after mating, accelerate the passage of ova through the oviducts. Injections of 0·005 mg. prevent this passage. Stilbœstrol is toxic to the ova, and causes corpora lutea to begin to regress on the 4th day. V. J. W.

Mode of administration as influence on effectiveness of mare serum in hypophysectomised immature female rats. J. H. Leathem (*Endocrinol.*, 1941, **28**, 615—618).—Injections were made subcutaneously or intraperitoneally in daily doses of 2 r.u. for 5 days or subcutaneously, intraperitoneally, or intravenously in a single dose of 10 r.u. The max. ovarian response was given by the divided intraperitoneal method. Responses to the single doses were equal and smaller; that to the divided subcutaneous dose was least. V. J. W.

Effects of progesterone on uterus of mouse. C. W. Hooker (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 270—272).—Daily injection of 0·25—0·5 mg. of progesterone into mice ovariectomised 3 weeks earlier caused mitosis in all uterine cells, both epithelial and muscular. V. J. W.

Effect of refeeding and of pituitary extract on ovaries of undernourished guinea-pigs. D. J. Stephens and W. M. Allen (*Endocrinol.*, 1941, **28**, 580—584).—Underfeeding, causing loss of wt. of 20—30%, caused also ovarian atrophy resembling that following hypophysectomy. Administration of pituitary extract (antuitrin-*T*) caused luteinisation and interstitial cell stimulation but not follicle stimulation. V. J. W.

Influence of delayed resorption on specific gonadotrophic augmentation. F. Bischoff (*Endocrinol.*, 1941, **28**, 611—614).—Augmentation of prolan effect on rat ovary by follicle-stimulating hormone is less if prolan absorption is delayed, and more if follicle-stimulating hormone absorption is delayed. This delay is brought about by use of insol. Cu or Zn compounds. Ovary-wt. response to prolan is increased by delayed absorption. Response to pregnant mare serum is not affected. V. J. W.

Clinical use of gonadotropic hormone from pregnant mare serum. C. P. Huber and M. E. Davis (*Surg. Gynec. Obst.*, 1940, **70**, 996—1005).—Administration of gonadotropic hormone from pregnant mare serum was followed by pregnancy in previously sterile patients in whom anovulatory menstrual cycles had been demonstrated. Menstrual irregularities were also favourably influenced. F. F. R.

Urinary prolan excretion in chorion epithelioma. K. Ehrhardt and P. Bureck (*Z. Geburtsh. Gynäkol.*, 1939, **119**, 133—148).—100,000—150,000 mouse units of prolan *B* were found in the urine in 3 cases of chorion epithelioma, developing after uterine moles. In one woman urinary prolan *B* excretion was the only symptom of the beginning disease. The patients died, in spite of hysterectomy, of metastases. A. S.

Female sex hormones, pregnancy, and choline-esterase. E. A. Zeller and H. Birkhäuser (*Helv. Chim. Acta*, 1941, **24**, 120—126).—In castrated male and female rats liver-choline-esterase is increased by injection of œstradiol. Progesterone alone is inactive in this respect. The activity of liver-choline-esterase increases during pregnancy and attains the highest val. hitherto observed. After delivery liver-choline-esterase sinks very rapidly and remains for several weeks at the low level of young animals. H. W.

Pregnancy test of Kapeller-Adler. (A) A. Kraus and R. Koenigstein. (B) F. E. Whitacre (*Chinese Med. J.*, 1941, **59**, 143—149, 184).—(A) Histidine was detected by a simple chemical test in the urine of 49 out of 55 pregnant women from 1½ months onwards. The test becomes negative some days after delivery. In 28 non-pregnant women one only, a hydatid mole, gave a positive result; in 25 males a subject with pulmonary tuberculosis alone was positive. Histidine was present in the urine of some children.

(B) Less encouraging results with the test are recorded. W. J. G.

Effect of anti-placenta serum on development of fœtus in pregnant rat. B. C. Seegal and E. N. Loeb (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 248—252).—Serum of rabbits immunised with rat-placenta extract caused absorption of 66% of rat fœtuses, but serum of rabbits immunised with rat blood caused absorption of 79%. Antisera to rat serum, to pregnancy urine, and to anterior pituitary had no effect. Anti-placenta serum contains little antibody for rat red cells, and its effect on fœtuses is not affected by addition of red cells. V. J. W.

Relation of spleen to sex organs. L. Kyriakis (*Klin. Woch.*, 1940, **19**, 304—305).—Inconst. changes in frequency and duration of œstrus were observed in 5 rats after splenectomy. Œstrus of splenectomised mice remained unchanged after injection of urine from splenectomised or normal rabbits (1 c.c. daily for 8 days). 10 juvenile rabbits were killed 1—3 months after splenectomy; slight enlargement of ovaries, maturation of several follicles, atresia, and increase of interstitial tissue were found and attributed to overproduction of prolan *A*. Splenectomy did not diminish Friedmann's pregnancy test in rabbits. M. K.

Toxicity of saline extracts of rabbit uterus after œstrogen administration. B. Krichesky and C. D. Honig (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 214—215).—Saline extracts of uteri of rabbits which had received 5—10 injections of 100 i.u. of theelin or progynon-*B* or 0·5 mg. of stilbœstrol were lethal to rabbits in doses of 0·2—0·9 c.c. 12—20 c.c. of control extracts had no harmful effect. V. J. W.

Toxic substances in extracts of post partum rabbit uterus. L. Sapirstein, W. Pollock, and B. Krichesky (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 431—433).—Such extracts, assayed on guinea-pig's ileum, contained only 2·2—3·2 μg. of histamine per c.c. The toxic substance is therefore not histamine. Toxicity is destroyed by 0·05N-NaOH or by N-HCl, but not completely at 80° for 5 min. It is unaffected by pancreatin. V. J. W.

Measurements of uterine contractions in late pregnancy. D. P. Murphy (*Surg. Gynec. Obst.*, 1940, **70**, 129—135).—Uterine contractions of 5 primiparous women were registered graphically at intervals of several days throughout the last two months of pregnancy. The general character of the uterine contractions in a given patient followed the same pattern from day to day but the character of the contractions varied widely from patient to patient. The mean frequency of contraction of the uterus was 11·1±6·0 per hr., the average duration 85±61 sec., and the average interval 243±156 sec. The patients were conscious of 47% of recorded contractions. As labour approached, strength, duration, and frequency of contractions increased as well as the no. perceived by the patient. F. F. R.

Pathology of kraurosis fornicis vaginæ. R. Wenner (*Z. Geburtsh. Gynäkol.*, 1939, **119**, 210—219).—21 cases of kraurosis fornicis vaginæ are discussed. 20 women showed evidence of ovarian hypofunction. Histological examination of the stenosed region shows lack of vaginal epithelium, proliferation of connective tissue, and, occasionally, inflammatory processes towards the uterine portio. Treatment with follicle hormone is recommended. A. S.

Urinary prolan excretion after oral and parenteral administration. W. Büttner and A. Millard (*Z. Geburtsh. Gynäkol.*, 1939, **119**, 148—158).—There was no urinary prolan excretion, demonstrable with the Aschheim–Zondek reaction, after oral administration, in 2—4 days, of 36,000—260,000 rat units (7200—62,000 mouse units) of "prolan"-Bayer; the test was also negative with 10 times conc. urine. 5000—12,000 rat units (2500 mouse units of prolan *A* and 1000 of prolan *B*—6000 *A* and 2400 *B*) were intramuscularly injected. Women with normal menstrual cycle excreted 16—18% of prolan *A* and 6—12% of the injected prolan *B*. Women with persistent ovarian follicles excreted 11—18% prolan *A* and 3·5—16% prolan *B*. The highest hormone excretion was observed 2—3 days after the injection. A. S.

Nasogenital relationship. III. Sexual function in female rats deprived of sphenopalatine ganglia. M. C. Shelesnyak, S. Rosen, and L. R. Zacharias (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 449—451).—Such rats do not differ from controls in time of vaginal opening, reproductive capacity, or the pseudo-pregnancy reaction to stimulation of the cervix. V. J. W.

Sensibility of excised uterus of opium-poisoned rabbits. T. R. Ko (*J. Orient. Med.*, 1939, **30**, 289).—Chronic opium poisoning in rabbits diminishes sensitivity of sympathetic nerve endings and muscle of excised uterus, but does not influence the parasympathetic endings. Injection of follicular hormone during the abstinence period has a rapid stimulating effect, but sensibility does not reach normal level. M. K.

Necessity of low oxygen concentration for hatching of *Aedes* mosquito eggs. C. M. Gjullin, C. P. Hegarty, and W. B. Bollen (*J. Cell. Comp. Physiol.*, 1941, **17**, 193—202).—Reduction of dissolved O_2 from 7 to 3 p.p.m. increases hatching of the eggs from 6% to 95%. Such a reduction can be effected by the presence of micro-organisms, org. matter, or reducing agents. *Aedes* eggs are laid on moist soil or debris; in genera which lay eggs directly in water O_2 concn. is relatively unimportant. V. J. W.

XIII.—DIGESTIVE SYSTEM.

Rapid production of lactic acid in oral cavity. I. Neuwirth and J. A. Klosterman (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 464—467).—Salivary lactic acid is increased 10—20-fold 10 min. after 1·5 g. of sucrose, glucose, or starch, or 10 g. of banana, is dissolved in the mouth. Similar results are given *in vitro* by unfiltered saliva. V. J. W.

Choline and epithelial hyperplasia in forestomach of rats. G. R. Sharpless (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 487—488).—Addition to diet of 0·15% of choline hydrochloride reduced incidence of papillomatous conditions of gastric mucosa from 18 out of 26 to 5 out of 33. V. J. W.

Effect of gastric HCl and other factors on number of colon bacilli in fæces. W. B. Rawls and G. H. Chapman (*Rev. Gastroent.*, 1939, **6**, 317—320).—Free HCl in the stomach and the presence of streptococcal metabolites in the fæces have independent but usually auxiliary inhibiting power over the proliferation of colon bacilli in the intestinal tract. W. J. G.

Clinical significance of gastroscopy. R. Schindler (*Rev. Gastroent.*, 1939, **6**, 122—127). W. J. G.

Influence of splanchnic denervation on motility of human stomach. L. E. Barron (*Rev. Gastroent.*, 1939, **6**, 109—114).—Resection of the splanchnics in man places the stomach under the unopposed action of the vagus, increases gastric peristalsis, and diminishes the emptying time of the stomach. Sympathetic denervation procedures applied to peptic ulcer and paralytic ileus have not yielded clear-cut results. W. J. G.

Studies on human with new secretagogue meal. R. Upham and F. Spindler (*Rev. Gastroent.*, 1939, **6**, 12—21).—To 40 g. of Liebig's extract (Lemco) dissolved in 1 l. of distilled water are added 60 mg. of Na phenol-red dissolved in 66 c.c. of 0·1N-NaOH, followed by 20 c.c. of 20% Na_2CO_3: finally, 1 l. of 0·1N-HCl is stirred in slowly. The ppt. which separates on standing is filtered off. Samples obtained ½-hourly after 300 c.c. of this meal give information on the rate of emptying, abs. HCl production, secretion of non-acid juice, etc. W. J. G.

Significance of nutrition and gastric acidity in the ætiology of experimental peptic ulcer. A. Slive, W. H. Bachrach, and S. J. Fogelson (*Surg. Gynec. Obst.*, 1940, **70**, 666—670).—When the duodenum is resected in the dog from its gastric and jejunal extremities and a gastro-jejunal anastomosis performed, jejunal ulcers develop, but if the duodenum is joined to the jejunum high up towards the anastomosis the incidence of ulceration and its rate of development are reduced. There is no relationship between post-operative acidity levels and the incidence of jejunal ulcer but malnutrition is an important factor. F. F. R.

Peptic ulcer in children. O. M. Moore (*Canad. Med. Assoc. J.*, 1941, **44**, 462—466).—Report of 8 cases. C. J. C. B.

Eumydrin in treatment of hypertrophic pyloric stenosis. H. M. M. Mackay (*Arch. Dis. Child.*, 1941, **16**, 1—20).—Forty consecutive cases of hypertrophic pyloric stenosis were treated with eumydrin with a mortality of 12·5%; 31 cases were cured by eumydrin and 4 more by operation. Of the 5 deaths, 4 were due wholly or in part to enteritis contracted in hospital, and 1 was probably due to excessive fluid administration. C. J. C. B.

Gastric acidity during the first month of life. R. A. Miller (*Arch. Dis. Child.*, 1941, **16**, 22—30).—707 fasting juices were obtained from infants during the 1st month of life and tested for free and total acidity. The gastric acidity falls during the first 10 days of life and thereafter it gradually rises. It is suggested that there is a gastrogenic hormone transmitted from the mother to the infant through the placental circulation. The birth wt. of the infant bears a close relationship to the amount of acid secreted by the stomach and to the degree of the development of the gastric mucosa. C. J. C. B.

Effect of Rammstedt operation on incidence of cinchophen ulcer. M. W. Davis, W. B. Bradley, W. H. Bachrach, and A. C. Ivy (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 66—69).—In operated dogs the incidence of ulcer after cinchophen feeding (100 mg. per kg. daily) was reduced from 80% to 46%. In 6 out of 14 dogs, intravenous cinchophen increased pyloric motility. V. J. W.

Effect of diet and cinchophen on production of experimental gastric ulcers in chicks. G. Cheney (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 190—195).—Feeding cinchophen to chicks (0·5—2% of diet) causes gizzard lesions resembling peptic ulcers and similar to those known to be caused by certain diet deficiencies. They are less severe when the anti-gizzard-erosion factor is added to the diet. V. J. W.

Influence of bile acids, vitamin-*K*, and cinchophen on chick gizzard lining. H. J. Almquist and E. Mecchi (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 168—172).—In confirmation of previous results (A., 1939, III, 77) bile acids in diet, but not injected, protect against gizzard erosion. Deoxycholic acid is the least effective. Vitamin-*K* and related esters have no protective effect, though they render the erosions less obvious by decreasing surrounding hæmorrhage. Addition of 1% cinchophen to a protective diet caused erosions which could be prevented by addition of cholic acid and ox bile salts. V. J. W.

Effect of denervation of intestine on its motor responses at site of distention. W. B. Youmans (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 420—424).—Denervated segments of dog's intestine give a smaller contractile response to distension by a balloon than do similar intact segments. V. J. W.

Rate of absorption of amino-acids from small intestine in man. L. C. McGee and E. S. Emery, jun. (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 475—477).—Solutions of hydrolysed casein (2·5—5%) and of casein and gelatin (4—5%) were introduced into the jejunum by tube and withdrawn at intervals. Amino-acid-N is absorbed in 15—25 min. and about 1% of protein-N remains after 50 min. V. J. W.

Length of intestine of calves and its bearing on absorption of nutrients from chyme. D. Espe and C. Y. Cannon (*J. Dairy Sci.*, 1940, **23**, 1211—1214).—The length of the small intestine of calves was 20—25 ft. *in vivo* and 60—80 ft. post mortem. For the large intestine vals. of 7 and 13—16 ft. were found. The small intestine is relatively 2—3 times as long in the ruminant as in the non-ruminant. J. G. D.

Assay of secretin. H. Greengard and I. F. Stein, jun. (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 149—151).—The prep. "pancreotest" is half as potent in causing pancreatic secretion in dogs as the standard *SI* prep. (A., 1939, III, 270) and one twentieth as potent as the prep. described (*Amer. J. Physiol.*, 1934, **110**, 198) for use on human subjects. V. J. W.

Pharmacology and bioassay of insulin-free pancreatic extracts. J. C. Munch (*Rev. Gastroent.*, 1939, **6**, 50—53).—Purified insulin-free pancreatic extract exerts in animals and humans a transitory depressor response not due solely to choline compounds, to histamine, or to inorg. constituents. Bioassay of the extract is described, the unit being the amount required to neutralise the pressor activity of 1 μg. of adrenaline. W. J. G.

Studies on ileocæcal junction (ileocæcus). J. A. Bargen, H. R. Wesson, and R. J. Jackman (*Surg. Gynec. Obst.*, 1940, **71**, 33—38).—The anatomy of the musculature and the blood

and lymphatic supply of the ileocæcal junction was studied in man. The circular and longitudinal muscles of both the ileum and colon enter the labia of the ileocæcal junction and exert a sphincteric action. Stimulation of this region in man suggests that the sphincter acts as a barrier between the ileum and colon when such a barrier is needed. F. F. R.

Effect of ascorbic acid on guinea-pig colon. H. B. Haag and I. Taliaferro (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 479—481).—Na ascorbate, added to bath in concn. of 1—10 mg.-%, caused marked increase in tone of guinea-pig colon after 1—2 min. V. J. W.

B_1-hypovitaminosis in chronic colitis. W. Löwenstein and H. Neumann (*Klin. Woch.*, 1940, **19**, 327—328).—A spastic form of chronic colitis is described in 17 of 30 patients, characterised by decrease of aneurin in urine. M. K.

Micro-method for determination of ammonia in fæces without distillation. F. Rappaport and L. Lissner (*Rev. Gastroent.*, 1940, **7**, 251—255).—The fæces are ground with trichloroacetic acid, centrifuged, and an aliquot part is placed in a Widmark flask. Saturated K_2CO_3 is added, and the NH_3 trapped in a mixture of H_2SO_4 and H_3PO_4 and subsequently determined either by titration or by Nesslerisation. W. J. G.

Incontinence of fæces in infancy. H. Oegg (*Mschr. Kinderheilk.*, 1939, **79**, 230—235).—Case reports. M. K.

XIV.—LIVER AND BILE.

Evaluation of liver function tests. F. W. Konzelmann (*Rev. Gastroent.*, 1940, **7**, 51—58).—The direct van den Bergh reaction, though useful quantitatively, is useless in differential diagnosis. The amount of urobilinogen in the urine and stools is a valuable guide in the diagnosis of different types of jaundice. If technical difficulties could be overcome the bile acid content of the blood would be a sensitive measure of hepatic efficiency; galactose tolerance, dye tests, etc. are unreliable. W. J. G.

New physiological test for liver function. L. M. Morrison and W. A. Swalm (*Rev. Gastroent.*, 1940, **7**, 269—275).—The bile salt concn., as measured by a surface tension method (cf. A., 1940, III, 620), in bile from surgical or non-surgical drainage is claimed to be the most sensitive method available for the determination of liver function. W. J. G.

Comparison of newer liver function tests. R. Finkelstein, E. W. Lipschutz, and J. M. Hill (*Rev. Gastroent.*, 1940, **7**, 351—361).—The plasma-albumin–globulin ratio is not altered except in severe liver damage. Cholesterol metabolism is disturbed by liver damage. The van den Bergh test distinguishes jaundice due to hepatitis from obstructive jaundice without liver damage. The hippuric acid excretion test reveals liver damage in jaundice and in cholecystitis and cholelithiasis. The Weltman serum reaction, in which the serum is heated with varying concns. of $CaCl_2$ and the degree of coagulation observed, is the most delicate test of early liver damage. W. J. G.

Tests of hepatic function. N. Mochizuki (*J. Orient. Med.*, 1939, **30**, 116).—Intravenously administered galactose combined with subcutaneous injection of histamine is recommended. M. K.

Galactose test of hepatic function. N. Mochizuki (*J. Orient. Med.*, 1938, **29**, 150).—0·2 g. of galactose (40% solution) per kg. body-wt. is administered intravenously before breakfast. Blood-sugar is determined after 3, 20, and 40 min. and expressed as A, B, and C. $B/A \times 100(C/B \times 100)$ is called the residual quotient at 20 (40) min. (M.R.Q.). Persons with disturbed hepatic functions showed more than 21 mg.-% in B and over 35% M.R.Q. at 20 min. In subjects without liver disturbances B was less than 15 mg.-%, and M.Q.R. less than 35 mg.-%. M. K.

New intravenous galactose clearance test for differentiation of obstructive from parenchymatous jaundice. A. M. Bassett, T. L. Althausen, and G. Coltrin (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 405—407).—1 c.c. per kg. of 50% galactose is injected and blood-galactose is determined 75 min. later. 90% of patients with hepatitis still have a blood-galactose of over 20 mg.-%, but 80% of those with obstructive jaundice have below 20 mg.-%. Normal subjects have none. V. J. W.

Evaluation of liver function tests in intra- and extra-hepatic jaundice. R. Upham and N. W. Chaikin (*Rev. Gastroent.*, 1940, **7**, 263—269).—Blood-cholesterol and -esters are increased in obstructive jaundice except in some cases with liver damage; in acute hepatic degeneration, atrophic cirrhosis, and cholecystitis with lithiasis, they are normal or subnormal depending on the extent of liver damage. Urinary urobilinogen is increased in hæmolytic jaundice when diffuse liver cell damage is present, and absent in complete obstruction; in partial obstruction it is unaltered unless there is associated liver damage. A positive galactose test indicates liver damage, but a normal result does not exclude this. The icteric index and van den Bergh methods are good quant. methods; qualitatively the latter is unreliable. Hypoalbuminæmia with increased globulin is common in liver disease. W. J. G.

Liver function in hyperthyroidism, with special reference to galactose tolerance test. S. S. Lichtman (*Ann. int. Med.*, 1941, **14**, 1199—1215).—Liver function is impaired in 45—90% of patients suffering from hyperthyroidism, as shown by the cinchophen oxidation, hippuric acid synthesis, and the galactose tolerance test. The last-named test gives results which are correlated with other criteria of severity of hyperthyroidism, *e.g.*, loss of wt. and basal metabolic rate. Liver function improves after administration of I, and partial or total thyroidectomy. Jaundice may occur in severe cases of thyrotoxicosis. The sugar which appears in urine following oral administration of galactose is mainly galactose. A. S.

Hippuric acid test of liver function in hyperthyroidism. S. F. Haines, T. B. Magath, and M. H. Power (*Ann. int. Med.*, 1941, **14**, 1225—1232).—A detailed account of work already noted (A., 1941, III, 262). A. S.

Hippuric acid liver function test in children. S. Londe and J. G. Probstein (*J. Pediat.*, 1941, **18**, 371—384).—In children with ideal wts. for height and age of 20—40 kg. 3 g. of Na benzoate are sufficient for gauging the max. rate at which the liver can synthesise hippuric acid. The adult dose of 4 g. is necessary for children with ideal wts. of 40 kg. or over. 25 control subjects, with ideal wts. of 20—40 kg. receiving 3 g. of Na benzoate, eliminated 67—88% of the benzoate in 4 hr. (average 79%). 22 excreted 32—58% during the first 2 hr. (average 46%). Disturbed function was demonstrated in 2 cases of chronic arthritis, in 2 children recovering from acute upper respiratory infections, in 1 patient with aniline dye poisoning, and in 1 child who had had a nephrectomy for Wilms' tumour of the kidney. Three of 4 patients with catarrhal jaundice had impaired hippuric acid functions. C. J. C. B.

Tyrosinæmia and Takata–Ara tests in cirrhosis of the liver. I. R. Jankelson, M. S. Segal, and M. Aisner (*Rev. Gastroent.*, 1939, **6**, 341—343).—Tyrosinæmia and the Takata–Ara tests were individually positive in 80% of cases; performed together one or other, or both, were positive in 98%. These tests are confirmatory only and of no prognostic val. W. J. G.

Value of serum-phosphatase in diseases of liver. T. Meranze, D. R. Meranze, and M. M. Rothman (*Rev. Gastroent.*, 1939, **6**, 254—262).—Using a modified Roberts technique it was found that in adults vals. above 16 units suggest obstructive jaundice, and below 12 units hepato-cellular jaundice; in children and young adults vals. up to 20 units suggest the latter condition. Serum-phosphatase is raised in widespread carcinoma of the liver with little or no jaundice. The importance of the stage of the disease in interpretation of the test, and of repeated estimations, is stressed. W. J. G.

Anatomical and behaviour changes produce by partial hepatectomy in rat. E. C. H. Schmidt, jun., and C. P. Richter (*Arch. Path.*, 1941, **31**, 483—488).—After removal of 60% of the liver in 10 rats spontaneous activity was stimulated in 6 animals; in the other 4 the pre-operative level of activity was maintained. There was little effect on food or water intake. There was a tendency to const. cornification of the cells of the vaginal epithelium, or a lengthening of the cycle to 6 days, but no consistent effect on the endocrine glands. C. J. C. B.

Variations in arginase activity in livers of white rats, caused by fasting. H. D. Lightbody and A. Kleinman (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 25—29).—Starvation for 2 days

does not alter arginase concn. in rat's liver but the liver decreases in wt. Starvation for 8 days causes increase in arginase concn. In males the concn. decreases throughout, but in females only for the first 4 days (cf. A., 1938, III, 695; 1939, III, 849). V. J. W.

Effect of oxidised bile salts on gall-bladder bile. B. P. Phibbs, H. S. Wigodsky, and A. C. Ivy (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 313—314).—In dogs which received 2·25 g. of mixed ketocholanic acids daily for 3 days, the gall-bladder bile was the same as in controls in p_H, sp. gr., % solids, and content of cholesterol. V. J. W.

XV.—KIDNEY AND URINE.

Bacterial localisation in kidneys. L. M. Asher and J. K. Sokol (*Amer. J. Path.*, 1941, **17**, 273—281).—Intravenous injection of bacteria and particulate material into rabbits showed that the normal kidney usually does not excrete living bacteria circulating in the blood. Blood-borne foreign particles have little tendency to localise in the kidneys. When localisation occurs, it is due to the narrow calibre of the glomerular and medullary capillaries, which trap large or clumped particles. Acute experimental hydronephrosis increases the tendency for blood-borne particulate matter to localise in the kidney. This localisation results from stasis, reinforced by the sterile inflammatory process and the mobilisation of phagocytic cells. (4 photomicrographs.) C. J. C. B.

Intercapillary glomerulosclerosis. P. A. Herbut (*Arch. Path.*, 1941, **31**, 501—507).—In intercapillary glomerulosclerosis there is diabetes, hypertension, retinal arteriosclerosis, albuminuria, and œdema. The condition is present in only a minority of patients with diabetes. Pathologically the kidneys exhibit characteristic hyalinisation of the intercapillary connective tissue of the glomeruli. (2 photomicrographs.) C. J. C. B.

Mechanism by which experimental nephritis is produced in rabbits injected with nephrotoxic duck serum. C. F. Kay (*J. Exp. Med.*, 1940, **72**, 559—572).—Injection of anti-rabbit-kidney duck serum caused glomerulonephritis in rabbits. Suppression of antibody formation by *X*-rays caused absence of nephritis, whereas injection of normal duck serum caused acceleration. It is suggested that the harmless combination of anti-rabbit-kidney antibodies and rabbit kidney interacts with the rabbit anti-duck antibodies in the kidney, resulting in nephritis. A. C. F.

Compensatory renal hypertrophy following unilateral nephrectomy. Influence of testosterone propionate. E. M. MacKay (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 216—217).—Castration has no effect on compensatory hypertrophy, but administration of testosterone propionate (87·5 mg. in 29 days) markedly increased it. V. J. W.

Effect of subtotal nephrectomy on œstrous cycle of rat. J. T. Diaz (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 226—229).—Subtotal nephrectomy (A., 1939, III, 658) caused marked changes in the œstrous cycle. These changes were of different types which were not predictable or correlated with any other results of the operation. V. J. W.

Enzymic histochemistry. III. Distribution of enzymes in rabbit kidney. L. Weil and R. K. Jennings (*J. Biol. Chem.*, 1941, **139**, 421—432).—The properties of rabbit kidney proteinase, esterase, and amylase are described, with studies of their distribution amongst the kidney tissues. Cathepsin, aminopolypeptidase, and esterase are similarly distributed and occur in all types of cell, the ratio of activity of the cortex, medulla, and pelvis being 4 : 2 : 1. Dipeptidase occurs chiefly in the cortex and medulla (ratio 2 : 1). Amylase occurs in the cortex and pelvis. R. L. E.

Significance of urinary p_H. M. A. Bridges and M. R. Mattice. (*Ann. int. Med.*, 1941, **14**, 1123—1136).—The normal range of urinary p_H fluctuates between 4·6 and 8·0. Abnormality of urine reaction is characterised by fixation at levels typical of the disease. Base deficit in conjunction with excess of plasma-$NaHCO_3$ (*e.g.*, in pyloric obstruction) is associated with acid urine; administration of NaCl is then followed by excretion of alkaline urine. Ketones may be found in abnormal amounts in urine of any reaction. Elevated plasma p_H and CO_2-combining power together with acid urine is found in diabetes mellitus and renal disease. The acidosis in terminal nephritis is accompanied by urine of close to neutral reaction; blood and urine p_H vals. move towards each other. Urinary p_H alone is of limited significance as acid–base ratios of tissues, blood, and urine do not rise and fall concomitantly. The response of patients to acidification or alkalinisation is variable. A. S.

Effect of hepatic injury on vitamin-*C* excretion in fasting dogs. A. T. Milhorat, W. E. Bartels, and V. Toscani (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 394—397).—$CHCl_3$ anæsthesia or administration of a toxic substance contained in hexane extract of oat oil caused increased urinary excretion of ascorbic acid. Results of CCl_4 administration were not const. V. J. W.

Effect of shivering, iodoacetate, and adrenaline on vitamin-*C* and creatine excretion in fasting dogs. A. T. Milhorat, J. D. Hardy, W. E. Bartels, and V. Toscani (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 397—399).—Severe cooling or administration intravenously of 100 mg. of iodoacetic acid caused creatinuria. Cooling also caused increased excretion of vitamin-*C*. Administration of adrenaline increased excretion of N, -*C*, and creatine. V. J. W.

Reliability of the cobalt-*iso*propylamine colour reaction for amytal. Evaluation of chromogenic substances in urine. R. F. Krause and R. F. Riley (*J. Pharm. Exp. Ther.*, 1941, **71**, 287—292).—Optimal amounts of reagents are recommended which reduce the error of the method. Pigments normally contained in dog urine, and extracted by $CHCl_3$, have been identified and quantitatively evaluated. Amytal increases the amount of colour-producing substances in dog's urine. The increase is not proof of amytal excretion. E. M. S.

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

Loss of body weight of newborn infants. H. Rusch (*Z. Geburtsh. Gynäkol.*, 1939, **119**, 1—13).—The average loss of body-wt. of 5153 newborn infants was 6·79% of the wt. at birth. The loss of wt. was less than 4·1% in 4% and more than 10% of the wt. at birth in 3·1% of the children. The max. physiological loss of wt. is 10% of the birth wt. Inadequate milk secretion is the main reason for loss of wt. above 10%. The loss of wt. is more pronounced in heavy than in light infants. The average duration of loss of wt. is 3·49 days after birth. 50% of the infants gained wt. for the first time between the third and fourth day. A. S.

Relation of chemical composition of lipins to characteristic tissue lesions. E. F. Hirsch (*Arch. Path.*, 1941, **31**, 516—527).—A general review. C. J. C. B.

Isolation of lanthionine from human hair, chicken feathers, and lactalbumin. M. J. Horn and D. B. Jones (*J. Biol. Chem.*, 1941, **139**, 473).—Lanthionine can be obtained from human hair, chicken feathers, or lactalbumin by the same method as from wool (A., 1941, II, 188). Wool may be boiled with 0·1N-NaOH or 2% Na_2S instead of Na_2CO_3 previous to acid hydrolysis. E. M. W.

Lactic acid content of human milk and Arakawa's reaction. I, II. F. Ohta (*Tohoku J. exp. Med.*, 1940, **39**, 215—226, 248—277).—I. The lactic acid content of human milk showing a normal or strong Arakawa reaction was at an average 6·1 mg. per 100 c.c., that with a weak reaction was 9·7 mg., and that with a negative reaction was 12·3 mg. per 100 c.c. Women with a high vitamin-B_1 intake had a lower milk-lactic acid content than those with a poor -B_1 consumption.

II. The average lactic acid content in 200 women was 8·7 mg. per 100 c.c. with a positive Arakawa reaction and 12·2 mg. with a negative reaction. The lactic acid content in Arakawa-positive and -negative milk was higher in elderly than in young women; it was also higher in the summer than in the winter. A. S.

Semi-micro-Kjeldahl method for the determination of total nitrogen in milk. S. G. Menefee and O. R. Overman (*J. Dairy Sci.*, 1940, **23**, 1177—1185).—A semi-micro-method is described, using HgO as catalyst and H_3BO_3 and screened methyl-red for the NH_3 absorption and titration. J. G. D.

Microscopical morphology of chromatophores of bony fishes. N. K. Koltzov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **28**, 459—463). M. K.

Nervous control of melanophores of bony fishes. N. K. Koltzov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **28**, 464—469). M. K.

Structure of melanophore. N. K. Koltzov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **28**, 554—558). M. K.

Chemical composition of *Cysticercus fasciolaris*. II. Occurrence of a cerebroside containing dihydrosphingosine and of hydrolecithin in *Cysticercus* larvæ. A. Lesuk and R. J. Anderson (*J. Biol. Chem.*, 1941, **139**, 457—469).—The ether-insol. fraction of the lipins of *Cysticercus* larvæ consists of a cerebroside and a hydrolecithin. The former is mainly hydrophrenosin which on hydrolysis yields galactose, phrenosinic acid, a small amount of unidentified lower fatty acids, and a saturated nitrogenous base corresponding in composition with dihydrosphingosine. The hydrolecithin yielding on hydrolysis fatty acids (mainly palmitic), glycerophosphoric acid, and choline, is a dipalmitolecithin. E. M. W.

Trypsin-inhibiting fraction of *Ascaris*. H. B. Collier (*Canad. J. Res.*, 1941, **19, B**, 91—98).—The body wall, ovaries, intestine, and œsophagus of the worms were ground separately with sand and extracted with saline, the filtered extracts being tested for pepsin, trypsin, cathepsin, and papain. The ovary and gut showed traces of cathepsin activity and the gut traces of trypsin activity; the other tests were negative. The body walls when washed in running water, ground with sand, and extracted with 1% NaCl gave an extract which was filtered, shaken with ether, and dialysed to give an opalescent liquid which contained much glycogen and strongly inhibited pepsin and trypsin but not papain; it showed no proteolytic activity. An active trypsin inhibitor was isolated from it by fractional pptn.; it is not pptd. by trichloroacetic acid and has the properties of a polypeptide. It acts instantaneously on trypsin, exerting its max. effect at neutral and acid reactions with a min. at p_H 5. The effect of concn. suggests a reversible combination between enzyme and inhibitor. The latter has no effect on papain but stimulates peptic digestion. H. W.

Distribution of peptidase in *Paracentrotus* embryos. H. Holter and P. E. Lindahl (*J. Cell. Comp. Physiol.*, 1941, **17**, 235—241).—Distribution, up to the stage of free-swimming plutei, follows the distribution of the egg cytoplasm. It is not selectively accumulated in any special parts of the embryo. V. J. W.

Diffusing factors. VII. Concentration of mucinase from testicular extracts and *Crotalus atrox* venom. J. Madinaveitia. **VIII. Reduction of viscosity of vitreous humour preparations by ascorbic acid and diazo-compounds. IX. Effect of salts on action of testicular extracts on viscosity of vitreous humour preparations.** J. Madinaveitia and T. H. H. Quibell (*Biochem. J.*, 1941, **35**, 447—452, 453—455, 456—460; cf. A., 1940, III, 534).—Dry testicular substance is extracted with 0·1M-acetic acid, and $(NH_4)_2SO_4$ is added to the filtrate to 27%-saturation. The ppt. is inactive, and further addition of $(NH_4)_2SO_4$ to the filtrate to 70%-saturation ppts. the mucinase, which is dissolved in water, dialysed for 24 hr., and conc. in vac. at 37° and finally to dryness while frozen. The yield is 22 g. from 1 kg. of testicular substance, containing 85% of the original activity. Further fractionation with Pb acetate at varying p_H yields 0·7 g. containing 68% of the original activity. Purification can also be effected by dilution of aq. NaCl extracts. Concn. of *C. atrox* venom mucinase, which is more thermolabile than lecithinase or proteinase, can be effected by similar methods or by adsorption on fuller's earth (max. at p_H 5·1).

VIII. The mechanism of the reduction of η of vitreous humour preps. by ascorbic acid differs from that produced by testicular extracts or snake venom. Diazobenzene, its *p*-sulphonic acid, and phenylhydrazine (particularly in the presence of H_2O_2) also decrease η.

IX. In presence of NaCl (above 0·05M.), the time required for reduction of η is inversely proportional to the concn. of testicular mucinase. At lower concns. of NaCl, the time decreases more than expected. P. G. M.

Behaviour of octopine towards enzymes. P. Karrer, H. Koenig and R. Legler (*Helv. Chim. Acta*, 1941, **24**, 127—132).—Octopine is dehydrogenated by an enzyme which occurs in liver and is probably *l*-amino-acid oxidase. It is not attacked by *d*-amino-acid oxidase. Octopine has therefore probably the *l*-configuration in its alanine as well as in its ornithine component. H. W.

Amino-sulphonic acid analogues of natural amino-carboxylic acids.—See A., 1941, II, 125.

Nitrogenous constituents of kephalin. G. Blix (*J. Biol. Chem.*, 1941, **139**, 471—472).—When ethanolamine is determined in pure kephalin by acid or alkaline hydrolysis followed by distillation at 75—80°/10 mm., not more than 25—50% of the total N distils as ethanolamine. Distillation at 160° does not increase the yield. This agrees with the evidence of Folch and Schneider (A., 1941, III, 343) that serine is present in kephalin. The fractions of kephalin least sol. in methanol contain least ethanolamine and this suggests a method of separation. E. M. W.

Hydroxyamino-acids of silk proteins. B. H. Nicolet and L. J. Saidel (*J. Biol. Chem.*, 1941, **139**, 477—478).—Serine, threonine, and other hydroxyamino-acids determined by the HIO_4 reaction are found to be 13·57%, 1·36%, and 0·8% respectively in silk fibroin and 33·9%, 8·9%, and 1·0% in silk sericin. E. M. W.

Isolation of *l*-serine from silk fibroin. W. H. Stein, S. Moore, and M. Bergmann (*J. Biol. Chem.*, 1941, **139**, 481—482).—*l*-Serine is isolated from silk fibroin as *p*-hydroxyazobenzene-*p*-sulphonate. E. M. W.

Thiol groups of ovalbumin.—See A., 1941, II, 235.

XVII.—TUMOURS.

Carcinogenesis. XIII. Tumours of the spleen and liver in mice following introduction of hydrocarbons into these organs. XIV. 3-Substituted and 10-substituted derivatives of 1 : 2-benzanthracene. M. J. Shear, H. L. Stewart, and A. M. Seligman. **XIV. 3-Substituted and 10-substituted derivatives of 1 : 2-benzanthracene.** M. J. Shear, J. Leiter, and A. Perrault (*J. Nat. Cancer Inst.*, 1940, **1**, 291—302, 303—336).—XIII. Pellets of methylcholanthrene (1·5 mg.) were implanted into the spleens of 20 young C_3H mice. Of 12 mice which survived 7 months 5 developed splenic tumours and 2 hepatomata; 3 of the splenic tumours contained methylcholanthrene pellets. Only 3 hepatomata occurred in the livers of 15 young male C_3H mice in which methylcholanthrene pellets were implanted. Implantation of threads coated with dibenzanthracene, benzpyrene, or methylcholanthrene into the livers of *C*57 and C_3H mice did not increase the incidence of liver tumours above the normal incidence of these tumours. Liver tissue is thus more resistant than spleen to the carcinogenic action of these hydrocarbons.

XIV. Derivatives of 1 : 2-benzanthracene were tested on 1300 mice, chiefly of strain *A*, by painting (P) or subcutaneous injection (S) of cryst. material moistened with glycerol. The results were as follows: 10-methyl-, P +, S +; 10-ethyl-, S +; 10-propyl-, S —; 10-*iso*propyl-, S —; 10-allyl-, S —; 10-butyl-, S —; 10-amyl-, S —; 9 : 10-dihydro-, S —; 5 : 6 : 7 : 8-tetrahydro-, S —; 1′ : 2′ : 3′ : 4′-tetrahydro-, S —; 1′ : 2′ : 3′ : 4′ : 9 : 10-hexahydro-, S —; 10-hydroxymethyl-, S +; 10-methoxymethyl-, S —; 10-acetoxymethyl-, S +; 10-aldehydro-, S +; 10-α-hydroxyethyl-, S —; 10-propylene glycol dibenzoate-, S —; 10-carboxymethyl-, S —; 10-carbomethoxymethyl-, S +; 10-hydroxy-, S —; 10-methoxy-, S +; 10-thiolmethyl-, S —; 10-chloromethyl-, S —; 10-cyanomethyl-, S +; 10-dimethylaminomethyl-, S —; 10-diethylaminomethyl-, S —; 10-cyano-, S —; 10-nitro-, S —; 10-amino-, S weak +; 3-hydroxy-, S —; 3-methoxy-, S weak +; 3-carboxymethoxy-, S —; stearate of 3-hydroxy-, S —; benzoate of 3-hydroxy-, S —; 3-amino-, S —; 3-methylamino-, S —; 3-methoxy-10-methyl-, S +; 3-methoxy-10-ethyl-, S +; 3-methoxy-10-propyl-, S —; 3 : 10-dimethoxy-, S —; 3-hydroxy-10-methyl-, S —; 3-hydroxy-4-(*p*-aminobenzeneazo)-, S —; 4 : 10-dimethyl-, S —; 4 : 10-dimethyl-1′ : 2′ : 3′ : 4′-tetrahydro-, S —; 5-cyano-10-methyl-, S +; 5-carbamyl-10-methyl-, S +; 5-chloro-10-methyl-, S +; 6-carboxy-10-methyl-, S —; 6-carbomethoxy-10-methyl-, S —; 6-cyano-10-methyl-, S —; 6-chloro-10-methyl-, S —; 7-carboxy-10-methyl-, S —; 7-carbomethoxy-10-methyl-, S —; 7-cyano-10-methyl-, S +; 7-chloro-10-methyl-, S +; 9 : 10-dimethyl-, S +; 9 : 10-dimethoxy-9 : 10-dimethyl-9 : 10-dihydro-, S —; 9-acetoxy-10-methyl-, S weak +; 9 : 10-quinone, S —; 9 : 10-quinol acetate, S —; and 1′ : 10-dimethyl-, S —. Other

compounds tested were 9-methylanthracene, S —; 9-methyl-1 : 2 : 5 : 6-dibenzanthracene, S +; 5-methyl-3 : 4-benzpyrene, S +; 3 : 4-benzpyrene-5-aldehyde, S +; and 5-hydroxy-3 : 4-benzpyrene, S —. E. B.

Tumours in mice injected with colloidal thorium dioxide. H. B. Andervont and M. B. Shimkin (*J. Nat. Cancer Inst.*, 1940, **1**, 349—353).—Subcutaneous injection of 0·2 ml. of 25% ThO_2 (by vol.) into 9 mice induced spindle-celled sarcomata in 2 mice and a hæmangioma in another mouse. Intravenous injection of ThO_2 did not increase the incidence of pulmonary tumours. E. B.

Effect of carcinogens on small free-living organisms. II. Survival value of methylcholanthrene-adapted paramecium. R. R. Spencer and M. B. Melloy (*J. Nat. Cancer Inst.*, 1940, **1**, 343—348).—Paramecia grown in a medium containing 1 μg. of methylcholanthrene per ml. for 388 days became resistant to the carcinogen. Organisms resistant to fluorescein were not resistant to methylcholanthrene. E. B.

Retardation of growth of the rat ingesting *p*-dimethylaminoazobenzene (butter-yellow). I. Effect of various dietary supplements. J. White (*J. Nat. Cancer Inst.*, 1940, **1**, 337—341).—The addition of 0·06% of butter-yellow to the diet of young rats (75—85 g.) retarded growth without producing apparent toxic effects. The addition of glycine, Na_2SO_4, taurine, or cysteic acid did not influence the retarding effect but it was completely neutralised by addition of cysteine or methionine. E. B.

Metabolism of rat liver during carcinogenesis by butter-yellow. J. W. Orr and L. H. Stickland (*Biochem. J.*, 1941, **35**, 479—487; cf. A., 1940, III, 669).—There is no change in glycolytic metabolism of liver in the precancerous phase of butter-yellow treatment. All liver tumours studied possessed glycolytic power but contained no glycogen. Liver cells thus show a sudden change in the type of metabolism when they form tumours, *i.e.*, the sole substrate for glycolysis changes from glycogen to glucose. P. G. M.

Preparation of dispersions of carcinogenic hydrocarbons and hormones with the aid of dioctyl ester of sodium sulphosuccinate (Aerosol O.T.). E. Lorenz, M. B. Shimkin, and H. L. Stewart (*J. Nat. Cancer Inst.*, 1940, **1**, 355—360).—Suspensions for subcutaneous injection were prepared by grinding the cryst. material in a 5% aq. solution of the Aerosol. Suspensions for intravenous injection were prepared by addition of an ethereal solution of the material to a colloidal solution of cholesterol; ether is blown off and the prep. stabilised with 0·02—0·05% Aerosol. Aerosol is not carcinogenic and does not influence the growth of tumours. E. B.

Union *in vitro* of papilloma virus and its antibody. W. F. Friedewall and J. G. Kidd (*J. Exp. Med.*, 1940, **72**, 531—558).—Rabbit papilloma forms an antibody of one type only, which is capable of neutralising virus and fixing complement. The union of antibody and virus cannot be dissociated "*in vitro*" by dilution or centrifugation. A. C. F.

Cellular changes in spleen and lymph glands in mice used for carcinogenic and related experiments, with special reference to the giant cells of the spleen. L. D. Parsons and F. L. Warren (*J. Path. Bact.*, 1941, **52**, 305—321).—In mice bearing subcutaneous grafted sarcomas the splenic giant cells are increased to 2 or 3 times their normal no., in contrast to mice bearing intraperitoneal grafts, in which these cells are decreased to 1/6 of their normal no. Mice bearing primary induced sarcomas or receiving injections of a carcinogenic compound show about ½ the normal no. of giant cells. *X*-Irradiation greatly diminishes the no. of giant cells in the spleen. A significant degree of correlation was found between the blood leucocyte counts and the splenic giant cell counts in mice bearing subcutaneous grafted sarcomas or primary induced sarcomas. Extramedullary myelopoiesis and changes in the lymphocytes occurring in the spleens of mice bearing tumours and under other conditions are described. (6 photomicrographs.) C. J. C. B.

Morphological alterations in regressing Brown–Pearce tumour and their relation to changes due to irradiation. M. Appel, O. Saphir, A. A. Strauss (*Arch. Path.*, 1941, **31**, 317—325).—The gross and cytological characteristics of resorbing Brown–Pearce carcinoma transplants in refractory animals and resorbing tumours in animals rendered resistant or "immune" by intracutaneous transplantation were: (1) degeneration and necrosis in the central portions of the tumours, while the marginal zones survived for a considerable time; (2) infiltration by many lymphocytes and by a few polymorphonuclear and endothelial leucocytes; (3) formation of foreign body giant cells; (4) formation of tumour giant cells, with calcification of nuclei and deposition of Ca throughout the regressing transplants; (5) failure of the new host to supply a vascular stroma. These changes are compared with those described following irradiation of tumours with divided doses and certain striking similarities pointed out. (4 photomicrographs.) C. J. C. B.

Chemical studies on the components of normal and neoplastic tissues. III. Composition and amphoteric properties of the nucleoprotein fraction of Jensen rat sarcoma. J. P. Greenstein, J. W. Thompson, and W. V. Jenrette. **IV. Melanin-containing pseudoglobulin of malignant melanoma of mice.** J. P. Greenstein, F. C. Turner, and W. V. Jenrette (*J. Nat. Cancer Inst.*, 1940, **1**, 367—376, 377—385).—III. Nucleoprotein prepared from rat sarcomata was dried in the Flosdorf–Mudd apparatus and washed with a hot alcohol–acetone mixture and then with ether. The native protein contained SH groups; assuming one SH group the protein has mol. wt. 40,000. Denaturation with guanidine liberates a second SH group. Titration curves of ox serum-albumin in water and 6M-guanidine hydrochloride and of the nucleoprotein in 6M-guanidine hydrochloride are given.

IV. Tumour tissue from the melanona *S*91 grown in *dba* mice was frozen and then extracted with 0·5M-KCl at p_H 7·8. The protein which was pptd. with 80% saturated $(NH_4)_2SO_4$ was almost entirely pseudoglobulin containing melanin and formed 2·5—4% of the fresh tissue. Melanin was separated by digestion with pancreatin and pptn. with acetic acid. The melanin contained 1·4% of cystine, 8·9% of methionine, 1·9% of tyrosine, and 1·3% of tryptophan. The viscosity of the pseudoglobulin in water and denaturating salt solutions indicated that it is globular in type. E. B.

Influence of genetic constitution on induction of resistance to transplantable mouse tumours. M. K. Barrett (*J. Nat. Cancer Inst.*, 1940, **1**, 387—393).—Subcutaneous injection of homologous blood into mice of the Rockefeller Institute, and *C*57 Black strains increased the resistance to tumour no. 15091 *A* (a tumour which arose in strain *A*). Resistance in strains in which the tumour arose (no. 755 in *C*57 Black mice and no. 15091 in strain *A* mice) was not increased by injection of homologous blood. Injection of blood increased the resistance of Rockefeller and strain *A* mice to the carcinoma *C*63. E. B.

Effect of colchicine and bacterial products on transplantable and spontaneous tumours in mice. H. B. Andervont (*J. Nat. Cancer Inst.*, 1940, **1**, 361—366; cf. Boyland, A., 1940, III, 508).—Repeated injection of 0·05 mg. of colchicine into mice bearing spontaneous mammary tumours did not influence tumour growth. Injection of colchicine or a *B. coli* filtrate into mice bearing sarcoma *S*37 or carcinoma *F* produced hæmorrhage in the tumours. The effects of colchicine and the bacterial filtrate could be summated but inhibition of growth could not be obtained. E. B.

Treatment of spontaneous breast adenocarcinomas in mice with extracts of spleen or yeast. R. Lewisohn, C. Leuchtenberger, R. Leuchtenberger, and D. Laszlo (*Amer. J. Path.*, 1941, **17**, 251—260).—38 spontaneous breast adenocarcinomas in mice, proved by biopsies, disappeared completely following treatment with spleen or yeast extracts. C. J. C. B.

Trend and geographic variation in cancer mortality and prevalence, with special reference to gastric cancer. S. D. Collins, M. Gover, and H. Dorn (*J. Nat. Cancer Inst.*, 1941, **1**, 425—450).—The cancer mortality in the U.S.A. has increased since 1900; the rate among males has increased more than in females. The death rate from cancer of the stomach is highest in the northern states. Skin cancer is most common in southern states. The ratio of cases under treatment to the no. of deaths is discussed. E. B.

Early diagnosis of cancer of the stomach; gastroscopy and gastric biopsies, gastrophotography and *X*-rays. R. Schindler (*J. Nat. Cancer Inst.*, 1941, **1**, 451—480).—Gastrophotography is unsatisfactory. Co-operation between gastroscopy and *X*-ray examination of the stomach with a thin layer of $BaSO_4$ is illustrated and recommended. The grading of

gastric carcinomas is discussed. Chronic atrophic gastritis is considered the most important precancerous condition. E. B.

Achlorhydria and gastric cancer. A. Brunschwig, R. L. Schmitz, and R. Rasmussen (*J. Nat. Cancer Inst.*, 1941, **1**, 481—488).—Extracts of stomachs from cases of gastric cancer and pernicious anæmia contain a gastric secretory depressant. E. B.

Hyperplastic and neoplastic lesions of the stomach in mice. H. L. Stewart (*J. Nat. Cancer Inst.*, 1941, **1**, 489—509).—Discussion of (1) the adenomatous lesion of the glandular mucosa of the stomach in mice of strain I; (2) squamous-celled papillomata and carcinomata produced by injection of methylcholanthrene into the stomach wall, and (3) carcinomata induced by oral administration of carcinogens. E. B.

Gastric cancer as sequel to gastritis, particularly gastritis of pernicious anæmia. C. P. Rhoads (*J. Nat. Cancer Inst.*, 1941, **1**, 511—522).—Pernicious anæmia and certain forms of gastritis are precancerous states and may be due to dietary deficiency. E. B.

Use of clinical material for investigation of gastric ulcers. M. R. Reid (*J. Nat. Cancer Inst.*, 1941, **1**, 523—537).—The work of a gastric clinic is described. E. B.

Programme for study of cancer of stomach. C. Voegtlin (*J. Nat. Cancer Inst.*, 1940, **1**, 539—558).—Discussion of the 7 foregoing papers and suggested problems. E. B.

Experimental gastric carcinoma: critical review with comments on criteria of induced malignancy. A. J. Klein and W. C. Palmer (*J. Nat. Cancer Inst.*, 1941, **1**, 559—584).—Consideration of time, mechanical, chemical, species or strain, and local tissue factors. E. B.

Metastatic cancer of stomach. G. T. Pack and G. McNeer (*Rev. Gastroent.*, 1939, **6**, 78—84).—In 1118 autopsies on subjects with malignant tumours there were gastric metastases in 7 cases only. W. J. G.

Seminoma and teratoma in the same testis. J. R. McDonald and A. C. Broders (*Amer. J. clin. Path.*, 1941, **11**, 138—143).—Case report. (5 photomicrographs.) C. J. C. B.

Squamous-cell carcinoma of the anus and anal canal: analysis of 55 cases. W. B. Gabriel (*Proc. Roy. Soc. Med.*, 1941, **34**, 139—160).—The average age was 62, higher than that of columnar-cell carcinoma of the rectum (57); the sexes were equally represented. The distribution of 3 grades, low, medium, and high malignancy, the histology, and the differential diagnosis are described. Early low-grade cases treated by Ra needling gave the best results; in medium and high grades excision of the rectum gave only 3—5-year survivals. Lymphatic metastases may occur in the superior hæmorrhoidal glands. W. J. G.

Primary fibromyxosarcomas of heart and pulmonary artery. S. R. Haythorn, W. B. Ray, and R. A. Wolf (*Amer. J. Path.*, 1941, **17**, 261—271).—Case report. (8 photomicrographs.) C. J. C. B.

Myoepithelium in sweat gland tumours. W. H. Sheldon (*Arch. Path.*, 1941, **31**, 326—337).—3 cases of sweat gland tumour are described in which the myoepithelium had undergone neoplastic proliferation. In 1 case both the myoepithelium and epithelium appeared to be involved in the neoplastic process, while in the 2 other instances the myoepithelium represented the main tumour element. (6 photomicrographs.) C. J. C. B.

Lipoid storage cells in lymphosarcoma. S. Tannhauser (*Arch. Path.*, 1941, **31**, 378—381).—A case of lymphosarcoma of the colon is reported which showed many lipoid storage cells and features of malignant lymphocytoma and of reticulum cell sarcoma within the same tumour. (3 photomicrographs.) C. J. C. B.

Myoblastoma of the thoracic wall. D. M. Grayzel and H. H. Friedman (*Arch. Path.*, 1941, **31**, 512—515).—Case report. C. J. C. B.

Carcinoid in stomach tissue within ovarian dermoid. J. L. Gabrilove (*Arch. Path.*, 1941, **31**, 508—509).—Case report. C. J. C. B.

Pleural mesothelioma with unusual rate of growth. M. G. Bohrod (*Amer. J. clin. Path.*, 1941, **11**, 60—67).—In 29 days the tumours increased in size by at least 800 c.c. (4 photomicrographs.) C. J. C. B.

Comparison of clinical and pathological diagnoses of malignant conditions of the skin. F. A. Torrey and E. A. Levin (*Arch. Dermat. Syphilol.*, 1941, **43**, 532—535).—The clinical diagnosis of epithelioma was correct for 90% of the lesions while the clinical differentiation between basal and squamous cell epithelioma was correct for 75% of cases. C. J. C. B.

Cutaneous carcinoma. R. Schrek and O. Gates (*Arch. Path.*, 1941, **31**, 411—448).—Of 581 cases of cutaneous carcinoma the median duration of basal cell carcinoma (3½ years) was greater than that of epidermoid carcinoma (1·2 years). The median sizes of the 2 types of tumour were the same. At time of onset the median age for those with basal cell tumours was only 57·3 years, compared with 66·2 years for those with epidermoid lesions. Epidermoid carcinoma had a marked predisposition for the ears, the hands, and the upper part of the face, whereas basal cell carcinoma prefers the upper part of the face, the nose, and the ears. Both types of carcinoma occurred more frequently in males than in females. 18% of the tumours of the scalp, trunk, legs, and arms developed in pre-existing scars, which were produced by such injuries as burns, lacerations, surgical operations, and ulcerations. C. J. C. B.

Sunlight and cancer of skin. M. F. Blum (*J. Nat. Cancer Inst.*, 1940, **1**, 397—421).—A review. E. B.

Radiation and the cell. P. S. Henshaw (*J. Nat. Cancer Inst.*, 1940, **1**, 277—290).—A review. E. B.

XVIII.—NUTRITION AND VITAMINS.

Change in wartime dietaries and individual health. E. P. Cathcart (*Chem. and Ind.*, 1941, 407—411).—Our present diet is poor in Ca and 1st-class protein and rather lacking in fat. Methods of tackling this problem are discussed in relation to current theories of catabolism and anabolism. J. G. D.

Diet as prescription in treating disease. M. Ant (*Rev. Gastroent.*, 1940, **7**, 325—334).—The constituents, analysis, and vitamins in a normal diet, and the adjustments necessary to provide alkaline, bland, low-purine, and diabetic diets, are tabulated to simplify diet prescriptions. W. J. G.

Nutritional standards for normal growth in infants. J. M. Moser (*Med. Ann. Columbia*, 1938, **7**, 121—124). E. M. J.

Feeding of infants and children in the tropics. I. First half year of life. J. H. de Haas, J. H. Posthuma, E. M. Ruzette, and O. Meulemans (*Geneesk. Tijds. Ned.-Indië*, 1941, **81**, 355—372).—The feeding of infants is discussed and recipes are given for breast, mixed, and artificial feeding. Lactic acid milk and buttermilk are the most important and the preferred artificial foods for bottle-fed children in the tropics provided they are supplemented by cod-liver oil and fruit. S. C.

Comparison of breast-feeding in ten classes of the population. M. Robinson (*Arch. Dis. Child.*, 1941, **16**, 31—34).—There is no decline in breast-feeding when all classes are considered together over a long period. During the 10 consecutive years 1930—1939 there is a decline in breast-feeding in 3 social groups. The greatest decline occurs in the first month among the wives of labourers. Continued poverty lowers the ability of the mothers to keep the baby on the breast throughout the 1st month. C. J. C. B.

Banana diet in treatment of typhoid fever in children. W. F. Schoffman (*J. Pediat.*, 1941, **18**, 399—403).—Banana, especially when supplemented by skimmed milk or buttermilk, is a good food for the maintenance of nutrition in typhoid patients. It supplies calorie requirements, minerals, and vitamins, and is readily digestible. C. J. C. B.

Biological values of proteins in watermelon and pumpkin seeds. T. E. King (*Chinese J. Physiol.*, 1941, **16**, 31—35).—By Mitchell's method on rats, the digestibility of both was 92%, the biological val. of the former being 73 and of the latter 63. N. H.

Biological values of soya-bean protein and mixed soya-bean–pork and –egg proteins in human subjects. L. T. Cheng, H. C. Li, and T. H. Lan (*Chinese J. Physiol.*, 1941, **16**, 83—89).—By Mitchell's method, soya-bean protein had a digestibility of 97% and a biological val. of 64, soya-bean–pork 96% and 67, and soya-bean–egg 94% and 77, respectively. N. H.

Soya-bean diets. T. T. Chen, H. Wu, and C. Y. Cheng (*Chinese J. Physiol.*, 1941, **16**, 91—95).—Rats fed on vegetable diets containing 15, 25, or 35% of soya bean grew and reproduced no better than those on the stock diet (cf. Guy and Yeh, A., 1938, III, 1023). N. H.

Effect of cooking on digestibility of cereals. J. R. Ross, D. Monypenny, and S. H. Jackson (*J. Pediat.*, 1941, **18**, 395—398).—There is a significant difference in the digestibility of starch under const. conditions in different cereals. Changing the physical state of a cereal alters the ease of digestibility of its starch. C. J. C. B.

Effect of added egg-phospholipins on nutritive value of vegetable oils. E. J. Schantz, R. K. Boutwell, C. A. Elvehjem, and E. B. Hart (*J. Dairy Sci.*, 1940, **23**, 1201—1204).—Egg-lecithin (0·25 to 0·5%) added to corn and coconut oil did not raise the nutritive val. to that of butter fat, although a slight improvement was noted. Choline appeared to be of val. for females but ethanolamine, sphingomyelin, and sphingosine sulphate were without effect. J. G. D.

Nutritive value of fatty acid fractions of butter fat. E. J. Schantz, R. K. Boutwell, C. A. Elvehjem, and E. B. Hart (*J. Dairy Sci.*, 1940, **23**, 1205—1210).—The superiority of butter fat to vegetable oils in the presence of all the known fat-sol. vitamins is due to the long-chain saturated fatty acids, this fraction having an I val. of 9·2. Separation of acids into steam-volatile, unsaturated, and saturated fractions showed that, when incorporated in corn oil in approx. the same amount found in butter, the saturated fraction gave somewhat better results than butter fat itself. J. G. D.

Influence of manganese on lameness in pigs. R. C. Miller, T. B. Keith, M. A. McCarty, and W. T. S. Thorp (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 50—51).—Pigs fed on rations with high mineral but low Mn content sometimes developed lameness, with enlargement of distal radio-ulnar epiphyses. This was prevented by addition of $MnSO_4$, 50—60 p.p.m., to the diet. V. J. W.

Acute dietary zinc deficiency in rat. H. G. Day and E. V. McCollum (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 282—284).—Out of 8 24-day-old rats on a Zn-free diet 2 died in 33 and 61 days; the others gained only 4 g. per week as against 16 g. in controls. Some eczema and alopecia occurred. Controls which received 0·15 mg. of Zn as $ZnSO_4$ daily developed normally. V. J. W.

Effect of continuous feeding of inorganic iron [in rabbits]. N. Hayashi (*J. Orient. Med.*, 1939, **30**, 181).—0·6 g. of $FeCO_3$ and 0·3 g. of ferrum reductum were administered daily into rabbits for 127 days. Fe concn. per c.c. of heart blood of healthy animals was 0·063—0·097 mg.; it increased 2—3 days after beginning of Fe feeding, but the figure was inconst. M. K.

Influence of vitamin-*A* and -*D* on growth changes produced by feeding of inorganic iron. S. Taniguchi (*J. Orient. Med.*, 1939, **30**, 265).—Continuous administration of inorg. Fe in animals leads to abnormal bone growth in the region of epiphysis and deformity of joints. These symptoms can be prevented by addition of vitamin-*A* and -*D* to the diet. M. K.

Adsorbing charcoals in chick diets. H. J. Almquist and D. Zander (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 303—305).—Addition of charcoal to an adequate diet rendered this diet deficient in vitamin-*A*, -B_2, and -*K*, and in the anti-gizzard-erosion factor. V. J. W.

Carotene and human requirements. A. L. Bacharach (*Chem. and Ind.*, 1941, 435—436).—The conversion of the carotenoids into vitamin-*A* in the animal body is discussed, in view of the increasing importance of vegetables as a source of -*A* activity. It is concluded that it is advisable to equate not less than 2 μg. of β-carotene to 1 i.u. of -*A*. Where an appreciable proportion of the provitamin consists of carotenoids containing only one β-ionone ring a corresponding increase in the wt. of carotene equiv. to 1 i.u. of -*A* must be made. E. B. H.

Absorption of vitamin-*A* in cœliac disease. C. D. May and J. F. McCreary (*J. Pediat.*, 1941, **18**, 200—209).—A small rise in the level of vitamin-*A* in the blood during the -*A* absorption test is a const. feature of cœliac disease; this occurs frequently in other conditions which may, as a secondary effect, give the clinical appearance of the cœliac syndrome. The -*A* absorption test is not a sp. diagnostic test for cœliac disease. The level of carotenoids in the blood in cœliac disease follows the clinical course of the disease, being low during the active stage and rising with clinical improvement. C. J. C. B.

Keratosis follicularis (Darier's disease), a vitamin-*A* deficiency disease. S. M. Peck, L. Chargin, and H. Sobotka (*Arch. Dermat. Syphilol.*, 1941, **43**, 223—229).—Four patients on a normal vitamin-*A*-containing diet showed a decrease in serum-*A*; serum-carotene was normal. In 2 cases good correlation was obtained between the result of a dark adaptation test and -*A* deficiency, as evidence by the serum val. 200,000 U.S.P. units of -*A* given by mouth daily to 3 patients caused a gradual disappearance of the eruption with a gradual restoration of serum-*A* to normal. C. J. C. B.

Vitamin-*A* contents of Shanghai foods. II. Colorimetric assay of 25 common fishes. P. G. Mar (*Chinese J. Physiol.*, 1941, **16**, 67—72).—The flesh of the carp, herring, and eel contained the most, viz., 171, 140, and 131 i.u. per 100 g., respectively. N. H.

Carotenoid and provitamin-*A* content of watermelon. L. Zechmeister and A. Polgár (*J. Biol. Chem.*, 1941, **139**, 193—198).—The extraction of the mixed pigments and the isolation of lycopene and β-carotene from watermelons are described. The content of provitamin-*A* is approx. 0·5 mg. of β-carotene per kg. of pulp (cf. Munsell, B., 1931, 415). J. N. A.

Factors affecting the Pett visual test for vitamin-*A* deficiency. L. B. Pett and M. K. Lipkind (*Canad. J. Res.*, 1941, **19**, **B**, 99—108).—Under the conditions prescribed for the Pett test (A., 1939, III, 400), it has been found that (*a*) antecedent light does not affect the median of the three tests usually performed, (*b*) no error results from the wearing or not wearing of glasses, (*c*) the use of pilocarpine to contract the pupils is not advisable, (*d*) some light may be admitted into the test room, (*e*) the time of exposure to the bright light (30 sec.) is suitable, (*f*) repeated tests cause a "learning" effect so rarely as to be of little concern, (*g*) the standard error of the mean is ±1·4 and of the median ±2·4 sec. Results are presented which suggest that there is a diurnal rhythm in the vitamin-*A* content of the blood. H. W.

Determination of vitamin-*A* and carotene in human blood. S. Yudkin (*Biochem. J.*, 1941, **35**, 551—556).—Methods for determination of vitamin-*A* and carotene in human plasma are discussed, and it is concluded that the most satisfactory method is the use of photo-electric colorimetry. Extraction of -*A* and carotene from serum or plasma pptd. with alcohol gives results comparable with those obtained by other methods of extraction. J. N. A.

Determination of carotene. W. J. Peterson (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 212—216).—Methods of isolating carotene from plant tissues are discussed and a suitable procedure is described in detail. Carotene is usually determined colorimetrically, but spectrophotometric methods are useful in determining related chromogens in carotene extracts. Chromatographic absorption (the technique of which is discussed) is the best method of separating β-carotene from non-carotenoid pigments present in the petroleum extract, but the method is not quant. The Petering–Wolman–Hibbard procedure for determining carotene consists of grinding fresh tissue with acetone, and absorbing the chlorophyll from the extract on active $Ba(OH)_2$. The xanthophylls and flavones are then separated by the usual methods. This method is also applicable to the determination of cryptoxanthin and other carotenoid pigments. J. D. R.

Physical and chemical determination of vitamin-*A*. J. B. Wilkie (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 209—211).—Methods of determination of vitamin-*A* are discussed. The $SbCl_3$ reaction has many drawbacks, *e.g.*, the rapid fading of the blue colour and sensitivity to interfering substances. The most reliable method of assay is measurement of the absorption band at 328 mμ., but international agreement has not yet been reached on the conversion factor of $E^{1\%}_{1\,cm.}$ vals. into biological units. -A_1 and -A_2 differ widely in ultra-violet absorption and in $SbCl_3$ vals. The stability of -*A* concentrates is discussed; decomp. is caused by absorption of light and by oxidation. Natural oils contain anti-oxidants. The degree of destruction due to irradiation is not definitely known, whilst the solvent appears to have some effect on stability. J. D. R.

Photo-electric photometer for vitamin-*A* determination. A. E. Parker and B. L. Oser (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 260—262).—A detailed description of the assembly and manipulation of a photometer for determining $E^{1\%}_{1\,cm.}$ vals. on vitamin-*A*-containing oils is given. J. D. R.

Vitamin-B_1 tolerance tests. S. Molnar and M. Horányi (*Klin. Woch.*, 1940, **19**, 204—206).—Vitamin-B_1 metabolism was diminished in 32 patients with gastric ulcer or malignant tumours, compared with 9 controls. Serum-B_1 was determined before and 5—60 min. after an intravenous injection of 1 mg. of -B_1; urinary -B_1 was determined over a 3-hr. period. -B_1 deficiency in the ulcer and cancer cases is attributed to the dietary deficiency in -B_1. In patients with Graves' disease -B_1 deficiency was found in spite of adequate -B_1 content of the diet. In 2 cases of pernicious anæmia -B_1 content was normal. M. K.

Effect of vitamin-B_1 on urine of women with Arakawa-negative milk. H. Umemura (*Tohoku J. exp. Med.*, 1940, **39**, 227—247).—Urinary Cl excretion and diuresis are increased by administration of vitamin-B_1 to women with Arakawa-negative milk; there is no change in Arakawa-positive women. A. S.

Fate of aneurin in digestive secretions. D. Melnick, W. D. Robinson, and H. Field, jun. (*J. Biol. Chem.*, 1941, **138**, 49—61; cf. A., 1940, III, 593).—Experiments *in vitro* show that, at p_H 1·5—8·0 and 37·5°, gastric juice has little or no destructive effect on aneurin, but if antacids [$Mg_2Si_3O_8$, $CaCO_3$ + $MgCO_3$, $Al(OH)_3$] are added, adsorption and/or destruction of the vitamin occurs. Gastric juice containing hæmin and gastric juice from persons suffering from achlorhydria do not destroy aneurin. In 16 hr., bile at its natural p_H destroys 40—55% of added aneurin and converts 10—35% more into a complex (not a phosphorylated derivative) from which aneurin is liberated by yeast phosphatase powder. The extent of destruction decreases with decrease in p_H (no destruction at p_H 4·5) and with decrease in duration of incubation. $CHCl_3$, but not heat or iodoacetate, inhibits production of the complex. Duodenal pancreatic juice resembles bile in its effects on anuerin. The results throw light on the probable fate of aneurin in the digestive tract. W. McC.

Effect of aneurin deficiency in rats on excretion of pyruvic acid and bisulphite-binding substances in urine. M. E. Shils, H. G. Day, and E. V. McCollum (*J. Biol. Chem.*, 1941, **139**, 145—161; cf. A., 1940, III, 673).—A rapid increase in the HSO_3'-binding substances occurs in the urine of rats on an aneurin-low diet. The increase is proportional to the extent of the deficiency and occurs before any other symptoms. The level of these HSO_3'-binding substances returns to normal 24 hr. after administration of aneurin. The amount of pyruvic acid in the urine accounts closely for the total HSO_3'-binding substances. In rats on a normal diet, the amounts of pyruvic acid and HSO_3'-binding substances in the urine increase with increasing intake of food, but the changes that occur in the HSO_3'-binding substances are small compared with the changes produced by aneurin deficiency, except when the food intake is very high. Replacement of sucrose in the diet fed to aneurin-deficient rats by the calorific equiv. of fat causes improved growth but only a partial return to normal in the HSO_3'-binding substances in the urine; generally these remain very high until aneurin is administered. The results confirm those of Banerji and Harris (A., 1939, III, 919). Methods for the determination of HSO_3'-binding substances in urine are described. J. N. A.

Effect of aneurin deficiency on citric acid excretion. A. H. Smith and C. E. Meyer (*J. Biol. Chem.*, 1941, **139**, 227—231).—The decrease in excretion of citric acid in the urine of rats on an aneurin-deficient diet is related to the diminished intake of food rather than to the absence of aneurin (cf. Sober *et al.*, A., 1940, III, 818). J. N. A.

Aneurin (vitamin-B_1) content of Australian wheat products. E. C. Slater and E. J. Rial (*J. Proc. Austral. Chem. Inst.*, 1941, **8**, 71—76).—Figures are given for the aneurin content of Australian wheats, white flour, bran, pollard, wheat germ (untreated and stabilised), and bread (wholemeal, germ, white, and special). The results for white flour (1·25—2·53 μg. per g.) are much higher than those obtained in England, partly owing to the higher aneurin content of the wheat (4·1—7·7 μg. per g.) and partly because a larger proportion of the aneurin passes into the flour. Aneurin is not evenly distributed throughout the endosperm, and is probably conc. in the outer portions. T. M.

Effect of aneurin on fermentation of yeast. H. Laser (*Biochem. J.*, 1941, **35**, 488—494).—The concn. of aneurin can be determined within the limits 0·01—0·04 μg. by means of the resulting increased anaërobic fermentation of yeast. Baker's yeast responds regularly, but *Torula utilis* does not respond at all under the same conditions. Aneurin is reversibly reduced by $Na_2S_2O_4$, but irreversibly by H_2–Pt, to an inactive product. P. G. M.

Measurement of urinary excretion of vitamin-B_1. G. A. Carden, W. D. Province, and J. W. Ferrebee (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 1—5).—Determination by the method previously described (A., 1941, III, 116) showed that normal subjects excreted at least 100 μg. per 24 hr. while 9 patients suspected of vitamin-B_1 deficiency excreted 5—70 μg., and also excreted a smaller proportion of -B_1 added to their diet. V. J. W.

Chemical determination of vitamin-B_1. D. J. Hennessy (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 216—218).—Chemical methods for the assay of vitamin-B_1 are described and discussed. The Prebluda–McCollum reagent, as applied by Melnick and Field (A., 1939, III, 401), is recommended. The thiochrome method has considerably greater sensitivity than the colorimetric methods, and may also be used on materials of low potency. The use of "Decalso," a synthetic zeolite, as a preliminary step in both procedures effectively eliminates interfering materials. J. D. R.

Thiochrome method of determining aneurin in urine, milk, and cereal products. E. C. Slater (*Austral. J. Exp. Biol.*, 1941, **19**, 29—32).—A modified Wang–Harris method (A., 1939, III, 920) is applicable to the determination of aneurin in milk and cereal products. The described method resembles that of Pyke (A., 1940, III, 428) but modifications in the latter technique, *e.g.*, omission of the peptic digestion prior to incubation with takadiastase, are considered desirable. F. O. H.

Infantile mortality and beriberi. W. K. Aykroyd and B. G. Krishnan (*Current Sci.*, 1941, **10**, 169—171).—Infant mortality in the Northern Circars Districts of the Madras Presidency in which raw milled rice is the staple food reaches its highest peak at the 3rd month of life; in towns outside the beriberi area the greatest proportionate mortality occurs during the first month. A sp. effect of infantile beriberi on the proportionate mortality at different stages of infancy is suggested. M. K.

Whole blood- and plasma-ascorbic acid concentrations in pellagra and associated deficiency diseases. V. Minnich, S. T. Wright, C. V. Moore, and T. D. Spies (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 441—446).—55 out of 70 patients diagnosed as deficient in various members of the vitamin-*B* group gave very low vals. for blood-ascorbic acid. V. J. W.

Dietary treatment of scaly desquamative dermatoses of seborrhœic type. P. Gyorgy (*Arch. Dermat. Syphilol.*, 1941, **43**, 230—247).—Attention is called to the seborrhœic character of various cutaneous manifestations in rats caused by the lack of members of the vitamin-B_2 complex, other than nicotinic acid, in the diet. These experimentally produced lesions, characteristic of lack of biotin (-*H*), pyridoxine (-B_6), pantothenic acid, or riboflavin, are described in detail. C. J. C. B.

Nonpellagrous eruptions due to deficiency of vitamin-*B* complex. P. Gross (*Arch. Dermat. Syphilol.*, 1941, **43**, 504—532).—The 13 cases reported responded to treatment with liver extract. C. J. C. B.

Effect of level of dietary riboflavin on quantity stored in eggs and rate of storage. L. C. Norris and J. C. Bauernfeind (*Food Res.*, 1940, **5**, 521—532).—The riboflavin content of eggs from hens fed on a basal ration containing 100 μg. of riboflavin per 100 g. can be increased if more is given. The addition of 1000 μg. of riboflavin to each 100 g. of the basal ration raised the riboflavin content of the fresh eggs by 1·9 μg. per g. fresh wt. The time required for max. storage in the eggs varied from 2 to 4 weeks. A similar period was necessary for depletion to the basal diet level after the hens had been fed on the high-riboflavin diet. Individual groups of hens showed varying ability to metabolise riboflavin. In

normal farm eggs the white contained about 1·9 and the yolk 2·4 μg. of riboflavin per g. fresh wt.; with eggs laid by hens fed on diets designed to promote good hatchability the figures became 2·3 and 2·9 μg. per g. fresh wt., respectively. The max. figures obtained by feeding large quantities of riboflavin (2000 μg. per 100 g. basal ration) were 2·9 μg. per g. fresh wt. for the egg white, and 4 μg. per g. fresh wt. for the yolk. R. G. W.

Clinical manifestations of ariboflavinosis. V. P. Sydenstricker (*Amer. J. Publ. Health*, 1941, **31**, 344—350).—Riboflavin deficiency, due to a complex disturbance of the coenzyme functions of the vitamin-*B* group and lack of riboflavin activity in intracellular oxidation, is characterised by early ocular signs including phytophobia and dimness of vision at a distance and in dim light, accompanied by cheilosis, seborrhœic lesions about the ears and nose, and a sp. glossitis. The earliest and most const. finding is superficial vascularisation of the cornea progressing to severe interstitial keratitis. Rosacea keratitis is due to riboflavin deficiency and syphilitic keratitis shows improvement with riboflavin therapy. H. G. R.

Interrelationship of deficiency diseases and resistance to infection. J. W. Riddle, T. D. Spies, and N. P. Hudson (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 361—364).—In riboflavin-deficient patients, skin lesions and conjunctivæ give cultures of *Staph. aureus* and *Strep. hæmolyticus*, which disappear after riboflavin administration. In acute deficiency, complement is decreased, but not in mild cases. V. J. W.

Determination *in vitro* of riboflavin in tissues. F. O. Van Duyne (*J. Biol. Chem.*, 1941, **139**, 207—218).—*In-vitro* methods for determination of riboflavin in tissues are discussed. They are unsatisfactory because either the riboflavin is not fully extracted or other interfering substances are also extracted. A method, based on peptic hydrolysis of the tissue-protein and determination of the intensity of fluorescence of the filtered solution, is described. This method gives results in good agreement with those from feeding methods but is unsuitable for determination of riboflavin in skeletal muscle, because extracts of the latter show a blue fluorescence which is quite different from the characteristic yellow-green fluorescence of riboflavin in dil. HCl when illuminated with light of λ 365 mμ. J. N. A.

Determination of flavin (vitamin-B_2) in vegetable materials. K. L. Povolotskaja (*Biochimia*, 1939, **4**, 327—335).—The methods of Euler and Adler (A., 1934, 544), Warburg and Christian (A., 1932, 1285; 1934, 109), and Emmerie (A., 1937, III, 325) are discussed. The first two methods are not directly applicable without a pretreatment which varies in each case owing to the large amount of other yellow pigments in plants. The best method is the last, which depends on the separation of flavin from other pigments by adsorption on PbS. Adsorption and elution with aq. pyridine must be carried out 3 successive times in order to obtain a recovery of 90—95% of the flavin as only 45—55% is determined by a single adsorption and elution. Data are given for the amount of flavin in seeds from germination to maturity. J. N. A.

Determination of vitamin-B_2 (riboflavin). Comparison of bioassay, microbiological, and fluorometric methods. A. D. Emmett, O. D. Bird, R. A. Brown, G. Peacock, and J. M. Vandenbelt (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 219—221).—The following methods are described: (*a*) rat growth method; (*b*) fluorescence methods using either visual reading or photoelectric fluorescence measurements; (*c*) microbiological methods in which the growth response of bacteria is measured either in terms of culture turbidity or by measuring the quantity of acid produced in 72 hr. incubation. The methods give similar results; the greatest differences are with samples of low potency. Method (*c*) shows excellent specificity and reproducibility, other vitamins, even in large excess, not interfering. The results are almost identical whether measured as culture turbidity at the end of 24 hr., or by acidimetry at the end of 72 hr. incubation. J. D. R.

Chemical determination of nicotinic acid and vitamin-B_6. H. A. Waisman and C. A. Elvehjem (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 221—225).—A modification of the Melnick–Field method (A., 1939, III, 401) is described. Methods of determination of vitamin-B_6 are reviewed, with special reference to that of Swaminathan (B., 1938, 974). J. D. R.

Effect of pantothenic acid on nutritional achromotrichia. K. Unna and W. L. Sampson (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 309—311).—Addition to daily diet of 80—100 μg. of pantothenic acid cured and prevented greying of hair and dermatitis in rats on a diet deficient in this substance. Liver and rice bran were also effective. V. J. W.

Toxicity of pantothenic acid. K. Unna and J. Greslin (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 311—312).—50% mortality dose in mice was 10 g. per kg. of Ca pantothenate by mouth, 2·7 g. and 0·92 g. per kg. subcutaneously and intraperitoneally respectively. No toxic symptoms could be produced by feeding to rats, dogs, or monkeys. Death was due to respiratory failure. V. J. W.

Rôle of manganese in the biological synthesis of ascorbic acid. Synthesis of indophenol-reducing substances by guinea-pig liver *in vitro* and *in vivo*. M. N. Rudra (*J. Indian Chem. Soc.*, 1940, **17**, 705—711; cf. A., 1939, III, 768, 994; 1940, III, 235).—Normal guinea-pig liver is able to synthesise indophenol-reducing substances *in vitro* and *in vivo* in presence of adequate concn. of Mn. Possibly the inability of the guinea-pig and the primates to synthesise ascorbic acid within the body is due to insufficiency of Mn which acts as a co-enzyme in the tissues. The probability of the synthesis of ascorbic acid in human beings under certain suitable (generally acid) conditions is discussed. H. W.

Levels of ascorbic acid in plasma of apparently healthy children. F. E. Holmes, G. E. Cullen, and W. E. Nelson (*J. Pediat.*, 1941, **18**, 300—309).—Plasma-ascorbic acid vals. ordinarily associated with vitamin-*C* deficiency were observed in a mass of apparently healthy children; in some instances these persisted for 10 months without apparent ill effect on the health of the children. C. J. C. B.

Influence of ascorbic acid on oxidation of tyrosine by ultraviolet light. S. Rothman (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 52—54).—Actinic change of tyrosine into dihydroxyphenylalanine, and of synephrin into adrenaline, is increased by presence of ascorbic acid, but further oxidation is inhibited. V. J. W.

Effect of vitamin-*C* on creatine and creatine metabolism. C. Fan and T. T. Woo (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 90—92).—In 4 normal children, saturation with vitamin-*C* caused no increase in creatine excretion, but in a case of glycogen disease, with lowered creatine tolerance, marked increase was so caused. V. J. W.

Ascorbic acid and arsphenamine dermatitis. F. M. McDonald and H. H. Johnson (*Arch. Dermat. Syphilol.*, 1941, **43**, 682—688).—In guinea-pigs on a scorbutic diet + 0·7 mg. of ascorbic acid daily (39 determinations) the average blood-ascorbic acid level was 0·33 mg.-%; with 2 mg. of ascorbic acid daily (44 determinations), 0·47 mg.-%; and with 10 mg. of ascorbic acid daily (38 determinations), 1·11 mg.-%. There was no relation between ascorbic acid intake or blood-ascorbic acid and the sensitivity to repeated intradermal injections of 0·15% neoarsphenamine. C. J. C. B.

Effects of sodium diphenylhydantoinate (dilantin) on vitamin-*C* level in tissues and vitamin-*C* excretion in rats. M. E. Drake, C. M. Gruber, and V. G. Haury (*J. Pharm. Exp. Ther.*, 1941, **71**, 268—272).—Dilantin increased ascorbic acid in the urine, to a max. within 4 days after administration. The ascorbic acid content of the tissues decreased, especially in the adrenal glands, the brain, and the skeletal muscle. E. M. S.

Capillary permeability of the intact intestine of the newborn and treatment of melæna neonatorum. H. Winkler (*Z. Geburtsh. Gynäkol.*, 1939, **119**, 195—209).—The fæcal excretion of blood in the newborn does not depend on the type of the bacterial invasion of the intestines. The no. of infants with fæcal excretion of blood is 20—28% higher in the winter than during summer. Simultaneous administration of ascorbic acid and of factor *P* ("citrin"-Bayer) during the winter diminished the no. of infants suffering from melæna neonatorum and with fæcal excretion of blood. A. S.

Sources of vitamin-*C* formation in living plant cell. B. A. Rubin, E. V. Artzichovskaja, N. S. Spiridonova, and O. T. Lutikova (*Biochimia*, 1939, **4**, 260—267).—When an aq. solution of sugar is injected into wheat sprouts, formation of ascorbic acid increases provided that a sufficiently high rate of oxidative processes in the tissues is ensured and that O_2 is

present. Hence, this formation of ascorbic acid may be due to aërobic oxidation of the sugar or of one of its decomp. products, and the rôle of O_2 in the living cell may be very different from its action on dead tissue. A scheme of the principal stages occurring in the dynamics of vitamin-*C* in living plant tissue is suggested. J. N. A.

Relationships between oxidation processes in living tissues and changes in their vitamin-*C* content. B. A. Rubin, E. V. Artzichovskaja, and N. S. Spiridonova (*Biochimia*, 1939, **4**, 268—275).—Maintenance of the level of vitamin-*C* in living tissues as well as its synthesis in germinating seeds are favourably affected by increased activity of oxidising enzymes and a liberal supply of O_2, whilst they are inhibited by low rates of oxidation processes. This is because the level of -*C* is maintained chiefly by new formation of -*C*, for reduction of dehydroascorbic acid cannot supply an adequate amount for a const. level. The ascorbic acid system is only partly reversible. Part of the acid undergoes further decomp. after it is oxidised to dehydroascorbic acid, and is thus removed from the vitamin balance of the cell. J. N. A.

Vitamin-*C* metabolism: new saturation test. M. Vauthey (*Rev. Gastroent.*, 1939, **6**, 337—340).—600 mg. of ascorbic acid (300 mg. in children) are given intramuscularly at 8 a.m. on 3 consecutive days. The ascorbic acid in urine specimens passed between 7 and 8 a.m. on the 2nd, 3rd, and 4th day is determined. Normally, the specimen passed on the last morning contains 2 mg. of ascorbic acid. Failure to attain this val. indicates deficiency which may be measured by the amount of vitamin (in daily doses of 600 mg.) necessary to produce it: 3000 mg. represents moderate, and 3600 mg. severe, deficiency. W. J. G.

Chemical determination of vitamin-*C*. C. G. King (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 225—227).—The most convenient method for the determination of ascorbic acid is the reaction with 2 : 6-dichlorophenol-indophenol, using direct titration or a photo-electric colorimeter. Adequate precautions must be taken to avoid oxidative changes during extraction, and HPO_3 is recommended as the extractant. Other methods are discussed. Methods for the determination of dehydroascorbic acid are subject to interference from, *e.g.*, aldehydes, ketones, and quinones. J. D. R.

Low-calcium rickets in guinea-pig. P. R. Howe, L. G. Wesson, P. E. Boyle, and S. B. Wolbach (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 298—301).—Rachitic changes in bones and teeth developed in young guinea-pigs fed on a diet almost free from vitamin-*D*, and containing 7·3 mg. Ca and 44 mg. P daily. V. J. W.

Photo-colorimetric determination of vitamin-*D*. V. L. Solianikova (*Biochimia*, 1939, **4**, 483—491).—The most sp. colour reaction (absorption bands at 545—550 and 590—600 mμ.) of vitamin-*D* is that of Tortelli and Jaffé. Since -*A* and carotene and their oxidation products and isomerides of -*D* do not interfere, the reaction is used in the determination of -*D*, *e.g.*, in 0·01—0·05 ml. of cod-liver oil or 0·001—0·005 ml. of "vigantol" or "vitaminol." Suitable light filters which absorb the light from the isomerides are used. W. McC.

Spectroscopic determination of vitamin-*D*. N. A. Milas, R. Heggie, and J. A. Raynolds (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 227—231).—Two methods are described for the determination of vitamin-*D* in fish-liver oils. One is based on the spectrophotometric observation of $E^{1\%}_{1\,cm}$ vals. at 500—520 mμ. of the $SbCl_3$ colour of various oils. Corrections are applied for the presence of sterols and -*A*, both of which interfere with the absorption band of -*D*. In the second method, the non-saponifiable fraction of the oil is treated with maleic anhydride to destroy -*A*, carotenoids, and 7-dehydrocholesterol: -*D* in the treated material is then determined spectrophotometrically as in the first method. The results obtained are in fair agreement with bioassays. J. D. R.

Growth-stimulating activity of α-tocopherol. M. M. Nelson, G. A. Emerson, and H. M. Evans (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 157—158).—Daily administration of 0·25 mg. to female rats which had ceased to grow on a vitamin-*E*-free diet gave a growth curve equal to that previously obtained with a daily dose of 1 mg. V. J. W.

Prevention of nutritional myopathy of ducklings by α-tocopherol. A. M. Pappenheimer (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 457—459).—This condition is prevented by daily administration of 4 mg. (but not of 1 mg.) of synthetic α-tocopherol. V. J. W.

Successive generations of vitamin-*E*-low rats. G. A. Emerson and H. M. Evans (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 159—162).—4 generations were reared on a vitamin-*E*-low diet, living offspring being secured by one administration of 1 g. of wheat-germ oil. Deficiency symptoms occurred at an earlier age in each succeeding generation, and there was progressive delay in maturity in the females. Males were all sterile, but the 4th generation became fertile on germ-oil administration (cf. A., 1940, III, 431). V. J. W.

Vitamin-*E* activity of compounds related to α-tocopherol. M. Tishler and H. M. Evans (*J. Biol. Chem.*, 1941, **139**, 241—245).—α-Tocopherylquinone and 6-phytyl-2 : 3 : 5-trimethyl-1 : 4-benzoquinone are inactive in 100-mg. doses, whilst the βγ-dihydro-derivative of the latter shows no activity at a 25-mg. level. α-Tocopherylquinol is purified by repeated washing with light petroleum, and is then oxidised to the pure quinone. Naphthotocopherol, prepared from vitamin-K_1 by the action of acid reducing agents, has approx. one third of the activity of β- and γ-tocopherol. P. G. M.

Chemical detection of vitamin-*F*. G. Woker and P. Bernhard (*Helv. Chim. Acta*, 1941, **24**, 98—117).—An alcoholic solution of a suitable aromatic amine or mixture of amine and phenol or physiologically interesting phenol is mixed with alcoholic vitamin-*F* solutions of varied concn. and the colours are compared with vitamin-free controls after suitable intervals. The reaction is usually terminated in 24 hr. *p*-Phenylenediamine is a very suitable substrate and its mixtures with thyroxine are very sensitive. *p*-Phenylenediamine–*o*-cresol mixtures are very suitable. Leuco-malachite-green is preferable to *p*-phenylenediamine for long but inferior to it for short periods. The constitution of the pigments which are formed is discussed. Addition of H_2O_2 to mixtures of -*F* with *p*-phenylenediamine alone or with phenols or benzidine enables observations to be completed generally in 1 hr. and after 24 hr. causes much colour displacement and darkening. -*F* can also be detected by absorption of I rendered evident by the decolorisation of starch or glycogen iodide. Its similarity to vitamin and provitamin-*A* in this respect is discussed. H. W.

Behaviour of compounds related to vitamin-*E* at the dropping mercury electrode.—See A., 1941, I, 270.

Formation of anti-egg-white-injury factor (biotin) in rumen of cow. L. W. McElroy and T. H. Jukes (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 296—297).—Chicks fed on a vitamin-*B*-low diet + raw egg-white developed a characteristic dermatitis which could be prevented or cured by feeding with dried rumen contents of a cow fed on the same diet. Pantothenic acid was ineffective. V. J. W.

Hæmorrhagic sweet clover disease. II. Bioassay of hæmorrhagic concentrates by following prothrombin level in rabbit's plasma. H. A. Campbell, W. K. Smith, W. L. Roberts, and K. P. Link. **IV. Isolation of crystalline hæmorrhagic agent.** H. A. Campbell and K. P. Link (*J. Biol. Chem.*, 1941, **138**, 1—20, 21—33; cf. A., 1941, III, 23).—II. By a modification, capable of detecting small changes in prothrombin activity, of Quick's method (cf. A., 1937, III, 381), the change, within a certain range, produced in the prothrombin activity of dil. rabbit's plasma by feeding spoiled sweet clover hay samples or concentrates is measured, the necessity for obtaining abs. vals. being eliminated because affected plasma is directly compared with healthy plasma from the same rabbit. The healthy plasma, which is more stable than the affected, undergoes no appreciable change in prothrombin activity during several days at 0°. Rabbits vary greatly in their susceptibility to the hæmorrhagic agent and susceptible individuals only are used. Thromboplastin (prep. described) retains its activity for several months at 0°. Since rabbits do not acquire immunity to the hæmorrhagic agent, they are used repeatedly, brief recovery periods being allowed. Application of the procedure permits production of concentrates free from N, S, and P and having a potency approx. 20,000 times that of the original hay.

IV. The method described permits the isolation from 3 kg. of hæmorrhagic hay, naturally and experimentally spoiled, of 60 mg. (equiv. to approx. 66% of the total content) of the

optically inactive hæmorrhagic *substance*, probably $C_{19}H_{12}O_6$ (two acidic OH groups present), m.p. 288—289° (*dimethyl ether*, m.p. 168—170°). The dry hay contains approx. 0·003% of the agent, which is not identical with any coumarin derivative so far found in plants. Since the dimethyl ether does not affect prothrombin level, it appears that the OH groups of the agent are involved in the activity. The agent acts when injected or orally administered but is inactive *in vitro*.
W. McC.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Site of action of narcotics in respiratory processes. M. Michaelis and J. H. Quastel (*Biochem. J.*, 1941, **35**, 518—533).—A concn. of chloretone which largely inhibits aërobic oxidation of glucose, lactate, and pyruvate in presence of brain tissue has very little effect on the anaërobic oxidation, using the $Fe(CN)_6'''$ technique. The dehydrogenases involved in the above oxidations in presence of brain are relatively narcotic-insensitive. Anaërobic glycolysis by brain is not inhibited by relatively high concn. of chloretone. Anaërobic oxidation of glucose, lactate, and pyruvate in presence of brain tissue and a carrier such as pyocyanine can be followed by the $Fe(CN)_6'''$ technique. Anaërobic oxidation of lactate by $Fe(CN)_6'''$ in presence of crushed yeast can be determined manometrically in absence of added carriers, and it is inhibited only slightly by relatively high concn. of chloretone. Addition of crushed yeast to a skeletal muscle extract containing α-glycerophosphate produces a narcotic sensitive respiratory system. The systems dialysed skeletal muscle extract, cozymase, and α-glycerophosphate, and liver-dehydrogenase, cozymase, and glucose, which are only weakly narcotic-sensitive, become highly sensitive in presence of cytochrome oxidase. Systems which are investigated anaërobically by the $Fe(CN)_6'''$ method are not appreciably inhibited by amounts of chloretone which produce much inhibition of O_2 uptake when pig heart cytochrome oxidase is added. A high concn. of chloretone does not inhibit reduction of heart-flavoprotein by reduced cozymase or the reduction of methylene-blue by reduced flavoprotein, but it does largely inhibit O_2 uptake of a system composed of skeletal muscle extract, cozymase, flavoprotein, cytochrome oxidase, and lactate. It is suggested that a biologically important concn. of chloretone affects mainly either a special flavoprotein or some component of the tissue respiratory system which plays an intermediate rôle between flavoprotein and cytochrome oxidase.
J. N. A.

Regulation of respiration by transformation of phosphagen. V. A. Belitzer (*Biochimia*, 1939, **4**, 498—502).—Stimulation of the respiration of muscle by creatine is reinforced, in certain cases, by addition of boiled tissue extracts. H_3AsO_4 inhibits the phosphorylation coupled with respiration and thus, in low concn., activates the respiration. Parallelism exists between the increased respiration and the synthesis of phosphagen which occurs in presence of creatine. W. McC.

Mechanism of fixation of carbon dioxide in Krebs cycle. H. G. Wood, C. H. Werkman, A. Hemingway, and A. O. Nier (*J. Biol. Chem.*, 1941, **139**, 483—484).—When radioactive α-ketoglutarate, formed in the oxidation of pyruvate by liver in the presence of radioactive Na_2CO_3, is oxidised the CO_2 contains 2·20% of ^{13}C and the succinate 1·10%, *i.e.*, all the fixed C is in one carboxyl group of the α-ketoglutarate in agreement with its derivation from pyruvate and oxalacetate.
E. M. W.

Mechanism of sugar synthesis from products of glycolysis. I. Oxidation of pyruvic acid in presence of glycine. A. Kuzin and Z. Makaeva (*Biochimia*, 1939, **4**, 449—456).—In an acid medium, I does not react with pyruvic acid but, in presence of glycine, rapid disappearance of I occurs and hydroxypyruvic acid is produced probably after enolisation of the pyruvic acid. Possibly muscular oxidation of pyruvic acid proceeds in a similar way. W. McC.

Mechanism of ascorbic acid oxidation in animal tissues. B. J. Goldstein and D. V. Volkenzon (*Biochimia*, 1939, **4**, 457—469).—In presence of pyrogallol and phenol oxidase, the ascorbic acid of aërated Jensen rat sarcoma undergoes oxidation but no oxidation occurs if liver, kidney, or spleen is substituted for the sarcoma. Ascorbic acid in the sarcoma and the spleen is oxidised if H_2O_2 or peroxidase is added and oxidation is intensified if H_2O_2 and peroxidase act simultaneously. These two substances do not oxidise the ascorbic acid of the liver and kidneys of mature rats. Peroxidase also oxidises the ascorbic acid of placenta and of embryonic liver but the effect is less pronounced than with sarcoma and spleen. The results suggest that H_2O_2 is produced during the metabolism of the sarcoma, spleen, placenta, and embryonic liver, that the system peroxidase + H_2O_2–polyphenol plays an important part in the oxidation of ascorbic acid in these organs and tissues, and that ascorbic acid acts as H carrier in tissues in which increased synthesis occurs. W. McC.

Method for measuring metabolism of tissue in serum. D. G. Friend and A. B. Hastings (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 137—139).—CO_2 is removed from serum and the p_H adjusted to 7·2—7·3. This serum can then be used for immersion of tissues in the direct Warburg method, and liver slices so examined show an O_2 consumption of 12·5 as against 10 for determinations in which Ringer's solution was used.
V. J. W.

Protein catabolism and protein sparing under adrenaline. C. Reid (*Biochem. J.*, 1941, **35**, 534—537).—Adrenaline increases the catabolism of protein in dogs and cats but protein can still be spared by giving carbohydrate, even when the metabolic rate is increased by administration of adrenaline. The protein-sparing action of carbohydrate appears to be united with the physiological rôle of insulin, for it is not shown under ordinary conditions by the depancreatised animal without insulin. Although the protein-sparing action of carbohydrate still functions when adrenaline is given, the latter cannot be regarded strictly as an "anti-insulin" despite their opposing actions on blood-sugar. J. N. A.

Choline metabolism. VI. Hæmorrhagic degeneration and labile methyl supply. W. H. Griffith and D. J. Mulford (*J. Amer. Chem. Soc.*, 1941, **63**, 929—932; cf. A., 1939, III, 1066).—Deficiency of choline and labile methyl in diets fed to rats causes hæmorrhagic degeneration, renal lesions, and decreases in kidney wt. and liver fat, the last-named being the best measure of the effect. 3—4 mg. of *dl*-methionine or betaine hydrochloride may replace 1 mg. of choline chloride; methionine is thus an efficient source of methyl, but betaine is either inefficient or has only one available group. Creatine may replace some but not all of the choline, apparently sparing for creatine synthesis some of the methyl which would without it be otherwise utilised. Glutathione causes excessive liver fat without kidney degeneration. Homocystine resembles cystine rather than methionine. R. S. C.

Extractive nitrogenous bases of muscle, and their biological significance. IX. Decomposition of carnosine in the animal organism. A. N. Parschin and V. A. Bognibov. **X. Determination of carnosine and anserine.** A. N. Parschin (*Biochimia*, 1939, **4**, 548—554, 555—561).—IX. Subcutaneous injection of carnosine into cats is followed by appearance of histidine in the urine, together with increased urinary purine excretion. Hydrolysis of carnosine is effected chiefly in the kidneys.

X. To 1 ml. of muscle extract are added 1 ml. of 0·33M-PO_4''' buffer at p_H 7·8, 0·5 ml. of purified dipeptidase solution (Waldschmidt-Leitz), and 3—5 drops of $CHCl_3$, and NH_2-N is determined after 24 hr. at 38°, in this and in a control system to which muscle extract had been added immediately prior to titration. The carnosine content is given by difference. Should anserine also be present it is determined in the filtrate after pptn. of carnosine as Hg salt. Carnosine is absent from smooth and heart muscle and blood of horses.
R. T.

Effect of ascorbic acid and cysteine on urea production in the perfused liver. E. E. Martinson and I. V. Fetisenko (*Biochimia*, 1940, **4**, 593—599).—Production of urea from $(NH_4)_2CO_3$ in defibrinated blood or Ringer–Locke solution perfused through isolated rabbit's liver is greatly augmented when ascorbic acid or cysteine is added to the solution. These substances act probably by facilitating hydrolysis of preformed arginine, and by activating arginase. R. T.

Catalytic function of amino- and keto-dicarboxylic acids in amino-nitrogen transfer between monocarboxylic substrates. X. Formation and decomposition of amino-acids by intermolecular transfer of amino-groups. A. E. Braunstein and M. G. Kritzmann (*Biochimia*, 1939, **4**, 303—315; cf. A., 1939, III, 721).—Although no reaction occurs between monocarboxylic-α-amino- and -α-keto-acids in presence of muscle tissue, trans-amination occurs at a fairly high rate between

lysine, phenylalanine, serine, or leucine and pyruvate in presence of small amounts (0·00006M.) of dicarboxylic-α-amino- or -keto-acids, which function catalytically as intermediate amino-group carriers. Under aërobic conditions, metabolic precursors of α-ketodicarboxylic acids (*e.g.*, citric, succinic, fumaric, malic) can be used as catalysts in presence of muscle tissue. In enzyme preps. which specifically trans-aminate glutamic or ketoglutaric acid, the amino-group of aspartic acid is transferred to pyruvate in presence of catalytic amounts of α-ketoglutarate. No catalysed transfer of amino-N occurs with histidine and arginine as amino-group donators, and irregular results are obtained with glycine and pyruvate. The ability of the dicarboxylic acids to act as carriers in the transfer of H and amino-groups places them in a central position as key substances in the joint processes of oxidation–reduction and energy translocation in the cell, similar to the nucleotide-like enzymes which transport H and transfer PO_4'''. J. N. A.

Trimethylamine oxide and trimethylamine in man. H. L. A. Tarr (*J. Fish. Res. Bd. Canada*, 1941, **5**, 211—216).—Both biological and chemical reduction methods show that the urine of man on a normal mixed (fish-free) diet contains 110—250 mg. of trimethylamine oxide dihydrate in a 24-hr. sample. Trimethylamine hydrochloride, when fed to man, appears largely as the corresponding oxide in the urine, but small amounts of the free amine may appear when fed rapidly. The oxide, similarly administered, appears unchanged in the urine. Its possible rôle in a reversible oxidation–reduction system is discussed. R. G. W.

Biological importance of sulphur. N. B. Medvedeva (*Acad. Sci. Ukrain. S.S.R., Kiev*, 1940, 3—103).—The biological rôle of S compounds (peptides, proteins, hormones, vitamins, and enzymes) is reviewed. R. T.

Metabolism of sulphur. XXIX. *S*-Carboxymethylcysteine. XXX. Thiourea. F. R. Blood and H. B. Lewis (*J. Biol. Chem.*, 1941, **139**, 407—412, 413—420; cf. A., 1937, III, 173).—XXIX. No extra urinary inorg. SO_4'' was formed by oxidation of *S*-carboxymethylcysteine injected into rabbits, but a small increase followed oral administration; this is attributed to the action of intestinal microflora. Oral, but not subcutaneous, administration caused excretion in the urine of an ether-sol. substance giving a positive test for disulphides. No *N*-acetyl derivative could be detected in the urine. There was no evidence of the excretion of a disulphide compound of thioglycollic acid.

XXX. Feeding or injection of thiourea causes a decrease in inorg. SO_4''-S excretion in rabbit urine, but no increase in org. SO_4''. Much of the thiourea appears in the urine; cystine was not identified. Starvation causes a similar decrease in inorg. SO_4''-S excretion, and thiourea augments this effect. R. L. E.

Passage of carotenoids from food to milk in the cow. Fate of lycopene. A. E. Gillam and S. K. Kon (*J. Dairy Res.*, 1940, **11**, 266—273).—The fat from the milk of cows fed on tomato purée was found to be free from lycopene. Thus although α- and β-carotene are absorbed, lycopene is excluded; the mechanism is obscure. The adsorption columns showed two small zones of pigments having absorption max. at 452 and 425 mμ. (? oxidation products of β-carotene). J. G. D.

Inositol: a lipotropic factor. G. Gavin and E. W. McHenry (*J. Biol. Chem.*, 1941, **139**, 485).—The production of fatty livers in rats by a beef liver fraction (A., 1940, III, 517) is prevented by simultaneous administration of lipocaic or similar extracts of liver, pancreas, kidney, muscle, wheat germ, yeast, and rice polishings. Inositol prevents the development of fatty liver caused by biotin + thiamin, riboflavin, pantothenic acid, or pyridoxine. E. M. W.

Metabolism of αβ- and βγ-deuterohexoic acids. M. G. Morehouse and H. J. Deuel, jun. (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 96—98).—In rats fed on the αβ-acid, 6·43% of β-hydroxybutyric acid excreted contained D. In those fed on the βγ-acid, this val. was 10·89%. These results suggest that δ-oxidation is of chief importance in hexoic acid oxidation. V. J. W.

Lethal dermatitis in chickens produced by external application of fat. B. Ben-Dor (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 495—497).—Application of lard, cottonseed oil, chicken fat, or mineral oil caused dermatitis in areas treated and usually death in 4—5 days. All birds were 4—5 weeks old. V. J. W.

Effect of crude peanut oil extracts of brown fat on metabolism of white rat. W. E. Hook (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 37—40).—Intraperitoneal injection of extracts of brown fat from the hibernating woodchuck or ground squirrel lowered O_2 consumption either at once or after 1—2 days. V. J. W.

Influence of antecedent diet on Exton–Rose one-hour, two-dose glucose tolerance test. P. H. Langner and H. L. Fies (*Amer. J. clin. Path.*, 1941, **11**, 41—44).—In 9 healthy adults the blood-sugar level after 1 hr. was much higher after a period of low-carbohydrate diet than in the control curve after a normal diet. In 2 cases the curves, after dieting, while higher than the respective control curves, were within normal limits but the other 7 curves after dieting were all abnormal according to the criteria of Exton and Rose. C. J. C. B.

Effect of vitamin-*C* on glycosuria. R. Stöger (*Klin. Woch.*, 1940, **19**, 171—174).—Administration of vitamin-*C* (300—500 mg. daily for 5 days) in diabetes mellitus produces marked and const. decrease of glycosuria. M. K.

Effect of ether-soluble fraction of bile on hepatic glycogen storage. R. W. Vance, E. Snapp, and A. C. Ivy (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 174—175).—Injection of an ether extract of ox bile did not increase the glycogen of rabbit's liver after glucose injection. V. J. W.

Degree of ketosis during fasting. A. N. Wick, J. W. Sherrill, and E. M. Mackay (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 437—439).—In man and the rat the blood concn. of ketonic compounds increases to 15—20 mg.-% during the first 2—4 days of fasting, and remains at that level for the rest of the 10 days of fasting. V. J. W.

Influence of alkalosis and acidosis on fasting ketosis. E. M. MacKay, A. N. Wick, H. O. Carne, and C. P. Barnum (*J. Biol. Chem.*, 1941, **138**, 63—68).—Determination of urinary ketones, N, and S, and of blood-ketones and liver-glycogen in fasting rats shows that the acidosis produced by administering HCl is anti-ketogenic, whilst the alkalosis resulting from $NaHCO_3$ administration is ketogenic. Since the acidosis is accompanied by increase in the glycogen content of the liver and in the daily excretion of N and S in the urine and the alkalosis by decrease in all these vals. it is suggested that the anti-ketogenesis and ketogenesis result, respectively, from increased and decreased glucose production from protein. W. McC.

Calcinosis universalis. J. F. Lutz (*Ann. int. Med.*, 1941, **14**, 1270—1282).—A case of calcinosis universalis in a girl of 16 is reported. A. S.

Radioactive iodine as indicator of the metabolism of iodine. I. Turnover of iodine in tissues of the normal animal, with particular reference to the thyroid. I. Perlman, I. L. Chaikoff, and M. E. Morton. **II. Rates of formation of thyroxine and di-iodotyrosine by the intact normal thyroid gland.** I. Perlman, M. E. Morton, and I. L. Chaikoff (*J. Biol. Chem.*, 1941, **139**, 433—447, 449—456).—I. Radioactive I is used to label I fed or injected, or, free from normal I, as a "tracer" for the endogenous I of the body. I fed as KI is rapidly absorbed, and 50% appears in the urine in 24 hr. The small intestine, liver, and kidney rapidly take up some of the I, but lose it within 24 hr. The thyroid takes up 2% of the I fed within 24 hr., and loses it much more slowly than do the other organs. 65% of "tracer" I given by stomach tube appears in the thyroid in 24 hr., and is slowly lost. Tracer doses also appear in the skin, testes, adrenals, and liver, and in smaller amounts in muscle and brain, a few hr. after injection. It is concluded that the thyroid absorbs I from the circulation much more rapidly than do the other tissues, and loses it slowly as equilibrium in distribution is attained. The I in blood and tissues other than the thyroid probably results from diffusion rather than from selective absorption.

II. More of the "tracer" I (labelling endogenous I) is found as di-iodotyrosine than as thyroxine, but the proportion of thyroxine is greater 48 hr. after injection than after 4 hr. Di-iodotyrosine is probably formed first. R. L. E.

Mechanism of phosphorylation associated with respiration. V. A. Belitzer and E. T. Tzibakova (*Biochimia*, 1939, **4**, 516—535).—Synthesis of phosphagen from creatine by washed

pigeon pectoral or rabbit heart muscle takes place rapidly at p_H above 7 in presence of dehydrogenation substrates, such as pyruvic, citric, malic, fumaric, α-ketoglutaric, succinic, and lactic acid. Adenylic acid is of far less importance as a phosphorylating agent in muscle than is creatine. Iodoacetic acid depresses respiration, owing to inhibition of glycolysis, but does not inhibit phosphorylation of creatine. In presence of a substrate NaF does not inhibit phosphagen synthesis. AsO_4''' has a feeble inhibiting effect; that of AsO_3''' is much more powerful for all substrates except succinic acid, which is rapidly oxidised to fumaric acid. Oxalic acid inhibits both phosphorylation and respiration. Phosphagen participates in each step of the oxidation of glucose; it is estimated that more than 30 mols. are synthesised during oxidation of 1 mol. of glucose to CO_2 and H_2O. R. T.

Distribution of ingested phosphorus in bone and teeth of dog, shown by radioactive isotope. M. L. Manly, H. C. Hodge, and S. N. Van Voorhis (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 70—72).—Uptake was greater in spongy than in dense diaphyseal bone and dentine. Only traces could be found in enamel. V. J. W.

Rate of detoxication of benzoic acid by glycuronic acid in man. H. Wagreich, A. Abrams, and B. Harrow (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 46—49).—5% of 5—7 g. of benzoic acid ingested is excreted as glycuronate. Excretion is max. in the 1st 3 hr. and lasts for 9—15 hr. V. J. W.

Oxidation of the benzene ring in the animal body. K. Bernhard and E. Gressly (*Helv. Chim. Acta*, 1941, **24**, 83—87).—A small amount of muconic acid was isolated in one of seventeen experiments after intraperitoneal injection of deuterobenzene into rabbits. The acid contained D, thereby establishing the oxidation of benzene to muconic acid in the animal body. Small amounts of muconic acid are burnt after administration orally or parenterally. H. W.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Stable derivative of 4-amino-3-hydroxybenzenesulphonamides.—See A., 1941, II, 206.

Possible source of error in determination of sulphapyridine and sulphanilamide. M. F. Butler and S. B. Nadler (*J. Lab. clin. Med.*, 1941, **26**, 1052—1053).—The colorimetric determination of sulphapyridine and sulphanilamide depends on diazotisation of primary arylamines, and procaine hydrochloride may thus give a pink colour, which is identical with that obtained from sulphapyridine. Procaine may be present in the syringe used to take blood. C. J. C. B.

Intracranial use of sulphonamides; experimental study of history and rate of absorption. E. F. Hurteau (*Canad. Med. Assoc. J.*, 1941, **44**, 352—355).—The drugs cause an unimportant transient focal meningeal leucocytic response in cats, less than that resulting from implantation of silk suture material or use of Ag clips. Sulphapyridine is absorbed most slowly, but cannot be detected after 34 days. Sulphathiazole cannot be detected after 17 days and sulphanilamide after 11 days. C. J. C. B.

Activity of sulphanilamide in various media. A. M. Locatelli and S. Bowden (*Pharm. J.*, 1941, **146**, 251).—The action of sulphanilamide dispersed in different media has been studied on agar cultures of swabs from infected wounds. The bacteriostatic effect was greatest in glycerin, less as the powder or suspended in oil. It was inactive as an ointment. J. L. D.

Reduction of neoprontosil by tissues *in vitro*. F. Bernheim (*J. Pharm. Exp. Ther.*, 1941, **71**, 344—348).—Suspension of rat liver, incubated semi-anaërobically with the dye, caused reduction, which was increased by addition of cystine, thioglycollic acid, or ethyl alcohol. Boiling or the addition of KCN prevented reduction by liver alone or with substrates. Kidney caused little reduction, brain and muscle none. E. M. S.

Sulphapyridine in secretin-stimulated pancreatic juice and bile of cats. A. Taylor and G. Ågren (*Acta Physiol. Scand.*, 1940, **1**, 79—84).—The sulphapyridine content of blood, pancreatic juice, and bile in cats were determined (method of Marshall), using a Pulfrich photometer. Bile was collected from the bile duct after ligature of the cystic duct. The bile pigments were pptd. by adding $ZnSO_4$ (4·5%), N-$NaCO_3$, and N-$BaCl_2$. 100 mg. per kg. of sulphapyridine was intravenously injected; secretin (0·3 mg. per kg.) was given 10—20 min. later. The drug concn. in pancreatic juice is slightly below that in blood and is independent of rate of flow. High concns. were found in bile, also independent of rate of flow. There was no change in the ratio free/bound drug in pancreatic juice but 30% of the free drug was acetylated by the liver. A. S.

Chemotherapy of infectious diseases. W. Heubner (*Klin. Woch.*, 1940, **19**, 265—269, 289—293).—A review and discussion of sulphanilamide derivatives. M. K.

Chemotherapy and wound infection. (*Proc. Roy. Soc. Med.*, 1941, **34**, 337—350).—L. Colebrook: A wound produced by violent injury is a honeycomb of "dead spaces" filled with serous fluid which is a good culture medium for pathogens, particularly staphylococci and streptococci. Sulphanilamide introduced into the wound saturates the fluid and may be expected to check the growth of bacteria; whether this strong solution is harmful to leucocytes is not known, although at 1/400 sulphanilamide has no such effect. Streptococci may be killed by the drug in the absence of leucocytes, but it is doubtful if staphylococci, gas gangrene clostridia, or coliform bacilli can be destroyed without their help. Early application of sulphanilamide in wound infection, following surgical exploration, and in compound fractures in closed plaster, gives hope of recovery without suppuration. Wounds dusted daily with sulphanilamide, provided there is not much exudate nor pockets for its collection, are usually rid of hæmolytic streptococci. E. E. Lewis: The incidence of infection in wounds may be greatly lowered by covering them with a uniform layer of sulphanilamide, lightly packing with plain or vaseline gauze, and, where suitable, primary suture. The wound is not inspected before the 5th day, when the majority are healthy. Further application of the drug and obliteration of depth with catgut sutures may then be done. Burns should be cleaned with soap and water, and 70% spirit applied after removal of loose skin. The spirit is dried off and streptocide dusted on the burnt area, which is then covered with tulle gras. Inspection and further application of streptocide are made on the 5th day. Results are good. A. Fleming: Sulphanilamide is sufficiently bacteriostatic to deal with most *Streptococcus pyogenes* infections but fails with pneumococcus and staphylococcus; sulphapyridine is more powerful, acting on streptococcus and pneumococcus but not staphylococcus; sulphathiazole is the most powerful, acting on all 3 organisms. Determination of blood-sulphonamide should be part of the routine of treatment. In the concns. reached in the blood the sulphonamides do not affect leucocytic function. Pus fluid inhibits the bacteriostatic power of sulphapyridine. Penicillin is, wt. for wt., 4 times as potent as sulphathiazole, and 20 times as potent as sulphapyridine; it is not inhibited by microbes or by pus fluid. Immunotherapy and chemotherapy can advantageously be combined. F. Hawking discusses the use of the drugs in gas gangrene, and C. A. Green their effect on antibody formation. W. J. G.

Superiority of neoarsphenamine and sulphathiazole in therapy of *Staphylococcus aureus* infections in marrow cultures. E. E. Osgood, J. Joski, and I. E. Brownlee (*Surg. Gynec. Obst.*, 1940, **71**, 445—449).—Controlled quant. studies of the relative effectiveness of sulphanilamide, sulphapyridine, sulphathiazole, sulphamethylthiazole, and neoarsphenamine against *S. aureus* infections were made by the marrow culture method. The results suggested that administration of neoarsphenamine combined with sulphathiazole in carefully regulated doses is worthy of clinical trial in serious staphylococcus infections. F. F. R.

Glycerin–sulphonamide paste for burns. J. M. Robson and A. B. Wallace (*Brit. Med. J.*, 1941, I, 469—472).—A paste consisting of 5 g. of sol. albucid, 100 c.c. of glycerin, 10 c.c. of cod-liver oil, and 80 g. of fine kaolin was successfully used in 20 cases of burns. It is antiseptic and allows greater freedom of movement than a coagulum. C. A. K.

Sulphanilamide powder in superficial streptococcal wounds. L. Colebrook and A. E. Francis (*Lancet*, 1941, **240**, 271—273).—In 62 wounds infected with hæmolytic streptococci, local application of sulphanilamide powder removed the organisms in 3—4 days, except in cases due to group *D*. Sulphanilamide and sulphathiazole had little effect on staphylococci, *B. proteus*, or *Ps. pyocyanea*. C. A. K.

Clinical aspects of the sulphapyridine therapy. R. A. Kilduffe (*J. Lab. clin. Med.*, 1941, **26**, 919—929).—A review. C. J. C. B.

Sulphathiazole in staphylococcal infections. G. Melton (*Lancet*, 1941, **240**, 274—278).—Sulphathiazole was used in 50 cases of staphylococcal infection, mostly severe. Cases of septicæmia, acute osteomyelitis, and carbuncles recovered, but surgical drainage was not avoided. The best method of attaining the high blood concn. of 15 mg.-% is by continuous intravenous drip of the Na salt in isotonic solution. Vomiting was less common than with sulphapyridine and toxic effects were skin eruptions, conjunctival congestion, and moderate leucopenia. C. A. K.

Sulphathiazole in staphylococcal septicæmia. J. Heselson (*Lancet*, 1941, **240**, 311).—A successful case report. C. A. K.

Treatment of staphylococcal septicæmia with sulphamethylthiazole and sulphathiazole. M. Hamburger and J. M. Ruegsegger (*Ann. int. Med.*, 1941, **14**, 1137—1154).—12 consecutive cases of staphylococcal septicæmia were treated with sulphamethyl- and sulpha-thiazole. 4 patients died; they had suffered from staphylococcal endocarditis. Two patients treated with sulphamethylthiazole developed peripheral neuritis. Other signs of sulphathiazole toxicity were rashes, conjunctivitis, chills, and fever. In previous years, 4 out of 27 patients with staphylococcal septicæmia survived. Osteomyelitis cases are included in both groups. A. S.

Action of sulphonamide and sulphathiazole in staphylococcal bacteræmia. H. Southworth (*Ann. int. Med.*, 1941, **14**, 1180—1183).—Two cases of prolonged staphylococcal bacteræmia (group *C*) without obvious foci of infection responded well to sulphonamide and sulphathiazole respectively. In one patient, staphylococci were persistently found in the blood stream for 17 months. A. S.

Sulphapyridine and sulphathiazole in staphylococcal bacteræmia. W. W. Spink, A. E. Hansen, and J. R. Paine (*Arch. intern. Med.*, 1941, **67**, 25—35).—6 out of 10 cases of staphylococcal bacteræmia recovered after sulphapyridine; 18 of 19 cases were successfully treated with sulphathiazole. C. A. K.

Susceptibility of pneumococci to sulphapyridine, sulphathiazole, and sulphamethylthiazole. F. C. Lowell, E. Strauss, and M. Finland (*Ann. int. Med.*, 1940, **14**, 1001—1023).—The susceptibility of pneumococci to the bacteriostatic action of sulphapyridine, sulphathiazole, and sulphamethylthiazole was tested *in vitro* by observing the growth of various strains in a medium to which different concns. of the drugs were added. Strains initially susceptible to the bacteriostatic action of the drugs were made resistant by growth in media containing increasing concns. of the drugs. The resistance acquired against one drug was also apparent against the other two drugs to approx. the same extent; strains differed in the ease with which they acquired fastness; resistance was also produced by one exposure to the drug in bacteriostatic concns. for 72 hr. Strains of pneumococci isolated from patients before treatment began were highly susceptible to the drugs; therapeutic concns. of the drug produced marked inhibition of growth *in vitro*. The degree of bacteriostasis varied in individual strains; the greatest resistance was found in type XXXIII strains; type III and V strains were also less susceptible to bacteriostasis than other types. Most strains showed the same degree of growth inhibition with equal concns. of each of the drugs; a no. of strains were more susceptible to sulphathiazole than to sulphapyridine. Strains isolated from 3 patients after several days of drug treatment and during a relapse of pneumonia were resistant to the 3 drugs; in two of the patients the pneumococci were highly susceptible to the drugs before treatment was initiated. In other patients with poor response to chemotherapy, no change in the susceptibility of the pneumococci was demonstrated. A. S.

Therapeutic sulphapyridine (Soludagenan) levels in blood of patients suffering from lobar pneumonia. P. T. Kuo, H. Rottenstein, C. H. Ho, and Y. C. Ho (*Chinese Med. J.*, 1940, **58**, 534—544).—Optimal levels were 8—10 mg. of free sulphapyridine % for serious cases, 4—6 mg. for moderately severe cases, and 3—4 mg. for late and mild cases. Sol. sulphapyridine given intravenously is not more toxic than that orally administered and rapidly produces the necessary therapeutic blood concn. W. J. G.

Sulphapyridine in pneumonia of children. R. M. Murray-Lyon and R. W. Biagi (*Edinb. Med. J.*, 1941, [iv], **48**, 313—316).—38 cases of lobar and 12 of broncho-pneumonia were treated with 0·1—0·3 g. per kg. of sulphapyridine daily and this dose was maintained until temp. became normal. Results in both forms of the disease were disappointing but there were no toxic effects from the drug. H. S.

Friedländer pneumonia successfully treated with sulphapyridine. F. Sinclair (*Brit. Med. J.*, 1941, I, 196).—Case report. C. A. K.

Sulphathiazole and sulphapyridine in pneumococcal pneumonia. C. F. Garvin (*Arch. intern. Med.*, 1940, **66**, 1246—1251).—40 patients with pneumococcal pneumonia treated with sulphathiazole showed a corr. mortality rate of 10%, 62 patients treated with sulphapyridine a rate of 9%. About twice as much sulphathiazole as sulphapyridine was required to maintain a level of 5—6 mg.-% of free drug in the blood. Sulphathiazole caused less vomiting but more crystals in the urine. C. A. K.

Sulphapyridine and sulphathiazole in pneumococcal pneumonia. H. F. Flippin, J. G. Reinhold, and L. Schwartz (*J. Amer. Med. Assoc.*, 1941, **116**, 683—690).—Sulphapyridine and sulphathiazole were each given to 200 cases. The mortality rate was 12% with the former, 8% with the latter. Sulphapyridine cases showed a more rapid fall of temp., higher concns. of free and acetylated forms in the blood, and a higher frequency of nausea and vomiting (60% against 22%) than those given sulphathiazole. In both cases the therapeutic responses showed no correlation with blood concns. from 2 to 15 mg.-%. C. A. K.

Treatment of pneumococcic pneumonias with sulphapyridine and sulphathiazole, and serum; analysis of the results of specific therapy at the Boston City Hospital from July, 1939, through June, 1940. M. Finland, F. C. Lowell, and E. Strauss (*Ann. int. Med.*, 1941, **14**, 1184—1198).—691 out of 911 patients suffering from pneumococcal pneumonia were treated either with sulphapyridine, sulphathiazole, or serum, or with a combination of serum and one of the drugs; the mortality rate among these 691 cases was 16·4%. Combined serum and drug treatment was used in severe cases of types I, II, V, VII, and VIII infection; more than half of the 88 patients of this group had positive blood cultures; the mortality rate was 19·3%. The mortality rate among patients who received no sp. treatment was 49·5%. The mortality rate in 518 patients treated with sulphapyridine, alone or with serum, was 17·4%; that in 169 cases who received sulphathiazole, with or without serum, was 12·4%; more than half of the deaths in the sulphapyridine group occurred in patients over 60, whereas only one third of those treated with sulphathiazole were of this age group. There was a high % of other serious illness in the group who did not receive sp. treatment. The blood concn. of free sulphapyridine ranged between 3 and 9 mg.-%, that of free sulphathiazole was 2—6 mg. The acetylated drug constituted 20—50% of the total circulating sulphapyridine; there were only small amounts of acetylated sulphathiazole. Among the patients who recovered 71% of those treated with sulphapyridine and 63% of those treated with sulphathiazole were afebrile and free of symptoms 36 hr. after commencement of treatment. In the thiazole group nausea and/or vomiting was observed in 42%, as compared with 54% among sulphapyridine-treated cases; severe vomiting was frequent in the latter and unusual in the former group. Hæmaturia was equally frequent in both. Anæmia and severe leucopenia were considerably more frequent in the sulphapyridine group, drug fevers and rashes were more frequent in the sulphathiazole group. There were few and mild reactions from sp. serum therapy. A. S.

Sulphapyridine therapy in pneumonia: discussion of apparent failures and complications. F. E. Smith, jun., R. Riley, and O. R. Jones (*Ann. int. Med.*, 1940, **14**, 1032—1041).—8 out of 122 patients with pneumonia treated with sulphapyridine died; 7 patients did not respond well. 49% of all the patients were over 40 and 5 of the deaths occurred in this group. 11 out of 72 cases showed bacteræmia. 2 patients with type I and type III bacteræmia died. Nausea was present in 68%, vomiting in 59% of the cases. The drug should not be discontinued unless vomiting is unusually severe; it may be resumed after omitting one or two

doses. The drug should be discontinued if gross hæmaturia or marked leucopenia occur. 1 g. of $NaHCO_3$ should be given per g. of sulphapyridine. The deaths were attributed to inadequate dosage, alcoholic history, type III bacteræmia, and heart failure. A. S.

Sulphathiazole in treatment of pneumococcic pneumonia. V. B. Callomon and W. E. Goodpastor (*Ann. int. Med.*, 1940, **14**, 1024—1031).—Sulphathiazole was used in 50 patients suffering from pneumococcal pneumonia; 4 patients died. The general effect of the drug on temp. and clinical course was similar to that observed with sulphapyridine treatment. Nausea and vomiting occurred rarely and were mild and of short duration. Azotæmia was observed in 2 cases. Red cells were found microscopically in urine in 24 patients (7 patients had red cells on admission). Sulphathiazole crystals in urine were found in 36 out of 65 patients; calculi were not observed. A. S.

Problem of pneumonia with reference to chemo- and serotherapy. P. H. Long and J. W. Haviland (*Ann. int. Med.*, 1940, **14**, 1042—1049).—The mortality rate of adult pneumococcal pneumonia in the last two years fluctuated between 7 and 8%. Sulphathiazole and sulphapyridine were equally effective, the former causing less nausea and vomiting, the latter producing more frequently drug fever and rashes but rarely anæmia or granulocytopenia. After administration of sulphathiazole the blood level of the drug rises rapidly and it disappears from the blood more rapidly than sulphonamides or sulphapyridine; sulphathiazole does not pass readily into the c.s.f. The drug is almost quantitatively excreted in urine, less as the acetyl compound and more than sulphonamides or sulphapyridine. Acetylsulphathiazole crystals in urine, unless accompanied by hæmaturia, are of no significance. Severely ill patients should receive both type-sp. serum and sulpha-pyridine or -thiazole. A. S.

Sulphanilamide therapy in severe puerperal infection. C. A. Gordon and A. H. Rosenthal (*Surg. Gynec. Obst.*, 1939, **69**, 631—636).—Large doses of sulphanilamide were given to 118 patients with severe puerperal infections of the genital tract, regardless of their ætiology. Clinical response was prompt and satisfactory in 45 cases (38%). In an additional 45 cases (38%), results were not convincing, yet good enough to suggest that the drug may have played a part in recovery. In 23 cases (20%), no beneficial results were observed. There were 5 deaths (4%). F. F. R.

Intraperitoneal sulphanilamide in intestinal obstruction. R. V. Hudson, R. Smith, and F. R. Selbie (*Lancet*, 1941, **240**, 438—442).—Rabbit experiments showed that sulphanilamide is well absorbed from the peritoneal cavity and prevents the development of peritonitis after contamination with cæcal contents (*B. coli*). 2 cases of acute intestinal obstruction in man successfully treated with sulphanilamide are reported. C. A. K.

Sulphanilamide in treatment of trachoma. T. H. Luo and E. Chang (*Chinese Med. J.*, 1940, **58**, 512—526).—Of 40 patients, 80% were cured and the remainder much improved after an average of 3 months' oral sulphanilamide therapy. Recurrence was not observed up to 6 months. In the absence of conjunctival cicatrix there was little or no scar formation. W. J. G.

Sulphanilamide in treatment of ulcerative granuloma. K. V. Earle (*Trans. R. Soc. trop. Med.*, 1940, **34**, 261—268).—6 cases of ulcerative granuloma treated with varying combinations of Sb salts + sulphanilamide derivatives are described. Favourable results were obtained by combining fuadin injections with sulphapyridine orally. C. J. C. B.

Course of the plasma-protein changes in early lymphopathia venereum under treatment with sulphanilamide. I. L. Schamberg (*Amer. J. Med. Sci.*, 1941, **201**, 67—81).—The 20 patients regularly showed an initial hyperglobulinæmia which returned to normal as they improved. The increase in blood-globulin may represent a humoral antibody response against the virus, and its reduction to normal in patients treated early with sulphanilamide indicates inhibition of antibody formation through destruction of the virus. C. J. C. B.

Treatment of undulant fever with sulphanilamide. A. B. Chinn (*Ann. int. Med.*, 1940, **14**, 921—924).—A case of undulant fever was cured by large doses of sulphanilamide. Intradermal tests for *Brucella abortus* had been negative for 6, 8, and 10 days; they showed a positive reaction after administration of sulphanilamide, coinciding with positive blood agglutination tests. A. S.

Local sulphonamides in prevention of gas gangrene. F. Hawking (*Brit. Med. J.*, 1941, I, 263—268).—Experimental crush wounds (involving muscle) in guinea-pigs were infected with large nos. of gas gangrene organisms. Untreated animals all died within 24 hr. Local application of sulphonamides at the time of infection saved a large proportion of animals given *Cl. welchii* and *Cl. septique* but had little effect against *Cl. œdematiens*. Sulphathiazole was the most active in all cases and sulphanilamide was superior to sulphapyridine against *Cl. welchii* although almost ineffective against *Cl. septique*. Local application of the drugs was more effective than systemic administration, but a delay of 2 hr. greatly reduced effectiveness. Sulphanilamide was absorbed within 24 hr., producing local concns. up to 1500 mg.-%; sulphapyridine was absorbed in 7—10 days, the drug concn. being 42 mg.-%; sulphathiazole was absorbed in 5—6 days, the drug concn. being 104 mg.-%. C. A. K.

Chemotherapy in experimental gas gangrene. G. B. Reed and J. H. Orr (*Lancet*, 1941, **240**, 376—379).—Gas gangrene was produced in guinea-pigs with *Cl. welchii*, *Cl. septique*, *Cl. sordelli*, or *Cl. novyi*. The infections were effectively controlled by sulphanilamide, sulphapyridine, sulphamethylthiazole, and sulphathiazole (in order of increasing potency). Oral administration alone was much less satisfactory than oral + local application. C. A. K.

Sulphonamides and antisera in experimental gas gangrene. J. Gordon and J. W. McLeod (*Lancet*, 1941, **240**, 407—409).—In experimental gas gangrene in mice and guinea-pigs sulphonamides were less effective than antisera as prophylactics. For treatment local administration is better than oral but the drugs are not very effective unless there is a mixed infection with a susceptible aërobe. Antisera are much more effective as prophylactics than in treatment and local injection is recommended. C. A. K.

Prophylactic sulphanilamide in rheumatic fever. C. B. Thomas, R. France, and F. Reichsman (*J. Amer. Med. Assoc.*, 1941, **116**, 551—560).—Sulphanilamide was given from November to June to 55 patients with a recent history of acute rheumatic fever; 67 controls had no drug. The small dosage of 1·2 g. daily produced no serious toxic effects and during administration none of the cases showed attacks of acute rheumatic fever or β-hæmolytic streptococcal infections. Among the controls were five rheumatic infections and 4 cases of subacute bacterial endocarditis. C. A. K.

Sulphapyridine in acute bacillary dysentery. R. Reitler and K. Marberg (*Brit. Med. J.*, 1941, I, 277—278).—20 successful cases are reported. C. A. K.

Sulphonamide diffusion into pericardium. M. H. Nathanson (*J. Amer. Med. Assoc.*, 1941, **116**, 280—281).—Sulphanilamide and sulphathiazole diffuse freely into the pericardial sac. C. A. K.

Blood-promin levels in man. J. A. Toomey and M. E. Dice (*J. Pediat.*, 1941, **18**, 6—9).—Using 5 g. of promin intravenously 3 times a day, 72% of 77 patients showed a blood level of 4 mg.-% or more. C. J. C. B.

Attempts to produce urinary concretions in monkey with promin. J. A. Toomey and W. S. Takacs (*J. Pediat.*, 1941, **18**, 10—11).—8 g. in 10 days (6 times the dose of promin recommended for human beings) does not produce urinary concretions in *M. mulatta* monkeys when injected intravenously. C. J. C. B.

Diphtheria treated unsuccessfully with sulphonamide compounds. S. M. Abelson and H. Leichenger (*J. Pediat.*, 1940, **17**, 670—671).—Two fatal cases of diphtheria treated inadvertently with sulphonamide compounds without early antitoxin administration are reported. C. J. C. B.

Gonococcal complement fixation reaction and sulphonamide treatment of female gonorrhœa. W. Schramm (*Klin. Woch.*, 1940, **19**, 182—185).—Administration of sulphonamide compounds in female gonorrhœa produced an optimal effect only in the presence of sp. antibodies. Antibodies are produced by vaccines as shown by the complement fixing reaction. Several cases are reported. M. K.

Toxic hepatitis due to sulphanilamide. S. S. Berger and H. S. Applebaum (*J. Lab. clin. Med.*, 1941, **26**, 785—790).—A case of fatal hepatitis (subacute yellow atrophy of the liver) is described following the ingestion of 26·6 g. of sulphanilamide. C. J. C. B.

Evaluation of combined effects of sulphapyridine and barbiturates in the treatment of pneumonia. W. L. M. King and H. J. Moersch (*J. Lab. clin. Med.*, 1941, **26**, 793—795).—Barbiturates in sedative doses may be safely used in patients receiving sulphapyridine or sulphanilamide. C. J. C. B.

Fatal anuria following sulphapyridine in pneumonia. F. R. Fletcher (*Brit. Med. J.*, 1941, I, 242).—Case report. C. A. K.

Comparison of mortality in pneumococcic pneumonia treated by hydroxyethyl*apo*cupreine and by sulphapyridine. W. W. G. McLachlan, J. M. Johnston, M. M. Bracken, and L. S. Pierce (*Amer. J. med. Sci.*, 1941, **201**, 367—374).—110 cases of pneumonia treated by hydroxyethyl*apo*cupreine or sulphapyridine showed an equal mortality rate. In 494 cases treated by hydroxyethyl*apo*cupreine, there was a marked lowering of the total mortality in both the bacteræmic and non-bacteræmic cases. The only evidence of toxicity observed was occasional nausea and vomiting, which was considerably less with the use of the base than with the dihydrochloride of this compound. There was no visual disturbance. C. J. C. B.

Treatment and prognosis of sepsis in infancy. A. Fykow (*Mschr. Kinderheilk.*, 1939, **80**, 42—102).—A report and discussion of cases. M. K.

Infantile pneumonia and serum therapy. E. Hering (*Mschr. Kinderheilk.*, 1939—40, **81**, 1—16).—A review. M. K.

Serum in pneumococcal pneumonia. F. J. Moore, R. E. Thomas, B. O. Raulston, A. Hoyt, and J. D. Walters (*Arch. intern. Med.*, 1941, **67**, 286—303).—The results of treatment in 513 cases of pneumococcal pneumonia by type-sp. anti-pneumococcal serum are analysed statistically and equations expressing the influences on temp. and outcome are formulated, in terms of dosage of serum, duration of disease before treatment, and interval between first and last doses of serum. C. A. K.

Pneumococcus polysaccharide in old-age pneumonia. P. Kaufman, A. Kaefely, C. O'Brien, C. Burnstein, S. K. Kling, and W. Dmitruk (*Arch. intern. Med.*, 1941, **67**, 304—319).—1750 old subjects were immunised with pneumococcal capsular polysaccharide. The incidence and mortality rates of pneumonia were reduced but the course of pneumonia, including case fatality rate, was not altered. The prophylactic val. was greatest in the first 9 months after injection. C. A. K.

Heparin and sulphapyridine in bacterial endocarditis. S. Sevitt (*Lancet*, 1941, **240**, 443—444).—2 patients with bacterial endocarditis died after treatment with heparin and sulphanilamide, one from pulmonary and the other from cerebral embolism. C. A. K.

Heparin in subacute bacterial endocarditis. C. M. Fletcher (*Lancet*, 1941, **240**, 444—445).—Cerebral hæmorrhage caused death in a case of subacute bacterial endocarditis after 14 days' treatment with heparin. C. A. K.

Enterococcal pyuria and treatment with mandelic acid. K. Riethmüller (*Mschr. Kinderheilk.*, 1940, **82**, 108—119).—Beneficial results were obtained in 5 of 10 cases. M. K.

Germicidal power of silver compounds. H. G. Rothe (*Arch. Hygiene*, 1938—39, **121**, 125—142).—A 20% solution of "Argidal" (a mol.-disperse solution of hexamethylenetetramine + acetylsalicylic acid containing 0·25% Ag) destroyed *B. coli* in the suspension test in 1 min. Staphylococci treated with the same concn. were still active after 1 hr. Streptococci were destroyed in 20 min. by 0·5% Argidal, diphtheria bacilli after 5 min. by 1% concn. 5% Argidal solution inhibited growth of gonococci after 2 min. in the suspension test. M. K.

Germicidal effect of halogens on anthrax bacilli. E. Hailer and U. von Bockelberg (*Arch. Hygiene*, 1939, **122**, 20—43).—In low concn. of Cl_2 (0·005%) numerous spores survived for over 1 hr., in concns. of 0·01—0·05%; some spores were still capable of development after several hr., according to the resistance of the various types. The germicidal effect was greatly diminished by decrease of temp. and by pure org. solutions. M. K.

Mercuric chloride, potassium mercuric iodide, and Harrington's solution as skin disinfectants. P. B. Price (*Surg. Gynec. Obst.*, 1939, **69**, 594—601).—The skin-disinfectant properties of the 3 solutions were investigated. Harrington's solution as a disinfectant in surgery should be discarded. $HgCl_2$ and HgI_2 have a definite though limited place in the pre-operative prep. of the hands. They should not be employed frequently or as a routine but in lieu of rubber gloves and for the occasional operator their use is indicated. Because of the "film" they form with the epidermis neither solution should be used to disinfect hands contaminated with pathogenic bacteria. F. F. R.

Chemical sterilisation of surgical instruments. E. H. Spaulding (*Surg. Gynec. Obst.*, 1939, **69**, 738—744).—Different species of bacteria were exposed to various chemical solutions widely used for the sterilisation of sharp surgical instruments. Against bacterial spores formaldehyde–alcohol and borax–formalin solutions appeared to be the most effective. A practical laboratory method for testing such disinfectants in the presence of blood or pus is suggested. F. F. R.

Antiseptic snuffs. M. E. Delafield, E. Straker, and W. W. C. Topley (*Brit. Med. J.*, 1941, I, 145—150).—The effects of proflavine, penicillin, and sulphathiazole snuffs on bacterial invasion of the nose and nasopharynx suggest their val. as prophylactics against cerebrospinal fever and in curing nasal carriers of staphylococci and possibly of diphtheria bacilli. They have no curative action in common colds, but may prevent secondary bacterial infections. Proflavine is the least satisfactory. C. A. K.

Correlation of basicity and antiseptic action in an acridine series. A. Albert, S. D. Rubbo, and R. Goldacre (*Nature*, 1941, **147**, 332—333).—Potentiometric titration of the 5 monoaminoacridines shows that basicity and bacteriostatic power run parallel. *Cl. welchii* was the most susceptible organism followed by *Strep. hæmolyticus A.*, *Staph. aureus*, *B. coli*, and *Proteus vulgaris* in order of decreasing susceptibility. 5- and 2-aminoacridines are most active and most basic, and resemble proflavine. 5-Aminoacridine and proflavine possess optimum basicity, for a no. of more basic diaminoacridines show equal or inferior antiseptic activity. The dissociation const. of acridine is $3·4 \times 10^{-10}$ at 20° in 67% methyl alcohol and 2×10^{-10} in water. The reduced basicity of 1-aminoacridine is attributed to H-bonding. E. R. S.

Recent work on louse [action of A.L.63]. P. A. Buxton (*Proc. Roy. Soc. Med.*, 1941, **34**, 193—204).—Studies in Africa and Asia show that wt. of hair crop and louse infestation are related; sex, religion, and occupation are unimportant. With rising age there is a steady fall in infestation rate which is not connected with hair wt. The no. of parasites per head tends to be small. An agent, A.L. 63, of secret composition, kills lice and renders garments lice-free for a week. A discussion on lice and scabies follows. W. J. G.

Pharmacological properties of saponins from *Dumoria* and other sources. P. Dodel, G. Dastugue, and Villedieu (*Compt. rend. Soc. Biol.*, 1940, **133**, 593—595).—Saponins decrease the imbibition of water by isolated striated muscle. They have no effect on the sensitivity of leech muscle to acetylcholine. Most saponins increase tone and decrease amplitude of contractions in the isolated snail heart; that from guaiacum has opposite effects. Saponin in small concn. lowers the tonus and amplitude of contractions in the isolated rabbit intestine. Larger concns. raise the tonus although the effect on the amplitude is the same. This effect is abolished by atropine. P. C. W.

Parallel sensitising effect of hydroxydihydrocodeinone and of eserine on reaction of leech muscle to acetylcholine. G. Dastugue and M. Gandour (*Compt. rend. Soc. Biol.*, 1940, **133**, 595—596).—While the activity of hydroxydihydrocodeinone is as great as that of eserine in sensitising the leech muscle to the action of acetylcholine it has not such great anticholinesterase activity. P. C. W.

Sensitisation to action of acetylcholine produced by hydroxydihydrocodeinone. G. Dastugue (*Compt. rend. Soc. Biol.*, 1940, **133**, 646—647).—Hydroxydihydrocodeinone has no sensitising effect on the action of Ba or nicotine on the leech muscle. K and veratrine produce inconst. effects. The

effects of acetylcholine on the frog abdominal muscle, isolated rabbit intestine, and rabbit blood pressure are not increased by it. It has a toxic effect on the snail heart. P. C. W.

Effect of sympatholytic drugs on changes in intrapleural pressure produced by histamine. J. Troisier, M. Bariéty, and D. Kohler (*Compt. rend. Soc. Biol.*, 1940, **133**, 629—632).—The decrease in intrapleural pressure in the dog produced by intravenous injection of small doses of histamine is diminished or suppressed by the previous injection of various natural or synthetic sympatholytic drugs. The temporary elevation of intrapleural pressure produced by large doses of histamine is completely abolished by the same treatment. This supports the view that it is caused by liberation of adrenaline. P. C. W.

Transfusion of normal dog with blood from atropinised dog rendered hypertensive with acetylcholine. U. Lombroso (*Compt. rend. Soc. Biol.*, 1940, **133**, 659—661).—Transfusion of blood from an atropinised dog, made hypertensive by acetylcholine injections, into a normal dog produces hypotension in the latter. The response of the recipient is unaffected by cocaine but increased by eserine injection. The cocaine injection has no effect on the increase produced by eserine. P. C. W.

Effect of sulphonation on action of dinitro-α-naphthol in suppressing apnœa. R. Hazard, J. Cheymol, and A. Quinquaud (*Compt. rend. Soc. Biol.*, 1940, **133**, 664—666).—Dinitro-α-naphthol raises the body-temp. in dogs and suppresses the apnœa produced by adrenaline or yohimbine injections. The sulphonate is inactive in both respects. P. C. W.

Action of paredrinol after induction of hæmorrhage and circulatory collapse. E. A. Stead, jun., and R. V. Ebert (*Amer. J. med. Sci.*, 1941, **201**, 396—399).—Paredrinol is useful in the treatment of circulatory collapse resulting from hæmorrhage, because it raises arterial pressure. The lack of clinical improvement in patients with severe circulatory collapse from acute infectious diseases is due to the fact that the collapse is due to a combination of factors and not to a simple reduction of blood vol. C. J. C. B.

Serum-cholesterol following administration of acetyl-β-methylcholine chloride by iontophoresis. S. Member, E. McDevitt, and J. B. Ludden (*J. Lab. clin. Med.*, 1941, **26**, 1012—1014).—Alterations in serum-cholesterol are not significant. C. J. C. B.

Effect of yohimbine on vessels of isolated organs. R. Kamei (*Tohoku J. exp. Med.*, 1940, **38**, 476—479).—Yohimbine in doses of 0·01—1·0 mg. diminishes the blood flow of the isolated perfused spleen; it may dilate or constrict the vessels in the rabbit's ear, legs, lungs, bowel, and kidney. After previous treatment with 0·01 mg. of ephedrine, yohimbine (0·01 mg.) dilates the vessels, but doses of 0·1—1·0 mg. constrict the vessels; the splenic vessels are constricted by all doses of yohimbine. A. S.

Fibrillation threshold after administration of digitalis and ouabain. R. Wégria, J. H. Geyer, and R. S. Brown (*J. Pharm. Exp. Ther.*, 1941, **71**, 336—343).—A method for determining the sensitivity of dog ventricles to fibrillation is described. Digitalis and ouabain, in therapeutic and subtoxic doses, do not alter the fibrillation threshold. Toxic doses induce a type of fibrillation, which differs from that caused by electrical currents and coronary occlusion. Its onset depends on development of localised blocks rather than on the advent of an effective stimulus. E. M. S.

Euphyllin in diphtheric myocarditis. F. Biskupski (*Mschr. Kinderheilk*, 1939, **80**, 121—129).—E.c.g. before and after administration of euphyllin was investigated in 10 cases of severe diphtheric myocarditis. In most cases it became worse (extra-systoles, total and partial block) and death occurred. In 3 cases there was temporary improvement. M. K.

Calcium gluconate in cardiac failure: clinical pharmacology and therapeutics. A. S. Rogen (*Glasgow Med. J.*, 1940, **134**, 147—162).—Intravenous injection of 10 c.c. of 10% Ca gluconate given slowly (2—3 min.) is safe. It produces bradycardia, presumably due to vagal stimulation. It is often effective where there has been no response to digitalis but it must not be given within 4 days of the last dose of digitalis. Ca gluconate increases the diuretic effect of digitalis given subsequently. G. H. B.

Ammonium chloride and ammonium carbonate [as expectorants]. S. Alstead (*Lancet*, 1941, **240**, 308—310).—NH_4Cl (20 grains 4 times daily) and $(NH_4)_2CO_3$ (10 grains 4 times daily) had no significant effect on the daily vol. of sputum in 31 cases of chronic bronchitis. A single dose of $(NH_4)_2CO_3$ of 30 grains rarely produced nausea. C. A. K.

Action of various neutralising agents on gastric acidity. C. W. Duden and O. Abel (*Rev. Gastroent.*, 1940, **7**, 334—339).—Liquid and effervescent forms of $Mg(OH)_2$ are equally effective as quick-acting antacids; the action of the effervescent form is more prolonged and a secondary rise in acidity occurs less frequently than with the liquid form. W. J. G.

Pharmacology of di-(β-*cyclo*hexylethyl)methylamine hydrochloride (cyverine hydrochloride). R. A. Lehman (*J. Pharm. Exp. Ther.*, 1941, **71**, 317—319).—In low concns. cyverine reduced the motility of isolated intestine. In high concns. and in intact animals of various species, stimulation of the intestine was frequently observed. E. M. S.

Cyverine hydrochloride, a new synthetic papaverine-like compound. Vasodilator action in chronic occlusive peripheral vascular diseases. R. J. Popkin (*J. Pharm. Exp. Ther.*, 1941, **71**, 320—324).—After oral administration of cyverine, patients suffered from heartburn, headache, and dizziness. Its vasodilator action, as shown by surface temp., oscillometer readings, and clinical improvement, was negligible. E. M. S.

Schistosomiasis (*S. mansoni*) [treatment]. A. S. Price (*Rev. Gastroent.*, 1939, **6**, 115—122).—Symptomatology, diagnosis, and treatment are described. W. J. G.

Active substance in new anthelmintic "Raigan" in tæniasis. B. Terada and S. Ryo (*J. Orient. Med.*, 1938, **28**, 91).—The active substance is an odourless, tasteless grey-brown powder, insol. in ether, alcohol, or acetone, but sol. in water and glycerin. 1 hr. of boiling destroys its activity. It behaves like a protein enzyme and is most active in alkaline solution (p_H 8). 0·3 g. of "Raigan" given 3 times daily for 3 days had a curative effect in 10 cases of tæniasis. M. K.

Incidence of *Entamœba histolytica* infestation in Philadelphia; its treatment. J. H. Arnett (*Rev. Gastroent.*, 1939, **6**, 91—96).—Methods for fæcal examination are described. Of college freshmen 4·1% were infested; the health of those infected was unimpaired. In an institution for the aged 11·3%, and in food handlers 6·5%, were infected. Treatment with oral carbarsone, chiniofon (yatren or aniodin), and vioform (N.N.R.) was successful. W. J. G.

Electrocardiogram in acute emetine intoxication. L. J. Boyd and D. Scherf (*J. Pharm. Exp. Ther.*, 1941, **71**, 362—372).—Alterations in the e.c.g. after intravenous injection of emetine hydrochloride, in dogs and cats, are described. Disturbance of intraventricular conduction is the most common change observed. The effects of 37 mg. in dogs of 5—9 kg. disappear within 45 min. Repeated injections of the same dose have more pronounced effects, although the normal e.c.g. has been restored. E. M. S.

Therapeutic results with histaminase. A. Ahlmark and T. G. Kornerup (*Klin. Woch.*, 1940, **19**, 121—123).—A review. M. K.

Histamine treatment of allergic diseases. L. Farmer (*J. Lab. clin. Med.*, 1941, **26**, 802—809).—17 of 23 cases improved. C. J. C. B.

Treatment of cold urticaria. O. Roth (*Schweiz. med. Wschr.*, 1941, **71**, 89—90).—Patients suffering from cold urticaria were successfully treated with torantil. It is assumed that exposure to cold releases histamine or a histamine-like substance in the skin which may diffuse out into the systemic circulation. A. S.

Combined nupercain spinal and *cyclo*propane anæsthesia. R. H. Meredith (*Canad. Med. Assoc. J.*, 1941, **44**, 394—396).—By a combination of nupercain spinal anæsthesia with light *cyclo*propane anæsthesia, psychic and spinal shock are greatly reduced, and adequate relaxation for upper abdominal surgery is obtained in most cases. C. J. C. B.

Oxygen capacity of blood after hexobarbitone. E. A. Pask (*Lancet*, 1941, **240**, 411).—Only small reduction of O_2 capacity of blood was seen after sol. hexobarbitone anæsthesia. C. A. K.

Oxygen therapy in reactions following barbiturate anæsthesia and cisternal intervention. J. G. Schnedorf (*Surg. Gynec. Obst.*, 1939, **69**, 305—311).—In dogs, pentobarbital or amytal anæsthesia produces a decrease in O_2 saturation of arterial blood which persists for more than 4 hr. There is a slight elevation of c.s.f. pressure but no alteration in the protein or cells. Nasal O_2 therapy restored blood O_2 saturation and tended to reduce c.s.f. pressure. F. F. R.

Improved intubation tubes for insufflation anæsthesia in dogs. V. B. Scott and H. Rudolph (*J. Lab. clin. Med.*, 1941, **26**, 854—856).—An intubation tube for use with positive pressure apparatus for anæsthesia in dogs undergoing intrathoracic operations is described, together with its method of use. C. J. C. B.

Clinical use of local and intravenous anæsthetic agents. J. S. Lundy, E. B. Tuohy, R. C. Adams, and L. H. Mousel (*Proc. Staff Mayo Clin.*, 1941, **16**, 78—80).—A discussion. H. H. K.

Absorption, distribution, and elimination of alcohol. VIII. Diuresis from alcohol and its influence on elimination of alcohol in urine. H. W. Haggard, L. A. Greenberg, and R. P. Carroll. **IX. Concentration of alcohol in blood causing primary cardiac failure.** H. W. Haggard, L. A. Greenberg, L. H. Cohen, and N. Rakieten (*J. Pharm. Exp. Ther.*, 1941, **71**, 349—357, 358—361; cf. A., 1940, III, 823; 1941, III, 465).—VIII. The amount of alcohol eliminated in the urine of man is related to the amount ingested, when urine is secreted at a uniform rate. Variations in the amount eliminated result from diuresis caused by alcohol. Diuresis occurs only when the concn. of alcohol in the blood is rising. Individual differences in the extent of diuresis are wide.

IX. An average concn. of 12·6 mg. of alcohol per c.c. in the blood caused myocardial failure in rats. Anoxæmia due to respiratory failure, which occurred at a lower concn., was prevented by artificial respiration. E. M. S.

Iodic acid val. in serum of patients suffering from chronic opium and heroin intoxication. T. Takano and N. S. Hsiang (*J. Orient Med.*, 1938, **29**, 133).—HIO_3 val. in 22 patients with opium or heroin poisoning was normal (0·139 c.c.), but decreased during abstinence. Body-wt. decreased parallel with HIO_3 decrease. During the 3rd week of abstinence both vals. increased gradually; body-wt. increased by 1·8—13·2%. The max. intake of opium was 5 g. daily, that of heroin 1·2 g. daily; min. intakes were 0·5 g. and 0·3 g., respectively. M. K.

Iodine absorption by serum of epileptic patients on bromide therapy. I. C. Sherman and A. J. Arieff (*J. Lab. clin. Med.*, 1941, **26**, 836—841).—The cholesterol vals. in 41 patients with epilepsy revealed no significant deviation from normal prior to or during therapy with NaBr. There was no correlation between blood-Br and serum-cholesterol in patients on Br therapy. Acne may occur in patients on Br therapy regardless of blood-Br or serum-cholesterol level. Patients with acneic or seborrhœic skin were more prone to an exacerbation of their skin lesions. The I absorption val. of serum was 108—698 (average 508). There was no relationship between blood-Br and amount of I absorbed by serum or between the latter and the presence or severity of acne. The response to treatment with NaBr was not dependent on the I absorption val. of serum. C. J. C. B.

Adrenal cortex extracts and bromide intoxication. C. P. Bondurant and C. Campbell (*J. Amer. Med. Assoc.*, 1941, **116**, 100—104).—Administration of NaCl (6—10 g. daily) + adrenal cortex extract rapidly relieved symptoms in 9 cases of Br intoxication and lowered serum-Br more quickly than NaCl alone. C. A. K.

Eserine and prostigmin in epilepsy. D. Williams and W. R. Russell (*Lancet*, 1941, **240**, 476—479).—In 6 out of 7 experiments in epileptic subjects eserine (1—2 mg. subcutaneously) reduced petit-mal activity induced by hyperventilation. Prostigmin (1·5 mg.) caused an increased activity in 10 experiments, as shown by the electro-encephalogram. Atropine antagonised both drugs. C. A. K.

Action of dilantin sodium on conduct and on psychometric ratings of institutionalised epileptics. A. T. Ross and V. Jackson (*Ann. int. Med.*, 1940, **14**, 770—773).—29 patients suffering from chronic idiopathic epilepsy and 44 patients with symptomatic epilepsy received Na dilantin over 12—18 months. Marked reduction of seizure incidence was observed in 65%. 50% showed marked improvement in conduct; this was observed in patients who had a pronounced diminution in the no. of seizures but as many showed no such improvement despite an equal reduction of attacks. The performance in the Grace Arthur point scale test improved in a small % of patients. A. S.

Epanutin [sodium diphenylhydantoinate] and electric convulsion therapy. R. E. Hemphill and W. G. Walter (*Lancet*, 1941, **240**, 446—448).—Epanutin raised the electrical convulsion threshold in 10 mental patients, in some cases so that convulsions could not be produced; 0·6 g. daily had little more effect than 0·3 g. daily, the full effect developing after 6 days and on withdrawal persisting for up to 14 days. C. A. K.

Cannabis indica. **VII. Relation between chemical constitution and hashish activity.** P. B. Russell, A. R. Todd, S. Wilkinson, A. D. Macdonald, and G. Woolfe (*J.C.S.*, 1941, 169—172).—A no. of new synthetic compounds structurally related to tetrahydrocannabinol have been tested for hashish activity on the rabbit (see A., 1941, II, 173). Those found active in addition to tetrahydrocannabinol were hexahydrocannabinol and tetrahydronorcannabinol. The "tetrahydrocannabinol, $[\alpha]_D^{22\cdot5}$ −165°" of Adams *et al.* (A., 1940, II, 379) gave results by the rabbit test similar to the dog test. The conclusions drawn as regards activity are that the presence of an alkyl group or double bond in ring A of partly reduced dibenzopyran derivatives is not, but the orientation of the OH group and the nature of the side chain in ring B are, of importance. Reduction in size of ring A or its complete removal reduces activity. J. H. B.

Treatment of chorea with luminal and myosalvarsan. E. Suppli (*Z. Kinderheilk.*, 1939, **61**, 206—216).—20 choreic children were treated with luminal (0·05 g. 2—4 times daily) and myosalvarsan (0·15—0·3 g. daily or on alternate days). Scarlatiniform rash, high temp., neutropenia, and eosinophilia were observed on 7th—10th day of treatment. In 10 cases marked amelioration of choreic symptoms occurred. Three relapses occurred, but the drugs had no harmful effects. M. K.

Nirvanol treatment of chorea. E. Stoeber (*Z. Kinderheilk.*, 1938—39, **60**, 546—564).—The duration of the disease was shortened by nirvanol (0·3 g. daily until the appearance of the rash; 2·5—3·5 g. per child in all) in 136 severe cases of chorea. Most cases showed only a partial reaction, such as a rash without temp. or blood changes. Slight reactions were observed in cases treated for a long time. 17 cases of relapse were successfully treated with nirvanol for a second time. Side effects (*e.g.*, recurring rash) were few. Injection of cryst. nirvanol or Na nirvanol into guinea-pigs and rabbits produced no anaphylactic reactions. Sensitisation of guinea-pigs was only produced by nirvanol + serum foreign to the species. Transmission of hypothetical nirvanol-antibodies into choreic children by injection of nirvanol-convalescent serum gave negative results, as did the test for cutaneous hypersensitiveness and inverse anaphylaxis. Complement-fixing reactions with nirvanol sera gave in some cases positive Wassermann and pptn. reaction on the 8th—10th day of nirvanol treatment. M. K.

Fatal exfoliative dermatitis from phenobarbital. D. L. Sexton, G. M. Pike, and A. Nielson (*J. Amer. Med. Assoc.*, 1941, **116**, 700—701).—Case report. C. A. K.

Exfoliative dermatitis due to phenobarbital. N. J. Winer and R. L. Baer (*Arch. Dermat. Syphilol.*, 1941, **43**, 473—484).—A clinical and post-mortem study of a case with a review of the literature on visceral lesions in cases of drug eruptions. (8 photomicrographs.) C. J. C. B.

Action of morphine on intestine. T. Hase (*Folia pharm. japon.*, 1940, **28**, 1—48).—The intravenous administration of small doses (2·5 mg.) into 2-kg. rabbits produces mainly inhibition through the splanchnic centre. Larger doses (15—20 mg.) stimulate the intestine through the Auerbach's plexus. The action of small doses of morphine shows a great variation in intensity and character in all experiments. The local application causes according to concn. a slight inhibition of mobility and increase of motility, and a final paralysis of the intestinal wall. H. H. K.

Action of morphia on urinary diastase. S. Sato (*Tohoku J. exp. Med.*, 1940, **38**, 205—209).—Subcutaneous injection

of 10—20 c.c. per kg. of morphine (1%) increased the diastase content of the urine in rabbits 2—3-fold. A. S.

Root extracts of *Nothosmyrium japonicum*, Miq. F. Ohsako (*Tohoku J. exp. Med.*, 1940, **38**, 293—304).—Subcutaneous injection in frogs or oral administration in mice and rabbits of alcohol–ether extracts abolishes reflex and voluntary movements, lowers the blood pressure by peripheral vaso-dilatation, and, finally, inhibits respiration. It abolishes or prevents the occurrence of strychnine convulsions in frogs and mice in doses which do not produce vaso-dilatation. It produces pulmonary œdema in rabbits and, on oral administration, hyperæmia of the gastric mucous membrane and increased intestinal peristalsis. It decreases the rate and force of contraction of isolated and perfused rabbit's and frog's heart. A. S.

Rôle of liver in detoxication of steroid hormones and artificial œstrogens. H. Selye (*J. Pharm. Exp. Ther.*, 1941, **71**, 236—238).—Partial hepatectomy lowered the resistance of rats to the anæsthetic effect of large, intraperitoneal doses of progesterone, deoxycorticosterone acetate, α-œstradiol, testosterone benzoate, and stilbœstrol. These compounds are inactivated in the liver. (Cf. A., 1941, III, 578.) E. M. S.

Action of drugs on human uterus. J. A. Gunn (*Edinb. Med. J.*, 1941, [iv], **48**, 289—304).—A lecture. Three graphic methods are available for investigating action of drugs. Response of uterine muscle depends on stage of sexual cycle. The actions of a no. of drugs are described. H. S.

Effect of 6-acetamidonicotine on respiration. A. N. Kostrov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **29**, 146—149).—This substance is superior to lobeline as a respiratory stimulant. It can be given by subcutaneous or intravenous injection. W. McC.

Cooling drugs and cooling centres. F. E. Rosenthal (*J. Pharm. Exp. Ther.*, 1941, **71**, 305—314).—Picrotoxin (1 μg.) and aconitine (0·01—0·07 μg.), injected in the infundibular region in rabbits, cause a fall of temp. accompanied by cardiac changes due to central vagal stimulation. Picrotoxin annuls the fall of temp. produced by luminal or paraldehyde (and vice versa), but adds to the fall during Ca narcosis, and potentiates the cooling effect of aconitine. Picrotoxin and aconitine stimulate a cooling centre in the diencephalon. E. M. S.

Action of vitamin-*C* and phenol oxidase in inactivation of β-phenyl*iso*propylamine (amphetamine). K. H. Beyer (*J. Pharm. Exp. Ther.*, 1941, **71**, 394—401; cf. A., 1941, III, 469).—Deamination of amphetamine was effected *in vitro* by a phenol oxidase–*p*-cresol system, and by dehydroascorbic acid. In dogs, ascorbic acid, 200 or 400 mg. daily, reduced the excretion of the amine to 35%. As the ascorbic acid level of the animal subsided the excretion of amphetamine in the urine increased, and vice versa. E. M. S.

Action of cardiazol on nerve–muscle preparations. F. K. Köllensperger (*Klin. Woch.*, 1940, **19**, 128—130).—Cardiazol solutions were applied to the muscle of a muscle–nerve prep. stimulated indirectly by rhythmic, submax. condenser discharges. Low concns. (0·005—0·1%) increased contractions, high concns. (up to 1%) diminished or abolished the reaction. Medium concns. (0·1—1%) produced temporary initial increase, followed by decrease. The effect set in suddenly after a short latent period. Contractions returned immediately to their initial intensity, if the muscle was irrigated with Tyrode solution. There was no cumulative effect. M. K.

Action of yakriton in rabbits poisoned with chromate. F. Ohta (*Tohoku J. exp. Med.*, 1940, **39**, 37—46).—Nephritis was produced by intravenous injection of K_2CrO_4. Urinary excretion of intravenously injected phenolsulphonephthalein is increased by yakriton. A. S.

Clearance of the diethylamine and diethanolamine salts of 3 : 5-di-iodo-4-pyridone-*N*-acetic acid. D. A. K. Black, J. F. Powell, and F. H. Kemp (*J. Pharm. Exp. Ther.*, 1941, **71**, 315—316).—Tested on 2 normal subjects, the salts did not differ significantly in plasma level, I clearance, and pyelographic appearance. E. M. S.

Capillary resistance in antisyphilitic therapy. G. Horne and H. Scarborough (*Lancet*, 1941, **240**, 412—414).—Patients who developed jaundice, erythema, or nitritoid crisis during antisyphilitic treatment showed decreased capillary resistance, which preceded the onset of toxic signs. C. A. K.

Clinical aspects of onchocerciasis in South Kavirondo district of Kenya Colony [treatment with antimony]. B. P. Harris (*Trans. R. Soc. trop. Med.*, 1940, **34**, 233—248).—A general review. Unusual features of dermal onchocerciasis are described, including ichthyotic and elephantoid stages, and tendency to the development of lipomata. Intravenous injections of Na Sb tartrate, either alone or combined with fever therapy, gave promising results. C. J. C. B.

Treatment of sleeping sickness with neocryl. L. S. Acres (*Trans. R. Soc. trop. Med.*, 1940, **34**, 281—289).—21 cases of sleeping sickness treated with neocryl were observed over a period of at least 2 years. The results obtained in 1st-stage cases compare favourably with those with tryponarsyl but those obtained in 2nd-stage cases were disappointing, only 3 of 12 cases being cured. A 2nd full course of neocryl treatment was given in 4 relapsed cases without result. Two of the cases became unresponsive to all later treatments with tryponarsyl. Of 8 relapsed cases treated later with tryponarsyl 6 reacted favourably and 2 were unresponsive. C. J. C. B.

Effect of zinc peroxide treatment of ulcers due to micro-aërophilic hæmolytic streptococcus. T. A. Shallow, K. E. Fry, and E. J. Pulaski (*Surg. Gynec. Obst.*, 1940, **70**, 987—995).—Six cases are presented illustrating the clinical characteristics of chronic burrowing ulcer. The importance of securing anaërobic as well as aërobic cultures as a routine in superficial skin ulcers is stressed. The favourable influence of ZnO_2 therapy on the condition is confirmed. F. F. R.

Therapy of typhus. K. Kikuta (*J. Orient. Med.*, 1938, **29**, 166).—Early intravenous injection of mercurial diuretics (novasurol) on 3 successive days (0·5 c.c. on 1st day, 1 c.c. on 2nd day, and 1·5 c.c. on 3rd day) decreased mortality in severe typhus to almost nil. M. K.

Hæmorrhagic encephalopathy due to acetarsone. H. L. Segal (*Ann. int. Med.*, 1940, **14**, 1083—1088).—A woman, aged 64, suffered from dysentery and was treated with acetarsone (4·5 g. in 9 days). She developed fever and rash, followed two days later by coma, convulsions and opisthotonus. C.s.f. contained 1750—5000 red cells and 56 white cells per cu.mm. Recovery took place, with the exception of marked pain and paræsthesia in the extremities, with pain and weakness persisting in one arm for 18 months. A. S.

Pharmacology of silica. W. Modell and C. Salzman (*J. Lab. clin. Med.*, 1941, **26**, 774—785).—Silicic acid solutions differ markedly in their toxicity when injected intravenously into cats. The average lethal dose of different batches was 15—193 mg. per kg. and was not affected by wide range in p_H or rate of injection. Immediately following injection there is a rise in intrapulmonary arterial pressure and a fall in systemic blood pressure, with engorgement of the right side of the heart and empty left side. Similar changes followed when silicic acid first passed through the systemic capillary bed (injection made into the left auricle). The effects on the lung circulation were not influenced by anticoagulants, and are not due to intravascular clotting. It is not a non-sp. colloidal effect of silicic acid in view of the selective action on the lung capillaries and the failure of other colloidal substances (egg-albumin, agar-agar, and acacia) to produce similar changes. Silicic acid exerts a selective action on the capillary bed of the lungs which results in increased resistance to blood flow and accounts for the toxic symptoms and death. C. J. C. B.

Physiological action of *Acanthopanax spinosum* and *Periploca sepium*. L. P. King, Y. C. Hou, and T. P. Li (*Chinese J. Physiol.*, 1940, **15**, 361—365).—Extracts of *A. spinosum* had no effect on the arterial pressure of the dog or rabbit, whilst those of *P. sepium* caused a rise of arterial pressure and death. N. H.

Sensitisation of animals with simple chemical compounds. VIII. Sensitisation to picric acid; subsidiary agents and mode of sensitisation. K. Landsteiner and A. A. Di Somma (*J. Exp. Med.*, 1940, **72**, 361—366).—Guinea-pigs sensitised to picric acid by application of oily solution to the skin or inflamed areas, or by treatment with a mixture of picric acid and butyl aminobenzoate, show lesions similar to human eczema. Probably picric acid is converted into a more active compound which is responsible for sensitisation. A. C. F.

Experimental shock produced by dilute phenol solutions. J. H. Raynal and Y. C. Lieou (*Compt. rend. Soc. Biol.*, 1940, **133**, 242—244).—Intraperitoneal injection of 1% phenol solutions or of brain extracts preserved with 1% phenol at intervals of 5 days in the rabbit produces at the 2nd or 3rd injection pathological changes characterised by convulsive crises. The shock is attributed to the phenol present which may account for the crises sometimes following injection of antirabitic vaccine in dil. phenol solution. P. C. W.

Lethal factors in burns. W. C. Wilson (*Edinb. Med. J.*, 1941, [iv], **48**, 85—93).—A lecture. Lethal factors are initial and secondary shock, toxæmia, and infection. Need for preventive legislation and danger of fluid infusion are stressed. H. S.

Nitrite content of sputum, gastric juice, and urine. J. Várady and G. Szántó (*Klin. Woch.*, 1940, **19**, 200—203).—NO_2' content of sputum was increased 3—5-fold in inflammatory conditions and in malignant tumours. NO_2', which is absent in sputum of untreated hypertension cases, appears after giving NO_2'-containing drugs. Sputum vol. was inversely proportional to the NO_2' content after 0·01 g. of pilocarpine. NO_2' was not found in gastric juice. Excretion of NO_2' into urine was marked in case of tumour. M. K.

Sodium perborate and poison ivy dermatitis. B. Shelmire (*J. Amer. Med. Assoc.*, 1941, **116**, 681—683).—10% $NaBO_3$ ointment offers little protection against poison ivy dermatitis. C. A. K.

Chronic endemic selenium poisoning. M. I. Smith (*J. Amer. Med. Assoc.*, 1941, **116**, 562—567).—A review. C. A. K.

Properties and occurrence of an abortificient protein. E. Klar (*Z. ges. exp. Med.*, 1940, **107**, 536—542).—The substance was found in fish spawn, human pregnancy urine, and, in high concns., in egg yolk. One unit produces abortion in pregnant mice within 10 hr. after injection. Egg yolk contains 0·7—1·5 units per 20—30 mg. The substance was not found in human lung, skeletal muscle, plasma, or blood clots, nor in guinea-pig testis. It was found in human liver (0·4 units), spleen (0·4), pancreas (0·2), and kidney (1·0 per g. dry wt.); it was also found in tuberculous (0·4) and pneumonic lungs (0·8 units) and in primary and secondary carcinomata of various organs (0·6—1·2). It was observed in the urine of all cases of carcinoma and sarcoma (up to 6 units). It is bound to the albumin fraction of tissues and can be pptd. by dialysis and treatment with HCl (p_H 3·5—6·0); the substance is in solution at p_H above 6·0 and below 3·5. Purified extracts showed the following negative tests: Millon, tyrosine, histidine, tryptophan, dihydroxyphenylalanine, carbohydrate following hydrolysis with acid; the following reactions were positive: biuret, ninhydrin, P, and S. 100 units contain 24 mg. of protein- and 4·8 mg. of non-protein-N per 100 c.c. The substance is unstable in solution; it can be pptd. at p_H 1·0 with trichloroacetic acid, HPO_3, benzoic acid, and U acetate; it is not pptd. by HCl, lactic acid, or $FeCl_3$. A. S.

Hæmorrhagic agent of sweet clover disease. V, VI.—See A., 1941, II, 202.

Mannitol and sorbitol in pharmacy. H. C. Speel (*Amer. J. Pharm.*, 1941, **113**, 134—141).—The pharmacological properties and pharmaceutical applications of the two sugars are described. F. O. H.

Design and interpretation of experiments based on a fourfold table: statistical assessment of effect of treatment. W. O. Kermack and A. G. M'Kendrick (*Proc. Roy. Soc. Edin.*, 1940, **60**, 362—375).—A formula is given for calculating the no. of animals required in a controlled experiment for testing the effect of a treatment when the max. efficiency of the treatment and the level of mortality among controls are approx. known. Various treatments may be compared and a formula for calculating the efficacy of any one treatment over the aggregate of all the treatments is deduced. W. F. H.

Oils in treatment of burns. W. Clayton, A. J. Howard, and D. Thomson (*Lancet*, 1941, **240**, 341).—Artificial burns on rabbit's skin healed more rapidly with application of oils than with tannic acid, carron oil being more effective than cod-liver oil. The formation of a film coagulum at the junction of protein and oil is preferable to the impermeable tannic acid coagulum. C. A. K.

War and skin disease. G. H. Percival (*Edinb. Med. J.*, 1941, [iv], **48**, 73—84).—An account of the treatment, under war conditions, of parasitic, fungoid, bacterial, and "chemical" lesions of the skin. Organised treatment and economy of materials are important. H. S.

Biometry in the service of biological assay. C. I. Bliss (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 84—88).—The application of statistical methods to biological assay is illustrated by analysis of variance of, *e.g.*, toxicity of digitalis to cats, therapeutic action of neosalvarsan in male rats, and serum-Ca response of parathyroid-treated dogs. The statistical characteristics of a valid biological assay are discussed. J. D. R.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Hygiene in air-raid shelters. P. G. Stock (*Proc. Roy. Soc. Med.*, 1941, **34**, 125—138).—Methods for dealing with the fundamental shelter problems, overcrowding, insufficient closet accommodation, defective ventilation, dampness, cold, etc., are described. In the interests of ventilation gas-proofing should be abolished, shafts opened, and fans installed; coal-burning stoves should be placed in large shelters and in trenches. Plans are given for a medical aid-post to facilitate easy detection of infectious disease, and to provide for accidents or acute illness. Against infection NaOCl sprays are recommended, and against vermin cleansing stations. Mosquitoes may be combated by placing cresol in all water and by spraying walls with pyrethrum preps., but all stagnant water should be cleared away. These problems are discussed by other speakers. W. J. G.

***X*-Ray diffraction—an important tool in pneumoconiosis research. New method of tissue analysis.** L. H. Berkelhamer (*J. Ind. Hyg.*, 1941, **23**, 163—175).—Examples are given of the utility of *X*-ray powder analysis in the qual. examination of minerals and dusts, extracted mineral residues from lung tissue, and of inorg. material in tissue sections and pulverised lung tissue. In favourable cases dust constituents can be identified in the actual section used for pathological examination. A case of nodular fibrosis, previously attributed to pyrophyllite dust, is shown to have been caused by quartz. A. J. E. W.

Silicosis in soft coal miners. B. G. Clarke and C. E. Moffet (*J. Ind. Hyg.*, 1941, **23**, 176—186).—The chest *X*-radiograms and occupational histories of 774 bituminous coal workers from the Southern Appalachians have been compared with similar records for 774 controls, forming a comparable age-group, from Chicago steel plants. Presilicotic and silicotic lung changes are detected in 2% and 1%, respectively, of the miners, chiefly among undercutting machine operators and coal loaders. The shortest exposure producing nodulation (in a rock driller) was 11 years. A. J. E. W.

Chemical and physiological investigation of electric arc welding. III. Coated welding rods. C. P. McCord, G. C. Harrold, and S. F. Meek (*J. Ind. Hyg.*, 1941, **23**, 200—215; cf. B., 1941, III, 135).—Rabbits and rats were exposed for 6 hr. daily, during 46 out of 65 days, to gases and fumes produced by welding operations, in which one coated electrode was used at 44 v. and 300—350 amp. Si and Ti were present in the fumes, in addition to the usual products from uncoated rods, but caused no apparent injury. Contrary to results with bare rods, growth rate disturbances were detected, particularly in rats. Evidence was obtained, with both animals and men, for relatively rapid production of methæmoglobinæmia by exposure to nitrous gases, even with NO_2 concns. as low as 13 p.p.m.; pulmonary œdema or inflammation of the respiratory tract attributable to nitrous fumes was never observed. Coated rods produced less nitrous fumes than bare rods, but more metallic fume, particularly of Mn. A. J. E. W.

XXII.—RADIATIONS.

Urticaria solaris. H. L. Arnold, jun. (*Arch. Dermat. Syphilol.*, 1941, **43**, 607—620).—Urticaria solaris is a photogenic dermatosis characterised by the formation of a wheal throughout any area of skin immediately on exposure of that area to light of sufficient intensity and proper wave-length. The active spectral region differs in different cases but is

usually in the violet and blue portions of the spectrum and occasionally in the near ultra-violet. The oral administration of histaminase failed to alter the sensitiveness to light in the case reported. C. J. C. B.

Roentgen pigmentation in gold-fish. F. Ellinger (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 148—150).—In mammals pigmentation is confined to the area irradiated, but in fish is much more widespread and is often accompanied by injury to the medulla. V. J. W.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Cell permeability and diffusion across the oil-water interface.—See A., 1941, I, 207.

Ultra-violet absorption spectra of metalloporphyrins and their compounds with globin.—See A., 1941, I, 292.

Measurements of dispersion of light by skim milk.—See A. 1941, I, 292.

Recovery of cottonseed allergic protein from its picrate by electrophoresis. J. R. Spies (*J. Amer. Chem. Soc.*, 1941, **63**, 1166—1167).—The allergic protein *CS-13A* (A., 1940, III, 775) is readily recovered from its picrate by electrophoresis at 1500—4000 v. in 50% dioxan, the protein being pptd. in the cathode cell. R. S. C.

p_H at surface of ovalbumin molecules, and protein error with indicators. J. F. Danielli (*Biochem. J.*, 1941, **35**, 470—478).—The p_H at the surface of a protein mol., like the bulk p_H, is affected by salt concn.; it can be calc. from electrokinetic mobility or from the Gibbs–Donnan equilibrium, and is probably the significant p_H in enzyme activity. The protein error in p_H determination by means of indicators may be large where they and the protein have opposite charges. With the anionic bromocresol-green, this error is +0·5 to +1·0 at bulk p_H 3—4, *i.e.*, on the acid side of the isoelectric point, and negligible on the alkaline side, whilst with neutral-red the error is −0·6 at bulk p_H 7—8. The bulk p_H is determined by means of the glass electrode. P. G. M.

Fruit and berry juices as colloid systems.—See A., 1941, I, 260.

Coagulation of pectic substances at various p_H.—See A., 1941, I, 260.

XXIV.—ENZYMES.

Nicotinamide, cozymase, and tissue metabolism. P. J. G. Mann and J. H. Quastel (*Biochem. J.*, 1941, **35**, 502—517; cf. A., 1941, III, 457).—The activity of the lactic dehydrogenase–cozymase and malic dehydrogenase–cozymase systems of mammalian tissues is considerably decreased by addition of a suspension of rat brain. This is due to the destruction of the cozymase by a hydrolytic enzyme, cozymase nucleotidase, in the brain. This enzyme, which is inactivated by heating at 70° for 5 min., is also present in rat liver and to a small extent in rat kidney. It is not present in dialysed rabbit skeletal muscle and washed ground pig's heart. Cozymase is not inactivated by adsorption on the special proteins in brain. The activity of the nucleotidase is greatly inhibited by nicotinamide under aërobic and anaërobic conditions, whilst in presence of cozymase nicotinamide stimulates the lactic and malic dehydrogenases in brain. This is not due to synthesis of cozymase from nicotinamide but to the competition of the latter with cozymase for the nucleotidase. Intact brain slices break down cozymase, but the effect is inhibited by nicotinamide. It is concluded that an equilibrium exists in intact brain between the mechanisms which synthesise and those which break down cozymase. The inhibition of succinic dehydrogenase of pig's heart by cozymase can itself be inhibited by addition of brain suspension and the effect of the latter can be neutralised by addition of nicotinamide which prevents the breakdown of cozymase. The inhibition of a lactic dehydrogenase–cozymase system by cobra venom, due to destruction of the cozymase, is retarded by nicotinamide, and an equilibrium probably exists between the amide and a nucleotidase in cobra venom. The protective action of nicotinamide on cozymase breakdown is not shown by nicotinic acid, coramine, propionamide, NaF, or $Na_4P_2O_7$. Yeast- or muscle-adenylic acid has a slight protective action. J. N. A.

Photochemical spectrum of Pasteur enzyme in retina. K. G. Stern and J. L. Melnick [with D. DuBois] (*J. Biol. Chem.*, 1941, **139**, 301—323).—The spectrum pattern of the Pasteur enzyme indicates that the CO-binding part is a hæmin group. The main absorption max. occurs at 450 mμ., whilst there are two secondary max. at 515 and 578 mμ. The thermolability of the enzyme suggests that a sp. protein is the activating portion of the hæmin group, whilst the presence of the α-band of the enzyme–CO complex at 578 mμ. suggests that, although similar to that of carboxyhæmoglobin, the prosthetic group may be a phæohæmin. Whilst the general spectrum pattern indicates a similarity to the respiratory ferments of yeast and *Acetobacter*, its affinity for O_2 and CO shows a definite difference from both these two and from the respiratory enzyme of retina. P. G. M.

Differences in dehydrogenase content of pea seeds. E. V. Dodonova (*Biochimia*, 1939, **4**, 342—351).—The activity of the reduction processes in peas varies considerably, *e.g.*, the reducing capacity of wrinkled is greater than that of round peas. Dehydrogenase activity is a genetic feature that is transmitted by inheritance together with morphological and chemical characteristics. The reduction processes vary only slightly among peas of the same strain, but unripe exhibit a greater reducing capacity than ripe seeds. Malic acid is an efficient H donator for various strains of peas and the activity of malic dehydrogenase cannot be used for the differentiation of various strains. The dehydrogenase activity of peas is not appreciably affected by geographical factors. J. N. A.

Enzymic dehydrogenation of phytanic, phytenic, and phytadienoic acid.—See A., 1941, II, 210.

Enzymic degradation of polyamines. IX. Occurrence of diamine oxidase in male sperm. E. A. Zeller (*Helv. Chim. Acta*, 1941, **24**, 117—120).—0·5—1 diamine oxidase unit is present or about 100 times as much as in an equal vol. of serum. There is also present at least one enzyme system which absorbs O_2 and is not inhibited by semicarbazide and to which the absorption of O_2 by sperm is due in the first place. H. W.

Oxygenase properties of carotene. O. J. Borodina (*Biochimia*, 1939, **4**, 356—366).—In presence of peroxidase, carotene functions as activator of mol. O_2, but the oxygenase action of carotene is decreased considerably by preliminary oxidation of the carotene. Since no H_2O_2 is formed during the oxidation, it is probable that a labile org. peroxide is formed which functions directly as an oxygenase. Unsaturated vegetable oils in presence of carotene act as inhibitors of the enzyme system consisting of carotene, pyrogallol, and peroxidase, and the inhibition increases with increase in degree of unsaturation. Linoleic acid behaves similarly to unsaturated oils. Carotene also functions as an oxygenase in presence of peroxidase of animal origin. J. N. A.

Oxidation of polyhydric alcohols by biological and non-biological means.—See A., 1941, II, 209.

Oxidation of amino-acids by peroxidase. J. A. Babin (*Biochimia*, 1939, **4**, 392—403).—In presence of oxygenated water, extracts of liver, spleen, cardiac muscle, and especially renal cortex deaminate amino-acids (alanine, valine, cysteine, tyrosine, tryptophan, histidine). No deamination occurs if boiled extracts are used. The energetic deamination produced by liver extracts in absence of added H_2O_2 is only slightly increased by H_2O_2 addition, which is explained by decomp. of H_2O_2 by catalase. Deamination of amino-acids in presence of H_2O_2 is also brought about by vegetable (horse-radish) and lactic peroxidase as well as by pseudo-peroxidases such as oxyhæmoglobin and cytochrome-*c*. W. McC.

Mitogenetic spectral analysis of mode of action of catalase. V. S. Schapot (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **29**, 216—217).—The radiation emitted during the decomp. of aq. H_2O_2 by catalase (mouse blood) is identical with that accompanying the reduction of Fe^{III} to Fe^{II}, indicating that the reaction involves the reduction of the Fe^{III} in the enzyme, followed by re-oxidation by atm. O_2. Similarly, the decomp. in the presence of phenolase and ascorbinase is accompanied by the radiation associated with the reduction of Cu^{II}. J. W. S.

Synthesis of cocarboxylase chloride. J. Weijlard (*J. Amer. Chem. Soc.*, 1941, **63**, 1160—1161).—Improvements in the previously described method (A., 1938, III, 951) are given.

The solid product is stable in the dark for more than a year, but loses a little water of crystallisation. R. S. C.

Comparison of carboligase with aldolase. A. M. Kuzin and E. V. Suchareva-Budnitzkaja (*Biochimia*, 1939, **4**, 445—448).—Carboligase is inactivated by dialysis and heating to 50° and is hence not identical with aldolase, the activity of which is not impaired by this treatment. W. McC.

Bacterial acylase. S. Tonota and H. Saitoo (*Tohoku J. exp. Med.*, 1940, **39**, 211—214).—Dried preps. (acetone–ether) of *B. subtilis*, *Staphylococcus pyogenes aureus* and *albus*, *Sarcina*, and *Mycobacterium phlei* decompose hippuric acid, those of *B. coli*, *proteus*, *prodigiosus*, *pyocyaneus*, and *Salmonella enteritidis* (Gärtner) have no effect. Benzoylglycine and dibenzoylornithine were not hydrolysed by the bacterial preps. A. S.

Manometric estimation of the activity of choline-esterase in lymph. D. G. Friend and O. Krayer (*J. Pharm. Exp. Ther.*, 1941, **71**, 246—252).—The method is described. Choline-esterase activity of thoracic and cervical lymph is less than that of serum, in the dog. Prostigmine inhibits the activity of choline-esterase in lymph. E. M. S.

Choline-esterase determination [application to gastro-intestinal disease]. H. M. Eberhard and W. S. Silverman (*Rev. Gastroent.*, 1939, **6**, 239—243).—A titration method for the determination of choline-esterase is described and its possible application in gastro-intestinal disease indicated. W. J. G.

Enzymes in ontogenesis. XIV. Action of proteins on certain activators of protyrosinase. J. H. Bodine and L. D. Carlson (*J. Gen. Physiol.*, 1941, **24**, 423—432; cf. A., 1941, III, 226).—The degree of activation of protyrosinase (in pulp of grasshopper eggs) by Na oleate or "aërosol" is decreased by addition of proteins (ovalbumin, hæmoglobin, caseinogen, edestin); with certain proteins, the effect is markedly changed by heating, or ultra-violet irradiation of, the protein–activator system. The bearing of surface adsorption on the phenomenon is discussed. F. O. H.

Enzymic preparations from *Aspergillus oryzæ*. V. G. Babakina and A. D. Zamislov (*Biochimia*, 1939, **4**, 316—326).—The preps. have the ability to depilate raw hides, and max. activity is obtained when the mould is grown on a medium made from wheat flour, peptone, glucose, and salts, and adjusted to p_H 5·8. The prep. is stable and can be used as a bating agent. J. N. A.

Two stages in the proteolysis of gelatin. M. S. Reznitschenko, N. P. Kozmina, and P. J. Staroselski (*Biochimia*, 1939, **4**, 434—444).—At p_H 6·6, pancreatin rapidly (a few min.) decreases the viscosity of gelatin solutions and, in exact proportion, diminishes the ease of pptn. with trichloroacetic acid but, at first, does not alter the amino-N content. The second stage of degradation begins and increase in amino-N becomes detectable after 20—30 min. when the viscosity has been reduced to 25% of its initial val. and 60—80% of the gelatin is no longer coagulable, only 2% of the peptide linkings having been hydrolysed. W. McC.

Importance of free hydroxyl groups of proteins for attack by tryptic enzymes. A. Kizel and T. Evreinova (*Biochimia*, 1939, **4**, 492—497; cf. A., 1938, II, 36).—When intact and partly deaminated proteins are acetylated in pyridine, OH groups are selectively affected, partial acetylation only of NH_2 groups taking place. Acetylated gliadin is attacked by pepsin but scarcely, if at all, by pancreatin or papain. The OH groups of proteins play a fundamental part in tryptic degradation, the NH_2 groups probably having no share in the process. W. McC.

Action of amylase and invertase on air-dry substrates of different degrees of humidity. G. P. Volgunov (*Biochimia*, 1939, **4**, 607—619).—The activity of taka-diastase or invertase in presence of the appropriate air-dry substrates on filter-paper varies parallel with the atm. R.H. and with the solubility of the substrate. The rate of inactivation of the enzymes rises with increasing temp. and R.H., but is at all temp. less than in aq. solution. R. T.

Effects of different buffers on activity of β-amylase. G. A. Ballou and J. M. Luck (*J. Biol. Chem.*, 1941, **139**, 233—240).—The prep. of β-amylase from wheat flour is described. The p_H optima in presence of formate, acetate, propionate, butyrate, valerate, phenylacetate, succinate, phthalate, citrate, and PO_4''' at a concn. of 0·05M. were determined. A slight shift in the optimum occurs from p_H 4·7 for formate to 5·2 for valerate. Activity is considerably reduced by 2M-urea in acetate buffer, but the p_H optimum is unchanged. Phenylacetate and phthalate also slightly inhibit activity. P. G. M.

Starch. XII, XIII.—See A., 1941, II, 213, 212.

Differences in behaviour of invertase from Cucurbitæ. V. V. Arasimovitsch (*Biochimia*, 1939, **4**, 251—259; cf. A., 1939, III, 871).—The invertase from the ripe fruits of some melons exhibits both hydrolytic and synthetic activities, whilst only the hydrolytic activity is observed in other species. In summer melons, the synthetic action of the invertase is very pronounced, whilst in winter melons only the hydrolytic action is observed. J. N. A.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Fermentation of sucrose. G. P. Toropova (*Biochimia*, 1939, **4**, 336—341).—When yeast, poor in invertase, is treated with acid, the mechanisms of inversion and fermentation are adversely affected, and under all conditions sucrose is hydrolysed quicker than it is fermented by acid-treated yeast. At p_H 2, the power of fermentation of untreated as well as of acid-treated yeast is almost completely inhibited, whilst the ability of untreated yeast to invert in the acid medium is scarcely affected, but that of acid-treated yeast is practically inhibited. Fermentation can be restored by mixing the acid-treated yeast with yeast juice or an acid extract of yeast. $Mg^{\cdot\cdot}$ also has a similar effect. Since acid-treated yeast does not ferment glucose or sucrose, the results do not agree with the theory of Willstätter and Lowry on the direct fermentability of sucrose. J. N. A.

Formation of succinic acid in yeast. A. Kleinzeller (*Biochem. J.*, 1941, **35**, 495—501).—The amount of succinate formed in resting suspensions of baker's and brewer's yeast and *Torulopsis utilis* depends on p_H and concn. of CO_2 and HCO_3' in the medium, and is proportional to the amount of sugar fermented. No succinate is formed in 1% KH_2PO_4 or in absence of glucose. In presence of 0·5% of $NaHCO_3$ 1·35—3·96 mols. of succinate are formed per 100 mols. of sugar fermented. Slightly larger amounts are formed when low concns. of yeast are used. In such cases the amount of succinate formed exceeds the total dry wt. of the yeast, which proves that the succinate is formed from sugar and not from glutamic acid of autolysed yeast cells. The yield of succinate is the same under aërobic and anaërobic conditions, although fermentation is more rapid in absence of O_2. Approx. the same amounts of succinate are formed from glucose, fructose, and sucrose, and a strain of *Sacc. cerevisiæ* adapted to galactose forms the same amounts of succinate from glucose and galactose. In absence of glucose, α-ketoglutarate yields some succinate, whilst in presence of glucose C_2 and C_3 compounds have no effect on succinate formation. Oxaloacetate, *l*-malate, and aspartate increase the yield of succinate by approx. 20%, and α-ketoglutarate and α-hydroxyglutarate about 30%, whilst fumarate, *l*-tartrate, γ-aminobutyrate, arginine, and ornithine have no effect. Practically no succinate is formed, even in presence of $NaHCO_3$, when glucose is fermented by growing yeast cells. The mechanism of succinate formation from glucose is discussed. Fumarase is absent from baker's yeast. J. N. A.

Ergosterol content of yeast during autolysis. A. V. Trufanov and V. A. Kirsanova (*Biochimia*, 1939, **4**, 377—380).—During autolysis of yeast, the ergosterol content increases in the first 9 hr., then remains approx. const. for 3—6 hr., and finally decreases slowly although, after 24 hr., it remains above the initial level. The increase results from enzyme action. Yeast contains free ergosterol and ergosterol combined to some high-mol. substance. W. McC.

Effect of mercury salts on formation of acid and lactoflavin by *Aspergillus niger*. G. S. Kitavin (*Biochimia*, 1939, **4**, 283—294).—Addition of 0·5 mg.-% of $HgCl_2$ to a glucose or sucrose culture of *A. niger* increases the formation of citric acid. When 10—20 mg.-% of $HgCl_2$ is used, formation of citric and oxalic acid is inhibited, but large amounts of gluconic acid are formed and the medium is coloured an intense yellowish-green. In absence of $CaCO_3$, 60—80% of

the glucose is converted into gluconic acid, whilst in presence of $CaCO_3$, the yield is increased by 10—15%. Similar results are obtained with $HgBr_2$, $Hg(NO_3)_2$, and Hg^{II} acetate. The poisoned mycelium still forms gluconic acid when placed in a fresh, $Hg^{\cdot\cdot}$-free medium. The gluconic acid formed by the mould is metabolised very quickly without accumulation of other acids or reducing substances in the solution. The formation of gluconic acid is inhibited by nutrient salts in the medium, and especially by NH_4 salts, but not by NO_3'; both forms of N increase the yellowish-green colour of the medium, which is due to lactoflavin. Formation of gluconic acid and lactoflavin is greatly increased in presence of CO_2 and 5 mg.-% of $HgCl_2$. J. N. A.

Fungistatic properties of antiseptics and related compounds. Effect of p_H. C. Hoffman, T. R. Schweitzer, and G. Dalby (*Ind. Eng. Chem.*, 1941, **33**, 749—751).—The fungistatic properties of $HgCl_2$, formaldehyde, phenol, and $CuSO_4$ are not appreciably affected by p_H, but with, *e.g.*, Na_2SO_3 and hexamine p_H below 4 and 6 respectively liberates toxic products; at higher p_H vals. these two substances are relatively ineffective. p_H affects significantly the fungistatic properties of benzoic acid, of salicylic acid and its acetyl and propionyl derivatives, and of pyrocatechol, resorcinol, and quinol; it is suggested that fungistatic power in these cases may depend on a balance of polar and nonpolar groups in the mol., p_H interfering with this (cf. A., 1940, III, 351). I. A. P.

Pure culture of *Trichomonas vaginalis*. II. Cell size in relation to p_H. A. B. Kupferberg (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 220—221).—Sizes varied within wide limits (4·8—25 μ.) At p_H optimal for growth (5·5) average size is smallest. V. J. W.

New method for diagnosis of amœbiasis. H. Aoki (*J. Orient. Med.*, 1939, **30**, 264).—A substance extracted from cultured amœbæ produces a cutaneous reaction which is positive in amœbic and negative in bacillary dysentery. M. K.

Bacteriological examination of flat surfaces. W. G. Walter and G. J. Hucker (*Amer. J. Publ. Health*, 1941, **31**, 487—490).—An agar plate, prepared in a Petri dish, is placed in contact with the surface (*e.g.*, of a dinner plate) for approx. 4 sec. by means of a rubber suction disc, returned to the Petri dish, and incubated at 32°. The method gives consistently higher counts than does the swab method. F. O. H.

Making bacterial counts in a test-tube. E. Redowitz (*Amer. J. clin. Path. Tech. Suppl.*, 1941, **5**, 26—31).—The method employs semi-solid agar in a test-tube with varying dilutions and is especially valuable for *L. acidophilus*. C. J. C. B.

Cultivation of anaërobic bacteria. B. C. J. G. Knight (*Chem. and Ind.*, 1941, 369—371).—The influence of the composition of the gas in contact with cultures of anaërobes and of the reducing power of the medium and inoculum is discussed. J. L. D.

Oxygen requirement of pathogenic bacteria under starving conditions. C. E. Cahn-Bronner (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 454—456).—With increasing starvation many varieties of bacteria become increasingly sensitive to O_2. The less the medium contains of C compounds (lactic acid) which can act as O_2 acceptors, the more inhibition is caused by presence of O_2. V. J. W.

Bactericidal action of heterocyclic compounds. T. Irie (*Bull. Inst. Phys. Chem. Res. Japan*, 1941, **20**, 150—186).—3 : 6- and 2 : 4-diaminophenoxthine have bactericidal action *in vitro* on streptococci and coliform bacilli. The dioxides of these compounds and the 2 : 7-diamino-isomeride (synthesis described in original paper) are less active. J. L. D.

Onion juice and bacterial growth. J. E. Fuller and E. R. Higgins (*Food Res.*, 1940, **5**, 503—507).—Onion juice partly inhibited the growth of bacteria of the *B. subtilis* group, but did not appreciably affect *Aërobacter aërogenes*, *Escherichia coli*, *Salmonella schottmuelleri*, *Pseudomonas pyocyanea*, *Staphylococcus aureus*, or *Proteus vulgaris*. Autoclave sterilisation practically destroyed the bactericidal val. of the onion juice. R. G. W.

Effect of variations in fat percentage and in p_H of milk media on heat-resistance of certain bacteria. A. A. Nichols (*J. Dairy Res.*, 1940, **11**, 274—291).—Of the aërobic spore-formers tested, strains of *B. subtilis* showed the greatest heat-resistance, some surviving 20 min. at 120°. "Skips" (anomalous results) occurred especially with *B. lichenformis*. Dormancy was not observed. Variation in p_H over the range 6—7 had no significant effect on heat-resistance. Variations in fat % indicated a slight but consistent tendency for a lower heat-resistance with a higher fat %, contrary to general belief. Similar experiments with *Bact. coli*, *Str. durans*, and *Str. thermophilus* failed to show any sp. fat effect. J. G. D.

Heavy carbon as a tracer in heterotrophic carbon dioxide assimilation. H. G. Wood, C. H. Werkman, A. Hemingway, and A. O. Nier (*J. Biol. Chem.*, 1941, **139**, 365—376).—By the use of ^{13}C, it is shown that CO_2 fixed by the *coli* group in the fermentation of galactose, pyruvic acid, etc. occurs as succinic and formic acids, the former being probably formed by union of a 3-C compound and CO_2. The formation of propionic acid from glycerol and glucose by *Propioni-bacterium* probably does not take place by dehydration of lactic to acrylic acid followed by reduction, but by union of C_3 and C_1 compounds with subsequent cleavage. P. G. M.

Position of carbon dioxide carbon in succinic acid synthesised by heterotrophic bacteria. H. G. Wood, C. H. Werkman, A. Hemingway, and A. O. Nier (*J. Biol. Chem.*, 1941, **139**, 377—381).—The theory that succinic acid is synthesised by bacteria by union of pyruvic acid with CO_2 is confirmed by the proof that CO_2 labelled with ^{13}C is fixed solely in the carboxyl groups. P. G. M.

Effects of ultra-violet radiations on luminescence and respiration of *Achromobacter fischeri*. A. C. Giese (*J. Cell. Comp. Physiol.*, 1941, **17**, 203—220).—Irradiation dosages which just inhibit division diminish O_2 consumption only after 5 hr. Larger dosages diminish it at once, after a momentary increase due to gas from irradiated glucose. Irradiation of the buffer medium before bacteria are added does not decrease their O_2 consumption, but irradiation of the bacteria before glucose is added does so. Irradiation therefore modifies some respiratory process in the bacteria, probably the dehydrogenases. After small doses, luminescence declines more rapidly than O_2 consumption, the decline being proportional to dose, and probably due to destruction of luciferin. V. J. W.

Isolation of a nucleotide essential for the growth of *Lactobacillus casei*. E. L. R. Stokstad (*J. Biol. Chem.*, 1941, **139**, 475—476).—A growth factor for *L. casei* isolated from liver contains N, P, and pentose. Approx. half the P is hydrolysed by 0·5N-H_2SO_4 at 100° in 2 hr. and the rest more slowly, only half the theoretical ribose being obtained. The factor consists of a purine and a pyrimidine nucleotide and contains guanine but no adenine. It can be replaced, but less effectively, by guanine + thymine. Adenine, hypoxanthine, or xanthine can replace guanine, but thymine cannot be replaced by uracil or cytosine. E. M. W.

Propionic acid fermentation.—See B., 1941, III, 154.

Production of acetylmethylcarbinol from pyruvic acid by a bacterial enzyme. M. Silverman and C. H. Werkman (*J. Biol. Chem.*, 1941, **138**, 35—48).—*Aërobacter aërogenes*, ground and extracted with KH_2PO_4 buffer or water, yields an extract (enzyme) which converts pyruvic acid (2 mols.) quantitatively into acetylmethylcarbinol (1 mol.) and CO_2 (2 mols.). The optimum temp. for the action of the enzyme is 34—36° (heating for 5 min. at 65° diminishes activity to 6—7%) and the optimum p_H 5·6—6·0 (inhibition at p_H 8·0). No transformation of the acid occurs at alkaline reactions. The enzyme is produced by the micro-organism only if acid reaction is maintained during propagation or, after propagation at alkaline reaction, by transfer to a medium of acid reaction. The system which converts pyruvic acid into equimol. proportions of formic and acetic acid and the acetylmethylcarbinol system compete for the available pyruvic acid, which distributes itself between the systems in proportions depending on the p_H. The activity of the extract remains almost unchanged for two months at 0° and after 6 months is appreciable. Heat and substances (*e.g.*, iodoacetate, NaN_3) that prevent production by the enzyme of acetylmethylcarbinol also prevent CO_2 production. The enzyme does not utilise acetaldehyde. The presence of PO_4''' is essential for the action of the enzyme and a phosphorylated intermediate (probably not acetyl phosphate) is

apparently produced. The activity of the enzyme producing acetylmethylcarbinol is stimulated by cocarboxylase (which is essential for the activity), Mn, and, to a small extent, Mg, but not by aneurin, riboflavin, or cozymase. Carboligase, if it exists at all, does not participate in the production of acetylmethylcarbinol and possibly carboxylase does not participate in its production by yeast. W. McC.

Biennial reviews of the progress of dairy science. E. Diseases of dairy cattle. P. S. Watts (*J. Dairy Res.*, 1940, **11**, 316—350).—This comprehensive review deals with mastitis, contagious abortion, and tuberculosis and contains 320 references. J. G. D.

Rate of bacteriophage inactivation by filtrates of *Escherichia coli* cultures. E. L. Ellis and J. Spizizen (*J. Gen. Physiol.*, 1941, **24**, 437—445).—The rate of inactivation at 37° of the phage by preps. from culture filtrates of a susceptible strain of *E. coli* (cf. A., 1939, III, 432) is proportional to concn. of phage and of filtrate and, at 0°, to the square root of the filtrate concn. The phage is also inactivated by relatively large concns. of starch, inulin, gum arabic, and acetylated gum arabic. The rate of inactivation is dependent on salt concn., being slow at high or extremely low, and rapid at moderate, salt concns. Inactivated phage cannot be regenerated by high salt concns. or by soaps. The mechanism of inactivation is discussed. F. O. H.

Nutritional factors concerned with colony development of *C. diphtheriæ*. J. C. Snyder and J. H. Mueller (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 243—244).—Horse or ox serum, freed from proteins, contains a substance which accelerates growth of these colonies on a special medium. The substance is not present in human or pig serum; it is not dialysable, and it consists of two components of which one is sol. in acetone. V. J. W.

Oleic acid in colony development of *C. diphtheriæ*. S. Cohen and J. H. Mueller (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 244—245).—Of the 2 factors described in the preceding abstract the acetone-sol. one is oleic acid. Optimal concn. is 1 mg. in 15 c.c. of medium. V. J. W.

Diphtheria in Liverpool during the years 1937—40. H. D. Wright (*J. Path. Bact.*, 1941, **52**, 283—294).—The period showed a notable increase in the no. and proportion of gravis cases. There was a slight decrease in the proportion of cases occurring in the age period 5—9 years. The case fatality rate continued to be highest in the intermedius infections, both in the gross and at all age periods, particularly among older children; it was lowest in the mitis group and in this group affects particularly children under 5 years. The greatest no. of deaths were due to the gravis type. Toxic deaths greatly predominated in intermedius and gravis infections, deaths from pneumonia or respiratory involvement in mitis cases. C. J. C. B.

Toxin of *Corynebacterium pyogenes*. R. Lovell (*J. Path. Bact.*, 1941, **52**, 295—303).—A medium found satisfactory for the production of *C. pyogenes* toxin is described. The max. concn. of toxin occurs after about 48 hr. at 37°, which is a little later than the greatest activity of growth. The toxin may be conc. with $(NH_4)_2SO_4$. Alum-pptd. toxoid can be prepared and it is more potent antigenically than formol-toxoid when injected intramuscularly and easily induces the formation of antitoxin in the sera of injected animals. C. J. C. B.

Rôle of nicotinamide and related compounds in the metabolism of bacteria. F. Saunders, A. Dorfman, and S. A. Koser (*J. Biol. Chem.*, 1941, **138**, 69—82; cf. A., 1940, III, 770).—With glucose as substrate, nicotinamide, nicotinic acid and its methyl, ethyl, propyl, and butyl esters, and di- and tri-phosphopyridine nucleotide stimulate the respiration of dysentery bacilli grown on a medium deficient in nicotinamide. The nucleotides stimulate less than does an equiv. amount of nicotinamide but, when hydrolysed, their activity becomes equiv. to that of their nicotinamide content. Methyl nicotinate (but not the other esters) is more, and nicotinic acid less, active than is the amide but the activity of the acid increases during experiments possibly owing to conversion of acid into amide. The respiration of *Proteus vulgaris* grown on a medium deficient in nicotinamide is stimulated by the same compounds, when glucose is the substrate, as is that of dysentery bacilli but, when lactate is the substrate, intact diphosphopyridine nucleotide only has stimulating power. Nicotinic compounds that stimulate the oxidation of glucose by dysentery bacilli also stimulate the oxidation of glutamate and glucose monophosphate. *P. vulgaris* behaves towards glutamate as it does towards lactate and does not oxidise glucose monophosphate in presence of nicotinic compounds. The effects are not adequately explained by differences in diffusion rates and the results show that nicotinamide does not act merely as material for the synthesis of either or both of the nucleotides. W. McC.

Antihæmorrhagic compounds as growth factors for Johne's bacillus. D. W. Woolley and J. R. McCarter (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 357—360).—Phthiocol or 2-methylnaphthaquinone can partly replace *M. phlei* extract as growth factor in Johne's bacillus cultures. V. J. W.

Experimental studies in whooping-cough. W. Camerer (*Z. Kinderheilk.*, 1938—39, **60**, 371—390).—Injection of lipin-free endotoxin containing Bordet–Gengou bacilli into 46 rabbits produced a blood picture typical of whooping-cough. The initial leucopenia with relative lymphocytosis after infection is regarded as a non-sp. reaction due to the protein fraction of the bacillus. The lymphocytosis occurring on the 2nd—3rd day is a sp. toxic reaction due to the combined effect of the residual bacillus and endotoxin. The decrease of sedimentation rate is caused by the albumin fraction of the bacillus. The encephalitis is due to endotoxin. M. K.

Laboratory investigation of pneumonia among infants and children. W. H. Auger (*Arch. Dis. Child.*, 1941, **16**, 35—42).—Two pneumonia seasons were compared, the one severe in 1938—1939 and the other mild, in 1939—1940. There was a striking reduction in incidence of type I pneumococcus and *Streptococcus hæmolyticus*, and a marked reduction in the incidence of empyemas due to these organisms during the mild season. Staphylococcus in the sputum of infants under 2 years of age was of serious portent and the high mortality and incidence of empyema in this age group was relatively unaffected by seasonal variation. C. J. C. B.

Laboratory diagnosis of pneumococcal pneumonia. N. Weinstock (*Amer. J. clin. Path. Tech. Suppl.*, 1941, **5**, 52—60).—A review of present methods of diagnosis and some of the sources of error. C. J. C. B.

Rhythmic precipitation of pneumococcal soluble specific substances and antipneumococcal sera. R. Brown (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 93—95).—Antisera were incorporated into a jelly with gelatin, and solutions of antigens placed over them. Pptn. took place in the jelly in discrete layers throughout the jelly instead of at the surface of contact. V. J. W.

Cultivation of relapsing fever spirochætes in embryo chick. S. W. Bohls, J. V. Irons, and F. De Shazo (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 375—377).—Material from 4 patients was successfully inoculated on the chorio-allantoic membrane or in the yolk sac of 9—10-day-old developing embryos. V. J. W.

Bacteriophage determinations as a supplemental procedure in the diagnosis of bacillary dysentery. K. M. Wheeler and A. L. Burgdorf (*Amer. J. Publ. Health*, 1941, **31**, 325—331). Bacteriophage for a strain of *Shigella paradysenteriæ* has been isolated from the fæces of 73% of the clinical cases during the 3rd—9th week after the onset whereas the organism could be isolated only from 13%. It belongs to a homogeneous group with respect to plaque form, specificity, and cross-resistance tests and was isolated in only one case where there was no other laboratory or clinical sign of infection, although some cases with clinical infections fail to show phage. H. G. R.

Comparative efficiency of plating media for isolation of *Shigella dysenteriæ*. C. R. Mayfield and M. Gober (*Amer. J. Publ. Health*, 1941, **31**, 363—368).—435 positive cultures of *S. dysenteriæ* were isolated with 95, 48, 20, and 2% positive on deoxycholate–citrate, plain Endo, LiCl–Endo, and Bi sulphite media, respectively. From a series of 1062 fæcal specimens 379 positives were obtained on *Shigella Salmonella* agar (Difco) and 356 on deoxycholate–citrate agar. Additional positive isolations may be obtained by repeated plating of the fæcal specimens on the 2nd and 3rd days. H. G. R.

Staphylococcal hæmolysins and lipase. R. Christie and J. J. Graydon (*Austral. J. Exp. Biol.*, 1941, **19**, 9—16).—Production of extra-cellular lipase by staphylococci is readily

demonstrated by means of nutrient agar plates containing 1% of washed butter fat and 0·005% of neutral-red. No correlation exists between lipase production and pathogenicity. The lipase will lyse sheep red cells treated with staphylococcal β-toxin but not normal cells. Under suitable conditions, the β-toxin, which does not lyse normal sheep red cells, will lyse cells previously treated with α-toxin. F. O. H.

Subclinical staphylococcus mastitis in herds free from streptococcus mastitis and its effect on milk composition. P. M. F. Shattock and E. C. V. Mattick (*J. Dairy Res.*, 1940, **11**, 311—315).—In a herd free from *agalactiæ* mastitis, 92 of 428 "cow tests" (21%) showed hæmolytic staphylococci. Although these could be present with little or no change in chemical composition of the milk, significant nos. were usually accompanied by a high p_H and low casein no. No clinical cases were found. J. G. D.

Hæmolytic streptococci from throat of normal monkeys. A. Pomales-Lebrón and P. Morales-Otero (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 509—511).—In a shipment of *rhesus* monkeys received at Puerto Rico from India 12·7% had hæmolytic streptococci in their throats, and the biological characters of these indicated that they were of human origin. Group *A* disappeared within a year, and is scarce among the local population. V. J. W.

Streptococcal virulence tests. C. H. Huang and R. H. P. Sia (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 87—90).—White mice and Chinese hamsters are particularly susceptible to intracerebral inoculation with hæmolytic streptococci. V. J. W.

Relation of surface tension of rancid milk to its inhibitory effect on growth and fermentation of *Str. lactis*. N. P. Tarassuk and F. R. Smith (*J. Dairy Sci.*, 1940, **23**, 1163—1170).—Lowering of the surface tension of milk by lipase action or addition of lauric acid resulted in inhibition of growth of *Str. lactis*. After delayed growth had taken place the surface tension became roughly that of normal milk, due probably to the utilisation of the surface-active fatty acids by the bacterial cells. J. G. D.

Rôle of technician in campaign against syphilis. R. A. Vonderlehr (*Amer. J. clin. Path. Tech. Suppl.*, 1941, **5**, 60—66).—A lecture. C. J. C. B.

Congenital syphilis in identical twins with dissimilar serological reactions. E. Wolk (*Arch. Dermat. Syphilol.*, 1941, **43**, 491—497).—Report of a case. C. J. C. B.

Comparison of serological tests for syphilis. L. Hollander, C. L. Schmitt, and C. R. Schlesinger (*Arch. Dermat. Syphilol.*, 1941, **43**, 311—316).—For a complete serological survey the larger is the no. of tests which are performed on the individual serum the greater is the accuracy of the result. Although the Hinton test is more sensitive than the Kahn or Wassermann test it failed in sufficient instances to make its fallibility apparent; moreover it showed the largest no. of false positive reactions. C. J. C. B.

Tuberculosis in childhood. D. H. Kelly (*J. Pediat.*, 1941, **18**, 405—416).—A crit. review. C. J. C. B.

Experimental ocular tuberculosis in normal and immunised rabbits. D. M. Angevine and R. W. Huntington, jun. (*Amer. J. Path.*, 1941, **17**, 155—163).—Tuberculosis developed in the eyes of 49% of 57 infected control rabbits injected intravenously with 0·00001 mg. of bovine tubercle bacilli and in the eyes of 27% of 136 rabbits immunised in various ways with either heat-killed human or bovine tubercle bacilli and subsequently infected with 0·00001 mg. of bovine tubercle bacilli. (11 photomicrographs.) C. J. C. B.

Identification of *M. tuberculosis* with simple fluorescence microscope. O. W. Richards and D. K. Miller (*Amer. J. clin. Path. Tech. Suppl.*, 1941, **5**, 1—8).—The bacteria are stained with a sp. dye (distilled water 97 c.c., liquefied phenol 3 c.c., auramin 0 0·1 g.), which, when irradiated with ultraviolet radiation, re-radiates as yellow light. Thus, the bacteria appear as brilliant yellow organisms in contrast with the nearly black background. C. J. C. B.

Tuberculin test of Halliday and Sutherland. E. Korth (*Klin. Woch.*, 1940, **19**, 224—225).—The reaction was positive in 75% of cases 5—15 min. after administration of tuberculin into the epidermis. M. K.

Local inhibition of tuberculin reaction. H. Hilber (*Z. Kinderheilk.*, 1938—39, **60**, 522—535).—Intracutaneous injection of serum of eczematous subjects sensitive to white of egg into 40 tuberculin-sensitive children produced in 16 a marked decrease and in 11 others absence of response. In 13 children the tuberculin reaction was unaffected. The inhibition is attributed to fixation of white of egg antibodies (transmitted with serum) to the skin tissues responsible for the tuberculin reaction. The skin tissues are blocked for a second allergic reaction. After local neutralisation of the antibodies by egg-white, the capability of reaction to tuberculin reappears. The varied results in children are due to constitutional variation of power of fixation by the skin tissues. In several subjects a total absence of this capability was established. M. K.

Stability of dilute purified tuberculins. S. C. Wong and G. Ouyang (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 83—86).—Dil. purified tuberculin remains stable for 4 months at 20° in a phosphate–saline buffer of p_H 7. V. J. W.

Effect of seal oil and glycerol broth treatment on antituberculous vaccination. W. Pagel (*J. Path. Bact.*, 1941, **52**, 383—385).—Intraperitoneal treatment of guinea-pigs with seal oil increases the protection against tuberculous infection conferred by vaccination with heat-killed tubercle bacilli. Intraperitoneal injections of seal oil and glycerol broth diminish the extent of subsequent tuberculous infection. The protective influence of this treatment is inferior to that obtained by vaccination with heat-killed tubercle bacilli combined with seal oil treatment. C. J. C. B.

Hydrolytic degradation of antigenic complex of *Bact typhosum*, Ty 2. G. G. Freeman and T. H. Anderson (*Biochem. J.*, 1941, **35**, 564—577).—Gentle hydrolysis of *Bact. typhosum*, Ty 2, antigen with 0·1N-acetic acid at 100° for 12 hr. dissociates it into a polysaccharide (50—60%), an insol. polypeptide (about 16%), a sol. N-containing component (10—20%), and a lipin component (3—4%). The polysaccharide, $[\alpha]_D^{20}$ +114°, represents the *O*-sp. hapten of the antigen. It yields *d*-galactose, *d*-mannose, and *d*-glucose on hydrolysis, and has a reducing val. of 83% in terms of glucose; it contains C 44·4, H 7·1, acetyl 3·3%. The polypeptide is insol. in water and sol. in dil. alkali and contains 8·2% N, approx. 50% of which is liberated as amino-groups on acid hydrolysis. The N is present partly as tyrosine and arginine units. The alcohol-sol. N-containing component contains 13·4% N, most of which is not present as free amino-groups, which do not increase on tryptic digestion or acid hydrolysis. The lipin component appears to consist of a mixture of fatty acids and a phospholipin. An *O*-antigenic strain of *B. typhi-murium* has yielded similar results. P. G. M.

Urinary excretion of vi-phage and *B. typhosus* following phage inoculation in a typhoid carrier. C. H. Yen and C. Y. Chen (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 78—83).—Injections of a mixture of vi-phage and a non-sp. phage caused appearance in the urine of vi-phage only. Typhoid bacilli in the urine were reduced at first but increased again later. Antibodies to both phages appeared in the blood. V. J. W.

Electrophoretic studies in elementary bodies of vaccinia. T. Shedlovsky and J. E. Smadel (*J. Exp. Med.*, 1940, **72**, 511—522).—Using the moving boundary method in electrophoretic studies of vaccinia virus, collodion particles, and glass particles, streaming boundaries were obtained in all dil. suspensions containing no sol. protein. This boundary artefact was suppressed by maintaining a sufficiently great density gradient to counteract the endosmotic flow. The mobility of elementary bodies of vaccinia corresponds with that found for heat-stable (*S*) antigen. A. C. F.

Observations on mixtures of elementary bodies of vaccinia and coated collodion particles by means of ultracentrifugation and electrophoresis. J. E. Smadel, E. G. Pickels, T. Shedlovsky, and T. M. Rivers (*J. Exp. Med.*, 1940, **72**, 523—530).—With mixtures of particles, the possible development of one or two boundaries on electrophoresis with the Tiselius apparatus depends on the type of coating on the particles. Collodion particles coated with heat-stable sol. antigen of vaccinia migrate at the same rate as elementary bodies, but if coated with a component of rabbit serum, they migrate at a different rate. A. C. F.

Experimental encephalitis. Factors affecting infection with certain neurotropic viruses. L. S. King (*J. Exp. Med.*, 1940, **72**, 573—594).—The action on mice of several neurotropic viruses was studied with reference to factors which influence infection. A. C. F.

Recovery from patients with acute pneumonitis of a virus causing pneumonia in mongoose. J. M. Weir and F. L. Horsfall, jun. (*J. Exp. Med.*, 1940, **72**, 595—610).—A virus has been isolated from patients with acute pneumonitis, which caused infective pulmonary consolidation in the mongoose. The virus has been propagated and can be neutralised by serum from convalescent mongooses or patients. Serum from normal cases fails to neutralise the virus. A. C. F.

Experimental measles. H. Gordon and H. T. Knighton (*Amer. J. Path.*, 1941, **17**, 165—173).—Blood taken from patients with measles was injected into white rats, guinea-pigs, rabbits, and monkeys; histologically, there was no evidence that measles was transmitted except that one monkey out of 4 injected with human blood developed a questionable exanthema 6 days after inoculation. Giant cells were found in the lymph nodes of 3 of 4 monkeys injected with blood removed from 2 patients with mild attacks of measles. (7 photomicrographs.) C. J. C. B.

Chick-embryo-adapted rabies virus. J. R. Dawson, jun. (*Amer. J. Path.*, 1941, **17**, 177—187).—Intracerebral passage of rabies virus in the chick embryo is associated with alteration of the pathogenicity of this virus for the rabbit and the mouse so that it is possible to produce a self-limited, non-fatal disease in rabbits by intracerebral injection and in mice by subcutaneous or intramuscular injection of embryo-passage virus. Recovery from the mild disease is followed by the development of immunity to intracerebral inoculation of rabbit-fixed virus and mouse-passage virus. (15 photomicrographs.) C. J. C. B.

Characteristics of fixed rabies virus cultivated on developing chick embryos. H. Bernkopf and I. J. Kligler (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 332—335).—After 47 passages through chick embryos, virulence for chicks, mice, and guinea-pigs remained unchanged, but for rabbits was reduced. Sp. antigenic character was unchanged. V. J. W.

Protection of guinea-pigs against Mexican typhus virus by vaccine from infected rat lungs. N. P. Hudson (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 40—43).—Vaccine from the infecting strain, killed by phenol, protected guinea-pigs against infection. V. J. W.

Felix–Weil reaction in typhus. K. Kikuta (*J. Orient. Med.*, 1938, **29**, 166).—Reaction is quicker in slight cases; the intensity of the reaction is stronger in moderate cases. Positive reactions were obtained in all slight cases 8—30 days after onset of fever, 12—60 days in moderate cases, and for a prolonged period in severe cases. M. K.

Refined hyperimmune rickettsial sera. T. J. Kurotchkin, J. van der Scheer, and R. W. G. Wyckoff (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 323).—Yolk-sac material can be used as antigen in the method described by Topping (*U.S. Publ. Health Repts.*, 1940, **55**, 41) instead of infected tick tissue. Serum can be conc. by the methods used for antipneumococcus serum. V. J. W.

Study of purified viruses with electron microscope. W. M. Stanley and T. F. Anderson (*J. Biol. Chem.*, 1941, **139**, 325—338).—Electron micrographs indicate that tobacco mosaic virus contains a predominating unit 15 mμ. in width and 280 mμ. in length. Similar micrographs of cucumber mosaic virus-3 and -4 indicate that the particles are very similar, show considerable end-to-end aggregation, and are of a size comparable with those of tobacco mosaic virus. Tomato bushy stunt and tobacco necrosis viruses contain spherical particles of 26 and 20 mμ. diameter, respectively. P. G. M.

Electron-microscopic study of reaction between tobacco mosaic virus and its antiserum. T. F. Anderson and W. M. Stanley (*J. Biol. Chem.*, 1941, **139**, 339—344).—Mixtures of virus and antisera were dried on collodion films and examined by means of the electron microscope. Tobacco mosaic virus particles show no change in size when mixed with non-sp. antisera, but in combination with their sp. antiserum increase in size and have a fuzzy outline. Confirmatory results are obtained with tomato bushy stunt virus. P. G. M.

Active immunisation—some present-day problems. H. J. Parish and I. H. Maclean (*Proc. Roy. Soc. Med.*, 1941, **34**, 247—256).—In diphtheria immunisation is safe and effective provided the doses are properly spaced and repeated periodically; it should be compulsory, especially for the young. Mass immunisation against enteric is desirable in many areas but should not be compulsory except in special cases; the vaccine can be given during an epidemic without increasing the chances of infection. For tetanus 2 doses of toxoid spaced by 6 weeks give immunity; a third dose of 1 c.c. after 7—9 months increases the circulating antitoxin and sustains immunity. Since vaccination against smallpox is optional there is danger of virulent strains from the continent. Measures against whooping-cough are unsatisfactory. Other diseases are discussed. Tetanus toxoid may be combined with T.A.F. or T.A.B., but the last two together may produce severe reactions in adults. Diphtheria A.P.T. should not be mixed with tetanus toxoid. W. J. G.

Rôle of sodium chloride in agglutination of bacteria by antibody. A. E. Platt (*Austral. J. Exp. Biol.*, 1941, **19**, 57—67; cf. A., 1939, III, 330).—For each mixture of suspension of *B. typhosum* and *B. stanley* antiserum, there is a concn. of NaCl that produces optimal flocculation, this concn. approximating to that at which max. absorption of antibody occurs. The serological optima may show variation in the serum-suspension ratio with change in concn. of NaCl and, with *Br. abortus*, this is probably an indication of an $S \rightarrow SR$ mutation. Electrokinetic experiments indicate that NaCl affects the relative amounts of antiserum- and normal serum-proteins adsorbed by the organisms. The principal effect of NaCl appears to be on the combination of antigen and antibody and the cohesion of the sensitised organisms. F. O. H.

Immunological investigation on determinant natural groups and substituted proteins. F. Haurowitz, K. Sarafyan, M. M. Yenson, S. Berkol, and P. Schwerin (*Rev. Fac. Sci. Istanbul*, 1940, **5**, 91—98).—When pseudoglobulin (sheep or horse) is diazotised, acetylated, or iodinated, the resulting material is not pptd. by an antiserum to pseudoglobulin if more than 100 substituent groups have been introduced. Immune serum developed following injections of purified pseudoglobulin or euglobulin yields ppts. with either globulin. When pseudo- and eu-globulin are added in succession to either anti-serum, the total ppt. obtained is about the same whether pptn. was carried out first with eu- or pseudoglobulin. Euglobulin immune serum is pptd. completely by euglobulin and partially by pseudoglobulin, indicating that although these proteins have determinant groups in common, they are not identical. Pseudoglobulin treated with the diazo-salt of *m*-aminophenyltrimethylammonium chloride when injected subcutaneously produced an immune serum which was pptd. by the azo-protein. No immune sera are developed against diphenylamine, toluidine, and guanidine used as antigens. J. L. D.

Fibrinolysin test in rheumatic fever. P. L. Boisvert (*J. Pediat.*, 1941, **18**, 357—362).—In rheumatic fever the fibrinolysin test has diagnostic val. when interpreted in the light of other clinical findings. C. J. C. B.

Immunity reactions after ultra-violet irradiation of the skin. A. Eidenow (*Lancet*, 1941, **240**, 540—542).—Exposure of the skin to ultra-violet radiation diminishes the local reaction produced in allergic patients by scarification and application of hay-pollen toxin, but intradermal injection produces exaggerated signs of hay fever and asthma with collapse. Intradermal T.A.B. vaccine in irradiated skin provokes 10 times greater agglutinin titre than injection into normal skin. C. A. K.

Iodine absorption and complement content of serum. T. T. Chen (*Chinese J. Physiol.*, 1941, **16**, 115—120).—The amount of I absorbed by guinea-pig and rat sera is not related to their complement content. N. H.

Solubility of immune precipitates. S. C. Liu and H. Wu (*Chinese J. Physiol.*, 1941, **16**, 97—112).—Ovalbumin, azo-ovalbumin, horse serum-albumin, and type-I pneumococcus polysaccharide were pptd. with antibody from rabbits' serum; the last with horse antiserum also. The ppts. were suspended in buffered saline solution at 20° for 1 hr., centrifuged, and the N contents of the supernatant fluid determined. This was repeated 12 times. The solubility of the ppt. decreased with washing to a const. val. Precipitins recovered from the

washed ppt. were pptd.; their solubility decreased as before. Ppts. prepared by fractional pptn. had different solubilities, indicating more than one antibody to be present. N. H.

Placental transmission of antibodies in the skin-sensitive type of human allergy. W. B. Sherman, F. Stanley, and R. A. Cooke (*J. Exp. Med.*, 1940, **72**, 611—621).—The human placenta is impermeable to skin-sensitising antibodies. When these antibodies are demonstrable in maternal sera diluted 1000 times, none can be shown in undiluted cord sera. Blocking antibody, developed in response to injections of pollen extract, and agglutinins are transmitted passively to the fœtus, and disappear from the infant's blood 3—6 months after birth. A. C. F.

Device for rapid performance of skin tests by scratch method. F. A. Simon (*J. Allergy*, 1941, **12**, 191—192).—An apparatus is described for applying liquid allergenic extracts to the skin rapidly in a manner analogous to that used in printing with a rubber stamp. C. J. C. B.

Results of skin tests following immunisation against encephalomyelitis (Eastern and Western types) with bivalent vaccines of chick embryo origin. H. Gold and B. Hampil (*J. Allergy*, 1941, **12**, 138—142).—No sp. sensitisation demonstrable by skin tests occurs following immunisation with lyophile encephalomyelitis vaccine, and whatever reactions occur following its injection are due to either a non-sp. protein effect or to the high salt content of the lyophilised antigen. or to both. C. J. C. B.

Late, or delayed, reactions to patch tests. G. V. Kulchar (*Arch. Dermat. Syphilol.*, 1941, **43**, 636—640).—A delayed reaction, appearing only after 45 days, to a patch test with nupercaine ointment on a patient with a dermatitis due to sensitivity to nupercaine is reported. Similar tests made subsequently showed repeated delayed reactions with a tendency towards a decrease in the reaction time with repetition, suggesting an increased sensitivity induced by the test. C. J. C. B.

Preparation of purified house dust extract. C. H. Boatner, B. G. Efron, and R. I. Dorfman (*J. Allergy*, 1941, **12**, 176—181; cf. A., 1940, III, 775).—The purified and conc. extract obtained by fractionation and refractionation of house dust extract with various org. solvents was further purified by dialysis through No. 1200 Cellophane. Extracts so purified contained a significantly greater degree of skin-reacting activity per unit wt. of dissolved solids than did the original extracts from which they were processed. Pptn. of extracts purified by water-miscible org. liquids with $(NH_4)_2SO_4$ and other sulphates in high concns. produced further purification. C. J. C. B.

Cold allergy and cold pathergy. E. Urbach, M. F. Herrman, and P. M. Gottlier (*Arch. Dermat. Syphilol.*, 1941, **43**, 366—374).—17 cases of urticaria due to cold air occurring in a family of 28 members within 4 generations are reported. C. J. C. B.

Acquired specific hypersensitivity to simple chemicals. M. B. Sulzenberger and R. Hecht (*J. Allergy*, 1941, **12**, 129—137).—Patients with irritation of the lips due to lipstick (lipstick cheilitis) are often allergically sensitive to the commercial dyes used in these cosmetics. Purification of a commercial brand of tetrabromofluorescein abolished or materially reduced its capacity to elicit allergic reactions in patch tests. The purification method employed, *i.e.*, repeated crystallisation of a sol. salt from alcohol, did not destroy the reaction-eliciting factors, but only removed them. Purification of commercial lithol-red and of commercial dibromofluorescein also reduced their capacity to produce allergic reactions in patch tests. C. J. C. B.

Sensitivity to casein in infantile eczema. L. W. Hill and H. N. Pratt (*J. Allergy*, 1941, **12**, 143—153).—Of 75 infants with eczema, 35 reacted to both casein and lactalbumin, 35 to lactalbumin alone, and 5 to casein alone. There was thus a true sensitivity to casein in some of the cases. C. J. C. B.

Allergy to pancreatic tissue extract. L. H. Criep (*J. Allergy*, 1941, **12**, 154—168).—Report of 2 cases. C. J. C. B.

Non-allergic nature of poison ivy smoke. B. Shelmire (*Arch. Dermat. Syphilol.*, 1941, **43**, 384).—In a sensitive patient the smoke from burning ivy caused no ill effects. C. J. C. B.

Preseasonal treatment of hay fever by electrophoresis of ragweed pollen extracts into the skin. H. A. Abramson (*J. Allergy*, 1941, **12**, 169—175).—Giant and dwarf ragweed extracts were used satisfactorily in the preseasonal treatment of a series of 7 cases of hay fever by electrophoresis of the skin-reactive constituents. C. J. C. B.

Hay fever in Palestine. M. J. Gutmann (*J. Allergy*, 1941, **12**, 182—187).—A review of hay fever in Palestine with enumeration of the most important hay fever plants. C. J. C. B.

Purification of extracts of grass pollens. C. H. Boatner and B. G. Efron (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 460—462).—Aq. extracts are fractionally pptd. by water-miscible org. solvents, *e.g.*, dioxan, acetone, or *iso*propyl alcohol, and the fractions further conc. by pptn. with 60% $(NH_4)_2SO_4$ and dialysis. V. J. W.

Antigenic fractions in ragweed pollen. A. Stull, W. B. Sherman, and S. F. Hampton (*J. Allergy*, 1941, **12**, 117—128).—Two water-sol. fractions were separated by fractional pptn. from low ragweed pollen extract. Both had protein characteristics but showed marked differences in N content and chemical reactions. The fractions gave positive skin reactions in direct tests on ragweed-sensitive patients and on testing sites prepared with the serum of ragweed-sensitive patients (passive transfer). The relative activity of these 2 fractions varied in different cases. The fractions also showed marked differences in their capacity to neutralise sensitive sera. Studies by the Dale test showed that each of the fractions had a certain antigenic specificity as well as cross relationship. C. J. C. B.

XXVI.—PLANT PHYSIOLOGY.

Enzymic indices of resistance to cold of *Cinchona* species. A. Kursanov and N. Kriukova (*Biochimia*, 1939, **4**, 562—565).—*C. succirubra* withstands exposure to a temp. of 0°, at which the invertase activity of the leaves rapidly disappears, gradually to return with prolonged exposure; raising the temp. to 20—25° rapidly restores invertase activity. The leaves of *C. ledgeriana* lose their invertase activity more slowly at 0°, but the synthesising activity is not restored by raising the temp. to 20°; for this reason this species does not withstand exposure to low temp. R. T.

Factors affecting regeneration of horseradish root. R. C. Lindner (*Plant Physiol.*, 1940, **15**, 161—181).—Root and bud initiation in pieces of horseradish root is confined to lateral root traces. Root initiation takes place in outer tissues only but initiation requires the presence of both inner and outer tissues. The factor in inner tissues essential for bud initiation moves only along the root trace via intact cells. In dormant roots there is no polar distribution of root- or bud-initiating factors; polarity is established only when the root is placed in an environment suitable for regeneration. Temp. affects initiation of buds more than that of roots; the optimum temp. for both is 26°. The p_H of the medium has little influence on the initiation process. Naphthylacetic acid over a wide range of concn. inhibits initiation of buds but not that of roots. At no concn. was bud initiation stimulated. The factor, present in inner root tissues, which is concerned in bud initiation is probably chemical. A. G. P.

Old bluegrass pasture. O. McConkey (*Sci. Agric.*, 1941, **21**, 237—241).—On a pasture consisting of 65% of bluegrass and cut at regular intervals, max. yields of dry matter and protein per acre were obtained by monthly cuttings. Max. % protein in the dry matter occurred when cuttings were made at 10-day intervals. The dry matter yield for May and June was 77% of the total yield for the season (May—Sept.). Application of complete fertilisers increased yields of dry matter, protein, and mineral matter although the proportion of clover in the sward was lowered by the N fertiliser. With increasing height of grass at cutting the yield of dry matter increased and the % of protein diminished. Complete fertiliser increased the yield for each height of cutting. N fertilisers diminished the % of Ca in the fodder. On a re-seeded area (mixed grasses, lucerne, and clover) the total yield was approx. 4 times that of the old blue grass pasture. A. G. P.

Laboratory method for soilless growth of grass. C. Foster, J. H. Jones, D. Russell, and F. Dorfman (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 62—66).—Barley is grown on cotton fabric in Ellis and Swaney solution no. 1. After 7 days the

shoots can be used to supply to guinea-pigs the essential growth factor of Wulzen and Bahrs (*Physiol. Zool.*, 1936, **9**, 508). V. J. W.

Distribution of nitrogenous and carbohydrate fractions and other substances in exposed and covered pineapple sister shoots. C. P. Sideris, B. H. Krauss, and H. Y. Young (*Plant Physiol.*, 1940, **15**, 225—255).—Comparison is made of the growth and composition of undetached pineapple shoots covered by green oiled cloth and those exposed to normal light. The covered shoots showed smaller gross wt., higher water content, breakdown of previously formed chlorophyll, cessation of chlorophyll synthesis, and smaller concn. of electrolytes in the sap than did exposed shoots. In chlorophyllous sections of leaves and stems titratable acidity decreased during the period of covering, probably as a result of decarboxylation and utilisation of the products by protoplasm. Production of org. acids in chlorophyllous parts of shoots is associated with the photosynthetic process and that in non-chlorophyllous sections with respiratory activity. Absorption of NO_3' and $Ca^{\cdot\cdot}$ and the formation of org. N substances were greater in the exposed shoots. The latter contained the larger amounts of sucrose. Reducing sugar contents were similar in covered and exposed shoots. A. G. P.

Determination of ethylene in emanations from apples and peas. E. Hansen and B. E. Christensen (*Bot. Gaz.*, 1939, **101**, 403—409).—A modified bromination method is utilised to determine ethylene. Different varieties of apples and pears produced 0·001—0·280 ml. of ethylene per kg. per hr. Acetylene, propylene, and butylene were not found in emanations in amounts detectable by the Br method. A. G. P.

Formation of pyruvic acid by barley. W. O. James, G. M. James, and A. H. Bunting (*Biochem. J.*, 1941, **35**, 588—594).—The conversion of sugars into pyruvic acid by cell-free barley saps indicates a mechanism involving a phosphorylating cycle similar to that occurring with yeast. Glucose, fructose, or sucrose does not cause pyruvic acid formation, and its formation from added hexose diphosphate and phosphoglycerate (the latter not yet isolated from barley) is appreciably inhibited by 0·025M-fluoride. Addition of adenylic acid alone yields traces, and of adenylic acid + glucose or sucrose larger amounts, of pyruvic acid. P. G. M.

Synthesis of sucrose by excised blades of cane. C. E. Hartt (*Hawaiian Sugar Planters' Record*, 1940, **44**, 89—116; *Int. Sugar J.*, 1941, **43**, 155).—The blade of the sugar-cane plant has a particularly efficient mechanism for the formation of sucrose from simple sugars. The detached blades can continue to form sucrose from glucose for nearly 2 weeks, over 16% of sucrose on the dry wt. basis being reached. Optimum temp. for formation of sucrose is 30°. The temp. coeffs. obtained suggest that absorption at low temp. is a purely physical process, but at higher temp. absorption is limited by a chemical reaction. The simple sugars are fleeting intermediates in the leaf, whilst sucrose is a storage product. J. P. O.

Chinese celery cabbage. II. Changes in acidity and carbohydrate fraction during growth and storage. C. H. Yueh and W. H. Adolph (*Chinese J. Physiol.*, 1941, **16**, 79—82).—The p_H increased from 6·3 to 7·6 during 12 weeks of growth and fell to 6·5 during storage. Reducing sugar, total carbohydrate, and crude fibre in the dried material all increased during growth and the first weeks of storage. N. H.

Reversible action of enzymes in germinating seeds. A. Kursanov and K. Briuschkova (*Biochimia*, 1939, **4**, 566—574).—Synthetic and hydrolytic invertase and proteinase activities of wheat, oat, and pea seeds fluctuate considerably during germination. In general, a rise in proteinase activity coincides with a fall in invertase activity, and vice versa. In the case of cereal seeds hydrolytic at all times dominates over synthetic invertase activity. Invertase is absent from pea seedlings until chlorophyll is formed. Synthetic proteinase activity exceeds that of hydrolysis at all stages of germination. The synthetic activity of both enzymes falls, and the hydrolytic activity rises, in absence of light. During the imbibition phase the endosperm exhibits little hydrolytic, but considerable synthetic, enzyme activity, whereas during the succeeding stage these relations are reversed, while at the same time the enzymic activity of the seedlings rises abruptly. This is ascribed to transfer of stored enzymes from the endosperm to the germ. R. T.

Radioactive copper and the mechanism of oligodynamic action. D. Mazia and L. J. Mullins (*Nature*, 1941, **147**, 642).—Data obtained by immersing the leaves of *Elodea canadensis* in 10^{-6}—10^{-10}M-Cu^*Cl_2 ($Cu^* = {}^{64}_{29}Cu$) at 25°±0·1° and p_H 6·8±0·2 show that the [Cu*] in the cell reaches a val. 3×10^8 times that in the external solution. The organism in the later stages tends to eliminate the accumulated Cu*. Metabolic rate is increased by these concns. Distilled water fails to remove the accumulated Cu*, which is probably bound in the cell. The Cu* can be exchanged readily for $Cu^{\cdot\cdot}$ or $Au^{\cdot\cdot\cdot}$ supplied externally, but not for alkali ions. L. S. T.

Watermark disease of willows. II. Pathological changes in the wood. G. Metcalfe (*New Phytol.*, 1941, **40**, 97—107).—The brown stain in watermarked willow wood is caused by an oxidation product of pyrocatechol compounds. The brown stain develops when protoplasmic degeneration occurs in the living cells of the wood and is accompanied by the appearance of large amounts of oil in the cells. The development of tyloses which occur in the vessels of watermarked trees is connected with the presence of gas bubbles in the vessels. L. G. G. W.

XXVII.—PLANT CONSTITUENTS.

Localisation of chemical constituents in the plant cell. A. M. Goldovski and M. Z. Podolskaja (*Biochimia*, 1939, **4**, 352—355).—The carotenoids of sunflower seeds are present mainly in the gel (non-oily) phase of the kernels of the seeds. The presence of considerable amounts of carotenoids in commercial vegetable oils is due to passage of the pigments from the gel phase into the oil during manufacture. J. N. A.

Determination of organic acids in plant tissue. G. W. Pucher, A. J. Wakeman, and H. B. Vickery (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 244—246).—The original method (A., 1934, 572, 1048) for total acids is modified by titrating the org. acids in presence of HNO_3 between the limits of p_H 8 and 2·6, using a glass electrode. Determination of malic acid is modified by alterations in the procedure for the distillation of the volatile Br-compound after oxidation with $KMnO_4$ in presence of KBr, and slight alterations in the procedure of filtering the dinitrophenylhydrazone ppt. In the determination of citric acid, a slight change in the technique of titration of the Br content of the pentabromoacetone is introduced. These modifications permit complete and accurate analyses to be made on 0·1 g. of material. J. D. R.

Ethanolysis of Western red cedar, Douglas fir, and Western hemlock.—See A., 1941, II, 227.

Carotenoids in corn gluten.—See A., 1941, II, 215.

Alkaloids of Bulgarian belladonna root.—See A., 1941, II, 234.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Photo-electric turbidimeter.—See A., 1941, I, 222.

Photo-electric colorimeter. A. Weil (*Amer. J. clin. Path., Tech. Suppl.*, 1941, **5**, 31—34). C. J. C. B.

Method for study of diffusion of biologically active material. J. Bourdillon (*J. Gen. Physiol.*, 1941, **24**, 459—465).—A simple diffusion apparatus is described in which a layer of solution is allowed to diffuse upward into a layer of solvent. The use of the apparatus is exemplified by cryst. catalase, for which a diffusion const. of $3·1 \times 10^{-7}$ cm.² per sec. at 4° was obtained. F. O. H.

Micro-determination of potassium. C. R. Harington (*Biochem. J.*, 1941, **35**, 545—550).—The method and its application to the determination of K in blood serum are described. K is pptd. as dipicrylamine salt, using the Li salt as a precipitant, and is determined in alcoholic solution by means of the step photometer. The determination cannot be carried out directly on blood serum because pptn. of K dipicrylamine is apparently inhibited by the org. constituents. The trichloroacetic acid filtrate from serum is ashed with HNO_3 and H_2SO_4, and K determined in the ash. The presence of Ca and Mg has no effect on the determination. Excess of Na must be avoided. J. N. A.