BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

NOVEMBER, 1941.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Origins of transverse cervical and transverse scapular arteries in American Whites and Negroes. W. T. Read and M. Trotter (*Amer. J. phys. Anthrop.*, 1941, **28**, 238—248).—From a study of 156 cadavers it was found that the two arteries arose from a common stem which was a branch of the thyreocervical trunk in approx. half of the cases, independently from the thyreocervical trunk in one fifth, and from the subclavian artery in approx. one third. Differences in respect to race, sex, and side of the body were insignificant. W. F. H.

Thyroid arteries and anomalous subclavian in White and Negro. D. L. Hammer and A. M. Meis (*Amer. J. phys. Anthrop.*, 1941, **28**, 227—237).—In 3 specimens (an adult White female, an adult Negro male, and a newborn Negro female), the right to left sequence of the branches of the aortic arch was : right common carotid, left common carotid, left subclavian, and right subclavian. The developmental history leading to the formation of the anomalous right subclavian artery is briefly discussed. Facts are adduced to show that the inferior arterial supply to the thyroid gland is primitive, hilar in distribution, and is represented by the medial portion of inferior thyroid artery and by the thyroidea ima artery. The absence of an inferior thyroid supply in most primates other than man is discussed. It is suggested that the developing thyroid gland and associated thymus originally draw on a vascular zone bounded by the carotids and aorta. Subsequent growth and descent of the viscera leave secondary connexions, *e.g.*, the superior thyroid artery and the thyreocervical trunk, as residual channels of supply. W. F. H.

Cardio-vascular system and lungs of African elephant fœtus. E. C. Amoroso, K. J. Franklin, and M. M. L. Prichard (*J. Anat.*, 1941, **76**, 100—111).—A description is given of the lungs and of certain features of the cardio-vascular system of an African elephant fœtus. The same essential anatomical features are present in the elephant fœtus as are found in other mammalian fœtuses examined. Physiologically the blood coming in the posterior caval channel is divided by a crista dividens into right and left terminal divisions. W. J. H.

Capillary bed of central nervous system in *Siphonops*. E. H. Craigie (*J. Anat.*, 1941, **76**, 56—64).—Observations on the morphology of the capillaries in *Siphonops* are in agreement with those in *Dermophis*. The capillary bed is composed entirely of slender, independent capillary loops which are unbranched and only occasionally form secondary side loops. A comparison is given with the condition found in *Dermophis*, *Cryptobranchus alleganiensis*, *Necturus*, and *Amblystoma tigrinum*. W. J. H.

Vascularisation in brains of reptiles. II. Cerebral capillary bed in *Sphenodon punctatus*. E. H. Craigie (*J. Morph.*, 1941, **69**, 263—277 ; cf. A., 1941, III, 545).—The blood vessels within the central nervous sytem of *Sphenodon* are arranged entirely in pairs of which the two members are very closely apposed. Each member of a pair is usually branched and the branching of the two members is strictly parallel. Each branch terminates in a hairpin loop connecting the two components of the pair. This arrangement is the same as that which has been described in some lizards and in marsupials. Since there is no anastomosis between adjacent pairs of vessels in these other vertebrates, each artery being an end artery in the strictest sense, it is probable that the same is true in *Sphenodon*. The observations suggest that stem reptiles had a cerebral bed of the loop type and imply repeated independent derivation of a reticular cerebral vascular mechanism from such a primitive system. J. D. B.

Laryngeal sacs of infant and adult gorilla. R. A. Miller (*Amer. J. Anat.*, 1941, **69**, 1—17).—In the infant gorilla the intralaryngeal processes from the ventricle are already completely formed. An extralaryngeal diverticulum lines the inside of the inflated hyoid bone and a rudiment of another is present in the submaxillary region. The membranous expansion from the right ventricle is already larger than that from the left. In the adult the right laryngeal sac extends into the neck and axilla while the left sac passes into the neck as far as the sternum. Important changes in the post-natal development in the topography of the neck, laryngeal ventricles, thyrohyoid membrane, thyroid cartilage, and cervical fascia are described. It is postulated that man is born with an atavistic tendency towards the development of laryngeal pouches similar to those of apes but the tendency is not favoured because of man's upright posture and less active life. W. F. H.

Features in embryonic skull of *Platypus*. H. L. Kesteven (*Proc. Linn. Soc. N.S.W.*, 1940, **65**, 144—154).—From a study of a model of the skull of a 140-mm. embryo it is concluded that the basisphenoid is ossified from three centres and that the identification of the lateral area of ossification as the alisphenoid is incorrect. Reichert's theory of the origin of the auditory ossicles is also criticised and it is concluded that the malleus is derived from the quadrate, the incus from the processus basalis quadrati, and the manubrium mallei from the ramus articularis quadrati. J. D. B.

Comparative study of the inferior tibio-fibular joint. A. Carleton (*J. Anat.*, 1941, **76**, 45—55).—A brief review is given of the early evolution of the hindlimb with reference to fossil forms already described. The bones of the leg and ankle regions have been examined in a no. of mammalian forms and serial sections were made of the tibio-fibular and ankle regions in human embryos. The palæntological, comparative anatomical, and embryological evidence suggests that at no time has there been greater rotatory movement of the tibia on femur or fibula than at present exists in man. W. J. H.

Triceps brachii in dog, monkey, and man. P. S. Dastur (*J. Univ. Bombay*, 1941, **9**, Part V, 35—40).—The results of careful dissection are described. The monkey dissected was *Semnopithecus entellus*. A. S.

Opercularis muscle in salamanders. E. R. Dunn (*J. Morph.*, 1941, **69**, 207—223).—The relationship of this muscle to the cucullaris and the levator scapulæ is described for a no. of species. Notes are appended on the development of the stapes in salamanders. J. D. B.

Osteology and relationships of Osmerid fishes. W. M. Chapman (*J. Morph.*, 1941, **69**, 279—301). J. D. B.

Comparative anatomy of tail in Sauria and Rhynchocephalia. I. *Sphenodon punctatus*. S. M. Ali (*Proc. Indian Acad. Sci.*, 1941, **13, B**, 171—192).—A detailed description of the anatomical features of the original and the regenerated tail in *S. punctatus* is given. The difficulty experienced in breaking the tail of *Sphenodon* compared with that in the fragile-tailed lizards is correlated with the morphological details of the autotomy segments. A subcutaneous fat layer is absent but there are intradermal lacunæ filled with fat and corresponding generally with the major surface elevations. The horizontal myoseptum is described and its importance indicated in dividing the caudal musculature into homologous sets. The differences in the no. and arrangement of muscle

processes from that obtaining in *Hemidactylus* is pointed out. The submuscular fat layer has no segmental lines of cleavage. The skin of the regenerated tail is distinctly thinner than that of the original, and has no fat deposits and no transverse lines of cleavage. The muscles of the regenerated tail exhibit transverse segmentation and are separated by radial connective tissue septa. Muscle bundles in the regenerated tail show fatty degeneration at their inner ends. The caudal artery and vein are continued into the regenerated organ but are widely separated from each other. W. F. H.

Clinical appraisal of growth in children. J. D. Boyd (*J. Pediat.*, 1941, **18**, 289—299).—A lecture. C. J. C. B.

Width-weight tables (revised). H. B. Pryor (*Amer. J. Dis. Child.*, 1941, **61**, 300—304).—A table for 15-year-old girls. C. J. C. B.

Developmental pattern of child as reflected in calcification pattern of teeth. M. Massler, I. Schour, and H. G. Poncher (*Amer. J. Dis. Child.*, 1941, **62**, 33—67).—Over 1000 human deciduous and permanent teeth were studied in ground and decalcified sections for the purpose of evaluating the degree of calcification of enamel and dentine at different ages. The calcification pattern of the teeth is a direct reflexion of the physiological characteristics of the developmental period of the growing child. The period in which there is the greatest susceptibility to hypoplastic defects in the enamel and the poorest calcification lies between birth and 10 months of age. C. J. C. B.

Solitary plasmocytoma of bone. R. A. Willis (*J. Path. Bact.*, 1941, **53**, 77—85).—A complete review and report of a case. C. J. C. B.

Osteodystrophia disseminata. H. W. Thomas, T. N. Meredith, and H. L. Wunderly (*J. Pediat.*, 1941, **18**, 638—642).—Report of a case. C. J. C. B.

Identity of Klippel-Feil syndrome and iniencephaly. J. R. Gilmour (*J. Path. Bact.*, 1941, **53**, 117—131).—An example of the Klippel-Feil syndrome and of iniencephaly is described, with a detailed report of the bony deformities found at necropsy in each. From the similarity of the changes in these two cases and in cases in the literature described under one or other name it is concluded that the Klippel-Feil deformity is a mild form of the deformity characteristic of iniencephaly. C. J. C. B.

Congenital bicuspid pulmonary valves. S. Koletsky (*Arch. Path.*, 1941, **31**, 338—353).—In 3600 consecutive autopsies, congenital bicuspid pulmonary valve was found in 8; 3 of these valves occurred in infants and children, and 5 in adults; 5 were in males and 3 in females. In the same group there were 20 congenital bicuspid aortic valves, 6 pulmonary valves with 4 cusps, and no aortic valves with 4 cusps. C. J. C. B.

Anococcygeal cyst. H. Lorenz (*Amer. J. Dis. Child.*, 1941, **62**, 130—132).—A case report. C. J. C. B.

Congenital absence of vagina. M. C. Watson (*Canad. Med. Assoc. J.*, 1941, **45**, 69—70).—A case report. C. J. C. B.

Clearing tissue with mixtures of tributyl and tri-*o*-cresyl phosphates. R. A. Groat (*Stain Tech.*, 1941, **16**, 111—117).—Gross anatomical specimens can be cleared by immersion in a mixture of these two compounds, the refractive index of which can be made the same as that of the tissue. A table is given of the figures obtained by varying the mixture. Preliminary treatment of specimens consists of skinning, eviscerating, fixing, washing, dehydrating, and de-fatting. E. E. H.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Presomite human embryo. R. J. Gladstone and W. J. Hamilton (*J. Anat.*, 1941, **76**, 9—44).—A well-fixed presomite human embryo at a stage of development with a blastopore, notochordal process, and chorda canal is described. The well-defined cloacal membrane involves the posterior part of the embryonic disc and the proximal part of the allanto-enteric diverticulum. Specialised angioblastic tissue in the chorionic mesenchyme is giving rise to vessels the majority of which contain no blood cells. Details of the process of vasculogenesis are given. Hæmopoiesis in the embryo is also described and the different blood cell types which were found are figured. J. D. B.

Chordal ectopia and its possible relation to chordoma. T. Horwitz (*Arch. Path.*, 1941, **31**, 354—362).—The topographical distribution of heterotopic chordal vestiges as found in 50 embryos and found in the literature corresponds closely with the sites of occurrence of chordoma; this suggests that chordoma arises from the aberrant chordal vestiges rather than from the chordal remnants within the nucleus pulpous of the intervertebral disc. C. J. C. B.

Tissue anomalies of probable neural crest origin in twenty-millimetre human embryo with myeloschisis. P. Gruenwald (*Arch. Path.*, 1941, **31**, 489—500).—Malformations of a 20-mm. human embryo are described, consisting of myeloschisis, irregularities of the notochord, and an area in the sacrococcygeal region containing several tissue malformations, among which a group of normally developed renal glomeruli and tubules is the most striking. (10 photomicrographs.) C. J. C. B.

Development and significance of cell columns in ventral horn of cervical and upper thoracic spinal cord of rabbit. G. J. Romanes (*J. Anat.*, 1941, **76**, 112—130).—A description is given of the cell columns in rabbit embryos and fœtuses of various ages. At the 8-mm. stage a ventral horn is formed, at the 11-mm. stage the first signs of cell grouping are visible, and at the 19-mm. stage the columns described in the adult rabbit are visible as separate entities. Four distinct stages in the development of the cells in the ventral horn have been noted. At stage one there is a thickening of the ventral part of the epithelium of the neural tube; at stage two there is an outgrowth of processes from the ventral horn cells which group themselves into longitudinal aggregates which undergo secondary splitting to constitute a third stage. At the fourth stage there is a co-ordinated neuro-muscular activity; at this stage Nissl granules appear in the cytoplasm of the cells. There is a tendency at all stages for cephalo-caudal differentiation. None of the cells in the adult rabbit displayed the typical reaction of chromatolysis as the result of nerve injury. W. J. H.

Development of middle ear of *Microtus pennsylvanicus*. H. L. Truscott and P. H. Struthers (*J. Morph.*, 1941, **69**, 329—346).—The order of appearance of the auditory ossicles was observed to be: stapes, malleus, and incus. The order of ossification was: malleus, incus, and stapes. A transitory connexion was observed between the stylo-hyal and the stapes. The lamina stapedialis is derived, in part at least, from the lateral surface of the auditory capsule. J. D. B.

Post-natal development of skin and hair of mouse. H. F. Gibbs (*Anat. Rec.*, 1941, **80**, 61—81).—Three phases of growth are described. During the first 4 days (phase 1) in the development of the skin and hair follicles the epidermis and dermis increase in thickness, primary fibres pierce the surface, and secondary follicles develop. From the 4th to 13th day (phase 2) the epidermis decreases and the dermis increases in thickness, tertiary and quaternary follicles appear, and an arrector muscle becomes attached to each follicle. From the 13th to 15th day (phase 3) follicle formation and growth cease. The phases of growth described are correlated with phases in the early post-natal development of ovarian follicles and it is suggested that the stimulus comes from a common source. The sequence described shows a recapitulation of the processes found in the marsupial *Trichosurus vulpecula*. W. F. H.

Median vaginal canal and other anomalies of genital tract of *Didelphys virginiana*. H. L. Ratcliffe (*Anat. Rec.*, 1941, **80**, 203—209).—In a series of 52 female animals five exhibited a median vaginal canal. It took the form of a thin-walled tube placed dorsal to the urethra and opening into the urogenital sinus at the level of the lateral vaginal canals. The lining cells were small, closely placed columnar epithelium forming a single layer. Gland-like spaces with a similar lining were occasionally found adjacent to the canal. It is suggested that the median vaginal canal develops by caudal extension of the medial parts of the lateral vaginal canals. The probable relation of the canal to parturition in this species is discussed. Other variations, *e.g.*, median dorsal extensions of the urogenital sinus (4 cases) and displacement of one lateral vaginal canal (1 case), are recorded. W. F. H.

Organismal differentials: effects on distribution of leucocytes in circulating blood. H. T. Blumenthal (*Arch. Path.*, 1941, **31**, 295—303).—Transplanted normal tissues cause a

local response and a distant reaction with changes in the leucocytes in the peripheral circulation; the latter closely parallels the local reaction. In mice, guinea-pigs, rats, pigeons, and chickens, the effects of organismal differentials present in normal transplanted tissues can be demonstrated by this reaction; the intensity of the reaction in the peripheral blood is dependent on the closeness of the genetic relationship of host and transplant. When the transplantation is carried out between closely inbred strain *A* mice, there is a less intense although longer lasting reaction than when the transplantation is between strains not so closely inbred or between different strains. Through transplantation of embryos of various ages, it was shown that the organismal differentials are not present in young embryos but develop some time shortly before birth. A first transplant modifies the influence which a second one exerts on the leucocytes. This effect is sp., and becomes manifest only if homoiotransplantation is followed by homoiotransplantation and heterotransplantation by heterotransplantation, whereas different types of transplantation are ineffective in this respect.

C. J. C. B.

Oogenesis of *Mesopilia globulus*. D. H. Tennent and T. Ito (*J. Morph.*, 1941, **69**, 347—404).—A detailed account of the cytological and chromosomal changes in the maturation of the ovum in this sea-urchin. J. D. B.

Multiple chromosomes in *Philocleon anomalus*. E. R. Helwig (*J. Morph.*, 1941, **69**, 317—327).—An account of naturally occurring aberrations in the chromosomes of acridid orthoptera with special reference to *P. anomalus* and a comparison between these and those induced by irradiation. It is concluded that the type of multiple formation of chromosomes in this species is a phenomenon of an entirely different order from those responsible for chromosome breakage and the production of translocations. J. D. B.

Female sterility in interracial hybrids of *Drosophila pseudoöbscura*. K. Mampell (*Proc. Nat. Acad. Sci.*, 1941, **27**, 337—341).—The genetic isolation of race *A* and race *B* has progressed an additional step in the hybrids of certain strains where the females produce no or very few offspring. Interracial lethals appear to act in cytoplasm produced by a female racially heterozygous for chromosome IV. With interracial lethals, dominant in hybrid cytoplasm, an effective isolating mechanism is accomplished, since no or very few offspring are obtained from hybrid females which are backcrossed to any kind of males. Individuals carrying the lethals die in the egg or early larval stage. The effect therefore is accomplished through interracial lethal genes connected with a maternal effect. W. F. H.

III.—PHYSICAL ANTHROPOLOGY.

***Africanthropus*, a new East African ape-man.** H. Weinert (*Z. Morph. Anthrop.*, 1939, **38**, 18—24).—A preliminary description of the remains found, together with an attempt at reconstruction of the skull mainly from frontal and occipital portions, is presented. The name *A. njarasensis* is proposed.

W. F. H.

Cerebral convolutions of twins. H. Geyer (*Z. Morph. Anthrop.*, 1939, **38**, 51—55).—A short account of the similarity of the convolutionary pattern in twins. Special mention is made of the higher visual and auditory centres. W. F. H.

Sterkfontein tooth. A. J. E. Cave (*Brit. Dent. J.*, 1941, **70**, 222—223).—The fossil Primate tooth from Sterkfontein in the Union of South Africa is discussed. H. H. K.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Early stages in degeneration of cutaneous nerve fibres. G. Weddell and P. Glees (*J. Anat.*, 1941, **76**, 65—93).—Experiments were carried out on the nerves of the rabbit's ear. Methylene-blue and the Bielschowsky–Gros and Schultze–Stohr modifications of the Ag technique were used. A modified Spielmayer–Hortega stain was used to stain the myelin sheath. An account is given of the stages of Wallerian degeneration between 12 and 336 hr. after nerve section. The results obtained by methylene-blue, Ag impregnation, and sp. staining for myelin are compared. In the skin from the ear of normal unoperated rabbits and in a piece of skin from the human elbow region a small proportion of nerve fibres show evidence of degenerative or regenerative changes.

W. J. H.

Variations in histology of hypophysis of *Anolis carolinensis*; Golgi configuration in cells of pars anterior and pars intermedia. E. G. Poris (*Anat. Rec.*, 1941, **80**, 99—121).—Œstrogen injections in the male produce great distension of the blood sinusoids in the anterior lobe of the hypophysis with an accumulation within them of colloid-like material particularly in the posterior half of the lobe. The distension of sinusoids is less marked and the colloid-like accumulation less abundant in the female. Basophils in the posterior part of the anterior lobe become smaller and stain more faintly than those of normal controls. The thyroid glands in injected animals are more active than in controls. Spermatogenesis is inhibited in injected males. The anterior lobe exhibits seasonal histological changes, becoming deeply acidophilic in the late summer, autumn, and winter and feebly acidophilic in the spring. The presence of an elaborate Golgi apparatus in the cells of the intermediate lobe suggests that this lobe is highly active. The two types of Golgi configuration described in the chromophils of the anterior lobe may be related to the two types observed in the chromophobes. W. F. H.

Interstitial cells in testis of *Ichthyophis glutinosus*. B. R. Seshachar (*Proc. Indian Acad. Sci.*, 1941, **13**, **B**, 244—254).—In the active as well as the resting testis the interstitial cells are the most conspicuous cells of the organ. There is no evidence that either mitotic or amitotic divisions contribute to their increase. The few mitotic figures encountered occurred at all times of the year and have no significance in the increase. No inverse correlation between stromal and interstitial cells was established. On the other hand, in the winter testis, correlated with the large quantity of interstitial tissue large nos. of stromal cells were also found. There is a seasonal disposition of interstitial cells. During spermatogenesis they occur as interlocular "heaps"; in winter as "nests," each "nest" bound by a common membrane. The structure of the interstitial cell is described in detail. Fat is a characteristic cytoplasmic content and is believed to have arisen by the activity of the Golgi bodies. No difference in the size of the nucleus was detected in the two seasons.

W. F. H.

Behaviour of osmic-reducing substance of protozoa during cell division. J. B. Gatenby (*Proc. Roy. Irish Acad.*, 1941, **46**, **B**, 161—171).—OsO_4 is actively reduced by the wall of the contractile vacuole in many protozoa. During cell division in the Flagellata (*Scytomonas* and *Chilomonas*) the wall is usually divided between the daughter cells, but in approx. 3% the original contractile vacuole and cortex remain in one daughter cell. A new vacuole with osmiophil cortex takes some days to form in the other daughter cell. Aggregation of osmiophil material is not only around the contractile vacuole, but is dispersed also as spherical grains, which possibly collect around the new daughter vacuole which has no cortex. A thick osmiophil cortex is not necessary for the operation of the contractile vacuole. The "parabasal body" of the Flagellata is probably the same structure as the contractile vacuole cortex. The vorticellid contractile stalk has granules which resemble Golgi bodies rather than mitochondria. During division in *Vorticella* sp. the osmiophil cortex never divides. W. F. H.

Morphology of osmiophil material in some Ciliates. J. D. Smyth (*Proc. Roy. Irish Acad.*, 1941, **46**, **B**, 189—205).—In *Lionotus* sp. the contractile vacuole has no osmophil cortex. Division is by transverse fission, one nucleus and half the no. of Golgi bodies going to each organism. The Golgi bodies divide independently by simple fission and they possess osmiophil cortices and osmiophil centres. *Colpidium* and *Plagiopyla* have an osmiophil cortex around the contractile vacuole and in both a large mass of less dense osmiophil material surrounds the cortex and appears to be associated with the cell wall. In *Chilodon* the contractile vacuoles (3—6 in no.) each have an osmiophil cortex. It is suggested that a modification of Nassonow's homology is necessary, namely, that osmiophil material alone, whether connected with the contractile vacuolar system or not, represents the homologue of the Golgi apparatus in the metazoa. W. F. H.

Movements of chromosomes during cell division. N. Rashevsky (*Bull. Math. Biophysics*, 1941, **3**, 1—3).—The rate of

movement of *Tradescantia* chromosomes in anaphase obeys the equation of a particle moving in a viscous medium under (elastic) forces which increase with distance from the poles. J. F. D.

Biophysics of cellular forms and movements. A. S. Householder (*Bull. Math. Biophysics*, 1941, **3**, 27—38).—Discussion of the conditions for non-spherical equilibrium of a "cell" which is deformed by diffusion of a metabolite. J. F. D.

Experimental analysis of Altmann technique of freezing-drying. W. L. Simpson (*Anat. Rec.*, 1940, **80**, 173—189).—From a study of the process of freezing and of other factors controlling fixation it is concluded that the coarsest reticulation in tissues prepared by the Altmann technique is due to ice crystals and not to treatment after freezing. Reticulation is influenced by the rate of freezing, the original water content of the tissue, and changes that occur in free water and salt concn. during the process of freezing. The preservation of cytological detail in the outer layer of tissues frozen in *iso*-pentane at −195° surpasses that of chemically fixed material. Denaturation of proteins of frozen-dried tissues was accomplished by heating the blocks in redistilled abs. ethyl alcohol for at least a week. Embedding in celloidin is recommended as a routine practice. W. F. H.

Stain fading in various histologic mounting media. R. D. Little (*Stain Tech.*, 1941, **16**, 127).—Mounting media used were neutral Canada balsam in xylol, salicylic acid balsam, 60% clarite in xylol, and heavy liquid petrolatum. Stains used were Weigert's Fe hæmatoxylin and van Gieson's stain, and Romanowsky stain buffered at p_H 4·2. Clarite gave the best results. E. E. H.

Formalin-phenol-thionin stain for nervous tissue. G. C. Grant (*Stain Tech.*, 1941, **16**, 125—126).—The method facilitates staining of formalin-fixed material by phenol-thionin. Nitrocellulose sections are washed in distilled water and stained for 30 min. at 50° in 25 c.c. of 0·5% aq. thionin + 2 drops of phenol + 2 drops of formaldehyde. After washing in 70% alcohol, sections are treated with 95% alcohol, then with abs. alcohol + 15% of $CHCl_3$. Sections are then cleared and differentiated in equal parts of oil of origanum, oil of bergamot, and phenol, and ultimately mounted in damar, clarite, or balsam. E. E. H.

Method for numbering serial celloidin sections. J. M. Hamilton (*Stain Tech.*, 1941, **16**, 125).—The ink consists of equal parts of 20% nitrocellulose in amyl acetate and black oil colour; it is "fixed" after use with $CHCl_3$ applied by brush. E. E. H.

Frozen section micro-incineration. W. T. Roddy (*Stain Tech.*, 1941, **16**, 101—104).—Material containing diffusible salts is cut frozen and sections are put into xylol and then on to slides filmed with glycerin-gelatin. Material containing non-diffusible salts is fixed in 10% formalin before cutting, and sections are taken through alcohols to abs. before transferring to slides. Sections are then incinerated in an electric furnace. E. E. H.

Fine needles for micro-dissection. H. G. Cannon (*J. Roy. Microscop. Soc.*, 1941, [iii], **61**, 58—59).—Fine W needles can be given a perfect point by dipping the end of the wire into fused $NaNO_2$. The needle is mounted in a small Ni tube 1 mm. diameter, with bore of 0·2 mm., which is pinched with pliers to hold it. Such needles are inserted through corks and kept in thick glass tubes. E. E. H.

V.—BLOOD AND LYMPH.

Hæmopoietic activity of mammalian livers. F. X. Aylward, W. S. M. Grieve, B. R. S. Mainwaring, and J. F. Wilkinson (*J. Physiol.*, 1941, **100**, 94—103).—Extracts were prepared from livers of ox, sheep, horse, Indian elephant, African rhinoceros, Baringo giraffe, Nylghaie antelope, gibbon, green monkey, red-faced Japanese monkey, chimpanzee, orang-utang, man, pig, lion, tiger, leopard, ocelot, Californian sea-lion, and whale. The yields of dry liver extracts varied from 0·3 to 2·9 g. per 100 g. of fresh liver tissue. All the extracts except those from sea-lion livers are clinically active in their ability to initiate remissions under controlled conditions in patients with pernicious anæmia. J. A. C.

Chemical nature of antianæmic principle. J. Schultz (*Amer. J. digest. Dis. Nutr.*, 1936, **3**, 405—412).—A review. Ch. Abs. (*el*)

Anæmia in college women. M. Ferguson (*Northw. Med.*, 1941, **40**, 58—60).—40% of 364 students with symptoms suggestive of anæmia had a hæmoglobin % below 70 (Sahli). 11 of these had a colour index of 0·3—0·65; 25 of 0·66—0·7; 54 of 0·71—0·8; and 55 of 0·81—0·9. All cases responded well to Fe preps. 54% of cases with less than 70% hæmoglobin complained of dysmenorrhœa; 63% were classed as of slender build. E. M. J.

Effect of liver extract on blood picture of 11-day embryo after injection into pregnant rat. J. H. Last and E. E. Hays (*J. Pharm. Exp. Ther.*, 1941, **72**, 25; cf. A., 1941, III, 552).—Embryogenesis of blood in the rat fœtus was not altered. H. H. K.

Effect of intravenous administration of liver extract in patients with sickle-cell anæmia: an unusual response. G. Vryonis (*J. Lab. clin. Med.*, 1941, **26**, 1470—1473).—One of 4 patients showed an increase of polymorphonuclear leucocytes, erythrocytes, and reticulocytes on the 1st and on the 5th day with simultaneous return to previous level on the 10th day. C. J. C. B.

Oligolytic concentration of salt solution for erythrocytes of various species of animals. S. Matuzaki (*Keijo J. Med.*, 1936, **7**, 113—155).—When the active mass is kept const., there is a sp. oligolytic concn. for each species of animal. The shape of the curve [NaCl]-degree of hæmolysis is also characteristic of each species. Ch. Abs. (*el*)

Blood group of *Macaca sylvanus*. J. Chaulin-Serviniere (*Compt. rend. Soc. Biol.*, 1940, **133**, 402—404).—All the individuals examined belonged to one group. No human agglutinogens *A* or *B* were present but there was a sp. agglutinogen not homologous with human agglutinogens; the serum also contained a feeble hetero-agglutinogen for human corpuscles. Human blood of all groups contains a hetero-agglutinogen for this monkey. The monkey blood contains sp. anti-β agglutinin. Its formula is therefore $O\beta$. P. C. W.

Isoimmunisation in pregnancy and erythroblastosis fœtalis. P. Levine, E. M. Katzin, and L. Burnham (*J. Amer. Med. Assoc.*, 1941, **116**, 825—827; cf. A., 1941, III, 552).—Atypical agglutinins, similar to the anti-*rhesus* agglutinin of Landsteiner and Wiener (A., 1940, III, 470), were found in the serum of 5 women, 3 of whom gave birth to infants with erythroblastosis fœtalis, and all of whom had had previous abortions. The agglutinins may pass across the placenta and produce an antigen-antibody reaction in the fœtus. C. A. K.

Hereditary factors in blood dyscrasias. T. B. Cooley (*Amer. J. Dis. Child.*, 1941, **62**, 1—8).—An address. C. J. C. B.

Blood chemistry determinations in pernicious anæmia. E. W. Pernokis and M. R. Freeland (*J. Lab. clin. Med.*, 1941, **26**, 1177—1180).—Total blood-lipins in 9 patients were greatly increased. The -fatty acids, "-lecithins," and -lipin-P were greatly diminished. Cholesterol was normally distributed between free and esterified forms and showed normal or slightly low vals. (only one below 100 mg.-%). One of the 6 amino-acid determinations showed a marked increase, while the other 5 were normal. -Ca, -P, -uric acid, -creatinine, -sugar, -Cl′, and $-CO_2$ determinations were normal. One -non-protein-N and one -urea-N were above normal. Total -protein, -albumin, and -globulin on 3 patients were normal. Blood-inorg. SO_4'' and -ethereal SO_4'' on 2 patients were normal. Four rose-Bengal liver function tests showed dye retention and the 5th was normal. The icteric index was increased in 11 of 15 cases, and the basal metabolic rate in 12. One patient (hæmoglobin 16%, red blood cell count 0·71 million) showed 14·5 mg.-% of reduced glutathione and none of the oxidised. The patient died 2 days later; a section of liver extracted with saline showed 168 mg. of reduced glutathione per 100 g. and no oxidised glutathione. C. J. C. B.

Reticulocyte counts. A. N. Sokolov (*J. Méd. Ukraine*, 1940, **10**, 478—492).—Cold-blooded animals (fish, frogs, turtles), but not birds, show more reticulocytes during summer. M. K.

Reticulocytes in secondary intestinal tuberculosis. W. Deboben (*Dtsch. Tuberk.-Bl.*, 1939, **13**, 94—102).—Comparison of the reticulocytosis produced by vitamin-*D* and -*C* was useless as a diagnostic test in intestinal tuberculosis. E. M. J.

Siderocytes: a new kind of erythrocytes. H. Grüneberg (*Nature*, 1941, **148**, 114—115).—Red blood cells, from newborn flexed-tail mice, stained with 1% $K_4Fe(CN)_6$ in 0·05—1% HCl and counterstained with Biebrich scarlet showed blue granules. These cells are normally present in the embryonic mouse, and 4% are found in newborn rats. A precursor of hæmoglobin containing labile Fe may be present in these cells, or an unknown type of breakdown to the hæmoglobin may occur. E. R. S.

Anæmia due to diaphragmatic hernia. K. Isizaka (*Tohoku J. exp. Med.*, 1941, **39**, 370—379).—A boy of 2¼ years suffered from a diaphragmatic hernia and marked secondary anæmia. A. S.

Anæmia in vitamin-*C* deficiency and its response to iron. S. H. Liu, H. I. Chu, T. F. Yu, H. C. Hsu, and T. Y. Cheng (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 603—606).—8 undernourished anæmic boys received 50 mg. of vitamin-*C*, and 8 others received 1·5 g. of $FeCO_3$, daily for 4 weeks. Anæmia was lessened in the second group but not in the first. V. J. W.

Simple method of indirect blood transfusion. S. A. Rosenburg and H. J. Bayer (*Penn. Med. J.*, 1940, **44**, 45—49).—Blood was collected in vacoliter flasks and diluted with 10% of a 2·5% solution of Na citrate. A trocar and cannula were inserted into the vein after a small incision had been made in the skin. No warming or filtering of blood was resorted to. There were no post-transfusion chills in a series of 196 cases. E. M. J.

Effect of blood transfusion on cholesterol, fatty acids, and water in rabbits' organs. M. D. Gatzaniuk (*J. Méd. Ukraine*, 1940, **10**, 413—428).—Total cholesterol, fatty acids, and water in blood, muscle, lung, liver, kidney, and brain of rabbits were determined on the 1st and 10th day after autohæmotransfusion (5 c.c. of own blood) and heterotransfusion (5 c.c. of dog's blood). Cholesterol was decreased on the 10th day after autotransfusion in lung (by 20%) and increased in brain by 29%; fatty acids increase after 24 hr. in the muscles (by 65%) and liver (52%), and decreased in brain by 17%. In heterotransfusion cholesterol increases in blood (60%), brain (53%), liver (32%), muscles, kidney, and lung (25%) after 24 hr.; after 10 days cholesterol is again normal in all tissues except kidney. Fatty acids increase in liver by 25% 1—10 days after heterotransfusion and in muscles by 18%; other tissues show no increase. The lipocytic coeff. (cholesterol/fatty acids ratio) increases markedly in brain and blood after heterotransfusion; after autohæmotransfusion the coeff. is markedly diminished in muscles and liver owing to the great increase of fatty acids in these tissues. M. K.

Shock in blood transfusion. A. A. Bogomoletz (*J. Méd. Ukraine*, 1940, **10**, 1—21).—A review and discussion. M. K.

Accidentally transmitted malaria [through intramuscular injection of whole blood]. M. B. Marks (*Arch. Pediat.*, 1941, **58**, 357—364).—A case of malaria in a 2-months-old infant is reported, probably occurring through intramuscular injection of whole blood. C. J. C. B.

Experiences with stored blood and "blood bank." G. Shanks (*Canad. Med. Assoc. J.*, 1941, **45**, 7—10).—A lecture. C. J. C. B.

Freezing human plasma and preservation in frozen state. M. M. Strumia, J. J. McGraw, and J. Reichal (*Amer. J. clin. Path.*, 1941, **11**, 388—401).—The plasma is frozen by a CO_2 ice–alcohol mixture. C. J. C. B.

Elimination of standards and nomograms in determination of whole blood specific gravity by falling-drop technique. B. M. Kagan (*J. Lab. clin. Med.*, 1941, **26**, 1681—1684).—A new oil, a mixture of specially purified petroleum oil and methyl salicylate, is recommended for use in the determination of whole blood sp. gr. by the falling-drop technique. This oil has the following advantages over the xylene–bromobenzene mixture: elimination of the use of standard solutions, and substitution of a simple formula for the nomogram. C. J. C. B.

Simple rapid method for determining relative blood volume changes by specific gravity studies. C. T. Ashworth and W. D. Tigertt (*J. Lab. clin. Med.*, 1941, **26**, 1545–1552).—The procedure is based on calculating hæmatocrit vals. from the sp. gr. of whole blood and plasma, and determining from changes in hæmatocrit vals. alterations in plasma vol. The hæmatocrit vals. were obtained by Wintrobes' method and the sp. gr. by a falling-drop method. Blood vol. changes in experimental shock due to mild trauma, intraperitoneal injections of hypertonic solutions of NaCl, or application and subsequent release of tourniquets may be accurately followed by this method. C. J. C. B.

Quantitative method for estimation of complement (alexin). M. Heidelberger (*Science*, 1940, **92**, 534—535).—The method depends on the difference between the N contents of the ppts. from heat-inactivated serum and unheated serum. 0·10—0·13 mg. N per 1000 hæmolytic units of complement was found in three pptg. systems. E. R. S.

Effect of climate on volume of blood and tissue fluid in man. W. H. Forbes, D. B. Dill, and F. G. Hall (*Amer. J. Physiol.*, 1940, **130**, 739—746).—White laboratory workers in a hot damp climate in the summer showed a small increase in vol. of both blood and plasma, both abs. and relative to body-wt. and to surface area. The average change was +5% (range −6% to +12%). The interstitial fluid decreased by 11% (range −34% to +26%). There was no difference between coloured sharecroppers, white sharecroppers, and white laboratory workers in respect to plasma vol. per unit surface area; interstitial fluid vol. was 25% higher in Negroes. M. W. G.

Clinical and hæmatological studies in blood dyscrasias. C. J. Tripoli and D. E. Fader (*New Orleans Med. J.*, 1941, **93**, 402—406).—Report of 5 cases. E. M. J.

Human red cell. R. L. Haden (*Cleveland Clin. Quart.*, 1941, **8**, 111–134).—A lecture. A. S.

Permeability of human erythrocytes to sodium and potassium. N. B. Kurnick (*J. Biol. Chem.*, 1941, **140**, 581—595).—Determinations of the changes occurring during 1—24 hr. in the Na and K contents of healthy human erythrocytes brought into equilibrium at 40° with isotonic saline or sucrose solution show that the intact erythrocyte membrane is permeable to Na but not, except under unphysiological conditions, to K. The passage of Na through the membrane is not mere mechanical transfer through "pores." In whole blood under CO_2 pressure much less than that prevailing in the body, restoration of osmotic equilibrium is attained by exchange of water, anions, and Na. W. McC.

Ability of sheeps' erythrocytes to survive freezing. A. H. Woodcock, M. W. Thistle, W. H. Cook, and N. E. Gibbons (*Canad. J. Res.*, 1941, **19**, **D**, 206—212).—Effects of storage temp. (−2° to −190°) on hæmolysis of sheep erythrocytes is examined. Min. hæmolysis occurred when erythrocytes were suspended in 1—1·5 isotonic aq. glucose and frozen quickly in liquid air. Cells dried in a vac. from the frozen condition hæmolysed when liquids were added. The formation of ice crystals is a primary cause of the cell disintegration. A. G. P.

Fragility of erythrocytes as affected by anoxia, inhalation of carbon dioxide, and insulin hypoglycæmia. M. Booth (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 640—641).—Breathing for several hr. of an atm. containing 5% or less of O_2 or 15% or more of CO_2, or prolonged severe insulin hypoglycæmia, increased fragility of red cells in the dog. V. J. W.

Comparison of hæmoglobin response to varying dosages of iron. A. P. Barer and W. M. Fowler (*J. Lab. clin. Med.*, 1941, **26**, 1482—1487).—0·5 g. daily of Fe NH_4 citrate is valueless in the treatment of mild anæmias. The response to 1 g. of the drug per day was satisfactory, although the hæmoglobin increase was less rapid than with 3 g. of the same prep. 1 g. of reduced Fe or Fe Na citrate per day gave the same response as 1 g. of Fe NH_4 citrate. 0·36 g. of $FeSO_4$ per day was as effective as 1 g. of the other drugs, although the actual Fe content is much lower. C. J. C. B.

Absorption spectra of hæmoglobin in solution and in red blood corpuscles.—See A., 1941, I, 398.

"Inactive" hæmoglobin in blood. W. Heubner (*Klin. Woch.*, 1940, **19**. 328—329).—Photo-electric tests on fresh blood of 20 healthy men and 7 rabbits showed colour changes after administration of cyanide, which are attributed to presence of methæmoglobin (1·47% of total hæmoglobin in rabbits and 1·7% in men). M. K.

Destruction of hæmin and hæmoglobin by unsaturated fatty acids and oxygen. F. Haurowitz, P. Schwerin, and M. M.

Yenson (*J. Biol. Chem.*, 1941, **140**, 353—359).—When hæmin or hæmoglobin acts catalytically in the autoxidation of linoleic and linolenic acids, even as colloidal solutions at p_H 6·8 and 38°, the pigments are decomposed with the release of Fe^{III}, which serves for the determination of the extent of the decomp. A. L.

Spectrophotometric studies. VII. Establishment of precise spectrophotometric constants for cytochrome-*c* and hæmin derivatives on an iron basis. VIII. Micro-determination of iron in cytochrome-*c* and hæmin preparations. D. L. Drabkin (*J. Biol. Chem.*, 1941, **140**, 373—385, 387—396).—VII. Vals. of ϵ (c = 1 mmol. per l., d = 1 cm.), based on the determination of Fe, are given for *x*-pyridino-ferroproto-, -ferromeso-, and -ferrocopro-porphyrin. Six preps. of cytochrome-*c* which showed good agreement in their ϵ vals. had Fe contents varying from 30·2 to 79·6% of theory. Spectrophotometric consts. for cytochrome-*c* on Fe basis are established from data from 5 independent preps.

VIII. A modification of the photometric method employing the Fe^{II}–*o*-phenanthroline complex for the determination of hæmins and cytochrome-*c* is described. Four analyses can be made with 0·5 mg. of hæmin. A. L.

Serum reactions. J. D. Le Mar (*Northw. Med.*, 1941, **40**, 208—210). E. M. J.

Evaluation of serum and plasma transfusions in treatment of shock. O. W. McFarland and J. H. Connell (*New Orleans Med. J.*, 1941, **93**, 353—356). E. M. J.

Treatment of surgical shock with blood plasma. C. S. White, J. L. Collins, and J. Weinstein (*Sth. Med. J.*, 1941, **34**, 38—42). E. M. J.

Changes in and uses of stored blood and plasma. R. O. Muether and K. R. Andrews (*Sth. Med. J.*, 1941, **34**, 453—461).—Blood is diluted with 1½ times its vol. of a solution containing glucose 4·68, Na citrate 0·43, NaH_2PO_4 0·025, and Na_2HPO_4 0·25%. The addition of the buffers allows the sterilisation of the solution in one process. Hæmoglobin and O_2 capacity of stored blood fell by less than 6% in 26 days, prothrombin by 40—50%, fragility to saline increased up to the 10th day after which it remained steady; mechanical fragility was not affected. A K shift of 1·5—3·0 mg.-% was noted without influence on the recipient. The frequency of reactions was 4·3% in 404 cases. The use of cold blood had no deleterious effect on the recipient. There was no rise in the icterus index of the recipient following the use of blood more than 15 days old. N excretion remained const. in 6 cases receiving plasma transfusion. E. M. J.

Storage of liquid blood. M. W. Thistle, N. E. Gibbons, W. H. Cook, and C. B. Stewart (*Canad. J. Res.*, 1941, **19**, **D**, 185—205).—Glucose markedly inhibited hæmolysis of stored blood partly by changing the p_H towards the acid side. Hæmolysis was also diminished by storage at 2—6°, exclusion of air, continuous slow rotation of the sample, and dilution with isotonic solutions. Storage temp. affects cell vol. Hæmolysis is probably restricted by storage at normal blood pressure. A. G. P.

Experiences with blood transfusions from blood bank. I. S. Hneleski (*Penn. Med. J.*, 1940, **44**, 301—304). E. M. J.

Simplified Westergren sedimentation rate technique. A. M. Glazer (*J. Lab. clin. Med.*, 1941, **26**, 1516—1517).—The end of a rubber bulb is cut off and the base is placed over the bottom of the Westergren tube. The blood is drawn from the vein in the usual manner, and the proper amount of anticoagulant is then drawn into the same syringe. Then after introducing some air, the blood and anticoagulant are mixed by gentle agitation of the syringe. The mixture is then introduced into the Westergren tube by inserting the needle through the rubber diaphragm. C. J. C. B.

Significance of sedimentation reaction in prognosis of cancer patients [after treatment]. P. Jacoby and J. Spotoft (*Radiology*, 1941, **36**, 617—620).—Constantly rising or periodically increased sedimentation rate was seen in those cases which developed recurrences after treatment for carcinoma of the breast or uterus. E. M. J.

Weltmann serum coagulation reaction in allergic disease. S. C. Decs (*Sth. Med. J.*, 1941, **34**, 586—593).—The normal coagulation band of 6 was present in 8 asthmatics and 3 cases of allergic rhinitis all of which were free from infection. A band of 5 was seen in 8 asthmatics who also had chronic bronchitis and 2 cases of angioneurotic œdema one of which in addition had a fungus infection of the feet and hands. 5 asthmatics had a band of 2—4 and these were complicated by acute bronchitis, bronchopneumonia, or purulent sinusitis. E. M. J.

Action of cytotoxic sera on blood composition and its modifications by blood transfusion. N. B. Medvedeva (*J. Méd. Ukraine*, 1940, **10**, 33—48).—Serum-protein and non-protein-N of rabbit's blood are unchanged by injection of small doses of antireticular and antihepatic serum or repeated injections of non-immune serum. Inhibition of the liver by cytotoxic serum causes azotæmia. Cytotoxic blockage of the connective tissue produces decrease of serum-globulin without affecting the azotæmia. Injection of large doses of immune and non-immune serum decreases the chromic index and especially the concn. of residual C. M. K.

Repeated stimulation of connective tissue and its effect on adult and old animals [by antireticular cytotoxic serum]. N. B. Medvedeva (*J. Méd. Ukraine*, 1940, **10**, 49—70).—Stimulation was produced by 3 injections of 0·005 c.c. of antireticular cytotoxic serum at intervals of 2 months over a period of 6 months. It produced a temporary invigorating effect in old animals. M. K.

Use of antireticular cytotoxic serum in treatment of chronic tonsillitis. M. E. Jankelevitsch and S. N. Ledanov (*J. Méd. Ukraine*, 1940, **10**, 607—617).—Antireticular cytotoxic serum has a beneficial effect in patients with chronic tonsillitis. The increased Congo-red index decreases after treatment, owing to the stimulation of active mesenchyme. M. K.

Reticulo-endothelial system and immunity in hog cholera. H. C. H. Kernkamp (*J. Immunol.*, 1940, **39**, 85—88).—The reticulo-endothelial system of pigs was "blockaded" by intraperitoneal injection of trypan-blue (10—40 mg. per lb. body-wt.). These animals could be immunised against hog cholera by antiserum-antigen administration as effectively as the controls. A. S.

Hæmoglobin values in normal adults over period of time. W. Ingersoll (*J. Lab. clin. Med.*, 1936, **21**, 787—789).—During a 3-month period the difference between the max. and min. vals. for blood-hæmoglobin in normal young adults was 0·4—2·7 g.-% (average, women 1·54, men 1·10). A downward trend from October to January observed in 50% was especially marked in 26% of subjects. Ch. Abs. (*el*)

Paroxysmal nocturnal hæmoglobinuria with hæmolytic anæmia (Marchiafava–Micheli syndrome). A. Buell and S. R. Mettier (*J. Lab. clin. Med.*, 1941, **26**, 1434—1439).—A case report. C. J. C. B.

Hæmolytic action of chyle. L. W. Freeman and V. Johnson (*Amer. J. Physiol.*, 1940, **130**, 723—728).—A hæmolytic agent appears in thoracic duct lymph (but not the other lymph) during fat absorption (dogs). The soap plus free fatty acid content of chyle is 3·3—6·3 mg. per c.c. during rapid fat absorption, mainly soap; these quantities are sufficient to account for the hæmolytic action of chyle. M. W. G.

Lysolecithin and hæmolytic anæmia; significance of lysolecithin production in differentiation of circulating and stagnant blood. K. Singer (*J. clin. Invest.*, 1941, **20**, 153—160).—A method is described for determining the lysolecithin content in small amounts of blood; lysolecithin in peripheral blood of dogs and normal human beings was determined. Lysolecithin concn. is increased 2—8 times by incubating unmoved blood for several hr.; shaking the blood during incubation did not produce this increase, because movement destroyed or inactivated the lysin. To relate circulation of blood to its lysolecithin production the lysolecithin quotient (LLQ), (lysolecithin content of unincubated serum) ÷ (lysolecithin content of incubated serum), was determined. LLQ of normal peripheral blood is always under 1; in stagnant or stored blood it is 1. Blood from the splenic vein in dogs has a LLQ of 1, indicating the presence of stored blood coming from the spleen. LLQ in blood from the splenic artery is always under 1, demonstrating increased lysolecithin production in the "splenic reservoir blood." LLQ of blood from varicose veins was also 1. The lysolecithin content and LLQ in the blood of patients with congenital hæmolytic anæmia are normal. C. J. C. B.

Comparison of surface tension measurements and hæmolytic activity of guinea-pig complement. J. E. Faber, jun., and

L. A. Black (*J. Lab. clin. Med.*, 1941, **26**, 1599—1603).—The hæmolytic titre of 27 male guinea-pigs was 0·06—0·18 c.c., 17 being 0·08—0·10 c.c. The titres of 18 non-pregnant females were lower than those of the males, possibly because the females were smaller. Pregnancy lowered the titre of 7 guinea-pig complements examined. The surface tension (measured by time drops) was no greater than that of non-pregnant females or males with higher titres. A larger % of sera from males showed time drops of less than 10 dynes than was recorded for either pregnant or non-pregnant females. 60% of the males showed a time drop of less than 10 dynes, while 27 and 30% of non-pregnant and pregnant females, respectively, had time drops of less than 10 dynes. Thus the surface tension, expressed as time drop, measured with a du Noüy tensiometer, showed no correlation with hæmolytic activity. C. J. C. B.

Activity of hæmolysins *in vivo*. F. Ponder, C. Hyman, and L. White (*Amer. J. Physiol.*, 1941, **132**, 18—23).—The lytic activity *in vivo* of a simple lysin is influenced by the high concn. of cells, the presence of serum inhibitors, taking up of lysins by the tissues, and const. supply of lysins. Taking these factors together the lytic activity of a lysin in the whole animal is $\frac{1}{20}$ that observed in the *in vitro* test system. The results were obtained in rabbits. M. W. G.

Fate of cellular elements and prothrombin in citrated blood. C. R. Drew and J. Scudder (*J. Lab. clin. Med.*, 1941, **26**, 1473—1478).—In citrated blood there is a loss in the red blood cells beginning about the 15th day and amounting to 1—1·5 $\times$ 10^6 cells per cu. mm. by the end of the month. The hæmoglobin content remains const. in the total sample, although 15—25% may diffuse out of the cells into the plasma in 1 month. The polymorphonuclear leucocytes are diminished to 50% in 48 hr. and are amorphous masses in 15 days. The lymphocytes and eosinophils do not disintegrate so rapidly; the latter are particularly well preserved. The monocytes are difficult to trace. The platelets fall rapidly to 50,000—80,000 per cu. mm. and remain at this level for 15 days, at which time counting becomes difficult. The fragility of red blood cells slowly increases with increasing age. The prothrombin level remains above 40% of normal concn. for at least 4 months. The use of old brain extract gives clotting times which are too rapid, thereby giving an exaggerated idea of the val. of preserved blood in the therapy of hæmorrhagic diseases associated with low prothrombin concns. C. J. C. B.

Stability of Quick's thromboplastic solutions for prothrombin tests. H. G. Poncher and J. C. Ricewasser (*Amer. J. clin. Path., Tech. Suppl.*, 1941, **5**, 110—112).—Thromboplastin material prepared according to Quick's original directions and stored at 5° is far more stable (98 days) than Quick's statements indicate. C. J. C. B.

Prothrombin in newborn infant. S. Kove and H. Siegel (*J. Pediat.*, 1941, **18**, 764—775).—Intravenous injection of a water-sol. form of 1 mg. of 2-methyl-1 : 4-naphthaquinone raised blood-prothrombin in 2 hr. in 4 infants. In the infant with moderate prothrombin deficiency the val. rose to normal val. within 8 hr. C. J. C. B.

Plasma-prothrombin levels after thyroidectomy. J. W. Lord and W. DeW. Andrus (*Arch. Surg., Chicago*, 1941, **42**, 643—660).—The plasma-prothrombin level showed no correlation with the severity or type of hyperthyroidism. After operation on the thyroid 29 out of 36 cases of toxic goitre showed a fall (down to 50% or lower in 6 cases, average 77%) whereas 10 cases of non-toxic goitre showed no fall. (4 photomicrographs.) F. S.

Systemic sarcoidosis with coincident thrombocytopenic purpura. E. T. Bernstein (*N.Y. Sta. J. Med.*, 1938, **38**, 1543—1547).—A woman, aged 39, treated by ultra-violet and radiotherapy for generalised sarcoidosis for over 7 years developed thrombocytopenic purpura with complete absence of platelets. 4 months after a blood transfusion of 500 c.c. there were 320,000 platelets per cu. mm. E. M. J.

Treatment of thrombocytopenic purpura. H. M. Greenwald (*N.Y. Sta. J. Med.*, 1938, **38**, 1391—1394).—A review. E. M. J.

Spontaneous bleeding from gums in purpura. H. E. Nathoo (*Brit. Dent. J.*, 1941, **70**, 51—52).—2 cases are reported. In one case the purpura was attributed to quinine intoxication. H. H. K.

Splenectomy in purpura hæmorrhagica. M. Finn (*New Orleans Med. J.*, 1940, **93**, 259—263).—Of 12 splenectomies performed 2—14 years ago 8 are living and well, 2 untraced, 1 died postoperatively, and 1 died 6 years after the operation. E. M. J.

Bleeding tendency and vitamin-*K* therapy in newborn. H. Leidenheimer and A. S. Albritton (*New Orleans Med. J.*, 1941, **93**, 464—469).—No change in the Boyce serum vol. index (cf. A., 1940, III, 704) was seen in the newborn children of 21 mothers treated by thyloquinone for 2—14 days before delivery, although the fall on the 3rd day was less pronounced. Treatment of the children with 2 mg. daily raised the index to adult val. on the 3rd day. 5 cases of hæmorrhagic disease in the newborn treated by klotogen, a natural concentrate, or thyloquinone recovered. E. M. J.

Treatment of hæmorrhagic disease of newborn. W. R. Barney (*Ohio Sta. Med. J.*, 1941, **37**, 41—45).—88% of untreated cases and 75% of those receiving intramuscular injection of blood died, whilst intravenous administration of blood reduced the mortality to 12·5% (41 cases). E. M. J.

Practical therapy with vitamin-*K*. A. M. Grossman (*Med. Ann. Columbia*, 1941, **10**, 218—225).—A review. E. M. J.

Hypoprothrombinæmia and vitamin-*K* in nutritional deficiency states. E. D. Warner, T. D. Spies, and C. A. Owen (*Sth. Med. J.*, 1941, **34**, 161—163).—In 48 cases of nutritional deficiency all but 6 had prothrombin vals. above 80% of normal and in 37 of a miscellaneous group 10 had vals. below 80%. 5 of the 6 and 8 of the 10 cases with hypoprothrombinæmia were given 6 mg. of vitamin-*K* per day by mouth for at least 4 days. Only 2 cases in the first group who had previously had severe diarrhœa showed a rise in prothrombin val., from 33 to 69 and 69 to 96%, respectively. E. M. J.

Vitamin-*K* [therapy] in newborn infants. P. S. Astrowe and E. S. Palmerton [with V. Henderson] (*J. Pediat.*, 1941, **18**, 507—515).—Prothrombin clotting time increases (*i.e.*, prothrombin concn. decreases) during the 1st few days of life, returning to normal by the 4th—5th day. Infants who received vitamin-*K* in the 1st 24 hr. do not show this initial increase. Mothers receiving -*K* at least 12 hr. before delivery transmit it to their infants. Normal clotting time in the mother does not preclude a hæmorrhagic tendency in her infant. No relationship was established between the mother's diet and the prothrombin level of her newborn infant. Mothers should be given -*K* ante-partum, and the newborn infant similar medication during the first 24 hr. C. J. C. B.

Method for counting leucocytes in blood containing gum acacia. J. V. Monke (*J. Lab. clin. Med.*, 1941, **26**, 1664—1667).—Leucocyte counts on blood containing gum acacia are difficult to make when Tuerck's solution is used. A solution of 0·1% saponin, 0·9% saline, and 0·1% methyl-violet is recommended instead; complete hæmolysis and stromatolysis of the red blood cells are obtained. The white blood cells are easily counted in both normal and acacia-containing bloods. C. J. C. B.

Determination of phospholipin content of white blood cells. E. M. Boyd (*J. Lab. clin. Med.*, 1936, **21**, 957—962).—A method is described. The average val. for 22 normal persons was 844 mg.-% with a standard deviation of 241. Ch. Abs. (*el*)

Idiopathic panmyelophthisis with hyperplastic marrow. S. Kimura and K. Kumagai (*Tohoku J. exp. Med.*, 1941, **39**, 380—388).—A boy of 6 years suffered from panmyelophthisis with extreme anæmia, leucopenia, and thrombocytopenia and hæmorrhagic diathesis. Bone marrow smears were "packed" with swollen mononuclear cells (degenerated myeloblasts) which were negative to the oxidase and Cu–peroxidase reactions. There were few megakaryocytes but many normoblasts. The smears showed "maturation arrest." A. S.

Hæmatology of glandular fever. M. Shindo and S. Watanabe (*Tohoku J. exp. Med.*, 1941, **39**, 389—398).—A child suffering from glandular fever had a blood picture resembling acute lymphatic leukæmia. There was an initial anæmia and slight thrombocytopenia, red cell sedimentation rate was increased; neutropenia appeared during the second week of illness, but marked leucocytosis with 82% lymphocytes and mono-

cytosis was observed during the third week. The lymphocytosis persisted for 3 months. A. S.

Acute lymphatic leukæmia with unusual number of monocytes. H. C. Thompson (*N.Y. Sta. J. Med.*, 1938, **38**, 1437—1439).—16,000—19,000 monocytes per cu.mm., representing on one day 4% and 3 days later 54·5% of total white cells, were seen in a female infant, aged 2 years, with a lymphoblastic leukæmia from which she died after another 2 days. E. M. J.

Chronic myeloid leukæmia. R. B. Niven and A. Gilpin (*Proc. Roy. Soc. Med.*, 1941, **34**, 557).—A case is reported in a 10½-year-old girl. H. H. K.

Myelogenous leukæmia changing to monocytic leukæmia. B. E. Hall and C. H. Watkins (*Amer. J. clin. Path.*, 1941, **11**, 443—459).—Report of a case which falls into the Naegeli type of monocytic leukæmia. C. J. C. B.

Marrow sclerosis associated with massive myeloid splenomegaly. H. E. Taylor and R. P. Smith (*Arch. Path.*, 1941, **31**, 803—810).—A case of marrow sclerosis in which there was extramedullary hæmopoiesis in the spleen, adrenals, liver, and hæmolymph glands, with fibrosis and osteosclerosis of the marrow of the sternum and vertebræ, is described. C. J. C. B.

Extreme eosinophilia and leucocytosis. M. H. Bass (*Amer. J. Dis. Child.*, 1941, **62**, 68—79).—Three cases in which the disease was characterised by general adenopathy, leucocytosis, and extreme eosinophilia occurred in children. In 1 the patient had roentgenographic evidence of miliary pulmonary infiltrations, which persisted for several years but finally disappeared. The leucocytosis, and especially the eosinophilis, remained long after the fever had disappeared. The course of the disease is chronic, but it may end in complete recovery. In 1 case death occurred from intercurrent illness during the first year of observation. In the third case the patient was kept under observation for several years and finally recovered completely. Although the cause of this syndrome is unknown, it is most probably due to chronic infection. C. J. C. B.

Blood changes in fatigue. N. M. Schtscherbakov (*J. Méd. Ukraine*, 1940, **10**, 509—527).—In the first stage of fatigue in strenuous work plasma-CO_2 and blood-sugar decrease, sedimentation rate, red cell count, and hæmoglobin concn. increase. In the second stage during a short period of work plasma-CO_2 and sedimentation rate are reduced, dry residue, red cell count, and hæmoglobin concn. are increased; no. of lymphocytes is increased, while neutrophils and eosinophils are reduced. With more prolonged work plasma-CO_2 and blood sugar decrease; red cell count and hæmoglobin concn. are increased; leucocytes are slightly increased, monocytes are increased absolutely and in %. With very prolonged work, plasma-CO_2 increases, blood-sugar decreases, hæmoglobin, red and white cell count increase; lymphocytes increase in %. M. K.

Purpura hæmorrhagica and avitaminosis-*C*. A. Sá and O. A. Prestera (*Semana méd.*, 1936, II, 295—304).—Recovery was attributed largely to subsidence of supposed deficiency in vitamin-*C*. Ch. Abs. (*el*)

Hæmorrhagic diathesis in case of gastric carcinoma with skeletal metastases. C. E. McLeod and R. H. Goodale (*N.Y. Sta. J. Med.*, 1938, **38**, 1339—1341).—Bleeding from the gums and throat, melæna, and hæmaturia were seen in a patient with a red cell count of 2,750,000, 60% hæmoglobin, 17,400 white cells, 5 normoblasts per 100 white cells, 9% reticulocytes, 15,000 platelets, a bleeding time of 8 min., and a clotting time of 35 min. by the capillary tube method. Autopsy 44 days later showed an unsuspected adenocarcinoma of the stomach with secondaries in the liver, mesenteric lymph nodes, adrenal, and bone marrow of the sternum and vertebræ (the only bones explored). E. M. J.

Diagnosis and treatment of purpuric diseases. R. R. Kracke (*Sth. Med. J.*, 1941, **34**, 56—61).—A review. E. M. J.

Treatment of hæmorrhage and hæmophilia in dental practice. E. V. Tomey (*Brit. Dent. J.*, 1941, **70**, 325—329).—A discussion. H. H. K.

Heparin. J. H. Ferguson (*J. Lab. clin. Med.*, 1941, **26**, 1559—1564).—A review. C. J. C. B.

Action of heparin, serum-albumin (crystalline), and salmine on blood-clotting mechanisms (*in vitro*). J. H. Ferguson (*Amer. J. Physiol.*, 1940, **130**, 759—770).—Cryst. serum-albumin has a non-sp. thromboplastic action in the prothrombin to thrombin phase and a slight effect usually antithrombic in the thrombin + fibrinogin interaction. Purified albumin lacks the ability of crude plasma-" albumin " preps. to produce a marked synergistic antithrombic action, in conjunction with heparin. Salmine is antiprothrombic in the first phase and fibrinoplastic in the second. The inhibition preponderates in plasma. Both actions are antagonised by heparin. Heparin is antiprothrombic in the first phase, to a degree and duration depending on quant. relations to the thromboplastic factors. In the second phase it has a minor immediate non-progressive antithrombic effect, exaggerated usually by albumin and antagonised by salmine. The significant anticoagulant effects observed are the antiprothrombic actions of heparin and salmine. M. W. G.

Determination of potency of heparin preparations. F. C. MacIntosh (*Biochem. J.*, 1941, **35**, 770—775).—The method (error ±5%) involves recalcification of oxalated horse plasma in presence of heparin and excess of thrombokinase, the clotting time depending on the concn. of heparin. Oxalated plasma is stable when completely dried in the frozen state, the clotting properties being unchanged when redissolved. The Na salt of heparin is more stable than the Ba salt and more suitable as a reference standard. The method overcomes objections of Jacques and Charles (A., 1941, III, 492) of the interference of Ba salts and the instability of the clotting properties of oxalated blood. H. G. R.

Colorimetric standardisation of heparin preparations. F. C. MacIntosh (*Biochem. J.*, 1941, **35**, 776—782).—Addition of a dil. solution (0·01%) of heparin to aq. toluidine-blue produces a heparin–dye complex, which can be removed by adsorption at the interface on shaking with light petroleum. The proportion of dye removed, a measure of the added heparin, is obtained from the decrease in absorption of the aq. phase. The relative potencies of synthetic anticoagulants cannot be stated exactly owing to qual. differences in their action. H. G. R.

Bacteriostatic properties of histiocytes toward *M. tuberculosis* as determined by single cell method. M. C. Kahn (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 630—634).—Tubercle bacilli, injected intraperitoneally in guinea-pigs and taken up in histiocytes, failed to grow when these histiocytes were implanted on Corper's egg medium. Free bacilli from the same exudate grew in 29% of the tubes inoculated. V. J. W.

Mobility velocities of histiocytes from normal and sensitised guinea-pigs. M. C. Kahn (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 635—638).—Histiocytes from the peritoneal cavity of guinea-pigs sensitised to H37 strain of tubercle bacillus had a lower velocity in electrophoresis than those from normal animals. V. J. W.

Gaucher's disease. J. McMichael (*Proc. Roy. Soc. Med.*, 1941, **34**, 560—561).—Case report. H. H. K.

Distribution of protein between red cells and plasma. B. Oisi (*Tohoku J. exp. Med.*, 1941, **39**, 399—418, 419—434).—I. The total N content of red cells is 6—7 times, the albumin-N content is 8—9 times, the globulin-N twice, the non-protein-N 1·5—2 times, the Cl content half that of plasma in man and rabbits. The following changes were observed after transfusion of 10 c.c. per kg. body-wt. of a 50% glucose solution: in the first 20 min. the total N, albumin-N, and globulin-N content of the red cells decrease, non-protein-N and Cl increase; the reverse changes were observed in the plasma; after 60 min. the hæmoglobin concn., red cell total N, albumin-N, and globulin-N increase, non-protein-N and Cl approach normal vals.

II. The following changes were observed in clinical and experimental (rabbits) anæmia: total N, albumin-N, and Cl contents are diminished in red cells and plasma; non-protein-N and globulin-N are markedly increased, especially in the erythrocytes. 20 min. after intravenous transfusion of hypertonic glucose in anæmic rabbits total, albumin-, and globulin-N are diminished in red cells and plasma, the hæmoglobin concn. and blood colloid-osmotic pressure are reduced, non-protein-N and Cl are diminished in plasma and increased in the red cells. After 60 min. the plasma-albumin decrease is more marked while non-protein-N and Cl content return to

pre-transfusion levels. The colloid-osmotic pressure is further reduced; globulin in cells and plasma is unchanged. A. S.

Protein distribution between erythrocytes and plasma in (III) kidney and (IV) liver diseases. B. Oisi (*Tohoku J. exp. Med.*, 1941, **39**, 435—461, 462—484).—III. Total and albumin-N contents are diminished in plasma and increased in erythrocytes in cases of nephrosis or glomerulonephritis + nephrosis. The globulin-N and the Cl content are increased in plasma and cells. Non-protein-N is markedly increased in plasma in glomerulonephritis. In experimental U poisoning of rabbits the changes are similar to those in human nephrosis; after ligaturing the ureters, changes resembling those in glomerulonephritis occur; 20 min. after intravenous injection of hypertonic glucose in rabbits, the hæmoglobin concn., total, albumin-, and globulin-N diminished in plasma and red cells after U poisoning, and increased after ligature of the ureters. Non-protein-N and Cl decreased in both conditions in the plasma, but decreased in the red cells. Similar changes were observed after 60 min.

IV. Plasma-albumin-N is diminished and -globulin-N increased, albumin- and globulin-N are increased in the red cells of patients suffering from various liver diseases and of rabbits with experimental liver damage. Various changes of hæmoglobin and plasma and red cell protein fractions are described following intravenous injection of hypertonic glucose solutions in rabbits with experimental damage to the liver. A. S.

Effect of intravenous serum transfusion on protein content and blood colloid osmotic pressure. G. Koseki (*Tohoku J. exp. Med.*, 1941, **39**, 533—559, 560—588).—I. Transfusion of defibrinated serum into rabbits (10 c.c. per kg. body-wt.) increases the hæmoglobin concn. (return to normal after 24 hr.), plasma-protein concn. (max. after 24 hr.) and plasma colloid-osmotic pressure (return to normal after 48—72 hr.). In hyperthyroid or starving rabbits, the hæmoglobin concn. is normal after 6 hr. and max. vals. for plasma-protein concn. and colloid-osmotic pressure are reached after 6 hr. (return to normal in 24 hr.). The return to normal of hæmoglobin and plasma-protein concn. and of colloid-osmotic pressure is retarded in thyroidectomised animals.

II. After double nephrectomy or ligature of the ureters, serum-protein increases and hæmoglobin concn. and colloid-osmotic pressure decrease. After serum transfusion serum-protein content increases. Colloid-osmotic pressure increases within 3 hr. and subsequently diminishes to the control level; the hæmoglobin concn. gradually diminishes. Similar changes were observed after ligature of the hepatic artery and subsequent serum transfusion. A. S.

Reversibility of denaturation of serum-albumin. J. Roche and M. S. Chouaiech (*Compt. rend. Soc. Biol.*, 1940, **133**, 474—478).—Horse serum-albumin was denatured by HCl–acetone and the denaturation reversed by the method of Anson and Mirsky (A., 1931, 1080). The reversed denatured protein has the same mol. wt. as the original serum-albumin but its solubility in $(NH_4)_2SO_4$ solutions of different concn. at 22° and p_H 6·10 is similar to that of the denatured protein. P. C. W.

Serum-protein concentration as guide to treatment of dehydration in diarrhœal diseases. E. M. Bridge, M. I. Cohen, and T. F. M. Scott (*J. Pediat.*, 1941, **18**, 709—723). C. J. C. B.

Osmotic regulation in crabs of North American Pacific coast. L. L. Jones (*J. Cell. Comp. Physiol.*, 1941, **18**, 79—92).—Osmotic pressures of body- and environmental fluids were compared in 9 species of crab. In general, body fluids change with change in environment, some species having a higher osmotic pressure than environment, and some a lower. Land crabs have much greater power of osmotic regulation than marine crabs. The type of regulation which reduces osmotic pressure below that of the environment has the effect of guarding the body fluids from the concn. produced by air exposure in the branchial chamber fluid. V. J. W.

Passage of blue dye T-1824 from blood-stream into lymph. J. W. Ferrebee, O. C. Leigh, and R. W. Berliner (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 549—553).—This dye, when injected intravenously into normal anæsthetised dogs, appears in thoracic and cervical duct lymph within 1 hr., so that errors may be caused when it is used for blood-vol. determination. V. J. W.

[Influence of corpus cinereum on blood-amylase.] A. M. Tscheshkov (*Arch. sci. biol. U.S.S.R.*, 1935, **38**, 407—409).—In normal and rabid dogs, placing a glass marble in the region of the corpus cinereum increased blood-amylase. Ch. Abs. (*el*)

Mineral composition of blood of a dog deprived of one cerebral hemisphere and of motor cortex of other hemisphere. K. C. Abuladze, A. M. Georgievskaja, A. M. Petrunkina, M. L. Petrunkin, and I. S. Rosenthal (*Arch. sci. biol., U.R.S.S.*, 1935, **38**, 403—406).—Whole blood-Cl, and serum-P, -Na, -K, -Ca, -Mg, and -sugar were normal. Ch. Abs. (*el*)

Control of wet ashing process for determination of serum-sodium by uranyl zinc acetate method. M. S. Kimble (*Amer. J. clin. Path., Tech. Suppl.*, 1941, **5**, 98—106).—A modification of Butler and Tuthill's method (A., 1931, 1342) is described. C. J. C. B.

Serum-calcium in negro. H. D. West and N. C. Jefferson (*J. Lab. clin. Med.*, 1941, **26**, 1644—1646).—385 determinations of serum-Ca on 309 Negroes were carried out; the results resembled those in other groups of the population. C. J. C. B.

[Blood] electrolyte changes in pulmonary tuberculosis. G. W. Thorn. R. P. Howard, and H. Dayman (*Johns Hopkins Hosp. Bull.*, 1940, **67**, 345—364).—Decreased serum-Cl′ parallel with decrease in vital capacity was observed in pulmonary tuberculosis and in extensive non-tuberculous pulmonary disease. In patients with pulmonary tuberculosis on a low NaCl intake supplementary K medication did not precipitate symptoms of adrenal cortical insufficiency, unlike patients with Addison's disease. T. F. D.

Blood-copper of ewes during pregnancy. A. Eden (*Biochem. J.*, 1941, **35**, 813—815).—No rise in the blood-Cu of breeding ewes was observed during pregnancy, although individual fluctuations were considerable as with non-pregnant animals. A. L.

Polarographic study of blood sera in experimental pneumonia in dogs. M. L. Crossley, R. H. Kienle, B. Vassel, and G. L. Christopher (*J. Lab. clin. Med.*, 1941, **26**, 1500—1505).—The wave heights of the current–voltage curves of whole sera decrease during the infection and return to normal with recovery. These changes may be associated with corresponding shifts in the proteic cystine content of the sera. The polarograms of the peptone fraction of dog sera (the fraction which, after alkali-denaturation, is not pptd. by sulphosalicylic acid) increase in wave height, as well as change their shape during infection. Recovery is associated with a return to normal vals. With the increase in wave height during illness, a corresponding increase in N vals. occurs; the fever curves do not directly parallel the polarographic changes. C. J. C. B.

Thiæmia [sulphur in blood]. H. R. Dalό (*Rev. fac. cienc. quim.*, 1935, **10**, 77—85).—The determination of S fractions of blood has been studied, and data concerning S content and distribution in normal and pathological blood are presented. Ch. Abs. (*el*)

Cystine content of hydrolysates of sera in experimental pneumonia in dogs. M. L. Crossley, B. Vassel, and G. L. Christopher (*J. Lab. clin. Med.*, 1941, **26**, 1635—1642).—The cystine content of serum hydrolysates decreased during infection, and returned to normal on recovery. The % decrease in cystine concn. was paralleled by the % fall in total N. This suggested that a fall in protein level occurred during infection. C. J. C. B.

Determination of plasma-uric acid. H. A. Bulger and H. E. Johns (*J. Biol. Chem.*, 1941, **140**, 427—440).—The method depends on determination of reduction of alkaline $Fe(CN)_6'''$ by protein-free blood filtrates before and after destruction of uric acid by uricase. Errors in the colorimetric methods include those due to non-uric acid reducing substances, which are particularly marked for whole blood, uric acid lost during deproteinisation, and factors present in protein-free blood filtrates that inhibit colour development. The uric acid content of human plasma varies between 2 and 6 mg.-%, being slightly lower in females (3·5) compared with males (4·4). The method is not satisfactory when applied to whole blood. H. G. R.

Specific polysaccharides of blood. A. Stepanov, A. Kuzin, Z. Makaeva, and P. Kosjakov (*Biochimia*, 1940, **5**, 547—556).—A method of isolating and purifying complex group-sp.

polysaccharides ($[\alpha]_D^{20}$ −25° to −30°) from human blood is described, the yields from 40 l. of group *A* and group *B* blood being 100 and 51 mg., respectively. The polysaccharides contain *l*-arginine and yield glucose and aminoglucose on hydrolysis but they contain no lipin, protein, pentose, fructose, S, P, or uronic acid. They bind the α- and β-agglutinins of human serum. W. McC.

Œstrogenic activity of blood. T. Schlossberg and C. A. Durruty (*Rev. Soc. argent. biol.*, 1936, **12**, 77—87).—Blood from women (normal, castrated, with amenorrhea, and in menopause), men, and various animals contained œstrogenic substance. Ch. Abs. (*el*)

Distribution of cholesterol between blood cells and plasma in rabbit and man. S. Member, S. B. Ehrlich, and M. Bruger (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 560—562).—In normal rabbits the blood cells contain more than twice as much cholesterol as the plasma. In cholesterol-fed rabbits and in normal men the plasma contains more than the cells. V. J. W.

Comparison of macro- and micro-gravimetric techniques for lipin analysis of serum. A. E. Hansen (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 706—708).—Serum-lipins were determined in 0·4-c.c. and 8-c.c. samples of serum from a case of lipæmia. Identical results were obtained except for I vals., where the Hanus method for the large samples gave higher vals. than the Yasuda method for the small samples. This difference was abolished if the Hanus reagents were diluted for adaptation to a micro-technique. V. J. W.

Experimental variation of urea content of blood. E. B. Drevermann (*Med. J. Austral.*, 1939, II, 747—752).—The blood-urea in normal man at any particular time is dependent on the previous diet, fluids intake, and the condition of work or rest under which the blood is taken. The rise in blood-urea following a gastro-intestinal hæmorrhage results in part from blood-proteins digested in the intestine. The diminished excretion of urea from compensatory retention of fluids also contributes to this effect. F. S.

Determination of blood-urea. E. B. Lisle (*Pharm. J.*, 1941, **147**, 94).—Urea in blood is converted into NH_3 by urease using the simplified method of Asman and Close, and the NH_3 is determined by the author's apparatus (B., 1939, 333) and using papers impregnated with aq. $AgNO_3$–$Mn(NO_3)_2$. The method, which is fully described, is rapid and accurate. J. N. A.

Use of perchloric acid in digestion mixture for blood non-protein-nitrogen determination. T. P. Sislock (*Amer. J. clin. Path., Tech. Suppl.*, 1941, **5**, 106—107).—The modified digestion mixture is prepared by mixing 46 c.c. of C.P. H_2SO_4 with 50 c.c. of water, and when cool adding 2 c.c. of 60% C.P. $HClO_4$ and 2 c.c. of 85% C.P. H_3PO_4 (syrupy). The mixture is used in the same way as Folin's mixture. C. J. C. B.

Influence of emotional excitement on insulin content of blood in normal and psychotic patients. E. Gellhorn, A. Allen, and J. Feldman (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 572—574).—Blood of excited psychotics causes marked hypoglycæmia in the hypophysectomised, adreno-demedullated rat. Blood from excited or unexcited controls, or unexcited psychotics, causes only slight change in blood-sugar, usually an increase. V. J. W.

Potassium cyanide as stabiliser for cevitamic acid in blood. I. Palmer (*Amer. J. clin. Path., Tech. Suppl.*, 1941, **5**, 93—97).—Unless a preservative is used, the cevitamic acid content of blood should be determined within 30 min. from the time the blood is drawn. The addition of KCN (1 mg. per c.c.) to whole blood arrests the oxidation of cevitamic acid for 2 hr. When KCN is used as a preservative, a blank containing 0·025% KCN in 2·5% HPO_3 should be titrated instead of the customary blank containing only 2·5% HPO_3. C. J. C. B.

Pantothenic acid content of blood of mammalia. P. B. Pearson (*J. Biol. Chem.*, 1941, **140**, 423—426).—Dog, pig, horse, rabbit, sheep, and human blood contain 27·4, 32·5, 42·2, 66·5, 25·7, and 20·1 μg. of pantothenic acid per 100 ml., respectively. In the dog and pig, the concn. is greater in the plasma than in the cells, 44% of the total occurring in human plasma and 59—63% in the plasma of other species. H. G. R.

Effect *in vitro* of curare and β-erythroidine hydrochloride on choline-esterase of human blood serum. M. M. Harris and R. S. Harris (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 619—622).—Choline-esterase activity of human serum, determined by method of Hall and Lucas (*Physiol. Abs.*, 1937, **22**, 781), is greatly decreased by small amounts of curare, the decrease up to 60% being proportional to curare added. β-Erythroidine hydrochloride has no effect on the esterase. V. J. W.

Effect in man of curare and metrazol administration on choline-esterase activity of blood serum. M. M. Harris and R. S. Harris (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 623—627).—Injection of 7—10 ml. of Squibb " intocostrin " caused marked inhibition of choline-esterase activity of blood serum in man. This inhibition gradually decreased but was still present after 6 hr. It was not affected by injection of metrazol. V. J. W.

Therapeutic value and limitations of vitamin-*K*. A. J. Quick (*Nebraska Sta. Med. J.*, 1941, **26**, 1—4). E. M. J.

VI.—VASCULAR SYSTEM.

Action of ions on frog heart. C. R. Spealman (*Amer. J. Physiol.*, 1940, **130**, 729—738).—The effect on the amplitude of the ventricular response and on the systolic and diastolic tone (length) of varying the Na^+, K^+, and Ca^{++} concns., the p_H, and the osmotic pressure on isolated frog heart was studied. The amplitude of the ventricular response becomes smaller if the concn. of any of these ions deviates too far from normal. With concns. closer to normal, the heart is not greatly affected except by Ca, which increases the amplitude of the ventricular response and increases systolic tone. With concns. close to normal increased K decreases conductivity and the duration of the ventricular response. Increased Ca increases the duration of the ventricular response. Addition of glucose (increasing osmotic pressure) increases the duration of the ventricular response to some extent. M. W. G.

Repetitive action of heart. M. Segers (*Compt. rend. Soc. Biol.*, 1940, **133**, 460—461).—A spiral slice of tortoise heart was excised and placed in a partitioned vessel so that the two ends rested in different solutions. If adrenaline, Ba^{++}, or Ca^{++} is added to the solution containing end *A* nothing happens but if this end is stimulated electrically for sufficiently long a series of spontaneous contraction waves is generated, passing to end *B* and persisting for up to 12 contractions after the stimulus is withdrawn. The same conditions can be produced by electric stimulation at end *B* when a wave of contraction reaches *A* and sets up a series of contractions passing from *A* to *B*, just as if *A* had been electrically stimulated as above. P. C. W.

Myofibrillar modifications induced by caffeine in cardiac muscle of frog. R. H. Cheney (*J. Cell. Comp. Physiol.*, 1941, **18**, 15—20).—Frog's cardiac muscle, immersed in 2% caffeine, shows changes similar in kind to those shown by striped muscle, but less in degree. V. J. W.

Action of water moccasin venom on isolated frog heart. R. V. Brown (*Amer. J. Physiol.*, 1940, **130**, 613—619).—Venom of the water moccasin (*Agkistrodon piscivorus*, Lacépède) acts directly on the endocardium, myocardium, and intrinsic ganglia of the isolated frog heart. In 1 : 1000 concn. cardiac depression occurs; in 1 : 10,000, and 1 : 100,000 concns. there is preliminary stimulation; concns. of 1 : 1,000,000 stimulate. The order of failure was first the ventricle, which stopped in complete contraction, then the atria which failed in wide dilatation; the sinus venosus survived longest. Dissociation occurred rarely. The venom acted on the vagal endings or ganglion cells of the heart to produce slowing, which was annulled by atropine. Permeability of the atria was greatly increased. M. W. G.

Effect of very high frequency waves on frog's heart. N. V. Bodrova (*J. Méd. Ukraine*, 1940, **10**, 537—549).—These waves when applied to Remak's node produce marked disturbance of heart rhythm attributed to changes in the nerve cells of the node. M. K.

Phonocardiography and its clinical correlation. H. Arenberg (*Ann. int. Med.*, 1941, **14**, 1607—1616).—The heart sounds were recorded simultaneously with the e.c.g., using a Cambridge electrocardio-stethograph, in 200 patients suffer-

ing from various organic heart diseases. The 1st normal sound recorded from the apex consists of 5—11 vibrations lasting 0·06—0·11 sec.; the 2nd sound consists of 3—4 vibrations lasting 0·04—0·06 sec.; the 3rd sound consists of 1—3 vibrations and takes place 0·11—0·14 sec. after the beginning of the 2nd sound; the 4th sound begins 0·04 sec. after the beginning of the *P* wave and consists of 2—5 vibrations. Murmurs are determined by the no. of vibrations and the time factor above the max. no. of cycles found in normal sounds. Systolic murmurs including the 1st sound may have 13—35 vibrations and may extend up to and beyond the 2nd sound, as it may extend not more than 0·02—0·03 m-s c. past the 1st sound. The diastolic murmur together with the 2nd sound consists of 7—45 vibrations. It may last for 0·07 sec. or may take up the entire diastole and continue into a presystolic murmur to emerge with the succeeding 1st sound. In 10% of diastolic murmurs of aortic insufficiency the murmur was heard on physical examination but not identified on the phonocardiogram. Out of 168 clinically recorded systolic murmurs 160 were recorded graphically; out of 75 clinically recorded diastolic murmurs 67 were recorded graphically. Late diastolic murmurs were recorded graphically in 5 patients in whom they were not noted clinically. The instrument is of great val. in the 3rd and 4th phase of the cardiac cycle, as extra sounds in these phases are clinically easily missed or difficult to interpret. A. S.

Significance of systolic murmurs. D. M. Lyon (*Edinb. Med. J.*, 1941, [iv], **48**, 589—616).—A very full account of the subject. The distinction between functional and organic murmurs is difficult to establish. Repeated examinations with normal cardiac rate are essential. Time, site, propagation, effects of respiration, posture, and exercise are important. H. S.

Clinical value of cardiophonograph. A. L. Smith (*Nebraska Sta. Med. J.*, 1941, **26**, 245—247). E. M. J.

Heart sounds in experimental endocarditis lenta in rabbits before death. J. Nyboer, M. J. Spence, and W. J. MacNeal (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 545—546).—Cardiac murmurs could be detected in a majority of rabbits in which valvular vegetations had followed streptococcal inoculations. V. J. W.

Heart sounds in myocardial infarction due to acute coronary occlusion. R. Friedman and A. M. Master (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 574—576).—Graphic records of sounds in such cases show that the 1st sound is diminished and may be less loud than the 2nd, and is of low pitch. Accentuation of auricular and 3rd sounds often results in gallop rhythm. V. J. W.

Electrocardiographic alterations in rheumatic fever in children. E. S. Orgain, J. M. Martin, and H. I. G. Anderson (*Amer. J. Dis. Child.*, 1941, **62**, 26—32).—From 70 patients, the e.c.g. of 49 disclosed one or more abnormalities in single or serial tracings. The e.c.g. of patients who had the greatest degree of myocardial injury were most frequently abnormal. C. J. C. B.

Monophasic and diphasic action current of auricle. L. von Unghváry and F. Obal (*Klin. Woch.*, 1940, **19**, 369—371). M. K.

Electrocardiogram after pneumonectomy. C. G. Barnes (*Proc. Roy. Soc. Med.*, 1941, **34**, 606—610).—More than 50% of the pulmonary artery must be occluded to cause the typical e.c.g. pattern of acute cor pulmonale in man. H. H. K.

Significance of splitting of *P* wave in electrocardiogram. G. Bachmann (*Ann. int. Med.*, 1941, **14**, 1702—1709).—The most direct pathway of conduction from the sino-auricular node to the left auricle is the interauricular bundle which ends at the base of the left auricular appendage. Clamping or ligation of this bundle causes delayed conduction to the left auricle by 2—4 times the normal in dogs. The *P* wave is split, flattened, and sometimes negative. Similar results are obtained if the recurrent interauricular branch from the left coronary artery is clamped. Deep notching of *P* in leads I and II was found in a patient with marked pathological alterations of the interauricular bundle. A. S.

Aneurysm of sinus of Valsalva causing coronary occlusion. H. D. Chipps (*Arch. Path.*, 1941, **31**, 627—630).—A case report. C. J. C. B.

Intimal coronary artery hæmorrhage as factor in the causation of coronary occlusion. M. G. Nelson (*J. Path. Bact.*, 1941, **53**, 105—116).—Changes in the vessel wall are of greater importance in the development of coronary occlusion than changes in the blood. The most common predisposing disease is coronary atherosclerosis. Many sinusoidal blood vessels are found in relation to intimal atheromatous plaques. These vessels occur in 2 situations, either deep in the intimal tissues close to the media, or more superficially, near the endothelium. In most cases they are surrounded by chronic inflammatory changes. Superficial intimal hæmorrhage is probably due to weakening of the sinusoidal wall by toxic action and transient raised intraluminar pressure induced by exertion or emotion. In such cases superimposed intravascular thrombosis may be delayed until a subsequent period of bodily or mental rest. (5 photomicrographs.) C. J. C. B.

Incidence and localisation of coronary artery occlusions. M. J. Schlesinger and P. M. Zoll (*Arch. Path.*, 1941, **32**, 178—188).—Most zones of occlusion of the coronary arteries are less than 5 mm. long and easily overlooked. Occlusions are as numerous in the right, as in the left descending, coronary artery. There is no relation between the manner of branching of the coronary arteries and the localisation of occlusions. Most occlusions are found within 3 cm. of the mouths of the vessels. C. J. C. B.

Rôle of coronary artery disease in ætiology of auricular fibrillation. I. C. Brill and W. A. Meissner (*Ann. int. Med.*, 1941, **14**, 1341—1347).—Analysis of 400 autopsied cases showed that, in the absence of congestive heart failure or acute coronary thrombosis, coronary artery disease is not a cause of auricular fibrillation. Auricular fibrillation is favoured by left ventricular failure regardless of the underlying pathological lesion. Transient auricular fibrillation following an attack of acute coronary thrombosis may be indirectly caused by the coronary disease by first inducing congestive failure. In a case suffering from congestive failure, subsequent development of auricular fibrillation is no indication of presence or absence or coronary artery disease. Analysis of 100 patients suffering from angina pectoris confirms the observation that auricular fibrillation is rare in angina pectoris of coronary origin, except in the presence of congestive failure. A. S.

Pulse rate in acute juvenile rheumatism. A. J. Glazebrook and S. Thomson (*Edinb. Med. J.*, 1941, [iv], **48**, 619—628).—Abs. (30) or relative (32) sinus bradycardia was found in acute stage in 62 of 100 males between 15 and 20. The condition occurred early, was often transient and has a bad prognosis, 12 out of 15 cases developing gross valvular lesions in 6 months. H. S.

Cardiac neuroses. J. A. Oille (*Canad. Med. Assoc. J.*, 1941, **45**, 1—7).—A lecture. C. J. C. B.

Spontaneous cardiac rupture. E. J. Simburg (*Canad. Med. Assoc. J.*, 1941, **45**, 112—116).—Report of 2 cases. C. J. C. B.

Cardiac status of adolescents. J. Schwartzman (*Arch. Pediat.*, 1941, **58**, 443—451).—5541 cases aged 12—19 years were examined. The incidence of organic murmurs was 2·4% and of non-organic murmurs 87%; the incidence was higher in females. C. J. C. B.

Anatomical findings in heart in combined hypertension and syphilis. C. L. Royster, J. R. Lisa, and J. Carroll (*Arch. Path.*, 1941, **32**, 64—75).—Sclerosis of the coronary arteries was more severe than in uncomplicated hypertension. Cardiac hypertrophy tended to be extreme, and myocardial damage was severe and extensive. Syphilitic myocarditis was found in 1 of 23 cases studied. Extensive rheumatic myocarditis was present in 6 cases, twice without valvular involvement. Other lesions included massive infarction with or without coronary occlusion acute, and chronic interstitial myocarditis, acute endocarditis, acute miliary infarctions, acute myocardial necroses, and acute abscesses. The rôle of infection, valvular or extra-cardiac, in the production of myocardial damage was of special importance. C. J. C. B.

Auriculoventricular (nodal) rhythm in acute rheumatic fever. A. M. Wedd and J. A. Lichty, jun. (*Amer. J. Dis. Child.*, 1941, **62**, 154—158).—An example of transient auriculoventricular rhythm, which occurred early in the course

of acute rheumatic fever, is described. After atropine the sino-auricular node took control. C. J. C. B.

Auricular paroxysmal tachycardia in infancy. H. N. Segall and A. Goldbloom (*Canad. Med. Assoc. J.*, 1941, **45**, 64—68).—Paroxysmal auricular tachycardia was demonstrated in an infant at the age of 8 months who had 2 previous attacks, one at 3 and one at 6 months. C. J. C. B.

Vitamin-B_1 for acute heart failure. O. J. Morehead (*Northw. Med.*, 1941, **40**, 57).—A child of 2½ years who for 8 months had suffered from occasional palpitations and difficulty in breathing (becoming more frequent and severe since tonsillectomy performed 4 months previously) was found in an acute attack with respiration 70 per min., and a pulse rate of 120. Hypodermic injection of 10 mg. of thiamin hydrochloride eased respiration and produced sleep within 5 min. The child remained well on a daily supply of vitamin-*B* complex syrup. E. M. J.

Auricular paroxysmal tachycardia in infant. A. C. Ernstene (*Cleveland Clin. Quart.*, 1941, **8**, 167—171).—An infant of 12 months developed auricular paroxysmal tachycardia (200—240 beats per min.) following a gastro-intestinal disturbance. The condition lasted for over 4 weeks and was little relieved by repeated injections of mecholyl; intravenous injection of quinine had no effect. The condition subsided after repeated injections of a digitalis prep. (2·75 cat units within 60 hr.). A. S.

Differential diagnosis of tachycardia and treatment with quinidine. W. J. Stainsby (*Penn. Med. J.*, 1940, **44**, 279—282). E. M. J.

Fallacies in treatment of heart disease. P. D. White (*New Orleans Med. J.*, 1941, **93**, 565—569). E. M. J.

Treatment of congestive heart failure. A. G. Friend (*Northw. Med.*, 1941, **40**, 53—57). E. M. J.

Survey of growth of knowledge about certain parts of fœtal cardio-vascular apparatus, and about fœtal circulation, in man and other mammals. I. Galen to Harvey. K. J. Franklin (*Ann. Sci.*, 1941, **5**, 57—89).

Contrast cinercœntgenography of circulatory organs. W. H. Stewart, C. W. Breimer, and H. C. Maier (*N.Y. Sta. J. Med.*, 1941, **41**, 1174—1175).—Exposures were made at 16 frames per sec. and the optimum time for starting an examination of the left ventricle was determined by the result of the cyanide test, 2 sec. being subtracted from the time obtained. The injection into one of the antecubital veins was made simultaneously with the onset of deep inspiration. The opaque medium, 40 c.c. of 70% diodrast, forms a solid column in the subclavian and innominate vein and superior vena cava which reaches the heart in 1 sec. and then delineates the right auricle and ventricle. 2 sec. later it enters the pulmonary arteries, the appearance resembling the "star burst" of a fireworks display in its sudden spread, gradually fading as it leaves through the pulmonary veins. About 5 sec. from the time of injection the medium, now somewhat diluted, enters the left auricle and ventricle and at 8 sec. outlines the aorta. E. M. J.

Effect of vitamin-*P* on circulatory system. A. J. Leser, C. F. Lombard, C. H. Thienes, C. Wawra, and J. L. Webb (*J. Pharm. Exp. Ther.*, 1941, **72**, 26). H. H. K.

Cause of death of toads after destruction of their lymph hearts. V. G. Foglia (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 598—601).—Destruction or denervation of all 4 lymph hearts causes death in 4 days with accumulation of œdema fluid in the tissue spaces. Destruction of the hearts in 2 stages permits survival by development of alternative lymph pathways. V. J. W.

Glass-capsule manometer for recording the blood pressure. F. F. Anderson (*J. Lab. clin. Med.*, 1941, **26**, 1520—1521). C. J. C. B.

Automatic blood pressure recording apparatus. H. Weiss (*J. Lab. clin. Med.*, 1941, **26**, 1351—1356).—A blood pressure recording device is described which functions automatically and records both systolic and diastolic pressure readings. The principle is that of a fluctuating base line resembling a sine curve, which is projected on to a calibrated plan by means of a moving galvanometer. This base line is produced by the changing pressures in a blood pressure cuff. These readings can be taken in the absence of a physician or operator, permitting blood pressure recording during sleep, rest, and various phases of activity. The records obtained are entirely comparable with the readings obtained by the ordinary ausculatory method. The instrument also records pulse pressure and the pulse rate. C. J. C. B.

Relationship of gastric juice and food to blood pressure. H. McG. Doles (*Sth. Med. J.*, 1941, **34**, 627—634).—The gastric juice of 2 women suffering from hyper- and hypotension respectively was withdrawn 1 hr. after a meal of 150 g. of red meat and 240 c.c. of water, and exchanged daily for 3 weeks. Blood pressure in the hypertensive subsequently fell from 230/120 mm. to 130/75 and rose in the other from 90/70 to 120/80; the red cell count changed from 5 to 4 and from 4 to 5 millions, hæmoglobin from 110 to 85 and from 80 to 90% respectively. All vals. returned to their previous level when treatment was discontinued but changed again when it was recommenced. E. M. J.

Pressor response to adrenaline in course of traumatic shock. A. M. Freedman and H. Kabat (*Amer. J. Physiol.*, 1940, **130**, 620—626).—In anæsthetised cats trauma to the hind leg (in which local fluid loss was minimised) results in fatal shock in 2½ hr.; preliminary transection of the upper lumbar spinal cord prevented such shock. Adrenaline (0·005 mg. intravenously at regular intervals) produced a greater rise in blood pressure during shock than before, except just before death when the blood pressure response disappeared. Hyperactivity of the sympathetic nervous system is not responsible for this type of shock, which results primarily from afferent nerve impulses. M. W. G.

Mechanism of vasomotor reversal [by drugs]. M. W. Green (*J. Pharm. Exp. Ther.*, 1941, **72**, 18).—Ergotamine potentiates the pressor effect of adrenaline in animals under nembutal anæsthesia. In animals under urethane anæsthesia, the vasomotor reversal obtained following ergotamine administration can be diminished, abolished, or converted into a pressor effect by gradually increasing doses of atropine. The larger is the dose of adrenaline, the more atropine is required to abolish the reversal. Ephedrine may potentiate the reversal-producing effect of ergotamine. H. H. K.

Relation of capillary permeability to inflammation. R. H. Rigdon (*Sth. Med. J.*, 1941, **34**, 292—295).—A review. E. M. J.

Effect of benzedrine sulphate and cigarettes on skin surface temperature. G. Saland (*N.Y. Sta. J. Med.*, 1938, **38**, 1462—1464).—3 cases of Parkinsonism and 4 of arteriosclerosis were given 60—80 and 20—50 mg. of benzedrine sulphate respectively; the blood pressure rose in all 7 cases, the pulse slowed in 5, and the skin temp. dropped in 6. Smoking of 2 cigarettes in these 7 cases, in 4 cases of thromboangiitis obliterans, and in 5 normal persons had no consistent effect on the skin temp. E. M. J.

Periarteritis nodosa in a nine-year-old child. M. Coe, H. A. Reisman, and J. de Hoff (*J. Pediat.*, 1941, **18**, 793—798).—A case report. C. J. C. B.

Primary arteritis (periarteritis nodosa) among children. H. M. Keith and A. H. Baggenstoss (*J. Pediat.*, 1941, **18**, 494—506).—Report of 2 cases. (6 photomicrographs.) C. J. C. B.

Aneurysms of pulmonary artery. L. J. Breslin, L. J. Solway, and D. Eisen (*Canad. Med. Assoc. J.*, 1941, **45**, 61—64).—A case report. C. J. C. B.

Abdominal arterial apoplexy (spontaneous rupture). G. H. Bunch and L. E. Madden (*Sth. Med. J.*, 1941, **34**, 643—646).—Review of the 17 cases from the literature with report of a new case. E. M. J.

Surgical treatment of femoral arteriovenous aneurysm. E. A. Nixon (*Northw. Med.*, 1941, **40**, 136—138).—Report of 2 cases. E. M. J.

Hereditary hæmorrhagic teleangiectasis. H. Alban (*Northw. Med.*, 1941, **40**, 86—88).—A family tree containing 19 affected members out of 102 in 5 generations is given. Females preponderated by 15 to 4. E. M. J.

[Diagnostic tests in] serious vascular affections. J. Gutman (*N.Y. Sta. J. Med.*, 1938, **38**, 1278—1282). E. M. J.

Clinical evidence for cerebral vasomotor changes. F. Kennedy, S. B. Wortis, and H. Wortis (*N.Y. Sta. J. Med.*, 1938, **38**, 1441—1448).—A review. E. M. J.

Renal aneurysm. D. M. Douglas (*Proc. Roy. Soc. Med.*, 1941, **34**, 563—564).—A case report. H. H. K.

Gangrene of extremities in newborn. G. Heller and G. Alvari (*Amer. J. Dis. Child*, 1941, **62**, 133—140).—A case report and review of the literature. C. J. C. B.

Brain in experimental vascular disease. M. C. Winternitz, R. Katzenstein, E. Mylon, J. P. Murphy, and H. M. Zimmerman (*Yale J. Biol. Med.*, 1941, **13**, 579—594).—In dogs bilateral nephrectomy caused only petechial hæmorrhages of meninges and brain; complete ligation of both renal arteries or both ureters caused convulsions and more extensive hæmorrhages in spite of the shorter survival time. Lesions were still more extensive when bilaterally nephrectomised dogs were injected with tissue extracts, particularly crude kidney and testis extracts. The lesions can be explained as due to the effect of the tissue extracts on the coagulation time of the blood. It is improbable that actual clotting occurs in the cerebral vessels but spasm of the vessels, changes in the character of the blood, and long-continued low blood pressure may result in an anoxæmia adequate to produce structural changes. (14 photomicrographs.) F. S.

Laboratory findings in hypertension and albuminuria of pregnancy. F. C. Irving (*Penn. Med. J.*, 1941, **44**, 557—562.)—Abnormal findings were discovered in 13·6% of 872 routine blood chemistry examinations, in 30% of 128 urea clearance tests, in 42% of 455 eyeground observations, and in 56% of 175 plasma-protein determinations. 1% of the 1186 patients seen developed eclampsia. The treatment is discussed in full. E. M. J.

Renal blood flow in coarctation of aorta. M. Friedman, A. Selzer, H. Rosenblum, P. McLean, and W. Picard (*J. clin. Invest.*, 1941, **20**, 107—111).—The effective renal blood flow and the rate of glomerular filtration were measured by means of the diodrast and inulin clearances, respectively, in 11 controls and in 6 patients with coarctation of the aorta. The patients showed a decreased renal blood flow but the glomerular filtration rate was normal. C. J. C. B.

Adenomatous hyperplasia of adrenal cortex associated with essential hypertension. J. F. Rinehart, O. O. Williams, and W. S. Cappeller (*Arch. Path.*, 1941, **32**, 169—177).—Nodular or adenomatous hyperplasia of the adrenal cortex is often associated with essential hypertension; the cells may show a high lipin content. Comparable changes are infrequent in normotensive patients. Hypersecretion of the adrenal cortex may in some cases be a factor in the genesis of hypertension. (6 photomicrographs.) C. J. C. B.

Specificity of renin. J. C. Fasciolo, L. F. Leloir, J. M. Muñoz, and E. Braun-Menéndez (*Science*, 1940, **92**, 554—555).—Pressor substances were formed from swine renin and sera of other animals (but none with human serum) and from human renin and other sera. Experience limited to sick men confirmed the prediction that there is no pressor response to intravenous swine renin. E. R. S.

Effect of various agents on blood pressure of renal hypertensive dogs. G. E. Wakerlin and W. Gaines (*Amer. J. Physiol.*, 1940, **130**, 568—573).—Œstrone, testosterone, extracts of liver, pancreas, garlic, parsley, fresh hog kidney, adrenal cortical extract, whole pituitary extract, and pituitrin were without effect on the blood pressure of renal ischæmic hypertensive dogs. Dog renin temporarily increased blood pressures of normal and hypertensive dogs slightly but significantly. Distemper lowered the blood pressures but extensive cellulitis was without effect. M. W. G.

Effect of time factor on amount of pressor material present in kidney after unilateral ligation of renal pedicle and after unilateral ligation of ureter. J. R. Beckwith (*Amer. J. Physiol.*, 1941, **132**, 1—4).—Kidneys removed within 4 hr. after renal pedicle ligation in rats contain greater than normal concns. of pressor substance. After this time the concn. decreases below that for control kidneys. After ureteral ligation the pressor content was greatest in the first 2 days but remained above normal for as long as 80 days. W. W. G.

Relation of kidney to cardiovascular disease. III. Tissue extracts and thrombosis. M. C. Winternitz, E. Mylon, and R. Katzenstein (*Yale J. Biol. Med.*, 1941, **13**, 595—622).—The order of potency of crude saline extracts of tissues in producing coagulation of a citrated plasma–$CaCl_2$ mixture was: testicle, lung, kidney, spleen, liver, muscle. In dogs, the intravenous injection of tissue extract caused a shortening of blood coagulation time or positive phase within ½ min. followed by a greatly delayed coagulation time. The dogs may die and symptoms are most severe in the positive phase; repeated injections during the negative phase may cause no symptoms especially if the shortening of the coagulation time in the positive phase has not been great. The clinical and morphological effects (described in detail) depend also on the coagulation time of the blood at the time of injection and the ability of the extract to change the coagulation time sufficiently to produce thrombi. (4 photomicrographs.) F. S.

Possibility of producing hypertension by intracisternal injection of kaolin. P. P. Foa', C. F. List, and M. M. Peet (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 696—698).—No significant or sustained rise of blood pressure was produced in 9 dogs by intracisternal injection of kaolin. V. J. W.

Vicious circle in chronic Bright's disease. Experimental evidence from hypertensive rat. C. Wilson and F. B. Byrom (*Quart. J. Med.*, 1941, **10**, 65—93).—Unilateral renal ischæmia in the rat leads to hypertension and to acute vascular changes in the other kidney (cf. A., 1939, III, 239). The chronic changes, described from experiments on 197 rats, are fibrous endarteritis, medial hypertrophy, adhesion of glomerulus to capsule and hyaline degeneration, focal tubular atrophy and dilatation, and interstitial fibrosis; they are due to organisation of the acute changes, and resemble those of chronic hypertensive Bright's disease. The hypertension persists in ⅔ of the rats after removal of the ischæmic kidney, and its height varies with the severity of the changes in the remaining kidney, no changes being found in the other ⅓. In the clamped kidney only areas of simple ischæmic atrophy are found, but in the remaining kidney acute changes (less than 3 weeks old) can be found months after the nephrectomy, and they were found in other rats in the clamped kidney left in after removal of the clamp. Residual hypertension can thus cause lesions leading to further renal ischæmia, and intensification of the hypertension, with formation of a vicious circle. There is no clue to the primary cause of hypertension, *e.g.*, in essential hypertension, which is probably extra-renal, but a malignant vicious circle termination has been observed, with mixed acute and chronic lesions, in chronic nephritis, chronic pyelonephritis, hypertension following toxæmia of pregnancy, and in Pb hypertension. Focal vascular and parenchymatous lesions were found in the pancreas, intestine, adrenals, liver, and testis, and there was perivascular fibrosis in the myocardium, and in a few cases there were lesions resembling periarteritis nodosa in the mesenteric vessels. It is concluded finally that chronic interstitial nephritis is not a disease entity, but that it is the result of persistent hypertension on the kidneys, and that an adequate classification of Bright's disease needs detailed case histories, and cannot be made on the non-sp. histological picture. R. K.

Pressor responses following short, complete renal ischæmia: characteristics, mechanism, and specificity for kidney. D. A. Collins and A. S. Hamilton (*Amer. J. Physiol.*, 1940, **130**, 784—790.)—Complete bilateral renal ischæmia lasting 6—7 hr. in anæsthetised dogs results in an elevation of blood pressure when circulation is restored. Briefer intervals, even as short as ½ hr., consistently give pressor effects only slightly less than that from longer occlusions. The blood pressure rises gradually, reaching a max. 2—9 min. after release of the clamps; the elevation is prolonged; in some cases the gradual rise is preceded by preliminary changes consisting of a rapid rise followed by a fall. Occlusion and subsequent restoration of the blood supply of one kidney with the other either intact or clamped is followed by a prolonged elevation of blood pressure. A nervous mechanism is not involved in these responses, which are due to release of pressor material from the ischæmic kidney. Recent adrenalectomy or splenectomy does not prevent the hypertension. If the circulation to the leg or to a portion of the liver is arrested for 2 hr. no elevation of blood pressure occurs when the circulation is restored. M. W. G.

VII.—RESPIRATION AND BLOOD GASES.

Anaërobic drawing and sampling of blood for gas analysis. J. V. Monke (*J. Lab. clin. Med.*, 1941, **26**, 1685—1686). C. J. C. B.

Gas tensions in tissues in pathological conditions. E. W. Sibree (*Med. J. Austral.*, 1941, I, 201—206).—In the pathological conditions examined (circulatory, respiratory, metabolic, and anæmic) little if any change from normal in O_2 tension could be detected in the tissues because capillary blood is nearly venous in nature and the O_2 tension in normal subcutaneous tissues may vary from zero to 30 mm. Hg. F. S.

Rate of respiratory adjustment to postural change. M. H. Soley and N. W. Shock (*Amer. J. Physiol.*, 1940, **130**, 771—776).—A 20-min. rest period in the supine position stabilises the respiratory vol. in most young adult males; a 30-min. rest period is sufficient for practically all subjects. The min. respiratory vol. under these standardised conditions is greater than that under the fasting conditions employed in the measurement of basal O_2 consumption. M. W. G.

Cystine–cysteine studies on blood in asphyxia. III. Asphyxia after administration of blood poisons. IV. Obstruction of aorta. R. Murata (*Japan. J. Med. Sci.*, 1940, III, **7**, 11—37, 59—69; cf. A., 1939, III, 961).—III. The average survival time of rabbits breathing a mixture of 2·5% CO in air is 42 min. Rate and depth of respiration are initially increased, then gradually diminish. Body-temp. is lowered. Arterial blood pressure is gradually reduced and falls rapidly in the terminal phase. The red cell count decreases. Blood-cystine–cysteine increases by up to 100%. The plasma-CO_2-combining power is diminished; blood $H^{\cdot}$ concn. increases. The hæmoglobin dissociation curve is shifted to the right. Methæmoglobinæmia was produced by intravenous injection of $K_3Fe(CN)_6$, phenylhydrazine, or hydroxylamine. The results were similar to those following CO poisoning.

IV. The abdominal aorta in rabbits was obstructed above the level of the superior mesenteric artery. The average survival time was 100 min. Depth and rate of breathing were temporarily diminished, subsequently markedly increased, finally depressed. Blood pressure falls when breathing decreases. Body-temp. is diminished, blood-cystine–cysteine increases. Blood-p_H and plasma-CO_2-combining power are lowered. The rate of oxidation of hæmoglobin is reduced, that of reduction is accelerated. A. S.

Effects of asphyxia on newborn infant. S. H. Clifford (*J. Pediat.*, 1941, **18**, 567—578).—Asphyxia increases *c*H of blood causing successively stimulation and paralysis in nerve cells and vasodilitation allowing the escape of plasma and red blood cells. There is congestion, œdema, hæmorrhage, and tissue degeneration. These changes may involve every organ and tissue of the body. C. J. C. B.

Allergic nose. N. W. Clein (*Northw. Med.*, 1941, **40**, 213—215). E. M. J.

Treatment of acute obstructive infections of larynx, trachea, and bronchi. H. R. Litchfield (*Arch. Pediat.*, 1940, **57**, 717—723).—A short review. C. J. C. B.

Vitamin-B_1 in chronic bronchitis. O. J. Morehead (*Northw. Med.*, 1941, **40**, 212—213).—8 cases of chronic bronchitis of the aged, with or without asthma, were cured or greatly improved by a course of intravenous injections of 30 mg. of thiamin hydrochloride followed by the oral administration of the vitamin-*B* complex. E. M. J.

Emotional factor in bronchial asthma in children. R. A. Jensen and A. V. Stoesser (*Amer. J. Dis. Child.*, 1941, **62**, 80—91).—The ætological importance of these factors is stressed. C. J. C. B.

Technique and mode of action of chest compresses. H. Bottenberg (*Dtsch. Tuberk.-Bl.*, 1939, **13**, 162—164). E. M. J.

Topographical percussion of pulmonary apices. K. Bühler (*Dtsch. Tuberk.-Bl.*, 1939, **13**, 151—155).—A check on Krönig's method by *X*-rays showed its medial limit to go through the middle of the apex and its lateral limit tangential to the greatest thoracic circumference. An improved method compares percussion on both sides just above the clavicle and inside the first rib, respectively to either side of the 7th cervical spine. E. M. J.

Chylothorax. M. A. Brescia (*Arch. Pediat.*, 1941, **58**, 345—355).—A case of spontaneous chylothorax in a 13-month male infant is described. The child recovered by repeated thoracentesis and expectant treatment. C. J. C. B.

Endobronchial lipiodol under general anæsthesia in children. A. H. L. Baker (*Brit. J. Anæsth.*, 1941, **17**, 112—116).—A method for giving lipiodol to children under endotracheal anæsthesia is described, and a diagram of the apparatus used is shown. H. H. K.

Results of treatment of open pulmonary tuberculosis in adults. F. Ernst (*Dtsch. Tuberk.-Bl.*, 1939, **13**, 1—9).—A closed tuberculosis was produced after an average of 30 months in 32% of those treated conservatively and in 61% of those treated by pneumothorax and other surgical measures; lasting cures were obtained in less than 30% of cases. E. M. J.

Present status of collapse therapy in pulmonary tuberculosis. L. Rickmann (*Dtsch. Tuberk.-Bl.*, 1939, **13**, 285—291). E. M. J.

Results of treatment of open [pulmonary] tuberculosis of puberty. G. Simon (*Dtsch. Tuberk.-Bl.*, 1939, **13**, 126—134).—Of 294 cases treated during 10 years by collapse therapy 18% were found cured 4—14 years later. 62% were dead, and 10·5% partly fit for work; after conservative treatment the respective figures were 8·3%, 86·7%, and 2·5%. E. M. J.

Correlation of p_H of arterial blood and urine as affected by changes in pulmonary ventilation. C. R. Branfield and V. G. Behrmann (*Amer. J. Physiol.*, 1941, **132**, 272—280).—Continuous blood- and urine-p_H tracings were recorded in the anæsthetised dog following changes in pulmonary ventilation. The extent of the change is smaller and of shorter duration in blood than in urine. PO_4''' elimination was increased by CO_2 excess and decreased by overventilation. Cl' excretion was diminished by CO_2 excess or asphyxia but was increased by O_2 lack or overventilation. There is an inverse relationship between Cl' and PO_4'''. In asphyxia, CO_2 excess, and overventilation there may be a definite relationship between Cl' and water excretion but not with O_2 lack. M. W. G.

Reduction of blood-carbon monoxide after *X*-ray treatment. J. A. Cameron (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 558—560).—Recovery of CO-poisoned rats, brought about by *X*-ray treatment (A., 1940, III, 105), is accompanied by a decrease in their blood-CO as determined by spectrograph. V. J. W.

Oxygen-want in pilots flying at 12,000 feet altitudes. A. L. Barach (*N.Y. Sta. J. Med.*, 1939, **39**, 121—123).—A review. E. M. J.

Studies at high altitudes. II. Morphology and oxygen capacity of blood. J. H. Talbot (*Folia Hæmatol.*, 1936, **55**, 23—36).—During acclimatisation to 5340 m. the increase in blood O_2 capacity is 28%; at 6140 m. there is no further increase. The increase in circulating hæmoglobin per unit vol. of blood from concn. due to dehydration is negligible. There is no direct correlation between changes in blood morphology and acute mountain sickness. Ch. Abs. (*el*)

Oxygen saturation of arterial blood in jaundice complicating lobar pneumonia. F. H. King and A. Leslie (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 554—556).—No relationship could be found between jaundice and anoxæmia in 29 cases examined. V. J. W.

Use of reduced atmospheric pressure in treatment of paranasal sinusitis. A. H. Andrews, L. W. Roth, and A. C. Ivy (*Quart. Bull. Northwest. Univ. Med. School*, 1941, **15**, 46—52).—Temporary complete relief was produced in 9, partial relief in 5, no relief in 2, out of 16 patients suffering from sinusitis by treatment in reduced atm. pressure (equiv. to 6000—8000 ft.). A. S.

Fundamental principles in adjustment reactions of organism to anoxia. E. Gellhorn (*Ann. int. Med.*, 1941, **14**, 1518—1532).—A review of the author's studies. A. S.

Eye and ear in aviation. D. Bean (*New Orleans Med. J.*, 1941, **94**, 29—32).—A review. E. M. J.

Ascorbic acid and resistance to low oxygen tension. J. M. Peterson (*Nature*, 1941, **148**, 84).—Methylene-blue and ascorbic acid increase resistance of mice and rats to low O_2 tension. E. R. S.

Oxygen therapy in pneumonia. D. D. Rutstein (*N.Y. Sta. J. Med.*, 1938, **38**, 1548—1555).—A review. E. M. J.

Effect of oxygen at different pressures on avian malarial infections. R. Hegner and M. Dobler (*Amer. J. Hyg.*, 1941,

34, C, 14—17).—Infections in canaries inoculated with *P. cathemarium* and *P. relictum* were less severe when the birds were maintained in an atm. of 50% O_2 and 50% N_2 at normal pressure than in room atm. O_2-rich atm. at increased and decreased pressures had no effect. Reticulocyte % was not influenced. B. C. H.

Modified nasal catheter for use in oxygen therapy. D. W. Richards (*N.Y. Sta. J. Med.*, 1938, **38**, 1283).—A 1-cm. length of soft, thick-walled rubber tubing of $\frac{1}{16}$ in. diameter and $\frac{3}{16}$ in. bore is fitted over one arm of a small angulated glass piece and introduced into one nostril. The sides of this rubber piece can be shaved down to fit narrow nasal openings. O_2 concn. in the oropharynx was 40% in a normal subject using this occlusive piece with O_2 inflow at 6 l. per min.; with the double intranasal catheter a concn. of 38% was reached. E. M. J.

Effect of oxygen tension of inspired air on respiratory response of normal subjects to carbon dioxide. N. W. Shock and M. H. Soley (*Amer. J. Physiol.*, 1940, **130**, 777—784; cf. A., 1940, III, 843).—Adult males respond with a greater increment in respiratory vol. to 1% CO_2 in 99% O_2 than to 1% CO_2 in 21% O_2. Similar results were obtained when 2 and 4% CO_2 were mixed with O_2. M. W. G.

VIII.—MUSCLE.

Nitrogenous extractives of muscle. J. M. Hefter (*Arch. sci. biol., U.R.S.S.*, 1935, **37**, 341—348).—A review of the work of Gulevitsch. Ch. Abs. (*el*)

Extractives of emu (*Dromadeus* sp.) muscle. N. Tolkatschevskaja (*Arch. sci. biol., U.R.S.S.*, 1935, **37**, 357—360).—Anserine, methylguanidine, creatine, xanthine, carnitine, and choline, but not carnosine, were isolated. Ch. Abs. (*el*)

Carnosine in muscle extracts. M. K. Karjagina and E. V. Talanova (*Arch. sci. biol. U.R.S.S.*, 1935, **37**, 371—372).—Carnosine was not detected in muscle extracts obtained by Tuschnov's technique. Ch. Abs. (*el*)

Chemistry of muscle contraction. J. M. Hefter and A. I. Kartaschov (*Arch. sci. biol., U.R.S.S.*, 1935, **37**, 481—484).—Sol. N, non-protein-N, sol. protein-N, and NH_2-N in frog muscles were unchanged after stimulation with a faradic current. Ch. Abs. (*el*)

Influence of sex hormones on glycogen, phosphagen, and adenyl pyrophosphate content of heart- and skeletal-muscle. H. Schumann (*Klin. Woch.*, 1940, **19**, 364—366).—Daily intramuscular injection of 5 mg. of testosterone propionate into normal male rabbits on 3 consecutive days increases muscle-glycogen from 506 to 719 mg.-%; phosphagen and adenylphosphoric acid remain unchanged. Castration decreases glycogen to 52% of normal, but does not influence the phosphagen content of skeletal muscle. Preliminary administration of testosterone propionate in castrated animals increases the glycogen content above normal. Heart muscle shows a gradual decrease of glycogen in the first 8 weeks after castration; on the 215th day after castration glycogen content was normal again. M. K.

Effect of cooling on creatine content of muscle of doubly adrenalectomised rabbits. E. Inaba (*Tohoku J. Exp. Med.*, 1935, **27**, 117—121).—Cooling (anal temp. 22—27°) for 12 min. followed by exposure to cold air for 2 hr. increased the total and preformed muscle-creatinine by 7 and 5% respectively. Double adrenalectomy 2 weeks beforehand did not affect the results. Ch. Abs. (*el*)

Distribution of body water and electrolytes in skeletal muscle of dogs with experimental hydronephrosis following injections of potassium salts. L. Eichelberger [with M. Roma] (*J. Biol. Chem.*, 1941, **140**, 467—481).—Following intravenous injection of large quantities of isotonic aq. NaCl containing K, no change in the phase vols. of the muscles of dogs with a single hydronephrotic kidney is observed, whilst an increased extracellular phase with decreased intracellular water, together with decreased muscle-K, occur in dogs with both kidneys hydronephrotic. Prior to the injections, the water content of the muscles of all the dogs was the same and there is no indication of any influence of K on the distribution of fluid in animals with hydronephrosis. H. G. R.

Relation of muscle-electrolyte to alterations in serum-potassium and to toxic effects of injected potassium chloride. H. C. Miller and D. C. Darrow (*Amer. J. Physiol.*, 1940, **130**, 747—758).—The normal range of muscle-K in adult rats is 44—50 mM. per 100 g. of fat-free solids. Injections of KCl intravenously which raise serum-K temporarily raise muscle-K above 50 mM. and lower muscle-Na. Animals with low muscle-K are more resistant to the toxic effects of injected K; these effects are directly related to the serum-K and only indirectly to muscle-K. With muscle-K concns. of 29—55 mM. per 100 g. there is a reciprocal relationship between muscle-K and intracellular muscle-Na. M. W. G.

Potassium accumulation in muscle. P. J. Boyle and E. J. Conway (*J. Physiol.*, 1941, **100**, 1—63).—Sartorii (*Rana temporaria*) were immersed at 2—3° in modified Ringer solutions; K (as KCl) can be accumulated to upwards of three times the normal concn.; this occurs without vol. change provided the solution is suitably adjusted; with raised K concn. Na is excluded for over 24 hr. There is only negligible loss of previously indiffusible mols. which for the most part consist of phosphate esters. The muscle membrane is permeable to both cations and anions up to certain size limits. The theoretical development of such a membrane system, based on a consideration of the osmotic, electrical, and Donnan equilibria, results in equations which predict the muscle vol., the internal K and diffusible anion concn., the resting currents and the currents of injury, in terms of the external concns. and the quantities η and ϵ; the val. of η represents the total indiffusible substance (as m-mols.), and of ϵ the difference between the total negative and positive charges on the indiffusible mols. (expressed as m-equiv. or valencies multiplied by the m-mol. concns.). The mean val. of η is the same as ϵ for the immersed sartorius, which leads to a more useful equation for the vol. change. The vol. of water in which the normal or the accumulated K in muscle is dissolved (the "osmotically active water") is 0·67 × the original muscle wt.; this corresponds to the total water minus the interspace water. Resting potentials in the sartorii from curarised frogs are described by the theoretical equations and are fully explained by K equilibria across the membrane. The maintenance concn. of K or that required to prevent loss from immersed muscle is 29 m-equiv. per l. for 24 hr. at room temp. (using Ringer–Barkan fluid) and 10 m-equiv. per l. for 24 hr. immersion in the cold. The total buffering of excised muscle previously washed in bicarbonate-free Ringer solution is linear over the physiological range of p_H and is equal to 27·4 m-equiv. per l. of "fibre water" or 18·3 per kg. muscle; this buffering is accounted for by the phosphate esters, carnosine, and the muscle-protein when this latter is considered to have a buffering val. between serum-globulin and serum-albumin. J. A. C.

Effect of adrenaline on potassium balance of hind limbs of frog. J. C. Stickney (*Amer. J. Physiol.*, 1941, **132**, 9—17).—In the hind limb of the frog perfused with gum acacia–Ringer solution the uptake of K from the perfusion fluid was independent of the rate of flow. Adrenaline has no direct effect on K exchanges or balance in resting muscle. The hind limbs of the frog similarly perfused and indirectly stimulated 9 times per min. lose 0·5—0·6 μg. of K per g. of hind limb per min.; const. perfusion with adrenaline reduces the rate of K loss by 40%. M. W. G.

Effects of denervation on phospholipin activity of skeletal muscle as measured with radioactive phosphorus. H. D. Friedlander, I. Perlman, and I. L. Chaikoff (*Amer. J. Physiol.*, 1941, **132**, 24—31).—Denervation increased by over 200% the rate at which skeletal muscle deposited newly formed phospholipin in rats (using radioactive P). This change appeared before atrophy set in and was present 19 days after section of the nerve. M. W. G.

Migration of lipins in striated muscle at rest and during activity. T. Feyel (*Compt. rend. Soc. Biol.*, 1940, **133**, 389—391).—Study of the fatigued isolated sartorius muscle of the frog shows that the *Q* granules (intrafibrillary constituents) serve as a substratum for lipins easily demonstrable at rest. The lipin is mobilised during activity, appearing diffusely in the sarcoplasm (contraction bands) and if not all used condenses into granules or filaments in the interfibrillary spaces. In fatigue all the mobilisable lipin is used so that no coloured *Q* granules or interfibrillary chondriome remain; the juxta-

nuclear chondrione alone remains and differs in properties according to its position relative to the nucleus or vacuole. P. C. W.

Absolute muscle power; internal kinesiology of muscle. A. M. Arkin (*Arch. Surg., Chicago*, 1941, **42**, 395—410).—Length–tension vals. of various dog muscles and of a human quadriceps muscle were determined by measuring the tensions developed at various lengths under supramax. stimulation by an induction coil. The Weber–Fick law that full physiological contraction represents a shortening of the fibre to one half of its extended length was confirmed. The max. tension developed at max. physiological length is 3 times that developed at max. physiological shortening. The work done in the physiological range is proportional to the wt. of muscle tissue. The val. obtained of this proportion is: $FR/W = 1{\cdot}2$, where F = average force in kg., R = range in cm., and W = wt. in kg. The val. for abs. muscle power obtained by von Recklinghausen (3·6 kg. per sq. cm.) was confirmed. F. S.

Muscular work carried to fatigue without depletion of reserves of energy-providing substances. O. I. Fainschmidt (*Biochimia*, 1939, **4**, 411—422).—Direct faradic stimulation of rabbit gastrocnemius muscle *in situ*, to complete fatigue, is associated with considerable decrease in the content of glycogen, creatinephosphoric acid, and adenosinetriphosphoric acid in the case of intact animals, but not of curarised rabbits (dose: 0·5—1 ml. of 1% curare per kg.), or after section of the sciatic nerve. Restitution of reactivity is as rapid in treated as in intact animals. It is concluded that curare acts by inhibiting the action of motor nerves, but does not interfere with the biochemical processes of working muscle. W. McC.

Effect of ultrafiltrate of toad's blood on contractions of the toad's gastrocnemius muscle. K. Takagi (*Japan. J. Med. Sci.*, 1940, III, 7, 39—57).—The contractions of the toad's gastrocnemius, perfused from the femoral artery and stimulated maximally from the sciatic nerve, increase if 0·2 c.c. of an ultrafiltrate of defibrinated toad's blood is added to the perfusion fluid. This effect was not observed after direct stimulation of the curarised muscle. *l*-Leucine, *dl*-tyrosine, *l*-phenylalanine, *d*-tryptophan, *d*-arginine, or creatinine in concn. of 1 mg.—0·1 mg.% increase the contractions, but not after direct stimulation of the curarised muscle. *d*-Alanine, *d*-glutamic acid, lysine, *l*-tyrosine, histidine, histamine, tyramine, or creatine in concn. of 1 mg.—0·01 mg.-% diminish the muscle contractions. Adrenaline diminishes the contraction in concn. of 1 μg.-%; it increases contractions in concn. of 0·1 μg.-%, but not after previous curarisation. Adrenaline (0·1 μg.-%) has an anti-fatigue effect after addition of *l*-tyrosine, *l*-tryptophan (0·02 mg.-%), or histamine (1 μg.-%). Quinol increases contractions in concn. of 0·5—1 μg.-%. The potentiating effect of ultrafiltrate on the gastrocnemius was also observed after previous administration of ergotoxine. A. S.

Influence of sympathetic nervous system on mechano- and electro-gram of striated muscle. B. V. Krajuchin (*J. Méd. Ukraine*, 1940, **10**, 551—575).—Gastrocnemius muscle–sciatic nerve–spinal cord prep. of frog shows greater contractions to nerve stimulation if the sympathetic nervous system is intact. Stimulation threshold usually decreases after destruction of the spinal cord. Subsequent sympathectomy markedly increases stimulation threshold. M. K.

Muscle chronaxie in old age. B. V. Krajuchin and N. M. Schtscherbakov (*J. Méd. Ukraine*, 1940, **10**, 529—536).—Chronaxie of the biceps muscle was greater in women aged 90—110 than in men of corresponding age (average val. 0·179 m-sec.). This hyperexcitability characterises the first phase of degeneration of the muscular system. Chronaxie of the triceps muscle was diminished in women (0·097 m-sec.), while in men the val. was 0·109 m-sec. The rheobase of biceps, triceps, and gastrocnemius is higher in women than in men. M. K.

Oxygen consumption of atrophied muscle. S. Hirohasi (*Japan. J. Med. Sci.*, 1940, III, 7, 79—95).—Atrophy of the gastrocnemius–soleus muscles in dogs was produced by severing the Achilles tendon and immobilising the limb in plaster of Paris or by cutting the sciatic nerve. The O_2 consumption of the atrophied muscles, estimated by analysis of popliteal vein and carotid blood, is higher than that of normal muscle. A. S.

Effect of thiamin hydrochloride on muscular dystrophy of avitaminosis-*E*. A. D. Holmes and M. G. Pigott (*Amer. J. Physiol.*, 1941, **132**, 211—214).—Young weanling rats in various stages of muscular dystrophy, due to a vitamin-*E*-deficient diet, give a definite response to oral administration of massive doses of -B_1 (thiamin hydrochloride). The total amount of -B_1 required to effect a cure ranged from 4 to 14 i.u. per rat. The results obtained indicate a permanent cure. M. W. G.

Vitamin therapy in progressive muscular dystrophy. A. McBryde and L. D. Baker (*J. Pediat.*, 1941, **18**, 727—730).—No improvement was noted in 6 patients with progressive hypertrophic muscular dystrophy after administration of wheat-germ oil, α-tocopherol, vitamin-B_6 orally or intravenously, and combinations of the -*B* complex orally. C. J. C. B.

Dystrophia myotonica in infants and children. O. Maas (*Brit. J. Child. Dis.*, 1941, **38**, 59—64).—Meagre case reports. C. J. C. B.

IX.—NERVOUS SYSTEM.

Effects of ions on whole nerve and isolated single nerve fibre preparations of crustacean neuromuscular systems. T. H. Waterman (*J. Cell. Comp. Physiol.*, 1941, **18**, 109—126).—Leg nerve was stimulated in *Panulirus* and *Maia*, and leg nerve and a single fibre in *Cambarus*. Contractions of flexor dactyl muscle were recorded isometrically. Tension varied inversely with $Mg^{\cdot\cdot}$ of perfusion fluid. Increased $K^{\cdot}$ caused decreased contractions in the "slow closer" system and increased contractions from the single fibres of the "fast closer" system. $Ca^{\cdot\cdot}$ changes did not cause const. results. V. J. W.

Effect of sodium citrate on calcium content of nerves. C. Torda (*J. Cell. Comp. Physiol.*, 1941, **18**, 127—128).—Frog's sciatic nerves were placed for 4 hr. in isotonic solutions of NaCl or Na citrate. Final Ca content was approx. the same in both cases, so that the greater power of citrate to cause muscular twitching is not due to Ca loss. V. J. W.

Effect of potassium and calcium on spontaneous activity of isolated crayfish nerve cord. K. D. Roeder (*J. Cell. Comp. Physiol.*, 1941, **18**, 1—13).—No. of spike potentials per sec. which exceeded the instrumental threshold was recorded by a double amplifier. Activity was const. for 20—48 hr. Increase of K caused temporary increase in activity followed by a fall to zero if K concn. was double that of normal saline solution. Decrease of K caused decreased activity in *Cambarus immunis* and increased it in *C. bartonii*. Decrease and increase in Ca had the same effects as increase and decrease in K. p_H had little effect over a range of 4 to 9. V. J. W.

Phosphate changes in sciatic nerve of rabbit after cutting. C. Aoki (*Mitt. med. Ges. Tokio*, 1935, **49**, 181).—Total P of the sciatic nerve is 30—40 mg.-%, of which phosphagen-P is 7—11, inorg. P 5—10, and pyrophosphate-P 12—20. After section the phosphagen content of the peripheral end falls from the 6th to the 18th day and reaches a normal val. again after 30 days. Inorg. phosphate increases and decreases in parallel. In the central portion phosphagen and inorg. phosphate are scarcely affected, but may increse slightly after the 14th day. The P_2O_7'''' and total phosphate are unaffected in either case. Ch. Abs. (*el*)

Stimulation of nerves by alternating electric fields. J. A. Gengerelli and N. J. Holter (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 532—534).—A muscle–nerve prep. was laid on a glass plate between two metal plates 7 in. apart between which a p.d. of 10,000 v., alternating at 60 cycles, was maintained. Contractions began when not less than 18 mm. of nerve was parallel to lines of electric force, and became tetanic when 35—40 mm. was so placed. Stimulation ceased when the angle between the nerve and lines of force increased to over 70°, or if the nerve was immersed in saline. Muscles without a nerve could not be excited. V. J. W.

Permeability change of stimulated nerve. J. F. Danielli (*J. Physiol.*, 1941, **100**, 117—124).—The lipoid part of plasma membrane of nerve axons is probably a bimol. film, composed of two partly expanded monolayers; the effect of the injury potential is to increase the degree of expansion; the increase of permeability found on discharging the injury potential is due to a reversion to close-packed film with gaps permeable

to ions between the areas or micelles of close-packed mols. With this structure the initial heat of nerve should, and does, lie between the approx. limits of 10 and 2×10^{-4} erg per sq. cm. of nerve surface; excitation occurs at "make" at the cathode and at "break" at the anode; $K^{\cdot}$ and $Ca^{\cdot\cdot}$ both increase the rate of accommodation; accommodation has a high Q_{10}. Thus the theory fits the facts. J. A. C.

Action potential of nerve in refractory phase. T. Otani (*Japan. J. Med. Sci.*, 1940, III, **7**, 1—10).—The duration of the refractory state of the sciatic nerve of *Bufo vulgaris japonicus* was studied by applying ascending and descending induced currents ("descending": cathode of stimulating electrodes nearer to leads than anode). The action potential is depressed if the second stimulus (descending) is applied a certain time after the first; with shortened intervals of stimulation, the potentials increase but show a longer latent period. The latent period after subnormal stimulation increases with shortening of the interval between the stimuli. A. S.

Reinforcement and interference between stimuli. G. Young (*Bull. Math. Biophysics*, 1941, **3**, 5—12).—Further discussion of the "two-factor" theory of nerve excitation. J. F. D.

Effects of direct currents on electrical excitability of nerve. A. Rosenblueth (*Amer. J. Physiol.*, 1941, **132**, 57—73).—The changes of electrical excitability produced by application of d.c. were studied in cat's myelinated nerves, either intact or excised. There may be an increase or a decrease of excitability at the anode or the cathode during or after the passage of d.c. The following factors influence the effects of d.c.: distance between the d.c. electrodes; voltage; distance of points tested to the d.c. poles; duration of the test shocks; inter-electrodal distance for the test stimuli. Changes of excitability are due to modifications of both the voltage and the time parameters of the voltage–capacity curves. For a given application of d.c. the change at the anode does not permit predicting the effect at the cathode and vice versa. The after-effects at either pole cannot be predicted from the effects seen during the application. M. W. G.

Free amino-acids of lobster nerve. R. H. Silber (*J. Cell. Comp. Physiol.*, 1941, **18**, 21—30).—Free amino-acids are present in the nerve in concn. of 3% in its fluid or 18—18·5% of dry wt. 1·3% is aspartic acid and the remaining 1·7% is a monoamino-monocarboxylic acid, largely alanine. There is thus an anion deficit (cf. A., 1941, III, 87) of about 0·2 mol. equiv. of which various tentative explanations are suggested. V. J. W.

***X*-Ray diffraction studies on structure of nerve myelin sheath.** F. O. Schmitt, R. S. Bear, and K. J. Palmer (*J. Cell. Comp. Physiol.*, 1941, **18**, 31—42).—Diffraction patterns from vertebrate nerves indicate that the myelin sheath consists of concentrically wrapped layers of mixed lipins alternating with thin layers of protein. In the layers, the lipin mols. are oriented with paraffin chains extending radially, and with polar groups in the aq. interfaces, bonded to those of the protein. V. J. W.

***X*-Ray diffraction studies of lipin–protein complexes.** K. J. Palmer, F. O. Schmitt, and E. Chargaff (*J. Cell. Comp. Physiol.*, 1941, **18**, 43—47).—Diffraction patterns from samples of kephalin-histone and kephalin-globin (A., 1940, III, 43) indicate that the protein occurs as thin, possibly unimol. layers between bimol. leaflets of kephalin. V. J. W.

Excitability of excised and circulated frog's sciatic nerve. H. O. Parrack (*Amer. J. Physiol.*, 1940, **130**, 481—495).—Excitability of the alpha fibres in the frog's sciatic nerve during the passage of a subrheobasic current was measured by determining the strength of a short test shock necessary to evoke half max. alpha spike potentials. Alteration of excitability in excised nerves is max. at 1 m-sec. after application of a const. current and falls to a steady level other than zero. The decrease and final val. of excitability are measures of the amplitude of accommodation and electrotonus respectively. Excised nerves not exposed to Ringer's solution show both accommodation and electrotonus. Ringer's solution containing excess of $Ca^{\cdot\cdot}$ reduces the amplitude of accommodation and may make it zero or negative. Excess of $K^{\cdot}$ increases the amplitude and shortens the time to half accommodation. Nerves with intact circulation in spinal animals show negligible accommodation up to 1 sec. after application of currents 50—90% of rheobase. After the circulation is blocked or during anæsthesia the amplitude of accommodation resembles that of excised preps. In all preps. the effects at anode and cathode are not mirror images of each other. Accommodation is always less at the anode than at the cathode, and negative accommodation in circulated preps. subjected to excess of $Ca^{\cdot\cdot}$ is more marked at the anode. M. W. G.

Histopathological changes in myelinated nerve fibres observed by polarised light method following artificially induced hyperpyrexia. H. M. Weaver (*J. Lab. clin. Med.*, 1941, **26**, 1295—1304).—Degenerative changes were more marked in rabbits subjected to hyperpyrexia by hyperthermy than in those subjected to comparable degrees of radiothermy. The nerves remained normal when the duration of hyperpyrexia was 33—75 min. and the terminal temp. 111·5—111·9° F. Hyperpyrexia by either method, with temp. of 108·7—109·1° F. and duration of 4—7 hr., resulted in marked degenerative changes in the peripheral nerves. In rabbits subjected to 1 exposure of 3—6 hr. duration each week, at 106·1—107·8° F., until the total period of hyperpyrexia is 18—50 hr. and one week allowed for recovery, the peripheral nerves showed only a mild reversible type of degeneration. C. J. C. B.

Secreto-motor reaction and action potentials of the frog's skin after direct and indirect stimulation. K. Motokawa (*Japan. J. Med. Sci.*, 1940, III, **7**, 97—113).—The secreto-motor reaction of the frog's skin (movement of fluid after stimulation of the skin with induction current and recorded with an "osmometer") has no relationship to the action potential of the skin seen after direct stimulation. There is parallelism between the two phenomena after stimulation of skin nerves. A. S.

Secretion and electro-osmosis of frog's skin after stimulation with direct current. K. Motokawa (*Japan. J. Med. Sci.*, 1940, III, **7**, 115—128).—The movement of fluid observed after stimulation of the frog's skin with d.c. is due to active secretion and electro-osmosis; the secretory component can be abolished by atropine. The secreto-motor reaction is increased on closing and diminished on opening the stimulating circuit, due to cathodal and anodal electrotonus. A. S.

Fundamental conditions of galvanic skin reflex in frogs. K. Motokawa (*Tohoku J. exp. Med.*, 1941, **39**, 347—369).—The galvanic reflex was studied using Hermann's nerve–skin prep. in frogs. The magnitude of the galvanic reflex is not determined solely by tension or strength of stimulating current. There is a linear relationship between galvanic reflex and a factor $E - iW$, where E is current tension (outflow positive), i is current strength (outflow positive), and W is skin resistance. The galvanic skin reaction consists of the galvanic reaction proper and the skin action potential; the former is proportional to the opposing polarising current, the latter is not proportional to the resting potential. A. S.

Form of reflex response in relation to pattern of afferent stimulation. L. L. Tureen (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 543—544).—Afferent nerves in the hind limb of a spinal cat were stimulated by condenser discharges at 1—15 per sec. Voltages below 5 caused contractions of the tibialis anticus at a const. level with no after-discharge in the nerve. Higher voltages caused stronger contractions which decreased after an initial max., and after-discharges. V. J. W.

Temperature regulation in cats with chronic cervical cord transection. G. Clark (*Amer. J. Physiol.*, 1940, **130**, 712—722).—Cats with the spinal cord transected in the lower cervical region do not maintain a normal body temp. when there is a sudden considerable fall in external temp., though they are capable of limited adjustment to a gradual lowering of external temp. This adaptation, which is lost after the animals have been kept again in a warmer environment, is attributed to increased metabolic rate. M. W. G.

Neurological symptoms and clinical findings in patients with cervical degenerative arthritis. S. R. Mettier and C. S. Capp (*Ann. int. Med.*, 1941, **14**, 1315—1322).—Two thirds of patients over 40 years of age complaining of pain and stiffness in the neck and shoulder-girdle or of radiation of pain down the arm with numbness or hyperæsthesia of wrist or fingers showed roentgenological evidence of hypertrophic arthritis of the cervical spine. A. S.

Effect of injury of lobulus posterior medianus of the cerebellum on blood pressure, blood-sugar, and adrenaline secretion in

non-anæsthetised dogs. M. Wada, M. Seo, and K. Abe (*Tohoku J. exp. Med.*, 1935, **27**, 218—244).—After puncture of the lobulus posterior medianus of the cerebellum the rate of adrenaline secretion increased to 0·00015—0·00035 mg. per kg. body-wt. per min.; the increase above normal was max. after 5—15 min., and continued for 1—2 hr. Hyperglycæmia was slight. The heart rate usually increased. With the puncture posterior to the 2nd fissure blood pressure increased; a puncture anterior to the fissure produced a smaller transitory rise. The former puncture invariably produced nystagmus.
CH. ABS. (*el*)

Paralysis of conjugate lateral movement of eyes in association with cerebellar abscess. P. C. Bucy and T. A. Weaver (*Arch. Surg., Chicago*, 1941, **42**, 839—849).—Of 7 cases of cerebellar abscess, ipsilateral paralysis of conjugate lateral movements of the eyes occurred in 3, probably as a result of compression of the pons, with implication of the abducens nucleus and the posterior longitudinal bundle. F. S.

Marie's hereditary cerebellar ataxia. R. C. Gray and C. P. Oliver (*Minnesota Med.*, 1941, **24**, 327—335).—Report of a case in which the ataxia was inherited as a Mendelian dominant. The ages of onset varied from 21 to 33 years; there was no anticipation, but the average age at death of the females was (at 35 years) 4 years lower than that of the deceased males. Of the 23 definite cases in 5 generations, 12 occurred in females and 11 in males. E. M. J.

Congenital anomaly of cerebellar vermis. A. L. Sahs (*Arch. Path.*, 1941, **32**, 52—63).—A 16-year-old boy who suffered from epileptic seizures and dizziness following exertion and changes in position was admitted with acute symptoms which developed after a neck-strengthening contest. Autopsy revealed a moderate degree of internal hydrocephalus, generalised narrowing of the sulci and flattening of the gyri, and displacement and compression of the occipital lobes, of the splenium of the corpus callosum, and of the vermis of the cerebellum. The vermis, however, was present in rudimentary form with all of its major divisions. C. J. C. B.

Internal hydrocephalus due to syringomyelia-like process of aqueduct of Sylvius. V. D. Sneeden and C. P. Larson (*Northw. Med.*, 1941, **40**, 44—45).—Hydrocephalus was first noticed 6 months before death in a boy, aged 3 years. Post-mortem showed flattened convolutions, markedly enlarged lateral and third ventricles (total vol. 300 c.c.), dilated foramina of Monro (to 1 cm. diameter), and complete obliteration of the aqueduct for 1 cm. Microscopy revealed a tiny opening in the usual position of the duct but its outline was distorted, irregular, and surrounded by a dense network of glial fibres. There were also cysts lined by ependymal cells. No evidence of inflammation was seen. E. M. J.

Positive potentials recorded from superior colliculus. G. H. Bishop and J. O'Leary (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 680—682).—If a needle electrode is thrust into the superior colliculus of the cat, e.m.f. changes occur when the optic nerve is electrically stimulated. Up to a depth of about 1·5 mm. this electrode shows a negative spike potential; as it enters deeper the potential becomes greater and positive.
V. J. W.

Stand for aseptic operations with Horsley-Clarke's stereotaxic instrument. E. A. Spiegel and H. R. Miller (*J. Lab. clin. Med.*, 1941, **26**, 1657—1658). C. J. C. B.

Case of hydranencephalus with cerebellar hemidysgenesis [? human decerebrate rigidity]. J. Minckler, T. McCurdy, and J. C. Iwersen (*Nebraska Sta. Med. J.*, 1941, **26**, 131—135).—Symptoms resembling tetany were seen during the 3 months' survival of an anencephalic infant. A post-mortem showed the cranial cavity filled by 300 c.c. of yellow fluid, a rough membrane 0·5 cm. in thickness, and a brain weighing 36·7 g. Two small nodules 1·5—2 cm. in diameter were the only remnants of the cortex except for cerebral tissue present in the membrane; the right cerebellar hemisphere appeared normal and larger than the left, the right midbrain was half the size of the left, and there were anomalies of the falx cerebri, tentorium, and cerebral vessels. The symptoms may represent those of true human decerebrate rigidity. E. M. J.

Relation of hypothalamus to neuropsychiatry. B. R. Tucker (*Sth. Med. J.*, 1941, **34**, 724—729).—A review.
E. M. J.

Rôle of hypothalamus and preoptic region in regulation of heart rate. S. C. Wang and S. W. Ranson (*Amer. J. Physiol.*, 1941, **132**, 5—8).—Stimulation of the hypothalamus in cats for 30 sec. increases the heart rate by 5—25% owing to stimulation of the cardiac–sympathetic nerves and adrenaline secretion. The response is independent of the associated hypertension.
M. W. G.

Evaluation of physical and mental capabilities following removal of right cerebral hemisphere. L. J. Karnosh and W. J. Gardner (*Cleveland Clin. Quart.*, 1941, **8**, 94—106).—3 out of 4 patients survived for more than 2 years removal of the right cerebral cortex because of tumours. The essential motor involvement was left hemiplegia. Movement in the upper extremity was almost nil; slow and clumsy flexion or extension movements could be carried out in the legs. Neither ankle nor toes could be moved; there were exaggerated defence reactions. There was little involvement of the cranial nerves, except weakness of muscle activity at the left angle of the mouth. Ocular, lid, and brow movements were unimpaired. There was no striking change in speech. Two-point discrimination was absent over the left side, except on the face. Light touch was perceived as dull pressure and referred to points up to 12 in. away from the point of stimulation. There was no great subjective discomfort. Localisation on the face was much better. Pinprick on the left side caused very disagreeable and diffuse sensations. There was left homonymous hemianopia; the mascular fields were intact. There was no serious impairment of hearing. There were no signs of serious intellectual deficiency, hallucinations, or disorientation. The patients were easily dejected and morose, with an equal tendency to elation and unwarranted gaiety. The personality of the patients has markedly changed. A. S.

Electroencephalography. R. K. Byers (*J. Pediat.*, 1941, **18**, 811—833).—A crit. review. C. J. C. B.

Method for recording electrocorticograms in animals without opening skull. H. Hoagland (*Science*, 1940, **92**, 537—538).—Victrola needles were forced through the skull and connexion was made by wrapping a wire tightly around the shank. Animals were kept for several days with the leads in place.
E. R. S.

Relationship between human electro-encephalogram and reaction time following light signal. T. Mita (*Tohoku J. exp. Med.*, 1941, **39**, 485—504).—A diphasic deflexion of the electro-encephalogram (frontal–occipital leads) was observed following exposure to light, resembling the "on"-effect in animal experiments. The suppression of the α-waves coincided with the electro-negative peak of the on-effect. The second peak of the on-effect coincided with the reaction time of the right index finger (moving a key after perception of light). The reaction time and the latent period of the electro-encephalographic reactions shorten with increased light intensity. The difference between the reaction time and latent period of α-wave suppression agrees with that between reaction time and the duration of light perception. A. S.

Encephalography in neuropsychiatry. D. H. Echols (*New Orleans Med. J.*, 1941, **93**, 370—372). E. M. J.

Techniques for obtaining electroencephalograms using ocular and intranasal electrodes. A. Barnett (*J. Lab. clin. Med.*, 1941, **26**, 1659—1663).—Techniques are described for taking electroencephalograms using a metal "contact" lens type of ocular electrode and a simple nasal electrode. Potentials led off from one ear lobe and the surface of the eye or the interior of the nose show alpha and beta waves. The eye–ear and nose–ear alpha potentials are of less amplitude than those obtained from occiput-ear and frontal-ear leads. In an epileptic marked changes in fronto-occipital potentials caused by hyperventilation were accompanied by parallel changes in nasal–ear potentials. C. J. C. B.

Sleep of canaries. G. Eckstein (*Science*, 1940, **92** 577—578).—Observations on the sleep habits of canaries are recorded. E. R. S.

Animal behaviour during air raids. H. B. Fell (*Science*, 1941, **93**, 61—62).—3 newspaper references are given and a few instances quoted. A classification comprises species showing (1) alarm, (2) indifference, (3) defiance. E. R. S.

Period of resistance [to training] in early childhood. E. Benjamin (*J. Pediat.*, 1941, **18**, 659—669).—A lecture.
C. J. C. B.

Effect of cerebral cortical lesion on respiratory exchange and associated phenomena of albino rat. Y. J. Wu, T. L. Chiu,

and C. Ping (*Contr. Biol. Lab. Sci. Soc. China*, 1940, **13**, 101—118).—The fronto-parietal right cortex was removed in rats; their metabolism was studied in a respiratory chamber. Body-temp. decreased to or below 35° 3—4 hr. after the operation; the R.Q. was below 0·7. There were, however, considerable variations. Metabolic disturbances became particularly apparent when the chamber temp. was raised to 25°. The effects of the operation are greatly diminished 2—3 days, and normal conditions were found 1—2 months, after the operation. A. S.

Oxidation of various sugars by brain tissue. F. Bernheim and M. L. C. Bernheim (*J. Biol. Chem.*, 1941, **140**, 441—444).—Glucose, mannose, maltose, and fructose are the only sugars of those examined that are oxidised by rat brain suspensions. The oxidation is inhibited by iodoacetate, 2 : 3 : 5-tri-iodobenzoate, and F′. Glucose and mannose, which inhibit oxidation of maltose and fructose, are oxidised more readily at p_H 6·7 than 7·8, whilst the reverse is true for maltose and fructose. H. G. R.

Electrical response of kitten and adult cat brain to cerebral anæmia and analeptics. B. Libet, J. F. Fazekas, and H. E. Himwich (*Amer. J. Physiol.*, 1941, **132**, 237—238).—A gradual development of the frequency, regularity, and amplitude of the cortical electrograms occurs during infancy as seen in kittens 2—6 or 19—25 days old and in adult cats. Electrical activity can be induced in the comparatively silent brain of 2—6-day-old kittens by metrazol or strychnine. Acoustic stimuli also evoke cortical responses. The relative dose of metrazol per unit body-wt. required to elicit electrical or motor response is greater for the kitten than the adult cat; the activity induced by metrazol in the kitten differs from that in the adult cat both as to central electrical and peripheral-motor manifestations. After sudden excision of the heart, the persistence of cerebral electrical activity is longer in the 2—6-day-old kitten than in the adult cat; this difference disappears by the 19th—25th day. During complete cerebral anæmia, the electrical response of the acoustic cortex to a sharp noise can be elecited for 50—100 sec., at a time when spontaneous electrical activity has long ceased. M. W. G.

Greater resistance of very young animals to arrest of brain circulation. H. Kabat (*Amer. J. Physiol.*, 1940, **130**, 588—599).—The young dog is much more resistant to acute asphyxia than the adult. The brain of the young animal is much more resistant to anæmia than the adult organ. In the newborn the respiratory centre continues to function 17 times as long as the adult after complete cerebral anæmia. Complete functional recovery following periods of complete cerebral anæmia is 400% greater in the newborn than in the adult. The resistance falls to the adult level at 4 months. Spinal shock does not supervene in young dogs during cerebral anæmia. M. W. G.

Tryptophan reaction of cerebrospinal fluid in diagnosis of meningeal tuberculosis. J. A. Buchanan and H. Ballweg (*N.Y. Sta. J. Med.*, 1939, **39**, 58—59).—Case report. E. M. J.

Mechanism of production of cerebrospinal fluid. Comparative study of the sugar, non-protein-nitrogen, and inorganic phosphorus contents of blood and cerebrospinal fluid. H. Cohen (*Quart. J. Med.*, 1936, **5**, 159—168).—No relationship was observed. Ch. Abs. (*el*)

Effect of induced hyperglycæmia on glucose content of cerebrospinal fluid. H. Cohen and J. Libman (*Quart. J. Med.*, 1936, **5**, 169—183).—If the blood-sugar is raised for a sufficient period c.s.f.-sugar rises significantly. Ch. Abs. (*el*)

Glucose content of cerebrospinal fluid after withdrawal. H. Cohen and J. Libman (*Quart. J. Med.*, 1936, **5**, 183—185).—The sugar content of c.s.f. kept at room temp. or at 37° remained const. up to 94 hr., but fell rapidly when the fluid was contaminated with micro-organisms, *B. subtilis* being most common. Ch. Abs. (*el*)

Cerebrospinal fluid pressure and vitamin-*A* deficiency. L. A. Moore and J. F. Sykes (*Amer. J. Physiol.*, 1940, **130**, 684—689).—Deficiency of vitamin-*A* in the diet of the calf increased c.s.f. pressure accompanied by papilloedema, nyctalopia, syncope, and inco-ordination. -*A* deficiency and low plasma-carotene are regularly correlated with raised c.s.f. pressure. When -*A* deficiency was corr. plasma-carotene increased and c.s.f. pressure decreased. On return to normal diet c.s.f. pressure slowly returns to normal in 4—5 months and the other disturbances disappear. M. W. G.

Visceral lesions in infectious polyneuritis. A. B Sabin and C. D. Aring (*Amer. J. Path.*, 1941, **17**, 469—481).—The adrenals showed focal degeneration and infiltration with mononuclear cells; the liver, focal cellular infiltration in the capsule and portal spaces, focal necrosis of epithelial cells with cellular infiltration, and focal fatty degenerations; the kidneys, focal intertubular infiltration with mononuclear cells; the heart, interstitial infiltration with mononuclear and polymorphonuclear cells and in one case necrosis of isolated muscle fibres and focal phlebitis. "Zonal" chromatolysis occurred in the nerve cells of the spinal cord and medulla; some of the nerve cells in the abdominal sympathetic ganglia showed a degenerative change consisting of vacuolization and the appearance of many acidophilic, sharply outlined bodies in the cytoplasm. Mice, guinea-pigs, rabbits, and rhesus monkeys were inoculated with pooled liver, spleen, adrenal, and kidneys tissue, and also with the spinal cord and medulla from one of the cases, with negative results. Cultures of these tissues for micro-organisms of the pleuro-pneumonia group were also negative. (23 photomicrographs.) C. J. C. B.

Hospital study of poliomyelitis with follow-up survey one year later. L. Litter (*Arch. Pediat.*, 1941, **58**, 413—430).—22 of 50 patients were discharged with paralysis; on admission 23 patients presented such evidence. 5 deaths occurred. 6 patients required the use of the respirator for intercostal diaphragmatic or abdominal muscle paralysis. 1 or both legs were the parts most frequently paralysed. The cranial nerves involved were the facial, glossopharyngeal, and hypoglossal. A high c.s.f. cell count did not necessarily mean a severe illness. The lowest c.s.f. cell counts were found in the bulbar type and the highest in the spinal poliomyelitis types. C. J. C. B.

Tic douloureux: relation of "trigger zones" to painful seizures; report of case. O. R. Hyndman (*Arch. Surg., Chicago*, 1941, **42**, 913—916).—The painful seizures were limited to an ophthalmic distribution but trigger zones were located about the gums and lower lip. A partial section of the fifth sensory root, which resulted in diminution of sensation only in the mouth and on the chin, abolished the tic. F. S.

Vaccine treatment of facial paralysis. J. V. Connole (*Penn. Med. J.*, 1941 **44**, 467—469).—8 cases were treated with a mixed catarrhalis influenza vaccine. 5 cases in whom the palsy had existed for 1—10 days recovered in 7—21 days and 3 cases seen on the 3rd, 10th, and 21st day respectively did not benefit. E. M. J.

Fatal [Landry type] paralysis following antirabic treatment. P. H. Herron (*New Orleans Med. J.*, 1941, **93**, 446—450).—An 18-year-old male who had played with a rabid dog and showed some abrasions but had not been bitten received a course of antirabic inoculations; after the 11th he complained of severe vomiting and abdominal pain. Two days later signs of a beginning Landry's paralysis appeared, ending fatally after 4 days. Histological examination of the brain showed the changes of rabies, except for the absence of Negri bodies. E. M. J.

Treatment of intractible pain. R. A. Youngman (*Nebraska Sta. Med. J.*, 1941, **26**, 22—23).—Relief from myalgia and allied conditions was obtained in 6 cases by repeated injection into the tender spots or the nerve supplying the region of up to 5 c.c. of a solution of 0·005 g. of *iso*amylhydrocupreine, 0·15 g. of ethyl aminobenzoate, and 0·25 g. of benzyl alcohol in 5 c.c. of oil of sweet almond or of an aq. solution of the sol. salts of the volatile bases of the pitcher plant *Sarrocenia purpurea*, each 5 c.c. containing 33 mg. of cryst. vitamin-*B*. 5 cases 3 of which were suffering from hypertrophic spinal arthritis did not respond. E. M. J.

Treatment of trigeminal neuralgia. S. N. Rowe (*Penn. Med. J.*, 1941, **44**, 728—730).—156 cases were treated by injection of alcohol with an average duration of relief from pain in the 95% of successful cases of 11 months. Section of the sensory root of the ganglion by the subtemporal route was done in 202 cases, resulting in complete relief from pain in 98%. 1·4% needed a second operation. There was an operation mortality of 3%, serious facial paralysis occurred in 2%, and keratitis with impaired vision in 2% of cases. E. M. J.

Value of convalescent serum in treatment of cerebral complications following acute infectious diseases. A. Gordon (*Penn. Med. J.*, 1940, **44**, 274—278).—Cerebral complications including convulsions and paralyses following measles, mumps, and diphtheria in children and adults were treated with intramuscular injections of convalescent serum and in some cases by administration of vitamin-B_1. Recovery ensued in 10 days to 2 months in the 7 cases following measles, in 10—21 days in 4 of 6 cases after mumps, and in 15—21 days in 2 cases after diphtheria. One patient in the mumps series died. E. M. J.

Involvement of nervous system in sickle-cell anæmia. J. G. Hughes, L. W. Diggs, and C. E. Gillespie (*J. Pediat.*, 1940, **17**, 166—184).—6 cases are described and the literature is reviewed. The essential changes in the brain are similar to those in other organs. The lesions are multiple and widespread but mainly localised in the cerebral cortex and meninges. The lesions are primarily intravascular and due to thrombosis, followed by hæmorrhage, degenerative and atrophic changes. Prognosis was poor, but variable and unpredictable. C. J. C. B.

Acute poliomyelitis. W. H. Kelleher (*Brit. J. Child. Dis.*, 1940, **38**, 217—240).—A review of all aspects of the disease based on 35 cases. C. J. C. B.

Fox–Fordyce disease [axillary neurodermatosis] in male. S. M. Kaufmann (*N.Y. Sta. J. Med.*, 1938, **38**, 971—973).—Case report, being the fourth on record. E. M. J.

Diagnosis and treatment of neuralgias of face and head. T. Fay (*Penn. Med. J.*, 1941, **44**, 861—865). E. M. J.

Histology of neurodermatitis. R. C. MacCardle, M. F. Engman, jun., and M. F. Engman (*Arch. Dermat. Syphilol.*, 1941, **44**, 161—189).—Unaffected skin from patients with neurodermatitis is hyperpigmented, hyperkeratotic, and acanthotic; skin from active lesions is depigmented. Perivascular infiltrations are common in the subpapillary cutis. In healing lesions, in which there are many mitotically dividing cells, the basal layer contains many clear cells. The clear cells in the basal layer of the epidermis are concerned in regeneration rather than in pigmentation and the pigmentation is related to keratinisation. (10 photomicrographs.) C. J. C. B.

Symptomatic relief of spastic disabilities with β-erythroidine. J. M. Williams (*Med. Ann. Columbia*, 1941, **10**, 171—172).—Relief from spasticity of the upper motor neurone or extrapyramidal type was obtained with initial doses of 0·2—0·8 mg. of β-erythroidine hydrochloride by mouth followed by maintenance doses of half this amount or with 10—25 mg. of dihydro-β-erythroidine hydrobromide. The only side-effects were transitory dizziness and some drowsiness in one, and a mild urticaria in another patient. E. M. J.

Case of polyradiculoneuritis. G. C. Anderson (*New Orleans Med. J.*, 1941, **93**, 443—446). E. M. J.

Rehabilitation of cerebral palsy. W. M. Phelps (*Sth. Med. J.*, 1941, **34**, 770—775). E. M. J.

Mental symptoms in frontal lobe tumours [and rôle of psychiatrist in diagnosis]. G. C. Anderson (*Sth. Med. J.*, 1941, **34**, 302—306).—A review. E. M. J.

Fever therapy in meningococcal septicæmia. M. B. Rosenblüth and D. W. Stetten, jun. (*N.Y. Sta. J. Med.*, 1938, **38**, 1078—1079).—The temp. remained normal after the 5th hyperpyrexial peak in a patient who had been treated with serum for 10 weeks without effect and who had developed serum sensitivity. Blood and c.s.f. cultures thereafter remained negative and complete recovery took place. E. M. J.

Irradiation of brain tumours. I. I. Kaplan (*Radiology*, 1941, **36**, 588—594).—Good results were seen in the irradiation of 154 cases, including 39 pituitary tumours. Medulloblastomas were the most sensitive, spongioblastoma multiforme less so, astrocytomas and ependymomas only slightly so, and oligodendrogliomas seemed to be radio-resistant. Treatment was given at 200 kv. or with a 5-g. Ra pack, in most cases after operative exploration. Irradiation is the method of choice for eosinophil adenomas of the pituitary. E. M. J.

Meningeal hæmorrhage in child with idiopathic thrombocytopenic purpura. S. Watanabe (*Tohoku J. exp. Med.*, 1941, **39**, 523—532).—A case is described. The possibility of thrombocytopenic purpura should be borne in mind in cases of cerebral or meningeal hæmorrhage. A. S.

Cerebral manifestations of bacterial endocarditis. E. C. Toone, jun. (*Ann. int. Med.*, 1941, **14**, 1551—1574).—17 of 35 patients suffering from bacterial endocarditis showed signs of neurological disturbance. 11 patients had meningitis which was most severe in cases with acute bacterial endocarditis; in 4 of 6 cases of the latter type the responsible organism was also found in the c.s.f. No organisms were found in the c.s.f. in 5 patients with subacute bacterial endocarditis + meningitis. Hemiplegia as a result of large cerebral emboli occurred in 8 cases. 3 patients with acute endocarditis had subarachnoid hæmorrhage, associated with meningitis. C.s.f. pressure readings above 200 mm. H_2O were noted in 4 patients. The c.s.f. contained mostly granulocytes; in some cases the lymphocytes were predominant. The fundamental brain lesion is a diffuse embolic meningo-encephalitis. A. S.

Tetany following sodium chloride replacement therapy. F. H. Power, S. Pedersen, and W. G. Maddock (*J. Pediat.*, 1941, **18**, 776—778).—Report of a case. C. J. C. B.

Convulsions in pig with low blood-calcium and -phosphorus. A. H. Craige and J. D. Beck (*J. Amer. Vet. Med. Assoc.*, 1941, **98**, 315).—Convulsions occurring in a 10-weeks-old pig and were relieved by intraperitoneal injections of Ca gluconate. The litter mates showed no symptoms. Serum-Ca was 5·1 mg.-% (normal 9), and -inorg. P 2·7 mg. (normal 6). The pig died after repeated seizures over a period of 3 days. E. G. W.

Epilepsy. D. McEachern (*Canad. Med. Assoc. J.*, 1941, **45**, 106—111).—A review. C. J. C. B.

Progress in treatment of mental disease. F. P. Moersch (*New Orleans Med. J.*, 1941, **93**, 439—443).—A review. E. M. J.

Nervous and mental diseases of soldiers during active warfare. G. A. Blakeslee (*N.Y. Sta. J. Med.*, 1941, **41**, 1241—1246). E. M. J.

Operation of genetic factors in pathogenesis of mental disorders. F. J. Kallmann (*N.Y. Sta. J. Med.*, 1941, **41**, 1352—1356).—A review. E. M. J.

Application of metrazol convulsions in schizophrenia. L. L. Orenstein, I. J. Rosenbaum, and P. Schilder (*N.Y. Sta. J. Med.*, 1938, **38**, 1506—1508).—Discharge from hospital was made possible in 5 out of 15 cases after a series of 6—8 convulsions; 4 of these cases were classed as recovered, one as improved. E. M. J.

Fracture of both femoral necks and of thoracic vertebræ following metrazol convulsion. G. R. Krause and R. F. Scherb (*Radiology*, 1941, **36**, 740—741).—Case report. E. M. J.

Non-effectiveness of metrazol therapy in schizophrenia. G. W. Robinson, jun. (*J. Kansas Med. Soc.*, 1941, **42**, 210—212).—A review. E. M. J.

Treatment of mental disorders with pharmacological and electrical shock methods. N. J. Berkwitz (*Minnesota Med.*, 1941, **24**, 25—30).—A review. E. M. J.

Vertebral fractures following metrazol therapy. G. R. Krause and C. L. Langsam (*Radiology*, 1941, **36**, 725—730).—42·6% of 75 cases treated with metrazol convulsions showed fractures of one or more vertebræ, the most common site being the mid-thoracic spine. Only 20 of the 32 patients with fractures complained of back pain. E. M. J.

Effects of insulin, metrazol, and camphor convulsions on brain metabolism [rat, cat]. S. B. Wortis (*N.Y. Sta. J. Med.*, 1938, **38**, 1015—1021).—O_2 consumption of minced brain tissue was diminished after insulin-produced convulsions unless 2% of glucose was present in the Ringer phosphate solution used. Metrazol or camphor convulsions or immersion of normal minced rat brain into insulin or metrazol solutions had no effect on O_2 consumption. E. M. J.

Present status of therapeutic shock in psychiatry. E. Connely (*New Orleans Med. J.*, 1941, **93**, 357—361). E. M. J.

Electrically induced convulsions in treatment of functional mental disease. D. J. Impastato and R. Almansi (*Med. Ann. Columbia*, 1941, **10**, 163—170). E. M. J.

Zig-zag method in insulin therapy of schizophrenia. R. M. Wilmanns and M. Hayman (*N.Y. Sta. J. Med.*, 1938, **38**, 1232—1233). E. M. J.

Electroshock treatment [of mental disease]. L. H. Smith, J. Hughes, and D. W. Hastings (*Penn. Med. J.*, 1941, **44**, 452—455).—32 cases of various types of mental disease were treated, with recovery in 19 and great improvement in 5 cases. One case of compression fracture of a thoracic vertebra and dislocation of the shoulder was seen. E. M. J.

Œstrogenic hormone therapy in presenile and manic depressive psychosis. E. M. Robards (*New Orleans Med. J.*, 1941, **93**, 450—453).—31 patients were given 10,000 units of theelin in oil weekly for 6—18 weeks; 21 were much improved, 8 improved, and 2 unchanged. E. M. J.

Epidurography. H. Sanford and H. P. Doub (*Radiology*, 1941, **36**, 712—716).—Epidurograms were obtained by injecting 200—300 c.c. of air into the epidural space through a needle in the fourth lumbar interspace. The *X*-rays were taken with the patient tilted 45° and head downwards. The patients were allowed to walk immediately afterwards and no after-effects were noted. A prolapsed intervertebral disc was demonstrated in 55% of a series of 77 cases by this method, whilst with air myelography only 35% could be shown. E. M. J.

Management of fits in adults. C. D. Aring (*Ohio Sta. Med. J.*, 1941, **37**, 225—230). E. M. J.

Treatment of chorea with typhoid shock. J. Tucker (*Cleveland Clin. Quart.*, 1941, **8**, 158—161).—80% of 17 patients suffering from chorea (16 with Sydenham's chorea) were successfully treated with 6 intravenous injections of typhoid or paratyphoid *A* or *B* bacteria from a vaccine (initial dose 25 million organisms for adults, 15 millions for children under 10; each successive injection is double the preceding dose; the bacteria were diluted in 10 c.c. of NaCl solution). No untoward effects were observed. A. S.

Present status of vitamins in nervous health and disease. H. Wortis and N. Jolliffe (*N.Y. Sta. J. Med.*, 1941, **41**, 1461—1469).—A review. E. M. J.

Liberation of acetylcholine-like substance by abdominal nerve-chain in *Scolopendra*. N. V. Ermakov and V. P. Skipski (*J. Méd. Ukraine*, 1940, **10**, 493—508).—The nerve chain of *Scolopendra* contain an acetylcholine-like substance which contracts the eserinised leech prep. M. K.

Autonomic nervous system and infection. M. M. Israelson (*J. Méd. Ukraine*, 1940, **10**, 467—477). M. K.

Analysis of excitatory and inhibitory effects of sympathetic nerve impulses and adrenaline on visceral smooth muscle. E. Bozler (*Amer. J. Physiol.*, 1940, **130**, 627—634).—Sympathetic nerve impulses and adrenaline lower or abolish the excitability of the non-pregnant cat's uterus. In the non-pregnant cat's uterus the inhibition brought about by stimulating the hypogastric nerve is always preceded by an excitatory effect. This finding and observations on other species (rabbit, dog, and monkey) suggest that diphasic responses are the general response of the uterus to nerve stimulation. Under different conditions and in different species the magnitude of each one of the two phases of the response varies greatly. Both the excitatory and inhibitory effects are produced by adrenergic nerve fibres, as adrenaline alone gives the same response as sympathetic nerve impulses. M. W. G.

Paraganglia and sympathetic system. A. Celestino da Costa (*Ann. d'Endocrinol.*, 1939—40, **1**, 337—357).—An anatomical, histological, and embryological description. P. C. W.

X.—SENSE ORGANS.

Ocular hypertelorism of Greig. E. A. Vorisek (*Amer. J. Ophthal.*, 1941, **24**, 928—932).—Four cases of this condition, which is characterised by excessive separation of the orbits, are described. There was no hereditary basis. W. T. A.

Case of cyclops eye in full-term human fœtus. R. B. R. C. Motwani (*J. Univ. Bombay*, 1941, **9**, Part V, 101—102).—There was fusion of cornea and lens and the iris showed 2 apertures. There was no evidence of the ethmoidal bone and the nasal cartilage was absent, nor was the naso-pharynx formed. A. S.

Virus diseases and eye in childhood. G. M. Bruce (*J. Pediat.*, 1941, **18**, 592—599).—A lecture. C. J. C. B.

Keratoconjunctival lesions observed at high altitudes in Bolivia. A. Solares (*Amer. J. Ophthal.*, 1941, **24**, 900—913).—The condition is found mainly in children from 4 to 15 years, usually boys, who live at altitudes between 2500 and 4000 m. The clinical features are hyperæmia with development of prominent chronic granulomata at the margin of the cornea. In late cases there may be peripheral corneal opacities. W. T. A.

Follicular conjunctivitis in school children as expression of vitamin-*A* deficiency. M. R. Sandels, H. D. Cate, K. P. Wilkinson, and L. J. Graves (*Amer. J. Dis. Child*, 1941, **62**, 101—114).—In children between 6 and 12 vitamin-*A* deficiency is a cause of conjunctivitis. C. J. C. B.

Ætiology and treatment of sympathetic ophthalmia. J. C. Holst (*Ophthalmologica*, 1941, **101**, 8—18).—5 cases are reported all of which gave negative tuberculin reactions; in 3 cases the injured eye had been enucleated 12—13 days after the trauma and in 2 of these sympathetic ophthalmia developed 4 and 6 weeks respectively after the enucleation. It is recommended not to postpone prophylactic enucleation beyond the 12th day after the injury. H. L.

Contact glasses as an aid in straightening the eyes. S. Goldberg (*Amer. J. Ophthal.*, 1941, **24**, 933).—A patient with convergent squint due to hypermetropia had his deviation much reduced while wearing contact lenses. W. T. A.

Fluorescence microscopy applied to ocular tissues. J. N. Evans and E. Singer (*Arch. Ophthal., N.Y.*, 1941, **25**, 1007—1019).—Frozen sections of fresh ocular tissues were examined microscopically on a dark ground while exposed to ultraviolet radiation. A strong bluish fluorescence was seen in Descemet's membrane, lens, and sclera and in other tissues to a smaller degree. The substance responsible was not identified. A greenish-yellow punctate fluorescence in the retina was attributed to vitamin-*A*. The choroid of the cat showed a strong yellow fluorescence. Fluorescent substances were introduced into the sections by a process similar to histological staining. Negatively charged substances imparted fluorescence to corneal epithelium, ciliary body, and optic nerve. Rivanol stained nuclei selectively. Positively charged substances gave diffuse fluorescence without tissue differentiation. W. T. A.

Eye of owl monkey (*Nyctipithecus*). S. R. Detwiler (*Anat. Rec.*, 1941, **80**, 233—242).—The eye of this monkey presents features characteristic of nocturnal vision: cornea with marked curvature, anterior chamber large relative to vitreous, large lens, neither fovea nor cones in the retina. A. Gl.

Ocular lesions in vitamin-*E*-deficient rats. V. Demolle and P. Knapp (*Ophthalmologica*, 1941, **101**, 65—73).—In young animals, keratoconjunctivitis developed regularly at the beginning of the paretic stage, *i.e.*, during the 3rd week of life. In adult rats, progressive exophthalmia was frequently observed as an early sign of *E*-avitaminosis, sometimes starting as early as the 3rd month on the diet; degenerative lesions were found in the striped portions of the external ocular muscles. Occasionally, a severe ocular condition developed in adult animals, characterised by œdematous opacity and vascularisation of the cornea, with or without keratoconus, iridocyclitis with numerous eosinophil cells especially in the ciliary body, complicated cataract, and serous inflammation of the retina resulting sometimes in severe degeneration of all layers. H. L.

Lipoid (?) droplets in episclera as regular change with age. A. Loewenstein (*Ophthalmologica*, 1941, **100**, 345—350).—Groups of lipoid droplets in the episclera of normal eyes in old people are described and taken to be analogous to the arcus lipoides senilis of the cornea. A. Gl.

Biochemistry of normal and pathological cornea. R. Weekers (*Ophthalmologica*, 1941, **100**, 136—149).—Review of papers dealing with the biochemistry of the normal and pathological cornea. A. Gl.

Nitrogenous metabolism in preserved cornea. T. P. Schesterikova and E. I. Gelelovitsch (*J. Méd. Ukraine*, 1940, **10**, 277—290).—At first insol. protein-N decreased but polypeptide- and residual N increased. From the 6th to 14th day insol. protein-N remained unchanged, but sol. protein-N decreased and residual N increased markedly. M. K.

Lipin metabolism in preserved cornea. T. P. Schesterikova and E. L. Rozenfeld (*J. Méd. Ukraine*, 1940, **10**, 303—309).—Lipin concn. in the cornea remained stable during the first 10 days of preservation at 3—5°; on the 14th day it fell to one third of its original val. A marked increase of ketonic compounds was observed from the 5th day onwards (330% on the 14th day). Cholesterol diminished gradually to less than half on the 14th day. M. K.

Mineral metabolism in preserved cornea. T. P. Schesterikova and K. M. Rapoport (*J. Méd. Ukraine*, 1940, **10**, 311—317).—The cornea of preserved eyes absorbs water and Cl from the aq. humour. K and Ca remain unchanged, while inorg. P increases. M. K.

Regeneration of corneal epithelium in preserved eyes. V. V. Skorodinskaja (*J. Méd. Ukraine*, 1940, **10**, 259—267).—Some epithelial regeneration is reported in the damaged cornea preserved at 2—4°. Migration of epithelial cells towards the site of the lesion was observed on the 3rd day and some cells were dividing. By the 9th—10th day cell degeneration is evident and migration has slowed down. M. K.

Cicatrisation of superficial corneal lesions in *Gallus banciva domesticus*, *Mus musculus*, L., and *Oryctolagus cuniculus*, L. N. M. Janik (*J. Méd. Ukraine*, 1940, **10**, 591—605).—Cicatrisation of a superficial corneal lesion begins by accumulation of epithelial cells at the margins and their advance towards the centre. Later the destroyed epithelial cells are replaced by mitosis. M. K.

Bullous keratitis, with particular reference to pathology of experimental corneal vesiculation. D. G. Cogan (*Arch. Ophthal., N.Y.*, 1941, **25**, 941—968).—Bullous keratitis was produced in the eye of the cat by injecting hypertonic saline into the anterior chamber. The pathological appearances were similar to those seen in the clinical condition, namely swelling of epithelial cells, loosening of epithelium, and formation of vesicles and bullæ containing debris probably derived from burst epithelial cells. Bullous keratitis is a late stage of corneal œdema and is due to the passage of fluid from the tears through the anterior surface of the cornea as a result of osmotic imbalance, probably from increased salt content of cornea or aqueous. W. T. A.

Krukenberg spindle associated with megalocornea and posterior pigmentation of lens. W. Cameron (*Amer. J. Ophthal.*, 1941, **24**, 687—689).—Case report. A. Gl.

Partial coloboma of scleral-limbus zone with visible Schlemm's canal. K. W. Ascher (*Amer. J. Ophthal.*, 1941, **24**, 615—619).—Description of a case of bilateral embryotoxon and of a case of unilateral coloboma of the scleral-limbus zone. The defect is attributed to a malformation of the corneo-scleral membrane. A. Gl.

Penetration of sulphanilamide and its derivatives into aqueous humour of eye. H. G. Scheie and B. F. Souders (*Arch. Ophthal., N.Y.*, 1941, **25**, 1025—1031).—The drugs were given orally to anæsthetised cats and the concns. attained in blood and aqueous were measured. Sulphanilamide, sulphapyridine, and sulphadiazine readily entered the aqueous. Sulphathiazole attained only a very small concn. in the aqueous compared with the blood concn. W. T. A.

Rôle of ophthalmology in diagnosis of hypertension. V. P. Filatov and M. E. Kaschuk (*J. Méd. Ukraine*, 1940, **10**, 247—257). M. K.

Glaucoma. V. D. Sathaye (*Indian J. Ophthal.*, 1941, **2**, 43—46).—In 72 out of 125 consecutive cases both eyes were affected but the ratio was higher in simple chronic cases (55 out of 70). Good results were obtained in cases of secondary glaucoma from cyclodialysis, performed after cataract extraction or when a trephine hole had been blocked. H. L.

Mechanical factors in ætiology of acute glaucoma. H. S. Sugar (*Amer. J. Ophthal.*, 1941, **24**, 851—872).—Two types of glaucoma are differentiated on the basis of measurements of the depth of the angle of the anterior chamber. The type with shallow angle includes acute glaucoma and so-called chronic congestive glaucomas. The type with normal angle depth includes chronic simple glaucomas of the so-called non-congestive group. The ætiological factors are tabulated and illustrative cases described. W. T. A.

New symptom in ophthalmoplegic migraine. R. Brückner (*Ophthalmologica*, 1941, **101**, 91—94).—Transient occurrence of both iridal hyperæmia and the presence of numerous cells circulating in the aqueous was observed. H. L.

Effect of cold on pupil, deprived of upper cervical sympathetic ganglion, and on blood-sugar content of dogs, normal and deprived of suprarenal medulla. K. Ichikawa (*Tohoku J. exp. Med.*, 1935, **27**, 568—584).—Dogs unilaterally deprived of the upper cervical ganglion and cooled to 30° body temp. suffered hyperglycæmia and paradoxical pupil dilatation. Bilateral adrenalectomy, before or after ganglionectomy, decreased the pupil reaction but scarcely affected the hyperglycæmia. Ch. Abs. (*el*)

Acid-soluble phosphate of lenses of various animals. R. Brückner (*Ophthalmologica*, 1941, **100**, 203—207).—The water and acid-sol. PO_4''' content of the lenses of calf, cow, horse, pig, rabbit, dog, cat, and some fishes was determined. The water content of fish lenses is lower than that of mammalian lenses. The fish lenses contain more total acid-sol. PO_4''' and particularly more org. PO_4''' than the lenses of adult mammals. A. Gl.

Rôle of calcium in carbohydrate metabolism of lens. R. Weekers (*Ophthalmologica*, 1941, **100**, 257—265).—Glycolysis in aq. extracts of rabbit and cow lenses is decreased or inhibited by addition of NaF, Na oxalate, or Na citrate. Addition of Ca does not re-establish glycolysis. The temporary reduction of the Ca content in lenses of parathyroidectomised animals may be responsible for the cataract formation. A. Gl.

Lens opacities associated with experimental calcium deficiency. K. C. Swan and P. W. Salit (*Amer. J. Ophthal.*, 1941, **24**, 611—614).—Addition of Ca salts to a Ca-deficient diet prevented development of lens opacities associated with low serum-Ca and tetany in young rabbits. A. Gl.

Effect of varying intake of dietary salts on formation of galactose cataracts. C. Pfeiffer, H. G. Glass, and R. H. Dreisbach (*J. Pharm. Exp. Ther.*, 1941, **72**, 31—32).—In 30 control rats fed for 3 weeks on Day's galactose diet the incidence of severe cataract was 45%. In 20 galactose-fed rats given 0·2—0·3% KCl solution as drinking-water the incidence was 20%. In 22 rats given 0·3% NaCl, $MgCl_2$, or $CaCl_2$ solutions as drinking-water the incidence of severe cataracts was 52%. When 3% K_2HPO_4 was incorporated in the diet, the incidence of severe cataracts fell to 22% compared with 55% for an equal no. of control rats fed on the identical diet without the K_2HPO_4. The incidence with 6% K_2HPO_4 was 25%. 4% KH_2PO_4 did not prevent severe cataract formation, for in a series of 10 rats the incidence was 50%. The severity of secondary calcification is decreased by the K administration. H. H. K.

Two uncommon forms of cataract. E. Kessler (*Ophthalmologica*, 1941, **101**, 19—22).—Cases are reported of a slowly progressive saucer-shaped posterior cataract with rudimentary lenticonus posterior in a child aged 5½ years and of a complete tetany cataract in a woman aged 36. H. L.

Formation of melanoidin in lens. F. P. Fischer (*Ophthalmologica*, 1941, **100**, 150—158).—A golden-yellow substance with green fluorescence obtained from the acetic acid filtrate after pptn. with Ag lactate is probably the cause of the yellow colouring in senescent lenses. This substance is not one of the melanoidins which are responsible for the colouring of the nucleus of the lens. A. Gl.

Crown-like striped opacity of the lens [in man]. N. C. Trantas (*Ophthalmologica*, 1941, **101**, 82—90).—A crown-like striped opacity of the anterior surface of the lens was found in 75% of all, and in 95% of all young, individuals examined and is therefore regarded as a normal phenomenon; it tended to disappear with increasing age and with decreasing transparency of the lens. H. L.

Albino with senile cataracts. M. H. Riwchun (*Amer. J. Ophthal.*, 1941, **24**, 798—800).—Report of case and successful surgical treatment. A. Gl.

Attempt to produce dinitrophenol cataracts in hypothyroid rats. G. K. Smelser (*Amer. J. Ophthal.*, 1941, **24**, 680—681).—Administration of dinitrophenol to thyroidectomised rats does not result in development of cataract. A. Gl.

Exfoliation of lens capsule (glaucoma capsulare). Report of two cases bearing on ætiology, nature, and significance of the condition. R. Irvine (*Arch. Ophthal., N.Y.*, 1941, **25**, 992—1001).—Exfoliation was associated in one case with spontaneous dislocation of the lens; in the other case it followed irradiation of the orbit. W. T. A.

Ectopia lentis. V. D. Sathaye (*Indian J. Ophthalmol.*, 1941, **2**, 1—5).—A review with report of 2 cases (siblings). H. L.

Normal and pathological vitreous humour. T. H. Hodgson (*Canad. Med. Assoc. J.*, 1941, **45**, 47—49).—A lecture. C. J. C. B.

Growth of retina in amphibians during spontaneous and experimentally induced metamorphosis. G. Schreiber and C. Koch (*Ann. Acad. Brasil. Sci.*, 1941, **13**, 1—14).—In *Bufo vulgaris* tadpoles the no. of ganglion cells remains strictly proportional to the total vol. of the retina. The size of the pars iridica retinæ decreases in relation to the rest of the retina except for a short period of relative increase during metamorphosis. The cross-section of the optic nerve increases at a slower rate than the no. of ganglion cells until metamorphosis begins. A. Gl.

Nature of receptors in human retina. A. S. Ramaswamy (*Current Sci.*, 1941, **10**, 253—254).—The author thinks that some of the differences between peripheral and central colour vision are due to partial scotopia in the peripheral field. He made the periphery of his retina completely photopic by exposure to sunlight. The periphery then behaved like the fovea in that light of long λ raised the threshold for all spectral regions. The field for green became larger than that for red. W. T. A.

Wernicke's syndrome complicating pregnancy and associated with ocular complications. G. Black (*Brit. J. Ophthal.*, 1941, **25**, 424—427).—A woman 3 months pregnant developed severe headache and vomiting; a month later vision failed until only hand movements were seen. The patient was very drowsy, both fundi showed large retinal hæmorrhages, but the blood pressure was normal and the urine clear. She was intensively treated with vitamin-*B* complex with dramatic improvement. Pregnancy proceeded uneventfully to term and vision is now normal. W. T. A.

Melanosis fundi with bilateral congenital group pigmentation of the central area. A. Loewenstein and J. Steel (*Brit. J. Ophthal.*, 1941, **25**, 417—423).—Description of a case with bilateral symmetrical pigment patches in the central area. A. Gl.

Retinitis pigmentosa. J. W. Barrett (*Med. J. Austral.*, 1941, **28**, II, 67—68).—A girl was treated for retinitis pigmentosa by cervical sympathectomy 9 years ago. The visual acuity has remained stationary at about 6/12 and the great expansion of visual fields which occurred 18 months after operation has been maintained. W. T. A.

Late developments in case of gyrate atrophy of choroid and retina (Fuchs). H. H. McGuire and W. P. McGuire (*Amer. J. Ophthal.*, 1941, **24**, 657—663).—Report on the progress of the disease in a case described in 1932. A. Gl.

Treatment of retinoblastoma (retinal glioma) by combination of surgery and radiation. H. E. Martin and A. B. Reese (*Trans. Amer. Acad. Ophthal. Otolaryng.*, 1941, 70—97).—Description of cases successfully treated by enucleation of the eye in which the disease is more advanced and by irradiation of the other eye. A. Gl.

Transitory myopia: a complication of sulphanilamide therapy. S. S. Blankstein (*Amer. J. Ophthal.*, 1941, **24**, 895—899).—Description of a case. W. T. A.

Acute myopia induced by sulphanilamide: report of case. B. B. Friedman (*Amer. J. Ophthal.*, 1941, **24**, 935). W. T. A.

Asthenopia. F. A. Williamson-Noble (*Brit. J. Ophthal.*, 1941, **25**, 397—417).—A review of the causes and treatment of eye strain. W. T. A.

Visual object-agnosia with special reference to Gestalt theory. W. R. Brain (*Brain*, 1941, **64**, 43—62).—The case is reported of a boy aged 15 who at the age of 7 developed visual object-agnosia associated with alexia, agraphia, finger agnosia, agnosia for R and L, and constructional apraxia. The effect of his agnosia on his mental development, spatial orientation, and perception of objects is described. The patient could recognise and match geometrical forms with good success, though laboriously. Hence the agnosia did not seem to be due to a defect in the perception of objects as visual Gestalts, but was rather of the associative type. W. T. A.

Case of von Recklinghausen's disease with diffuse neurofibromatosis of choroid. S. Robson, W. Blackwood, and H. A. Cookson (*Brit. J. Ophthal.*, 1941, **25**, 431—442).—There was diffuse neurofibromatosis in the course of the short ciliary nerves of one eye. The tumour contained "ovoid bodies" in which nerve fibres were demonstrated. W. T. A.

Development of optic nerves of *Amblystoma*. C. J. Herrick (*J. comp. Neurol.*, 1941, **74**, 473—534).—Two major fibre systems are found in the optic nerve: (*a*) the first develops early in ontogeny, is composed of thick axons, and is not concerned with the projection of retinal loci on particular parts of the brain; (*b*) the other appears later, consists of thinner axons, and the fibres are segregated by retinal quadrants at their peripheral origin. These fibres enter the tectum superficially and terminate in sp. regions of the optic lobe. The thick fibres with rapid rate of conduction serve as non-sp. activators of a "central excitatory state" prodomal to a sp. response due to subsequent excitation by the specialised system of optic fibres. A. Gl.

Marble bones and optic atrophy. R. O. Riser (*Amer. J. Ophthal.*, 1941, **24**, 874—878).—Optic atrophy and associated eye conditions are often found in infants and children with osteopetrosis. W. T. A.

Injuries of the ear. H. M. Jones (*J. Laryngol. Otol.*, 1941, **56**, 189—203).—Presentation of some features of a theory of the mechanism of hearing which are thought to account for various so far unexplained effects of aural injuries (blast: localisation of perforations in the drum, eversion of their edges; concussion: capillary hæmorrhages near the round window; perforation of the drum: increased sensitivity to noise and diminished bone conduction). The complementary movements of the various parts of the tympanic membrane affording both transmission and protection are illustrated by the model of a tennis net cable. The impact of the sound waves impinges as a slender column on a limited area at the foot of the tympanic membrane or, in its absence, on the groove in which the round window is placed, all other pressures acting approx. equally on both fenestræ. They cause reciprocal movements of the structures closing the fenestræ and thus reciprocal movements in the scalæ. In bone conduction, the movements to and from the round window are greater than those affecting the oval window, producing the sensation of sound in the same way as when caused by air pressures. The mechanism for transmission is not so perfect but more resistance to the pressure is presented by the fluid than when an air cushion intervenes and, there being no protective mechanism, the forces of the movements of fluid are directly proportional to those of the movements of the skull. A perforation of the drum effecting equality of pressure on its opposite sides and removing one source of resistance to movement of the stapes reduces the movement of fluid towards the round window while increasing that towards the oval window, producing thereby a corresponding reduction in bone conduction. H. L.

Hearing in the rat of high frequencies. J. Gould and C. Morgan (*Science*, 1941, **94**, 168).—After evoking a conditioned reflex to tones in 9 rats the animals were tested for hearing of frequencies between 1 and 40 kc. (40 kc. being the upper limit of the apparatus). The average thresholds were determined in the animals and in 8 human individuals (in the latter up to 14 kc.). At 1 kc. the rats' threshold was much higher than man's but the difference diminished with each higher frequency up to 8 kc. At higher frequencies the animals were more sensitive than the human subjects. The rats' threshold was lowest at frequencies of 20 or 40 kc., their upper limit of hearing being therefore probably tones of much higher frequencies. H. L.

Present status of vitamins in relation to 8th nerve and conduction deafness. G. Selfridge (*Arch. Otolaryngol.*, 1941, **34**, 125—140).—A review. It is stressed that deafness may be caused by the association of several of the factors involved in growth (hormones, electrolytes, amino-acids, vitamins) rather than by any single one of these factors. Treatment may have to be followed for years. For prevention of nerve

deafness, optimum diets are essential during the last 6 months of pregnancy and thoughout the child's life up to adolescence. H. L.

Vestibular function and flyers. K. Fuchs (*Canad. Med. Assoc. J.*, 1941, **45**, 15—21).—A general discussion. C. J. C. B.

Tastes of oxygen and nitrogen at high pressures. E. M. Case and J. B. S. Haldane (*Nature*, 1941, **148**, 84).—O_2 breathed at 6 atm. has an acid, sweet taste. N_2 at 8—10 atm. has a harsh, metallic taste. L. S. T.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Hormones. E. Medgyesi (*J. Hung. Chem. Soc.*, 1941, **2**, No. 5, 20—25).—A review of the glands, their function, their hormones, and the standardisation of these last. E. A.

Pharmacological classification of steroid hormones. H. Selye (*Nature*, 1941, **148**, 84—85).—Steroid hormone actions are classified according to the degree to which they are able to imitate or substitute for the function of a certain endocrine gland. There are 4 main groups, designated corticoid, luteoid, folliculoid, and testoid. E. R. S.

Varying manifestations of thyroid gland dysfunction in infants, children, and adolescents. C. G. Kerley (*Arch. Pediat.*, 1940, **57**, 694—709).—A general review illustrated by cases. C. J. C. B.

Action of plants of *Brassica* type on thyroid gland. (Problem of "cabbage goitre.") N. D. Judina (*J. Méd. Ukraine*, 1940, **10**, 71—77).—Addition of the wild herb *B. rapa oleifera* (140 g. daily for 4 months) to the diet of female rabbits increased the wt. of the thyroid gland by 25—65% in 6 out of 10 animals. Addition to the diet of *Raphanus raphanistrum* (wild radish) 150 g. daily for 3½ months increased thyroid wt. by 45—125% in 3 of 10 animals. Both groups show abundant formation of colloid; in some cases degeneration and cell atrophy were found. M. K.

Thyroid hormone and blood diastase. G. Papayanopulos (*Klin. Woch.*, 1940, **19**, 396—399).—Experimental thyrotoxicosis was produced in guinea-pigs by daily injection of 0·1—0·5 mg. of thyroxine. In all animals blood-amylase increased. This is attributed to increased activity of the exocrine part of the pancreas due to thyroxine. Starvation during thyroxine treatment diminishes or prevents the increase in blood-amylase. M. K.

Tetanoid epilepsy diagnosed by electrocardiogram. J. von Fernbach and Z. Szandányi (*Klin. Woch.*, 1940, **19**, 372—374).—Case report of chronic latent tetany, occurring 8 years after thyroidectomy, and accompanied by epileptic attacks. E.c.g. showed characteristic prolongation of *Q–T* as well as changes in *T* and *S–T*, which disappeared after successful treatment with AT.10. M. K.

Parathyroid glands and lactation in rat. S. J. Folley (*Nature*, 1941, **147**, 744; cf. A., 1938, III, 1011).—Total thyroidectomy of rats at the 6th day of lactation almost suppresses lactation. Large doses of parathormone improved the lactational performance of such rats. The integrity of the parathyroid glands is essential for normal lactation. E. R. S.

Pinealoma. J. H. Globus (*Arch. Path.*, 1941, **31**, 533—568).—A review based on 12 cases. (31 photomicrographs.) C. J. C. B.

Waterhouse–Friderichsen syndrome. J. A. Monfort and J. H. Mehrling (*Amer. J. Dis. Child.*, 1941, **62**, 144—149).—Review of the literature and report of a case with autopsy. C. J. C. B.

Retroperitoneal pneumography [to visualise adrenal glands]. N. W. Roome (*Canad. Med. Assoc. J.*, 1941, **45**, 56—58).—Retroperitoneal pneumography is of val. in the visualisation of the adrenal glands and other retroperitoneal organs. C. J. C. B.

Neonatal cortical insufficiency (Addison's disease) associated with adreno-genital syndrome. H. E. Thelander and M. Cholffin (*J. Pediat.*, 1941, **18**, 779—792).—A case report. C. J. C. B.

Adrenal gland and lactose in treatment of major allergic disorders in childhood. S. D. Lockey (*Arch. Pediat.*, 1940, **57**, 724—730).—Whole adrenal gland concentrate plus lactose by mouth was used in the treatment of 163 cases of major allergic disorders of childhood (eczema, asthma, hay fever) during a period of 18 months with clinical improvement in 82%. C. J. C. B.

Effect of deoxycorticosterone acetate on hypochlorræmia in pneumonia. R. A. Newburger (*J. Lab. clin. Med.*, 1941, **26**, 1642—1644).—Three of 4 patients with lobar pneumonia and low serum-Cl were treated with deoxycorticosterone acetate; one received salt alone. 10 mg. daily of deoxycorticosterone had no effect; 15—20 mg. had a doubtful effect on serum-Cl. No clinical benefit was demonstrated. C. J. C. B.

Hyperinsulinism. W. Magner (*Canad. Med. Assoc. J.*, 1941, **45**, 49—52).—A report of 2 cases. C. J. C. B.

Acute fatal insulin poisoning. E. L. Jackson (*J. Pharm. Exp. Ther.*, 1941, **72**, 21—22).—Acute fatal insulin poisoning in unanæsthetised rabbits produced respiratory failure followed by circulatory failure. The respiratory failure was not due to anoxæmia and the aëration of the blood in the lungs proceeded normally. H. H. K.

Effect of subcutaneous administration of protamine (salmine) to rabbits and mice. I. Vartiainen and A. Marble (*J. Lab. clin. Med.*, 1941, **26**, 1416—1422).—The median lethal dose was 200—300 mg. per kg. body-wt. The injection of protamine produced respiratory distress, muscular rigidity, opisthotonos, marked malaise, polyuria, fall in body temp. followed by a rise, hyperglycæmia, and dilatation of superficial blood vessels. Post-mortem the animals showed vascular damage with hæmorrhages into thymus, lungs, and kidneys. Other findings included renal infarcts, acute toxic changes in the kidney tubules, and focal necrosis of the liver. The amount of protamine in clinical protamine insulin is too small to produce harm. C. J. C. B.

Neurodermatitis treated with hypoglycæmic reactions [insulin]. S. J. Tillim and M. T. Squires (*Arch. Dermat. Syphilol.*, 1941, **43**, 980—991).—In 5 of 8 cases of neurodermatitis described, treatment with insulin was successful. C. J. C. B.

Hypoglycæmia from metastasising insular carcinoma of aberrant pancreatic tissue in liver. J. Ballinger (*Arch. Path.*, 1941, **32**, 277—285).—A case report. (3 photomicrographs.) C. J. C. B.

Varying insulin sensitivity in diabetics. D. Decaneas and K. Uiberrak (*Klin. Woch.*, 1940, **19**, 347—353, 366—369).—Griffiths' modification of Himsworth's insulin-sensitivity determination (A., 1938, III, 657) was employed in 15 cases of diabetes. After administration of 5 units of insulin intravenously and 50 g. of glucose in 100 c.c. of water orally the capillary–venous blood-sugar difference was more pronounced in insulin-sensitive than in insulin-resistant cases. Insulin-sensitivity in diabetes could be determined more accurately by the method of Falta and Boller (*Wien Arch. inn. Med.*, 1935, 27). M. K.

Nomenclature of pituitary autacoids. F. W. Landgrebe (*Nature*, 1941, **148**, 85).—The terms thyrodesmic, blastodesmic, oodesmic, xanthodesmic, androdesmic, galactodesmic are suggested for the anterior and hæmodesmic, splanchnodesmic, melanodesmic, erythrodesmic, nephrodesmic, leucodesmic for the posterior pituitary hormones. E. R. S.

Autoplastic grafting of anterior pituitary in male rats. E. Cutuly (*Anat. Rec.*, 1941, **80**, 83—97).—Successful grafts were made in the anterior chamber of the eye of 6 male rats and in the sella turcica of 4. In both sellar and ocular transplants stimulation of testicular tubules, interstitial elements, and seminal vesicles occurred. Hypophysectomised animals with ocular or sellar anterior lobe grafts had fertile matings over 200 days after transplantation. Neither ocular nor sellar grafts caused activation of the thyroid gland; only sellar grafts were adrenotropic and were more normal histologically and better vascularised than ocular grafts. Data are given for 6 male rats in which the function of the transplant was transient or the graft failed to take. W. F. H.

Replacement therapy in hypophysectomised juvenile pigeons. J. P. Schooley, O. Riddle, and R. W. Bates (*Amer. J. Anat.*, 1941, **69**, 123—157).—The effect of pituitary removal on the average daily food consumption, body-wt., intestinal and pancreatic tissue, adrenals, thyroid gland, and testes is described. Extra-pituitary hormones from thyroid, adrenal, and gonads were variously combined with a no. of vitamins in exploratory tests but they did not improve

appetite or repair deficiencies in operated birds. Unfractionated alkaline extracts of the anterior pituitary lobes of ox or sheep fully repair and produce excess stimulation of all the functions and organs of experimental animals. Prolactin is the particular hormone which stimulates appetite and best maintains or increases body-wt. in normal and hypophysectomised birds. Intestinal and pancreatic tissue receive special support from the pituitary other than that indirectly obtained through increased appetite and food consumption. W. F. H.

Seasonal variations in histology of hypophysis in *Bufo arenarum*. J. N. Masselin (*Rev. Soc. argent. Biol.*, 1940, **16**, 581—588).—Monthly microscopical examination of the hypophysis were made. Acidophil cells increased in no., became progressively larger and loaded with granules from March to July (autumn—winter); they decreased in August, just before the sexual season, and then remained stationary up to February. Carminophil cells were only seen in September–October (sexual season). Pars intermedia and nervosa accumulated colloid from March to July; this was reduced to a min. during spring and summer. J. T. L.

Balance studies in hypophysectomised rats fed high-carbohydrate and high-fat diet. L. T. Samuels, R. M. Reinecke, and H. A. Ball (*J. Pharm. Exp. Ther.*, 1941, **72**, 34).—Hypophysectomised male rats and similar rats with sham operations were fed equicaloric amounts of diets containing 15% of calories as protein and the balance supplied either entirely by fat or by carbohydrate. Hypophysectomised rats can utilise carbohydrate, fat, or protein when supplied in the food, but the carbohydrate-fed hypophysectomised rats store fat because of a lowered metabolic rate. This was not found in the fat-fed hypophysectomised rats. H. H. K.

Effect of high-fat–low-protein diets on nitrogen and fat metabolism of hypophysectomised and normal rats. R. M. Reinecke, L. T. Samuels, and H. A. Ball (*J. Pharm. Exp. Ther.*, 1941, **72**, 32—33).—Hypophysectomised and normal rats were fed with equicaloric quantities of diets by stomach tube in which 15, 10, 5, and 0% of the calories were furnished by protein, the balance being supplied by butter fat. The amounts fed were sufficient to maintain the normal wt. when the 15% of protein was fed. Hypophysectomised rats can maintain life without any large supply of either exogenous or endogenous carbohydrate if sufficient amounts of fat are available. H. H. K.

Mechanism of augmentation effect caused by adding zinc salts to thyrotropic extracts. P. A. Wunder and E. E. Jung (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **29**, 654—656).—Addition of Zn acetate to hypophyseal extract, which was injected in chicks twice daily in doses of 0·5 c.c. for 5 days, augments its thyrotropic action; the wt. of the thyroid glands increased by 93—100%. This is attributed to partial or complete pptn. of the thyrotropic hormone by forming $ZnCO_3$ and $Zn(OH)_2$. The separation of the hormone from the solution retards its absorption and augments its effectiveness. $FeCl_3$ and $NiSO_4$ in the same concns. as Zn acetate do not increase thyrotropic activity. M. K.

Effect of pituitary growth hormone on epiphyseal disc of tibia of rat. R. D. Ray, H. M. Evans, and H. Becks (*Amer. J. Path.*, 1941, **17**, 509—528).—At 25—50 days of age in normal female rats an equilibrium is established between formation of cartilage and bone in endochondral ossification. Injection of growth hormone over 10 days in normal animals is followed by stimulation of endochondral ossification without disturbance of this equilibrium, and a decrease in marrow fat. Hypophysectomy is followed after 25 days by a disturbance of this equilibrium, reduction in the width of the epiphyseal cartilage, resorption of the diaphyseal trabeculæ, and an increase in marrow fat; in animals 150 days old there was a deposition of bone along the diaphyseal side of the epiphyseal cartilage. Injections of growth hormone over a similar period in hypophysectomised animals (15 days postoperative, then 10 daily injections) are followed by disruption of the equilibrium with increased cartilage formation and a return of the "youthful" type of epiphyseal line, most pronounced in young animals (54—88 days of age), increased activity in the diaphysis with formation of trabeculæ and deposition of bone along them, and stimulation of the myeloid elements of the marrow with a reduction in the fat. (17 photomicrographs.) C. J. C. B.

Proposed names for the follicle-stimulating and interstitial cell-stimulating hormones of anterior lobe of pituitary body. H. C. Coffin and H. B. van Dyke (*Science*, 1941, **93**, 61).—Thylakentrin and metakentrin are proposed and etymologies given. E. R. S.

Breeding of *Xenopus* in laboratory. [Action of pituitary hormones.] F. W. Landgrebe and G. L. Purser (*Nature*, 1941, **148**, 85).—Male and female specimens of *X. lævis* received injections of pituitary gonadodesmic extracts and were kept in a tray in an aërated aquarium at 22°. Coupling occurred within 24 hr. The tadpoles developed in the aquarium, and after metamorphosis were fed on liver or muscle. 12 months after oviposition the wt. was 9—10 g. and body length 4—5 cm. The toads could then be used for assay of melanophore-stimulating substance (*B*-substance) and gonadodesmic extracts. The tadpoles can be used for assay of thyroid and thyrodesmic extracts. E. R. S.

Oxytocic assay of posterior pituitary fractions. B. Smith (*J. Pharm. Exp. Ther.*, 1941, **72**, 38). H. H. K.

Modification in official methods for assay of posterior pituitary solution. B. Smith, jun., J. M. Coon, P. Fourt, and E. M. K. Geiling (*J. Amer. Pharm. Assoc.*, 1941, **30**, 151—153).—In the guinea-pig uterus method, the quantities are determined of the standard and of the unknown solution such that, when 2 doses of each are administered alternately, a series of 4 contractions of approx. equal height is obtained. A dose of the standard solution 25% greater than that used above is then administered. The 4 contractions of the first series are considered submax. and equiv. if the difference between the highest and lowest of these is less than half the difference in height between the lowest of the 4 and the contraction due to the increased dose of the standard. Two such series of 5 contractions constitute an assay. Results (greatest variation 12%) of this assay from 5 different laboratories are tabulated. F. O. H.

XII.—REPRODUCTION.

Rôle of nutrition in reproduction. T. S. Sutton (*J. Amer. Vet. Med. Assoc.*, 1941, **98**, 17—22).—A brief review, without references, of the relation of dietary factors to reproduction in farm animals. E. G. W.

Sex difference in growth in gonadectomised albino rats. Y. Z. Tang (*Anat. Rec.*, 1941, **80**, 13—32).—Castrated males showed a slower rate of growth than controls while females grew faster than their normal litter mates. There is a sex difference in the response of the hypophysis and adrenals to gonadectomy. Hypertrophy of these organs was accompanied by a decrease in body wt. The wt. of the thymus gland increased in both sexes. In castrated males kidney wt. was greater and liver wt. less than in normal controls; in females, body and tail length increased and there was an increase in wt. of the skeleton, muscles, spinal cord, integument, heat, and stomach. The lungs, spleen, fat, and adrenals were variable in both sexes. W. F. H.

Anophthalmic strain of mice. II. Effect of congenital eyelessness on reproductive phenomena. E. B. Chase (*Anat. Rec.*, 1941, **80**, 33—36).—Comparison of the reproductive phenomena in congenitally anophthalmic mice and normal strains showed that there was no significant difference in the length of the cycle, in the no. of cornified smears before fertile mating, or in the age at which the first litter was produced. Normal reproductive phenomena in the house mouse thus occur in the absence of eyes and optic nerves. W. F. H.

Androgen and xanthomatoses. T. Cornbleet and B. Barnes (*Arch. Dermat. Syphilol.*, 1941, **44**, 248—250).—The urine of 7 subjects with varieties of lipoidoses contained normal quantities of 17-keto-steroids and androgen. C. J. C. B.

Response of cartilage and bone of growing mice to testosterone propionate. M. Silberberg and R. Silberberg (*Arch. Path.*, 1941, **32**, 85—95).—Testosterone propionate promotes the ageing of the epiphysial cartilage of growing female mice by inhibiting proliferative processes and, by promoting degeneration, hyalinisation, sclerosis, and calcification in the cartilage. It also inhibits for some time absorption of cartilage and bone, but to a smaller extent and for a shorter period than does œstrogen. Hyalinisation of the cartilage of the joint is less pronounced and arthropathic changes are,

therefore, more frequent and severe with testosterone than œstrogen, but decreased compared with normal old mice. With prolonged administration of testosterone propionate the age changes do not progress beyond the max. reached in normal old mice. The skeletal tissues of female *C57* mice react more vigorously to testosterone than those of female *D* mice. (6 photomicrographs.) C. J. C. B.

Effect of certain androgens on red cell count and glucose tolerance. E. P. McCullagh and R. Jones (*Cleveland Clin. Quart.*, 1941, **8**, 79—84).—Prolonged use of androgens, particularly of methyltestosterone, in patients suffering from hypogonadism increases the hæmoglobin concn. and the red cell count; withdrawal of the androgens is followed by decrease in blood vals. Methyltestosterone diminishes glucose tolerance; this effect is not due to changes in absorption, as it persists after intravenous administration of glucose. A. S.

Deposition of melanin in sparrow bill following local action of testosterone propionate in alcoholic solution. A. Kirschbaum and C. A. Pfeiffer (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 649—651).—Blackening of bill occurred in 5 days after local application of 8 μg. to the skin of the breast or of 2 μg. to the base of the bill. V. J. W.

Androgenic action of deoxycorticosterone acetate? K. E. Paschkis (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 336—338).—Administration of 0·6—5 mg. to castrated rats caused no cell-proliferation in vesicles or prostate, and injection during 6 days of 0·15—0·75 mg. into comb of 1-day-old chicks caused no increase of comb growth. V. J. W.

Gynecogenic action of deoxycorticosterone in *rhesus* monkey. H. Speert (*Johns Hopkins Hosp. Bull.*, 1940, **67**, 189—195).—Deoxycorticosterone acetate stimulates the secondary sex organs of the mature castrate female monkey in doses of 10 mg. per day. It may also produce uterine bleeding without priming with œstrogens when injections are stopped. T. F. D.

Epididymitis and varicocele in cases of impotence. M. Huhner (*Northw. Med.*, 1941 **40**, 206—207).—Signs of old epididymitis were present in 11% and varicocele in 13% of several hundred cases of impotence; the incidence of varicocele in the general population is estimated at 0·3%. The relationship of both these conditions to impotence is discussed. E. M. J.

Antisexual substance in urine of young girl. P. Zéphiroff (*Compt. rend. Soc. Biol.*, 1940, **133**, 405—409).—The urine of a 4-year-old girl was pptd. with acetone and the supernatant pptd. with 80% alcohol. This ppt. when dissolved in water inhibited œstrous cycles in adult rats and the growth of the reproductive organs in immature male and female rats. P. C. W.

Ruptured human follicle with ovum *in situ*. R. B. Greenblatt (*Arch. Path.*, 1941, **31**, 634—638).—A case report. (4 photomicrographs.) C. J. C. B.

Action of œstrogens on female genital tract. C. W. Emmens and R. J. Ludford (*Nature*, 1940, **145**, 746).—No evidence of direct action of œstrogens on the epithelium of rat vagina or uterus was obtained from tissue culture experiments. This result is complementary to Hechter's conclusion (A., 1940, III, 654) that vaginal and partial uterine response to œstrogens is dependent on hyperæmia. E. R. S.

New œstrogenic substance present in neutral fraction of human pregnancy urine. R. I. Dorfman (*Science*, 1940, **92**, 585—586).—Œstrogenic activity was found in the neutral non-ketonic fraction to the extent of 20—55 i.u. per l. E. R. S.

Rate of secretion of œstrogenic hormones by ovaries of the *rhesus* monkey. G. W. Corner (*Johns Hopkins Hosp. Bull.*, 1940, **67**, 407—414).—The rate of secretion of œstrogenic hormones by the ovaries of the young adult *rhesus* monkey weighing 4—5 kg. is estimated at 200 i.u. (20 μg.) of œstrone daily. Hence, human secretion is roughly estimated at 3000 i.u. (300 μg.) of œstrone daily. T. F. D.

Clinical aspects of ovarian deficiencies [and their treatment]. B. G. Wiesstien (*Ohio Sta. Med. J.*, 1941, **37**, 425—429). E. M. J.

Treatment of laryngeal papillomata in children by local application of œstrogenic hormone. E. N. Broyles (*Sth. Med. J.*, 1941, **34**, 239—242).—Multiple laryngeal papillomata in 5 children, aged 6—10 years, were treated by 5—11 weekly laryngeal sprays of 0·1 c.c. of amniotin in oil (œstrogenic prep. containing 10,000 i.u. per c.c.). All 5 cases, some of which had recurred repeatedly after surgical removal, cleared up in 6 months; a remaining single papilloma was then removed by surgery in 3 cases. Recurrence of a single papilloma within 6 months was seen in one case; the 4 others have been free for 11 months. E. M. J.

Complication following use of œstrogen in spondylitis. W. M. Solomon (*Ohio Sta. Med. J.*, 1941, **37**, 131—132).—Redness, swelling, and tenderness of the nipples was seen in a man of 40 after receiving a total of 46,000 units of theelin by injection in 9 weekly doses of 2000—4000 i.u. 3 more injections of 2000 i.u. were given when the swelling diminished and all symptoms had disappeared 5 months later. No changes were effected in the spinal condition. E. M. J.

Mating behaviour induced in hypophysectomised female rats by injected œstrogen. J. Ball (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 669).—4 daily injections of 250 i.u. of œstradiol benzoate caused mating behaviour in such rats after a latent period of 2—3 days. V. J. W.

Treatment of pruritus of perineum, labia, and vagina [by stilbœstrol, an astringent cresol derivative, and injection of alcohol.] L. R. Wharton (*Sth. Med. J.*, 1941, **34**, 694—696). E. M. J.

Treatment of hyperplasia of prostate with diethylstilbœstrol and its dipropionate. P. J. Kahle and E. Maltry (*New Orleans Med. J.*, 1940, **93**, 121—131).—Marked reduction in the size of the prostate, starting on the 4th day and leaving a normal prostate at the end of the course in half the cases, was seen in 14 patients treated with intramuscular injections of 140,000—810,000 i.u. of diethylstilbœstrol in sesamé oil and its dipropionate in olive oil over a period of 15—61 days. There was improvement and often abolition of all urinary symptoms. Histological changes included reduction in the no. of papillary infoldings and height of epithelium, vacuolisation of the cytoplasm of the epithelium, decrease in size of acini, and stratification of the epithelium. E. M. J.

Results of treatment with diethylstilbœstrol. M. H. Hoffman (*Minnesota Med.*, 1941, **24**, 222—225).—Satisfactory results were obtained in 16 out of 25 cases with menopausal syndrome (0·3—2 mg. daily over 20—40 days) and in a few cases of amenorrhœa, acromegaly, mastopathy, and migraine. 7 of the 34 cases treated had such severe reactions that medication had to be abandoned. 3 patients complained of tightness in the throat causing a feeling of suffocation, a reaction not previously reported. E. M. J.

Treatment with stilbœstrol. J. A. Hepp (*Penn. Med. J.*, 1941, **44**, 718—721).—144 patients were given 0·1—1·0 and occasionally 5 g. of stilbœstrol daily by mouth. 54 cases with symptoms caused by natural or artificial menopause improved; pruritus vulvæ was cured in 1 of 2 cases; 2 cases of infantile vulvo-vaginitis were cured in 3 weeks; relief was obtained in 2 cases of premenstrual tension; no improvement was seen in 2 cases of functional bleeding and in 3 out of 4 cases of secondary amenorrhœa; lactation was suppressed or inhibited in 78 puerperal women. No toxic reactions were seen. E. M. J.

Suppression of lactation by stilbœstrol. C. W. Mucklé (*Penn. Med. J.*, 1940, **44**, 305—307).—Lactation was suppressed completely in 85% and partially in 13% of 208 cases given stilbœstrol in 6—7 doses of 1 or 5 mg.; the best results were obtained with 6 doses of 5 mg. given in 2 days. 40 of 107 cases followed for a sufficient period had a secondary lactation 4 or 5 days after cessation of treatment but yielding to further administration of stilbœstrol. Toxic effects, consisting chiefly of nausea, were seen in 7 of 250 patients. E. M. J.

Corpus luteum hormone and testosterone in treatment of menorrhagia, threatened abortion, and dysmenorrhœa. D. T. Feiman (*Ohio Sta. Med. J.*, 1941, **37**, 633—634).—13 of 20 cases of menorrhagia treated with 2 mg. of proluton 7, 5, and 2 days prior to onset of menses responded well; 6 of the remaining 7 cases responded to subsequent treatment with 5 mg. of testosterone given in a similar course. An initial dose of 10 mg. of proluton, repeated within 8 hr., and followed by daily and then weekly doses of 2 mg. until term, was given in cases of threatened abortion. Pregnancy was preserved in 2 of 10 cases within the first three months and in

10 of 11 cases more than 4 months pregnant. 2 of 7 cases of dysmenorrhœa responded to 10 mg. of progesterone given 5 and 2 days before menstruation; 3 of the other 5 cases responded to treatment with 10 and 25 mg. of testosterone given in a similar course. E. M. J.

Practical points in female sex hormone therapy. J. R. Manley (*Minnesota Med.*, 1941, **24**, 219—222). F. M. J.

Effect of progesterone anæsthesia on systemic blood pressure. S. M. Friedman (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 197—198).—Progesterone in anæsthetic doses (17—22 mg.) does not lower the rat's blood pressure more than nembutal. The anæsthesia is not related to the pressor or depressor effects of the compound. V. J. W.

Production of deciduomata in ovariectomised mice receiving progesterone. C. W. Hooker (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 698—700).—Daily injection of 0·25 mg. of progesterone caused formation of deciduomata in sutured uteri of mice of which the ovaries had been removed 70 days previously. V. J. W.

Excretion of pregnanediol as indication of corpus luteum function. H. A. Müller (*Klin. Woch.*, 1940, **19**, 318—322).—Pregnanediol is found in the 2nd half of the corpus luteum phase of the menstrual cycle and during the whole of pregnancy. In the 1st half of the menstrual cycle and after the menopause no pregnanediol was found in urine. Determinations of the Na compound of pregnanediolglucuronic acid were carried out by Venning and Browne's method. M. K.

Hormone content of ovaries of whales. C. Bomskov, B. Wiesiollek, and W. Doht (*Klin. Woch.*, 1940, **19**, 392—396).—Ovaries of whales contain slightly less follicle hormone than those of pigs (1450 i.u. per kg. against 1550 i.u.). The progesterone-content of corpora lutea was the same (40 mg. per kg. wt.). M. K.

Action of gonadotropins. R. B. Greenblatt and E. R. Pund (*Sth. Med. J.*, 1941, **34**, 730—741).—8 patients with functional amenorrhœa were given courses of equine gonadotropin (pregnant mare's serum) and in 6 instances a progestational endometrium was obtained; menstrual bleeding occurred most frequently from an œstrogenic endometrium. 7 bitches were given courses of gonadotropin in the anœstrous period with increase in turgescence of the genitalia and improvement in the vaginal p_H in 5 animals, 2 of which showed marked signs of heat and accepted coitus after equine and combined equine and human chorionic gonadotropin respectively. Increased turgescence of the genitalia but no heat was produced in 3 hypophysectomised bitches after courses of anterior pituitary gonadotropin (sheep and cattle) or synapoidin (Evans' synergistic factor of the anterior pituitary + human pregnancy urine). Bleeding was induced with more regularity following combined administration of equine and chorionic gonadotropins than when used alone. E. M. J.

Experimental uterotubal insufflation. H. F. Newman and M. D. Mayer (*J. Lab. clin. Med.*, 1941, **26**, 1447—1452).—In 11 rabbits 1·0—1·5 c.c. of procaine was injected throughout the uterine mesentery from the cervix to the uterine cornu. The plateau level of insufflation fell in 11 animals. The range of fall was between 3 and 54 mm. Hg, and the amount of fall was less as the control plateau level approached 45 mm. Hg. In 7 animals there was no apparent change in the nature of the small waves of pressure while in 2 animals, after a fall in the plateau level, the waves became deeper and more regular. Insufflation 2 days after induced ovulation in normal rabbits gave normal results. C. J. C. B.

Experimental uterotubal insufflation in rabbit. H. F. Newman (*J. Lab. clin. Med.*, 1941, **26**, 1129—1137).—The type of the curve varies with the insufflating gas and the type of anæsthetic used. Repetition of insufflation also modifies the character of the curve. C. J. C. B.

Anatomical and histological changes during œstrous cycle in mare. J. Hammond and K. Wodzicki (*Proc. Roy. Soc.*, 1941, **B**, **130**, 1—23).—Changes in wt., histology, and anatomy of the reproductive organs during œstrus were studied in 6 mares. The length of heat is 6 days and of diœstrus 16 days. Ovulation, which occurs during the last days of heat, takes place in the ovulation groove. In contrast to the cow and sow, the size of the ovary during the œstrous cycle in mares is mainly influenced by the (rapidly) growing Graafian follicle. The large no. of small follicles present at the beginning of heat disappear and probably degenerate; this is probably due to the absence of follicle-stimulating hormones of the anterior pituitary gland. The active stage of the corpus luteum is much shorter than that of the sow or cow. The relatively long period of heat in the mare appears to be due to the longer time taken by the follicle to come to the surface of the ovulation fossa and break through. Changes in colour and turgidity of the uterine folds and in the shape of the epithelial cells and glands occur. The cervix acts as an important mucous gland during the whole cycle, there being a distinct flow towards the end of the heat period. No vaginal bleeding occurs. Some anatomical changes in the mammary glands are described. F. O. H.

Test for pregnancy. R. Paddock (*Sth. Med. J.*, 1941, **34**, 174—177).—1·2—1·5 c.c. of serum are injected subcutaneously into 3 guinea-pigs. The test is positive if at least 2 of these show opening of the vagina within 24—48 hr. In 230 of 254 cases this test agreed with the modified Friedmann test, in 4 cases too little serum was used, and 4 of 13 negatives with positive Friedmann test were pregnant, as were 4 of 5 positives with negative Friedmann test. E. M. J.

Vaginal smear picture, sexual receptivity, and time of ovulation in albino rat. W. C. Young, J. L. Boling, and R. J. Blandau (*Anat. Rec.*, 1941, **80**, 37—45).—In most animals heat commenced when the first cornified cells appeared but the relationship between willingness to mate and the vaginal condition is inconst. The end of heat usually occurs after cornification is complete and commonly after nucleated epithelial cells have reappeared. Ovulation takes place early in the stage of cornification. W. F. H.

[Action of light on] sexual cycle [in frogs]. G. Streich and E. Svetosarov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **29**, 643—647).—Activation occurs. M. K.

Histogenesis of ovarian Brenner tumours. W. C. Danforth (*Quart. Bull. Northwest. Univ. Med. School*, 1941, **15**, 98—102).—Cell nests of epithelial type were seen in 3 cases of Brenner tumours of the ovaries. Epithelial rests may be found in the portions of the ovary near the surface, in the tubes, and in the broad ligaments, particularly in younger patients. Condensation of stroma around the cell nests, and areas of cystic degeneration with mucoid material in the open spaces, are further characteristics of these tumours. A. S.

Use of glandular extracts in functional uterine bleeding. W. Long (*New Orleans Med. J.*, 1940, **93**, 170—173). E. M. J.

Action of manganese on uterus pertinent to its use in dysmenorrhœa. E. R. Smith (*Yale J. Biol. Med.*, 1941, **13**, 623—642).—$MnCl_2$, in concns. of less than 1 mg.-%, increased the response of the isolated rat uterus to pitocin, but had no effect on spontaneous contractions or on those produced by $BaCl_2$. Concns. above 1 mg.-% depressed all types of contraction. The uteri of thyroidectomised rats and of rats deprived of both Mn and I were more responsive to pitocin and Mn than those of normal rats. The uteri of Mn-deficient rats behaved like those of normal rats. It is suggested that pitocin is a respiratory enzyme or catalyst involved in the metabolism of uterine muscle and is in turn catalysed by Mn (or Mg etc.). F. S.

Comparative activities of œstradiol benzoate, vitamins-*A* and -*C*, and stilbœstrol in experimental fibromatosis. R. Moricard and R. Simard (*Ann. d'Endocrinol.*, 1939—40, **1**, 399—417).—Fibromata are produced in female guinea-pigs by the weekly injection intraperitoneally of 1 mg. of œstradiol benzoate for 4 months. Uterine fibrosis was not so marked when stilbœstrol was given (0·25 mg. weekly subcutaneously) but there was cystic hyperplasia of the uterine mucosa. Vitamin-*A* (3 mg. or 5000 i.u. weekly intraperitoneally) did not affect the incidence of fibromata caused by œstradiol but there appeared to be more fibromata when -*C* (100 mg. or 2000 i.u. weekly) was added to the œstradiol benzoate. P. C. W.

Hysterectomy at parturition and ovarian function in monkey. G. van Wagenen and H. R. Catchpole (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 580—582).—Hysterectomy caused no alteration in onset or periodicity of vaginal desquamation in the macaque. V. J. W.

Physiology of uterus in labour. D. N. Danforth, R. J. Graham, and A. C. Ivy (*Quart. Bull. Northwest. Univ. Med.*

School, 1941, **15**, 21—31).—Previous experimental work is reviewed. A. S.

Yohimbine and the œstrous cycle in rats. N. W. Fugo and E. G. Gross (*J. Pharm. Exp. Ther.*, 1941, **72**, 16).—Daily administration of the drug for several months produced const. œstrus of 3—9 days duration. Reproduction was unaffected. Castrates treated with yohimbine showed neither œstrous cycle nor sexual behaviour. Prolonged administration produced no toxic symptoms. Action of yohimbine is related to the sex endocrines. H. H. K.

Extractives of human placenta. N. E. Sinadski (*Arch. sci. biol., U.R.S.S.*, 1935, **37**, 361—370).—Hypoxanthine, uracil, and choline were isolated; carnosine, carnitine, methylguanidine, and creatinine were absent. One sixth of the total extractive N was not pptd. by Gulevitsch's Hg method. Ch. Abs. (*el*)

Transfer of radioactive sodium across placenta of rat. L. B. Flexner and H. A. Pohl (*J. Cell. Comp. Physiol.*, 1941, **18**, 49—59).—The fœtus comes to within 10% of equilibrium with ^{24}Na in maternal plasma only after 6 hr. Transfer rate across the placenta increases 6 times from the 14th day of pregnancy until term, and the growth curve is similar to the curve of rate of transfer. V. J. W.

Intricacies of ectopic pregnancy. H. D. de Sa (*J. Univ. Bombay*, 1941, **9**, Part V, 17—34).—Diagnostic difficulties and treatment in cases of ectopic pregnancy are discussed. A. S.

Mating behaviour in female mammals. W. C. Young (*Quart. Rev. Biol.*, 1941, **16**, 135—156).—A review. J. D. B.

Fertility in mammals and birds. J. Hammond (*Biol. Rev.*, 1941, **16**, 165—190).—A review. J. D. B.

Gynæcological management of barren marriage. G. H. Gardner (*J. Kansas Med. Soc.*, 1941, **42**, 237—242).—A review. E. M. J.

Investigation for male sterility. C. A. Owens (*Nebraska Sta. Med. J.*, 1941, **26**, 121—123). E. M. J.

Physiology of reproduction and investigation of sterility in female. W. E. Brown (*Nebraska Sta. Med. J.*, 1941, **26**, 123—126). E. M. J.

Causes of sterile marriages. J. C. Sharpe (*Nebraska Sta. Med. J.*, 1941, **26**, 119—121). E. M. J.

Diagnosis and treatment of sterility. W. A. Dial (*New Orleans Med. J.*, 1941, **93**, 412—418).—A review. E. M. J.

Application and interpretation of Friedmann's modification of Aschheim–Zondek test. A. V. Friedrichs (*New Orleans Med. J.*, 1941, **93**, 408—411).—A review. E. M. J.

Toxæmia of pregnancy. C. P. Huber (*Nebraska Sta. Med. J.*, 1941, **26**, 77—81). E. M. J.

Full term abdominal pregnancy with living mother and child [delivered by laparotomy]. M. J. Renner (*J. Kansas Med. Soc.*, 1941, **42**, 245—247).—Case report. E. M. J.

Artificial insemination in horses and mules. V. R. Berliner (*J. Amer. Vet. Med. Assoc.*, 1941, **98**, 384—388).—A general account of the procedure adopted. One vol. of semen diluted with 3 of glucose–tartrate solution retains its potency for 24 hr. at 40—50° F. E. G. W.

Influence of vitamin-B_1 on Arakawa's reaction and lactose content of human milk. K. Shoda (*Tohoku J. exp. Med.*, 1941, **39**, 589—601).—Human milk with a positive Arakawa reaction has a high lactose content; Arakawa-negative milk is lactose-poor. Administration of vitamin-B_1 to women with Araka-negative milk increases the milk-lactose content. A. S.

Response of mammary gland to prolonged stimulation with ovarian hormones. I. G. Macdonald (*Surg. Gynecol. Obstet.*, 1936, **63**, 138—144).—The effects of œstrin and progestin on dogs and rabbits are described. Ch. Abs. (*el*)

XIII.—DIGESTIVE SYSTEM.

Congenital atresia of œsophagus with tracheo-œsophageal fistula. J. D. Ashley (*Radiology*, 1941, **36**, 621—624).—Case report. E. M. J.

Case of cardiospasm with subdiaphragmatic herniation of œsophagus. R. P. Ball and A. C. Crump (*Radiology*, 1941, **36**, 575—582). E. M. J.

Antagonism in acidity of saliva and gastric juice. W. Reindel (*Klin. Woch.*, 1940, **19**, 390—392).—In 39 of 50 cases the p_H of fasting saliva was 6·9—7·1 when gastric acidity was normal, below 6·9 with hypochlorhydria, and above 7·1 in hyperchlorhydria. M. K.

Action of extrinsic stomach nerves on gastric motility. J. Malméjac, V. Donnet, and H. Monges (*Compt. rend. Soc. Biol.*, 1940, **133**, 478—480).—In the chloralosed dog stimulation of the peripheral end of the splanchnic nerve in the thorax or at the level of the diaphragm usually increases gastric motility but may cause inhibition. These effects are not modified by adrenalectomy. A motor effect is changed into inhibition following atropine. The reverse change is effected by F.933. P. C. W.

Intrathoracic anastomoses of vagi and gastric motility in dog. J. Malméjac, V. Donnet, and H. Monges (*Compt. rend. Soc. Biol.*, 1940, **133**, 480—482).—Centrifugal stimulation of either vagus nerve in the neck causes gastric contraction even if the vagus of the same side is cut lower down in the thorax. If both nerves are cut in the thorax no effect is produced. The path of the connecting fibres between the two nerves in the thorax is described; the fibres from right to left are anterior to those in the opposite direction. P. C. W.

Origin and path of cholinergic nerves in splanchnic supply to stomach. J. Malméjac and V. Donnet (*Compt. rend. Soc. Biol.*, 1940, **133**, 482—486).—The cholinergic fibres in the splanchnic nerves causing gastric hypermotility have their origin in the spinal cord at the level of Th 2—4. They pass from the cord via the posterior roots and the sympathetic chain at the level of Th 5—6. P. C. W.

Differentiation of urogastrone and pituitrin. J. S. Gray, S. C. Harris, and E. Wieczorowski (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 691—693).—Equal inhibition of gastric secretion in dogs is produced by 3 mg. of urogastrone and 4 units of pituitrin. Urogastrone has hardly any effect as an antidiuretic or on blood pressure, and 1—2 mg. are necessary to inhibit gastric motility as much as 0·1 unit of pituitrin. V. J. W.

[Response of stomach to tyrosine, alanine, and histamine under various conditions.] K. S. Zamuitschkina (*Vsesoy. Inst. Eksp. Med., K Neiro-Hum. Reg. Sekret. Sheludka*, 1936, 33—45).—Subcutaneous or intravenous injection of tyrosine or alanine (80—400 mg.) and peptone (0·05—1 g. per kg. body-wt.) and subcutaneous injection of histamine (0·04—0·5 mg.) and Liebig's extract (2·5—3·0 g.) during a period of relative rest of the stomach (after prolonged alkaline reaction of the stomach) produced little or no secretory response in dogs with fundus fistulæ of the stomach. Similar injections during gastric secretory activity (acid reaction) produced marked secretory response. Ch. Abs. (*el*)

Effect of histaminase on gastric secretory response to histamine. A. J. Atkinson, A. C. Ivy, and V. Bass (*Amer. J. Physiol.*, 1941, **132**, 51—56).—No inhibitory effect was observed in dogs or men. The gastric response to a standard dose of histamine is variable. M. W. G.

Gastric anacidity; its physiologic and clinical significance and management. H. Shay, J. Gershon-Cohen, and S. S. Fels (*Amer. J. digest. Dis.*, 1941, **8**, 115—123).—A review. N. F. M.

Secretion of chlorine ions in achlorhydric gastric juice: observations by means of radioactive chlorine. A. Brunschwig, R. L. Schmitz, and L. Slottin (*Amer. J. digest. Dis.*, 1941, **8**, 171—173).—Radioactive LiCl was injected intravenously into dogs and human subjects during histamine test meals. Radioactive Cl′ appeared in the gastric contents even in cases of achlorhydria. The slight delay as compared with cases secreting free HCl was attributed to diminished vol. of gastric juice in achlorhydria. N. F. M.

Influence of fruit juices on gastric function. H. W. Haggard and L. A. Greenberg (*Amer. J. digest. Dis.*, 1941, **8**, 163—170).—The effect of various fruit juices was studied in 8 normal subjects with carbohydrate, glycine, and mixed test meals. The juices interfere with the titration, contributing directly to the "free acid" during the earlier part of the meal. At the height of digestion the p_H of gastric contents

was unaffected by the fruit juice. Most juices delayed emptying except pineapple, which hastened it. N. F. M.

Basal secretion of Pavlov pouch dogs as influenced by oxygen want. E. J. Van Liere and P. E. Vaughan (*Amer. J. digest. Dis.*, 1941, **8**, 155—156).—Experiments on 4 dogs indicated that basal gastric secretion was not affected by degrees of O_2 want compatible with consciousness. Basal secretion was impaired by more severe degrees of anoxia. N. F. M.

Selective elimination of neutral-red through gastric mucosa. S. Morrison, R. E. Gardner, and D. L. Reeves (*J. Lab. clin. Med.*, 1936, **21**, 822—827).—Neutral-red granules are eliminated selectively by the parietal cells of the stomachs of rats and dogs after intravenous injection of 1 c.c. of a 1% aq. solution. CH. ABS. (*el*)

Rôle of stomach in digestion of carbohydrate and protein. J. M. Beazell (*Amer. J. Physiol.*, 1941, **132**, 42—50).—The relative importance of the human stomach in the digestion of protein and starch was investigated. The production of reducing sugars from starch and of nitrogenous material sol. in 2·5% tungstic acid from protein were selected as end-points of digestion. With an average meal voluntarily regurgitated after 0·5—1 hr., 40% of the remaining carbohydrate was in the form of reducing sugars but none of the protein was in a form sol. in tungstic acid. Where a finely divided meal was given, and the stomach evacuated by an Ewald tube at the end of 1—2 hr., of the material remaining in the stomach 20% of the starch was in the form of reducing sugars, and only 3—10% of the protein-N was sol. in tungstic acid. M. W. G.

Indications for gastric resection. F. H. Lahey (*Amer. J. digest. Dis.*, 1941, **8**, 180—185).—A lecture with 8 illustrative plates. N. F. M.

Peptic ulcer in aged. F. W. Mulsow (*Amer. J. digest. Dis.*, 1941, **8**, 112—114).—A study of 65 patients dying from peptic ulcer, and a review of literature, indicate that about $\frac{1}{8}$ of deaths occur after 60 years of age, $\frac{1}{3}$ from 50 to 60, and $\frac{1}{3}$ before 50. Massive hæmorrhage is twice as frequent as perforation after 60. N. F. M.

Intralumen pressures of digestive tract, especially pyloric region. D. A. Brody, J. M. Werle, I. Meschan, and J. P. Quigley (*Amer. J. Physiol.*, 1940, **130**, 791—801).—The balloon–water manometer method is unsatisfactory for the registration of gastro-intestinal pressures. Pressures are accurately measured from an open tip in the gut using an optical manometer. The basal pressure of the pyloric antrum usually exceeds the basal pressure in the duodenal bulb and both rise moderately when food enters the stomach (dogs). Sub-atm. pressures are common in both regions. Periodically phasic pressure changes amounting to 30 cm. H_2O develop in both regions. The phasic pressure changes of the bulb are related to those in the antrum, and are produced by bulbar or antral contractions. Swallowing or smelling food produces transient inhibition of these pressure changes even in vagotomised dogs. After feeding this inhibition is quickly supplanted by phasic changes more uniform, more persistent, and frequently of greater magnitude than those preceding the feeding. M. W. G.

Fractional gastric analysis in newborn. J. A. Ritter (*Penn. Med. J.*, 1941, **44**, 1321—1324).—Fasting free HCl ranged from 0 (4 cases) to 56 c.c. of 0·1N-HCl % in 36 newborn infants, total acid from 11 to 84 c.c., and p_H from 1·28 to 4·59. Milk and barley gruel were poor stimulants of gastric secretion; 2% Liebig's extract was a good stimulant. E. M. J.

Gastro-intestinal activity *in utero*. R. F. Becker (*Quart. Bull. Northwest. Univ. Med. School*, 1941, **15**, 85—93).—Colloidal $Th(OH)_4$ or ThO_2 was injected into the amniotic sac of guinea-pigs during various stages of gestation. The fœtus begins to swallow amniotic fluid on the 42nd day. As pregnancy proceeds, the propagation of the contrast material in the gastro-intestinal tract becomes more rapid. Cat and guinea-pig fœtuses were delivered into a const.-temp. bath of Locke's solution; the placental circulation was intact. Simple localised contraction and slow relaxation of the gut following slight pinching was observed in 25—27-day specimens. Spontaneous gastric peristalsis was seen in the 29—30-day cat fœtus; in 35—40-day cat fœtus, a contraction wave passed over the stomach every 15 sec. In the guinea-pig, gastric peristalsis was first seen on the 35th day; it was still very sluggish and irregular on the 4th day; waves of contraction every 3 sec. were seen from the 55th day. Intestinal peristalsis was first seen in the 28—30-day cat fœtus; rhythmic segmentation predominated at 35—40 days. The large intestine was very inactive; meconium was seen in the amniotic sac on the 58th day. In guinea-pigs intestinal peristalsis was seen at 35 days, in the large intestine at 40 days, and most active in the ascending colon at 50 days. A muscularis mucosa of the stomach was first seen in the 29—32-day guinea-pig fœtus, in the intestines at 35 days; in the cat it is still ill defined at 45 days. Ganglion cells and intercellular plexus are present in the submucosa and between the external muscular layers by the time good peristalsis is seen in the gastro-intestinal tract of both species. A. S.

Gastroscopic observations in rosacea. B. Usher (*Arch. Dermat. Syphilol.*, 1941, **44**, 251—255).—In rosacea the incidence of hypochlorhydria and achlorhydria in patients was not greater than in other dermatoses. HCl secretion content was not related to the duration or degree of severity of the rosacea. Gastritis was present in all except 1 of 19 patients; in 15 control dermatoses only 4 patients showed evidence of gastritis. Gastroscopy in 2 treated patients showed coincidental improvement of both the gastritis and the rosacea. C. J. C. B.

New roentgen sign of pyloric obstruction. M. Feldman (*Radiology*, 1941, **36**, 736—738).—Preliminary roentgenograms of the abdomen in cases of pyloric stenosis showed the outline of the whole gastric contour, indicative of the presence of an excessive amount of fluid in the stomach. E. M. J.

Gastroscopic appearances of acute and chronic gastritis. P. B. Nutter (*Northw. Med.*, 1941, **40**, 169—172). E. M. J.

Pernicious anæmia and carcinoma of stomach. C. E. Haygard (*Northw. Med.*, 1941, **40**, 125—127).—Partial gastrectomy for pyloric carcinoma in a man aged 30 was followed 3 months later by a severe gastritis lasting 3 months and causing contraction and thickening of walls and complete achylia. 9 years later he developed pernicious anæmia which responded to liver therapy but he died after another six years from a carcinoma involving the residual stomach and lower œsophagus. E. M. J.

Gallstone obstructing duodenum. M. F. Fuller (*Northw. Med.*, 1941, **40**, 180—181).—A gallstone, 6 × 4·5 cm., completely obstructing the lumen, was found in the duodenum of a man aged 78 who died shortly after a gastro-enterostomy performed for persistent vomiting. He had previously had intermittent and milder attacks of obstruction. The fundus of the gall-bladder was replaced by dense scar tissue firmly adherent to the duodenum and no internal biliary fistula was found. Pressure necrosis is suggested as the mode of entry of the stone into the duodenum. E. M. J.

Pathogenesis of azotæmia in hæmorrhage from upper gastro-intestinal tract. J. B. Johnson (*J. clin. Invest.*, 1941, **20**, 161—168).—Plasma-non-protein- and urea-N rise markedly in cases of severe upper gastro-intestinal hæmorrhage only when there is temporary or permanent reduction in renal function as shown by urea or creatinine clearance tests. The azotæmia lasts 3—5 days after a single hæmorrhage but is more prolonged after repeated hæmorrhages. Serum-Cl′ and plasma-CO_2-combining power were unchanged. The azotæmia depends on the rate of urea formation (from absorbed blood) exceeding the rate of urea excretion by the kidneys. C. J. C. B.

Significance of occult intestinal hæmorrhage in newborn. A. Ebergényi (*Mschr. Kinderheilk.*, 1939, **81**, 132—138).—Positive results were obtained in 67% of 273 newborn infants with the max. on the 5th day after birth. M. K.

Biochemical changes associated with hæmorrhage from stomach and duodenum. M. Bick (*Med. J. Austral.*, 1941, I, 104—115; cf. A., 1941, III, 839).—Eight cases were studied in detail and occasional determinations were made in 5. In exsanguinated and dehydrated patients there was a rise in blood-urea probably from digested blood-proteins and a fall in blood-Cl′, plasma-protein, and alkali reserve. Blood-urea fell after hæmorrhage had ceased; this fall was hastened by liberal administration of fluid. F. S.

Contributions made in 1940 to knowledge in regard to pancreas. R. Elman and L. A. Sachar (*Amer. J. digest. Dis.*, 1941, **8**, 105—112).—A review. N. F. M.

External pancreatic secretion in man. B. Kogut, M. J. Matzner, and A. E. Sobel (*J. clin. Invest.*, 1936, **15**, 393—396).—Analytical data for pancreatic secretion, obtained from a woman with external pancreatic fistula, are reported. Injected neutral-red and indigo-carmine did not appear in the pancreatic juice. Ingestion of food was followed by increased rate of secretion. CH. ABS. (*el*)

Source of pancreatic juice bicarbonate. E. G. Ball, H. F. Tucker, A. K. Solomon, and B. Vennesland (*J. Biol. Chem.*, 1941, **140**, 119—129).—After intravenous injection of $NaHCO_3$ containing radioactive C into dogs, there is a rapid appearance of radioactive HCO_3' in the pancreatic juice, the amount being 4—5 times that present in the serum. Since the total CO_2 content of the juice is approx. 5 times that of the serum, it is concluded that the plasma-HCO_3' is the chief source of the juice-HCO_3'. The amount of the latter that could be derived from metabolic CO_2 of the gland itself is calc. to be not greater than 20% of the total amount. Data are given for the amounts of total CO_2 and Cl′ in pancreatic juice. The amount of both in the cells is 50—60% of that in the plasma, and it is suggested that formation of pancreatic juice high in HCO_3' and low in Cl′ may be due to the limited diffusibility of Cl′ from the pancreatic cells. J. N. A.

Quantitative aspects of pancreatic response to secretin. H. Greengard, I. F. Stein, and A. C. Ivy (*Amer. J. Physiol.*, 1941, **132**, 305—309).—It is concluded from continuous injection experiments that the min. (total) effective amount of pure secretin base necessary in the circulation of the average anæsthetised dog is 0·0007 mg.; the amount necessary to stimulate the gland to secrete maximally is 0·014 mg. M. W. G.

Secretin and pancreatic secretion (cat). E. J. W. Barrington (*J. Physiol.*, 1941, **100**, 80—93).—In atropinised cats, or in cats with both vagi cut, enzymes continue to be discharged in the pancreatic juice after at least 6 hr. continuous secretion under secretin stimulation. A continued fall in enzyme output does not necessarily occur under these conditions. If the rate of flow of pancreatic juice is increased either by the administration of $NaNO_2$ or by increasing the rate of secretin injection, only the latter results in an increased concn. and output of enzymes. Secretin directly stimulates the discharge of zymogen and the enzyme content of "secretin" juice does not result merely from the passive washing-out of the zymogen by the fluid passing through the pancreatic cells. J. A. C.

Absorption of unaltered protein from abnormal gastro-intestinal tract. I. Gray and M. Walzer (*Amer. J. digest. Dis. Nutr.*, 1936, **3**, 403—404).—The rapidity with which unaltered protein is absorbed after its oral administration is directly influenced by the degree of gastric acidity. In patients with hyperacidity absorption is retarded; in hypoacidity it is accelerated. CH. ABS. (*el*)

Portal absorption of fatty acids. I. C. Winter and L. A. Crandall, jun. (*J. Biol. Chem.*, 1941, **140**, 97—104).—Using the angiostomy technique simultaneous blood samples are collected from the portal and hepatic veins and the femoral artery before and during fat absorption in normal, unanæsthetised dogs, and the fatty acids in the plasma and whole blood from these samples are determined. Using a modification of the method of Stoddard *et al.* (A., 1930, 103) for the determination of fatty acids, there are no significant arterio-portal or hepatic inflow–outflow differences in fatty acid content during fat absorption. If only 10% of the fat fed had been absorbed by way of the portal vein, an arterio-portal difference would probably have been detected. An adaptation for whole blood of the Mojonnier method for extraction of lipins from milk is described and a comparison between the amounts of fatty acids, total cholesterol, and lipin-P extracted by this method and that of Bloor (A., 1928, 662) is given. J. N. A.

Absorption of carotene from isolated intestinal loops. J. L. Irvin, J. Kopala, and C. G. Johnston (*Amer. J. Physiol.*, 1941, **132**, 202—210).—Absorption of carotene from isolated intestinal loops of dogs was studied by means of photoelectric colorimetric determinations of the provitamin in the loop contents before and after absorption. Carotene when placed in the loops in conc. solutions in cottonseed oil without bile and pancreatic lipase is not absorbed. When given with hog- or ox-gall-bladder bile, or introduced in oil with pancreatic lipase, small amounts are absorbed. With bile + pancreatic lipase, much larger amounts are absorbed. In the presence of identical amounts of bile and lipase, the rate of absorption of carotene is greater when the initial amount of carotene in the loop is increased. Pure bile salts promote the absorption of carotene. The inhibiting effect of mineral oil on carotene absorption is confirmed. M. W. G.

Absorption of liquid petrolatum ("mineral oil") from intestine. W. A. Stryker (*Arch. Path.*, 1941, **31**, 670—692).—Liquid petrolatum is absorbed in small amounts from the intestine of man, rabbit, rat, and guinea-pig. The oil is demonstrable most readily in the mesenteric lymph nodes but may be also present in the intestinal mucosa, liver, and spleen. A substance similar to liquid petrolatum in physical and chemical properties can be recovered from the unsaponifiable fraction of the involved tissues of animals fed this oil. Liquid petrolatum is a foreign body in the tissues and excites a typical chronic inflammatory reaction. C. J. C. B.

Treatment of food-borne diseases of gastro-intestinal tract. Z. Bercovitz (*N.Y. Sta. J. Med.*, 1941, **41**, 1450—1456).—A review. E. M. J.

Roentgenologic diagnosis of tumours of small bowel. H. P. Doub and H. C. Jones (*Amer. J. digest. Dis.*, 1941, **8**, 149—154).—A clinical and pathological study of 33 cases of small bowel tumour, 8 of which were benign. Filling defects or intestinal obstruction were the principal *X*-ray findings. N. F. M.

Fate of ingested pectin. C. S. Werch and A. C. Ivy (*Amer. J. digest. Dis.*, 1941, **8**, 101—105).—In dogs on a mixed diet 90% of ingested pectin (140 g.) was decomposed during passage through the alimentary tract. In fasting dogs only 50% was decomposed. Results in human subjects were very similar. Ileostomy experiments both in dogs and in man indicated that the decomp. occurred chiefly in the colon. N. F. M.

Laboratory aids in diagnosis of pancreatitis. M. W. Comfort (*Minnesota Med.*, 1941, **24**, 225—230).—Report of 3 cases. E. M. J.

Reciprocal innervation in small intestine. R. Hodes (*Amer. J. Physiol.*, 1940, **130**, 642—650).—The vagi exert a tonic motor influence on the small intestine of cats and rabbits (urethane or dial anæsthesia; balloon method). Central sciatic stimulation causes intestinal inhibition even after abdominal sympathectomy and adrenalectomy. The response is due to decreased vagal activity. Central vagus stimulation, with the other vagus and splanchnics intact, enhances motility. When both vagi are removed but the splanchnics are intact, central vagus stimulation either causes augmentor or inhibitory reflexes mediated by the splanchnic nerves; the augmentor reflex is advanced as possible evidence of reciprocal innervation. M. W. G.

Atypical regional ileitis; roentgenological limitations. A. M. Yunich and B. B. Crohn (*Amer. J. digest. Dis.*, 1941, **8**, 185—188).—A discussion of the diagnosis of regional ileitis, with special reference to negative on misleading *X*-ray pictures. Laparotomy is not necessarily contra-indicated by negative *X*-ray findings. N. F. M.

Atresia of terminal portion of the ileum, with perforation, in premature infant. E. Moses (*Amer. J. Dis. Child.*, 1941, **62**, 141—143).—A case report. C. J. C. B.

Chronic tetany with changes in *X*-ray appearances of intestines. W. B. Rawls (*N.Y. Sta. J. Med.*, 1938, **38**, 1464—1466).—*X*-Ray examination in a woman, aged 36, with symptoms of chronic tetany of unknown origin (serum-Ca 6·8 mg.-%, -P 2·8 mg.-%) revealed dilatation of the duodenum and small intestine with marked stasis and an abnormal mixing of Ba and intestinal contents in the colon. The symptoms which had included the passing of 10—20 stools daily accompanied by severe abdominal cramps and tenesmus disappeared on daily administration of 8 g. of Ca gluconate. E. M. J.

Influence of chemical substances introduced into small intestine on gastric secretion. O. F. Scharovatova (*Vsesoy. Inst. Eksp. Med., K. Neiro-Hum. Reg. Sekret. Sheludka*, 1936, 17—32).—Milk, meat extract, hæmose, water, or Na salicylate, when introduced into the upper part of the small intestine of

dogs with Pavlov pouches (the pyloric part of the stomach having previously been removed), stimulated secretion of the fundus. Gastric juice and HCl were the test stimulants; saliva, pancreatic juice, intestinal juice, bile, tyrosine, and peptone produced mild stimulation. The effects are attributed to absorption. CH. ABS. (*el*)

Diagnostic significance of cellular exudate studies in chronic bowel disorders. Z. Bercovitz (*Ann. int. Med.*, 1941, **14**, 1323—1340).—Diarrhœa due to pathological changes in the intestinal wall is accompanied by the appearance of 4 main types of cells in the fæces: epithelial cells, polymorphonuclear leucocytes, lymphocytes, large macrophages of endothelial origin of often more than 100 μ. size. There is copious cellular discharge in bacillary dysentery, predominantly of leucocytes; macrophages should not be confused with amœbæ. Cells were only found in 2 out of 1123 patients who had no intestinal complaints. 9 different groups of case histories with cellular exudates are described. A. S.

Rôle of Miller–Abbott tube in treatment of intestinal obstruction. E. S. Allen and J. D. Allen (*Sth. Med. J.*, 1941, **34**, 766—770).—Review and report of 3 cases. E. M. J.

Treatment of post-operative adynamic ileus and small bowel obstruction with Miller–Abbott tube. I. W. Kaplan and M. L. Michel (*New Orleans Med. J.*, 1941, **93**, 558—564).—The Miller–Abbott intestinal tube was successfully used in 23 cases of paralytic ileus; it relieved incomplete mechanical obstruction of the small intestine in 3 cases, and was used for jejunal feeding in a case of duodenitis. It failed in 2 cases of complete obstruction and one of ileus. The tube was also used like an ileostomy in a case of ulcerative colitis and for intestinal medication in this and in a case of strongyloides infestation. E. M. J.

Effect of feeding apple sauce on induced diarrhœa in rats. Z. I. Kertesz, M. S. Walker, and C. M. McCay (*Amer. J. digest. Dis.*, 1941, **8**, 124—128).—Rats fed on 10 c.c. of milk + 1 g. of lactose per day developed diarrhœa which was cured by feeding apple sauce (84%). Apple sauce with pectins removed was less effective (39%). When all water-sol. substances were also removed some curative action still persisted, which was ascribed to crude fibre content. N. F. M.

Quantity of colonic flatus excreted by " normal " individual. J. M. Beazell and A. C. Ivy (*Amer. J. digest. Dis.*, 1941, **8**, 128—129).—Colonic flatus was collected during 24 hr. in 5 normal ambulatory subjects by means of a rubber tube and balloon. The vol. averaged 527 c.c. and the composition was 7·9—11·4% O_2, 2·5—10·3% CO_2, 80·9—88·3% undetermined. There was wide individual variation and no consistent difference between day and night gas. N. F. M.

Congenital megacolon (Hirschsprung's disease). L. H. Barenberg, D. Greene, and L. Greenspan (*J. Pediat.*, 1941, **18**, 579—586).—Report of a case treated with acetyl-β-methylcholine bromide, 200 mg. twice a day, with apparent cure. C. J. C. B.

Non-specific ulcerative colitis in childhood. J. Elitzak and A. H. Widerman (*Amer. J. Dis. Child.*, 1941, **62**, 115—126).—Report of 28 cases. C. J. C. B.

Review of 1000 consecutive cases of irritable colon; its simulation of surgical conditions and treatment. E. N. Collins and H. S. van Ordstrand (*Cleveland Clin. Quart.*, 1941, **8**, 67—78).—320 abdominal operations were performed in 204 out of 1000 patients with irritable colon without relief of symptoms; appendectomy was carried out in 163 cases. The most common single ætiological factor was the chronic use of cathartics (45% of the cases). A. S.

Digestive enzymic actions in gut of the earthworm, *Pheretima*. Y. C. Puh (*Contr. Biol. Lab. Sci. Soc. China*, 1940, **13**, 121—132).—Pharynx and stomach have similar digestive functions, which is in accordance with their histological similarity. p_H of pharynx is 7·4, that of stomach 6·4. Both digest protein, to a smaller extent starch. The main digestion of protein takes place in the stomach and in the intestine immediately following it. The stomach secretes a special proteolytic enzyme which is more active in an acid medium. The cæcum and post-cæcal intestine mainly produce enzymes converting starch into sugar. A. S.

XIV.—LIVER AND BILE.

Manner in which glycogen is formed in the liver from different carbohydrates. Y. Otomo (*Tohoku J. exp. Med.*, 1935, **27**, 420—433).—Glucose, fructose, galactose, sucrose, maltose, and lactose are decreasingly effective in that order. The disaccharides are probably first hydrolysed by an enzyme of the blood or tissues. CH. ABS. (*el*)

Abnormal intravenous glucose tolerance in liver disease. R. Wilson and M. Gibson (*Canad. Med. Assoc. J.*, 1941, **45**, 147—151).—165 glucose tolerance tests on control and diseased subjects are recorded and discussed. Menstruation did not affect the curve. Delayed intravenous glucose tolerance is noted in cases of cirrhosis of the liver (with gross liver damage) and in chronic infections. No delayed tolerance occurred in other conditions in which mild liver insufficiency might be anticipated. Lowered glucose tolerance was not improved by liver extract, thiamin, or nicotinic acid. Histaminase, administered intravenously or by mouth, does not modify the reaction caused by intravenous injection of liver extract. C. J. C. B.

Kephalin–cholesterol flocculation test as aid in diagnosis of hepatic disorders. F. J. Pohle and J. K. Stewart (*J. clin. Invest.*, 1941, **20**, 241—247).—Emulsions prepared from mixtures of sheep brain kephalin and cholesterol are not flocculated by serum from normal individuals and rarely by serum from patients without hepatic disease. Kephalin–cholesterol emulsions are regularly flocculated by serum from patients with hepatitis, cirrhosis of the liver, or focal lesions of the liver. The flocculation test is a more sensitive index of hepatic disease than many of the functional studies. A strongly positive reaction is usually accompanied by a reduction in the plasma-prothrombin and in hippuric acid synthesis and excretion. The flocculation reaction is usually negative in gall bladder disease without hepatic complications. The flocculation test was not a reliable guide for the differentiation of obstructive from hepatogenous jaundice. Sera from 880 persons were examined. C. J. C. B.

Detoxicating abilities of the liver. I. Histological. S. K. Lee (*Mitt. med. Ges. Tokio*, 1935, **40**, 200).—Stimulation of the splanchnic nerve caused decomp., followed by disappearance, of the granules of the mitochondria. Vagus stimulation caused only temporary appearance of rod- and thread-like bodies in the mitochondria. In both cases fat deposition and glycogen breakdown were increased. The capacity of the Kupffer cells to store lithia-carmine may be decreased, or is increased, respectively. CH. ABS. (*el*)

Formation of sympathetic substance in the liver. S. K. Lee (*Mitt. med. Ges. Tokio*, 1935, **49**, 209).—Tetanic stimulation of the splanchnic nerves of perfused toad's liver, whether or not treated with ergotamine, produces a protein-free perfusate which stimulates the isolated heart prep. The active substance is stable for 24 hr. at 24°, is dialysable, and is adsorbed by kaolin and C; it is destroyed by boiling or aërating the fluid. CH. ABS. (*el*)

Influence of phenolphthalein on liver. B. Fantus, F. Steigmann, and J. M. Dyniewicz (*Amer. J. digest. Dis.*, 1941, **8**, 176—179).—Clinical studies of 300 jaundiced and 425 non-jaundiced patients, and the results of liver function tests on 17 constipated subjects, indicated that phenolphthalein in therapeutic doses is not harmful to the liver. N. F. M.

Purine catabolism in *Anodonta* (*Compt. rend. Soc. Biol.*, 1940, **133**, 433—435).—The hepato-pancreas of *Anodonta* contains adenase, guanase, uricase, allantoinase, and allantoicase. Adenosine-deaminase, guanosine-deaminase, and urease were not found. P. C. W.

Homeostasis of acid output in biliary–duodenal fistula dogs. A. L. Berman, E. Snapp, A. C. Ivy, and A. J. Atkinson (*Amer. J. Physiol.*, 1941, **131**, 776—782).—In experiments on biliary–duodenal fistula dogs, slight suction being applied to the tubing draining the biliary passages, 3 different initial doses of cholates dissolved in dog bile were introduced into the duodenum. In each case cholic acid output progressively returns to a level of 3·8—4·1 g. per 8-hr. period. This level is determined by the basal dietary synthesis of cholic acid, since the average % " loss " (12%) during each enterohepatic circuit remains const. When the level is reached after 2 weeks, synthesis balances cholic acid " loss." An equation is given permitting the prediction of the cholic acid

output for any subsequent period when the basal output per unit of time on the diet is known, and the average loss of cholic acid during one entero-hepatic circuit is known, and the diet and frequency of feeding are kept const.
M. W. G.

Cholagogne and chloretic effects of bile acids as compared with oleic acid. E. W. Lipschutz and I. A. Feder (*Amer. J. digest. Dis.*, 1941, **8**, 173—176).—Biliary excretion was studied in 10 normal subjects by duodenal drainage and cholecystography after ingestion of the test substance. 5 c.c. of oleic acid did, and 0·5 g. of bile acid did not, cause emptying of the gall bladder. Distension of the gall bladder was observed after bile acid ingestion in 5 cases. N. F. M.

Congenital absence of gall bladder. P. J. Sarma (*Amer. J. digest. Dis.*, 1941, **8**, 139—141).—Anatomical anomalies of the biliary tract are common. 2 cases of absent gall bladder are described and reference is made to 38 similar cases. 3 of these 40 patients had gallstones with dilatation of the common bile duct. N. F. M.

XV.—KIDNEY AND URINE.

Kidney threshold for glucose. K. Y. Yardumian and A. N. Alpern (*Amer. J. clin. Path.*, 1941, **11**, 425—442).—The same individual under diverse physiological and pathological conditions shows fluctuation of renal threshold for glucose. The condition of the kidneys, the no. of functioning nephrons, the rate of filtration through the glomeruli, the capacity of the reabsorption by the tubules, and the max. concn. of glucose in the blood all have an influence on the "renal threshold" at a given time. Pyogenic infection of the urinary tract may contribute to the combustion of free glucose in the urine, thus giving a false negative urine. Any form of infection outside of the urinary tract, including gangrene of extremities, has altered the renal "threshold" with a tendency to high threshold. C. J. C. B.

Behaviour of diodrast in dog. H. L. White (*Amer. J. Physiol.*, 1940, **130**, 454—463).—Diffusion equilibrium rates of diodrast *in vitro* and *in vivo* were studied in the dog. *In vitro* rate of passage of diodrast between cells and plasma is very low. *In vivo* rate of passage is high as shown by the fact that diodrast concn. is lower in the red cells in renal vein blood than in those in the renal artery. The red cells (dog) contribute to the diodrast content of urine. At diffusion equilibrium diodrast concn. per 100 c.c. of red cell water is only 58% of that in plasma water; this val. is independent of diodrast level. At arterial plasma diodrast levels below that at which clearance begins to be self-depressed (13 mg. of 1%) the clearance by kidney averaged 74% with little correlation between completeness of extraction and plasma level. M. W. G.

Effects of phloridzin on renal plasma flow, glomerular filtration, and tubular excretion of diodrast in the dog. H. L. White (*Amer. J. Physiol.*, 1940, **130**, 582—587).—In unanæsthetised dogs, 0·2 g. of phloridzin per kg. subcutaneously given 1·5 hr. before observation lowers plasma clearance and renal extraction of diodrast considerably more than can be accounted for by the slight lowering of glomerular filtration rate which results. Renal plasma flow is unchanged. The ability of the tubules to excrete diodrast is lowered to 60% of the normal at both high and low plasma diodrast levels.
M. W. G.

Simultaneous plasma clearances of creatinine and certain organic iodine compounds in relation to human kidney function. E. M. Landis, K. A. Elsom, P. A. Bott, and E. H. Shiels (*J. clin. Invest.*, 1936, **15**, 397—409).—Skiodan (Na monoiodomethanesulphonate) is cleared from plasma at about the same rate as creatinine; neoskiodan (3 : 5-di-iodopyrid-4-one-*N*-acetic acid diethanolamine) and hippuran (Na *o*-iodohippurate) were cleared much more rapidly, suggesting tubular activity. In renal insufficiency clearance of hippuran is reduced in proportion to urea and creatinine clearance and concentrating power and is related more closely to the grade of renal insufficiency as a whole than to preponderance of glomerular or tubular dysfunction. Ch. Abs. (*el*)

Hæmoglobinæmia and hæmoglobinuria produced in man by intravenous injection of hæmoglobin solutions. D. R. Gilligan, M. D. Altschule, and E. M. Katersky (*J. clin. Invest.*, 1941, **20**, 177—187).—15 intravenous injections of stroma-free human hæmoglobin solutions were made in 10 normals, in 3 patients with albuminuria due to congestive heart failure, and in 1 with carcinoma with liver metastases and anæmia. The amounts of hæmoglobin injected were 1·3—16·4 g. given in 1—10 min.; plasma-hæmoglobin after injection was 40—380 mg.-%. The rate of decrease of plasma-hæmoglobin concn. was greater at higher hæmoglobin levels. Hæmoglobin was excreted in the urine in all normals when the plasma concn. exceeded 135 mg.-%; thereafter, hæmoglobinuria persisted until the plasma concn. fell to 30—50 mg.-%. Small amounts of hæmoglobin were excreted in the urine of the patients with pre-existing albuminuria at plasma concn. of 40—50 mg.-%. Plasma-bilirubin increased after the hæmoglobin injection in all cases, the degree varying directly with the rise of plasma-hæmoglobin concn. The increase was proportionately greater in congestive heart failure and in the case of carcinoma with liver metastases and anæmia than in normals. C. J. C. B.

Distribution of fatty change in kidneys and factors influencing its production. J. H. Dible and G. Popjak (*J. Path. Bact.*, 1941, **53**, 133—146).—In the fatty change induced in the rabbit's kidneys by starvation the greatest concn. of fat occurs in the Henle zone: dissection and chemical analysis show that there is a real increase which quantitatively accords with the histological appearances. This evidence together with the reduction in I val. and the relationship between the increase in fat and the extent of the animal's storage depots show that the change is a fatty infiltration. At low temp. the usual quant. relationship between depot fat and the degree of fatty infiltration in the parenchymatous organs is upset, owing to the greater utilisation of the mobilised fat to meet the animal's increased calorific requirements. C. J. C. B.

Toxicity of orally administered potassium salts in renal insufficiency. A. W. Winkler, H. E. Hoff, and P. K. Smith (*J. clin. Invest.*, 1941, **20**, 119—126).—Cardiac death due to K absorbed from the gastro-intestinal tract can be produced experimentally in dogs whose ureters have been tied. Direct introduction of K salts into the stomach induces spasm of the pylorus, preventing absorption and delaying death; rapid death occurs with direct introduction of K into the duodenum. The conditions necessary for fatal poisoning by oral K administration probably do not occur in patients with nephritis so long as urine is being excreted. C. J. C. B.

Chronic arterial hypertension in dog produced by coating kidney with Cellophane. H. Hermann, F. Jourdan, and J. Vial (*Compt. rend. Soc. Biol.*, 1940, **133**, 523—524).—Confirmation of Page (A., 1939, III, 658). P. C. W.

Excretion of vitamin-*A* in urine. N. R. Lawrie, T. Moore, and K. R. Rajagopal (*Biochem. J.*, 1941, **35**, 825—836).—Vitamin-*A* was not found in normal human urine even from subjects receiving large doses, nor in human urine during pregnancy or rat urine, but was excreted in some human diseases, *e.g.*, pneumonia and nephritis. It was also present in urine of healthy dogs, and traces were found in rabbit and cat urine. Blockage of the reticulo-endothelial system by Bi in the rat and rabbit did not cause excretion of -*A*. Turbid urines after filtration still contained -*A*, which although insol. in normal urine, was taken up from halibut-liver oil by vitaminous urines. -*A* was associated with a non-heat-coagulable protein fraction. In cases of accidental death, traces of -*A* were found in the kidney. Functional abnormality of the liver is probably involved in the excretion.
A. L.

Micro-determination of glucose, free and conjugated glucuronic acid. II. Determination of glucuronic acid in presence of glucose in human and rabbit urine. S. Kakinuma (*J. Pharm. Soc. Japan*, 1940, **60**, 168—170).—Human urine (glucose content below 1%) is centrifuged if necessary and 3 c.c. are treated with activated yeast cells for 18 hr. at 28°. The solution is centrifuged and the clear, supernatant liquid is used for the determination of glucuronic acid by the colorimetric method of Ogata and Yamanouchi. Rabbit urine (80—90 c.c.) is neutralised with dil. HCl and the reaction is adjusted to p_H 5—7. The solution is made up to 100 c.c. with distilled water, centrifuged if necessary, and the clear supernatant liquid is treated as described above. If the glucose content exceeds 1%, it is first determined by the usual method and the urine is diluted with distilled water until the concn. is about 1%. If necessary, NaCl may be added to a concn. of

0·5—1%. The solution is now treated as described for the removal of glucose. H. W.

Titrimetric determination of galactose and fructose in urine. H. Gohr (*Klin. Woch.*, 1940, **19**, 374—377). M. K.

Determination of vitamin-*C* in urine. L. Armentano (*Klin. Woch.*, 1940, **19**, 399—401).—The reaction between ascorbic acid and methylene-blue is largely inhibited by $Cu^{\cdot\cdot}$ and $Fe^{\cdot\cdot\cdot}$, which are immediately reduced by leucomethylene-blue to $Cu^{\cdot}$ and $Fe^{\cdot\cdot}$. The reducing effect of 0·1 mg. of ascorbic acid is completely inhibited by 0·1—0·2 c.c. of 1% $CuSO_4$. Another inhibitory substances in urine is urochrome B. With small amounts of ascorbic acid (10 mg.) the loss is 30%, with larger amounts it is 6—14%. M. K.

Determination of acetone compounds in urine. J. Trotzki and R. Mendelson (*Ukrain. Biochem. J.*, 1936, **9**, 157—161).—Urine (10—20 c.c.) + water (10 c.c.) is treated with Pb acetate (5 c.c.), 15% NaOH (1 c.c.), and water (44 c.c.). After quant. filtration, and addition of 5 c.c. of Pb acetate and 1 c.c. of NaOH, the liquid is filtered and 25 c.c. are distilled with 1 c.c. of 10% acetic acid and 20 c.c. of water, the acetone being collected in H_2O (10 c.c.), 15% NaOH (10 c.c.), and 0·01N-I (20 c.c.). When boiling begins, 1 c.c. of conc. H_2SO_4 + 5 c.c. of 2% $K_2Cr_2O_7$ are introduced dropwise into the distilling flask, and 5 c.c. of $K_2Cr_2O_7$ are added every 5 min. After 20 min. the distillate is treated with 5 c.c. of conc. HCl, and titrated with $Na_2S_2O_3$ after 5 min. The method is more generally applicable than Engfeldt's method. Ch. Abs. (*el*)

Vesical calculi in infancy. L. G. Goldberg (*Arch. Pediat.*, 1941, **58**, 271—280).—Case report of 9-months-old male infant. C. J. C. B.

Kidney stones in *Rana pipiens* tadpoles reared on spinach. R. W. Briggs (*Science*, 1941, **93**, 256—257).—50% of the *Rana pipiens* tadpoles reared on a diet of boiled spinach and dried food contained large kidney stones, probably of Ca oxalate, deposited in the tubules. L. S. T.

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

Body form in growing chickens. R. G. Jaap (*J. Agric. Res.*, 1941, **62**, 431—443).—Among birds from 2 breeds and 3 crosses, increase of shank length ceased in females at 16—18 weeks. The growth const. must be differentiated from the limiting equilibrium const. based on relative shank length at maturity. The relative growth const. for shank growth in female chicks probably applies only to the first 12 weeks of growth and about 16 weeks in males. Anterior body depth becomes relatively smaller between 8 and 12 weeks after hatching in both sexes. Heritable differences in conformation were apparent only after 12 weeks' growth. The % of edible flesh is not a satisfactory criterion of visual conformation or of market quality. In practice body shape is more important than the proportion of edible flesh. A. G. P.

Pigmentary changes and the background response in Amphibia. B. Dawes (*Nature*, 1941, **147**, 806—807).—A discussion. L. S. T.

Calcium content of normal skin and sclerodermia. H. Kaether and K. W. P. Schaefer (*Klin. Woch.*, 1940, **19**, 353—354).—The Ca content of normal human skin (water- and fat-free) varies according to region as well as individually. The Ca content of sclerodermic skin is not higher than normal. M. K.

Volume of the extracellular fluids of the body. P. H. Lavietes, J. Bourdillon, and K. A. Klinghoffer (*J. clin. Invest.*, 1936, **15**, 261—268).—Sucrose, CNS', and inorg. SO_4'' are distributed through approx. the same fraction of the body fluids. This fraction (about 20% of body wt.) consists of extracellular fluids only. Their vol. is calc. from CNS' determinations; sucrose and SO_4'' are excreted too rapidly to permit their use for this purpose. Ch. Abs. (*el*)

Group-specific substances in human saliva. K. Landsteiner and R. A. Harte (*J. Biol. Chem.*, 1941, **140**, 673—674).—Heated human saliva after 3 pptns. with alcohol in strongly group-sp., inhibiting isoagglutination in concns. of 0·25—0·125 p.p.m. Saliva preps. from subjects in blood group *A*, *B*, and *O* have similar analyses for amino-acid, hexosamine-N, reducing sugar, and ash. E. M. W.

Winter activities of desert reptiles. R. B. Cowles (*Ecology*, 1941, **22**, 125—140).—Desert reptiles almost invariably hibernate underground, mostly at depths less than 13 in., some being just below the surface of the ground, where they are exposed to freezing temp. Average temp. of reptiles taken in hibernation was 15·2° and average temp. of adjacent soil 16·1°. Protection from cold is not the only factor involved in selection of hibernation site. L. G. G. W.

Effects of various relative humidities on life processes of the Southern cowpea weevil. H. F. Schoof (*Ecology*, 1941, **22**, 297—305).—Larval–pupal stages of the weevil have the same mortality rate from 0 to 80% R.H. Egg stage has lowest mortality rate at a R.H. of 44% at 30°. Development is most rapid at 63% R.H. for the egg and 80% for larval–pupal stages. Very dry air desiccates the cowpea so that the larva of the weevil may have difficulty in penetrating and survival is possible only because of the metabolic water that the larva produces. L. G. G. W.

Parallel ecogenotypical colour variation in butterflies. W. Hovanitz (*Ecology*, 1941, **22**, 259—284).—Low temp., increased R.H., and increased or decreased rainfall are correlated with increased area and intensity of pigment in butterflies, with black, brown, and grey melanin patterns, increased intensity and increased or decreased area of pigment in butterflies with tawny, rufous, red, orange, and yellow colours with a brown tint, and increased development of the lighter of the three pigments in those with the yellow and orange ground colour pigments. L. G. G. W.

Encystment of the harpacticoid copepod, *Canthocamptus staphylinoides*, Pearse. E. S. Deevey, jun. (*Ecology*, 1941, **22**, 197—200).—Emergence of *C. staphylinoides* from cysts is inhibited by O_2 deficiency at temp. of 10—20°. Encystment is not an effective means of avoiding high temp. Complete drying is fatal to cysts. Copepods subjected to O_2 deficiency experimentally could not be induced to form cysts. L. G. G. W.

Variations in content of active substance in purple gland. A. Jullien (*Compt. rend. Soc. Biol.*, 1940, **133**, 524—527).—A Ringer extract of the purple gland of *Murex trunculus* kept at room temp. gradually, over 40—50 days, lost its power to contract eserinised leech muscle. The active substance is a choline ester hydrolysable by serum or alkali but stable in extract owing to the absence of choline-esterase. P. C. W.

Enzymic cleavage of muscle-proteins. II. Viscosity of products of peptic digestion of myosin. V. V. Oppel (*Biochimia*, 1940, **5**, 535—546).—The changes in η of the macromol. colloids (albumins and albumoses) and peptones obtained by peptic hydrolysis of myosin show that these degradation products are members of the same homologous series. The anomalous η of even very dil. solutions of native myosin suggests that the protein is a complex combination of micellar and macromol. systems. W. McC.

Carbohydrate in collagen. J. Beek, jun. (*J. Amer. Chem. Soc.*, 1941, **63**, 1483).—Hydrolysed collagen is unaffected by galactose-active yeast. The sugars are thus probably *l*-glucose and *l*-galactose (cf. Grassmann *et al.*, A., 1935, 771). R. S. C.

XVII.—TUMOURS.

Production of tumours by tobacco tars. C. M. Flory (*Cancer Res.*, 1941, **1**, 262—276).—Tar obtained by destructive distillation of tobacco at 350—700° produced tumours at the site of application in 49—79 days when painted on the ears of rabbits. 12 rabbits survived 238—660 days. 68 of the tumours were papillomas and 5 were carcinomatoid tumours. No carcinomas were produced. A 135—350° destructive distillate tar induced tumours in 16 of 17 rabbits but more slowly than the 350—700° tar. 40 of these were papillomas and 5 carcinomatoid tumours. Tar obtained by smoking tobacco in pipes induced tumours in 22 of 24 rabbits in 37—374 days. 36 tumours were papillomas and 2 were carcinomatoid. No carcinomas were produced. The 350—700° tar (denicotinised) when painted on mice induced 8 papillomas and 1 squamous cell carcinoma at 8·5 months. The pipe tar (denicotinised) induced 2 papillomas and 1 squamous cell carcinoma at 17 months. F. L. W.

Abnormal *Paramecia* produced by blastogenic agents and their bearing on the cancer problem. J. S. Mottram (*Cancer*

Res., 1941, **1**, 313—323).—Abnormal cells occur when *Paramecia* are exposed to polycyclic hydrocarbons, γ-radiation, ultra-violet radiation, heat, or cold. Such abnormal cells cultured in the absence of these agents produced mixed populations of normal and abnormal cells. Proneness to abnormality is transmitted rather than any special type of abnormality. Changes in the cytoplasm interfering with cleavage precede the formation of an abnormal cell. After failure to cleave reorganisation to a single cell with a double constitution occurs. Subsequent division of these doubles gives rise to polymorphic abnormal populations. Biological changes similar to the abnormalities observed in *Paramecia* may be involved in the ætiology of tumours. F. L. W.

Action of synthetic carcinogenic hydrocarbons on tissue cultures. A. D. Timofeevski and S. V. Benevolenska (*J. Méd. Ukraine*, 1940, **10**, 79—86).—1 : 2 : 5 : 6-Dibenzanthracene, methylcholanthrene, and 3 : 4-benzpyrene have a toxic action on cultures of chicken mesenchyme and rats' embryonal tissues proportional to the concn. of the carcinogenic substance (dilutions from 1 : 1000 to 1,000,000 were used) and the duration of the action (several days to 3 months). In all 69 experiments with chicken and rats' tissues, except one, signs of malignancy did not develop *in vitro*. M. K.

Malignancy following protein injections. R. Reding (*Compt. rend. Soc. Biol.*, 1940, **133**, 450—453).—Autopsies have been performed on 82 mice each injected thrice weekly subcutaneously with small doses of various foreign protein solutions, *e.g.*, blood, peptone, etc., followed by weekly injections of egg-white and a deproteinised liver extract. The liver appeared to be enlarged and degeneration with hepatitis was frequent. Malignant tumours were found in 20 mice, benign tumours in 6. In 21 controls 1 cancer has been found. P. C. W.

Failure to find carcinogens in urine from patients with cancer. R. O. Bowman and H. R. Mottshaw (*Cancer Res.*, 1941, **1**, 308—309).—Growth-stimulating and growth-inhibitory fractions were prepared from 20 l. of cancer urine. 400 l. of cancer urine were extracted with benzene and ether. None of these concentrates induced tumours in *C*57 black mice when applied by painting or injection. F. L. W.

Occurrence and pathology of spontaneous carcinoma of lung in mice. H. G. Wells, M. Slye, and H. F. Holmes (*Cancer Res.*, 1941, **1**, 259—261).—Of 147,132 mice 2865 (2%) had lung tumours. 388 (13·6%) of the growths were certainly malignant. Of these, 284 showed metastases throughout the lungs and 104 showed metastases in the mediastinal lymph nodes, chest wall, and diaphragm. Metastases also occurred in kidney (5), heart (3), seminal vesicle (1), and skull (1). Of the metastatic growths outside the lung 33 showed sarcomatous structure even when no sarcomatous elements were seen in the primary growth. In a no. of the primary lung tumours this sarcomatous structure was apparent but no primary sarcomas of the lung without epithelial elements were observed. The mesenchymal or epithelial origin of these lung tumours is discussed. F. L. W.

Adrenal glands of mice from strains with different susceptibilities to mammary cancer. J. S. Blaisdell, W. U. Gardner, and L. C. Strong (*Cancer Res.*, 1941, **1**, 283—289).—Adrenals of 31 male and 99 female mice were examined for occurrence of brown degeneration and amyloid deposition. Mice of 11 inbred strains were used, of which 5 showed variable susceptibility to spontaneous mammary carcinoma while 6 were cancer-resistant. Brown degeneration was found in 70·7% of all females and amyloid deposits in 39·3%. The former varied in frequency in females of the different strains from 20 to 100%, the latter from 0 to 100%. The extent of degeneration was different in the various strains, but no mouse which had developed mammary carcinoma showed more than a moderate degeneration. The adrenals of many tumour-bearing animals showed no degeneration. Degeneration was less frequent and less extensive in males than in females. Amyloid degeneration was more extensive in older mice. The degenerative processes could not be considered as either immediate or remote causes for the development of mammary carcinoma. F. L. W.

Influence of œstrogens on incidence of tumours in foster-nursed mice. J. J. Bittner (*Cancer Res.*, 1941, **1**, 290—292).—Pellets of œstrone (2 mg.) or œstradiol benzoate (1·5—2·0 mg.) were implanted in mice of strain *A*, C_3H, or *C*57 black which had been foster-nursed by females of high- or low-cancer strains. Mammary tumours were induced in mice which had (*a*) an inherited susceptibility for spontaneous tumours and an active milk influence, or (*b*) an active milk influence without inherited susceptibility. F. L. W.

Physiological age as a basis for comparison of strains of mice subject to spontaneous mammary carcinoma. W. S. Murray and J. G. Hoffman (*Cancer Res.*, 1941, **1**, 298—307).—Various methods of comparing amounts of spontaneously occurring mammary cancer in three strains of mice are illustrated. A method of calculating corr. cancer rates is proposed. The suggested calculations give the amount of cancer which might be expected in standard virgin females if they were subjected to the physiological burden borne by breeding females. Cancer rates for breeding females of the dilute brown, Bittner Albino, and Marsh Albino strains are as 100 : 82 : 59 respectively when calc. on this basis. F. L. W.

Fate of spontaneous mammary carcinomas in mice after simple biopsy. R. L. Lewisohn, C. Leuchtenberger, R. Leuchtenberger, and D. Laszlo (*Cancer Res.*, 1941, **1**, 324—327).—Biopsies on 81 strain *A* mice with spontaneous mammary carcinoma did not cause regression of the tumours. Temporary regressions occur spontaneously. 49% of the mice showed metastases in the lungs at autopsy. F. L. W.

Effect of lowered atmospheric pressure on spontaneous tumours in mice. G. L. Rohdenburg (*Cancer Res.*, 1941, **1**, 310).—Lowering the atm. pressure to 38 cm. Hg, raising the temp. to 36°, and placing tumour-bearing mice in an atm. containing CO_2 10, N_2 34, and O_2 56% for periods up to 3 weeks did not cause disappearance of mouse sarcoma 180 or spontaneous mammary carcinoma. All the animals died of starvation since food is refused unless the pressure is about 50 cm. Hg. F. L. W.

Effect of treatment with water-soluble cortin and cysteine of mouse with mammary adenocarcinoma. N. Dobrovolskaja-Zavadskaja and P. Zéphiroff (*Compt. rend. Soc. Biol.*, 1940, **133**, 391—395).—Cortin injected every two days into a mouse with 2 mammary adenocarcinomata inhibited their growth. 7 injections of cysteine during 10 days (0·1 ml. of 1—2% solution of cysteine hydrochloride) caused immediate resumption of the normal tumour growth and appearance of 7 more tumours, in spite of continued cortin treatment. The animal survived abnormally long (103 days). P. C. W.

Relation of age to occurrence of adenoma-like lesions in rat hypophysis and to their growth after transplantation. J. A. Saxton (*Cancer Res.*, 1941, **1**, 277—282).—Adenoma-like lesions were found in the hypophysis of 17 of 43 rats of the Yale Albino strain between 1 and 2 years. None was found in 84 rats aged less than 1 year. The nodules were frequently of multicentric origin and showed abundant lipoid vacuoles in the chromophobe cells. Bioassay of this adenoma-like tissue for gonadotrophic, thyrotrophic, and adrenotrophic hormones was negative. 3 out of 9 homologous intra-ocular transplants of adenoma-like tissue grew after latent periods of 7, 10, and 12 months. The formation and growth of these adenoma-like lesions probably depend on factors appearing at an advanced age of the host. F. L. W.

Transmissible agent of Rous chicken sarcoma. I. Precipitation with basic proteins. D. Shemin, E. E. Sproul, and J. W. Jobling (*J. Exp. Med.*, 1940, **72**, 697—706).—The viscosity of Rous sarcoma extracts can be reduced by treatment with a polysaccharide enzyme, isolated from pneumococcus without loss of potency. The active agent can be pptd. with papain or thymus-histone, and then liberated by electrophoresis. A. C. F.

Prostatic cancer. I. Effect of castration, of œstrogen and of androgen injection on serum-phosphatases in metastatic carcinoma of prostate. C. Huggins and C. V. Hodges (*Cancer Res.*, 1941, **1**, 293—297).—Phosphatase determinations at p_H 5 and p_H 9·3 were made on serum of 40 normal men, of 21 men with benign prostatic hypertrophy, and of 47 men with carcinoma of the prostate. The average vals. for the first two groups were 3·25±1·37 units of acid phosphatase per 100 c.c. and 7·9±2·1 units of alkaline phosphatase per 100 c.c. Of the 47 carcinoma patients 23 had acid phosphatase below 4·5 units and alkaline phosphatase below 12·5

units; of the 24 with alkaline phosphatase above 12·5 units 21 had acid phosphatase above 5 units. Castration or injection of œstrogen produces a fall in acid phosphatase and a rise followed by a fall in alkaline phosphatase. Androgen injection induced a sharp rise in acid phosphatase. Prostatic cancer is influenced by androgenic activity in the body. It is inhibited by castration or œstrogen and activated by androgen injection. F. L. W.

Glucose tolerance test in its relation to cancer. G. L. Rohdenburg (*Cancer Res.*, 1941, **1**, 311—312).—No relationship between the degree of malignancy and glucose tolerance in individual cases could be established in 128 human cases over a period of 6 years. Consideration of group average vals. indicated that more anaplastic tumours do not rid the blood of added glucose as quickly as do less anaplastic tumours. The glucose tolerance of the tumour bearer has no prognostic val. as to expectancy of life. F. L. W.

Metachronous multiple malignancies in cancer. S. Peller (*Amer. J. Hyg.*, 1941, **34**, A, 1—11).—Histories of 5876 cancer patients were investigated with regard to synchronous and metachronous multiple tumours. Surface tumours followed by internal, internal by surface, and internal by internal cancers were considered. Calculations based on the survival rates showed that in actual no. metachronous primary malignancies were less frequent than would be expected on the hypothesis that development of one tumour in a susceptible person is independent of the existence of a past primary tumour. This discrepancy indicates that a cured tumour leaves protection or resistance against the development of other malignant neoplasms. It is suggested that endeavours to change the distribution of cancers by site are justified. B. C. H.

Reliability of cancer death certificates. H. F. Dorn and J. L. Horn (*Amer. J. Hyg.*, 1941, **34**, A, 12—23).—Data obtained from 13,524 cases showed that in 84·5% of death certificates cause of death agreed with the corresponding diagnosis of cancer from physician or hospital. Closest agreement (92·6%) was reported for cancer of the digestive tract. Least agreement occurred for skin cancer (42·6%), brain (46·3%) and bone cancer (51·5%). In nearly half the cases with cancer of the brain, non-malignancy was given as cause of death. Detailed sp. diagnoses agreed in 77·3% cases with the report of the physician or hospital. Less than 60% agreement was found for cases with cancer of the lip, mouth, pharynx, other buccal, and other respiratory sites. Slightly greater agreement occurred when microscopic tissue examinations were made. The % agreement in age between the survey and death certificate was greater for males than for females and for whites than for coloured but in 75% cases it was correct to within 5 years. B. C. H.

Action of cytotoxic antireticular serum on cancerolytic power of serum of cancerous patients. M. P. Feduchin and N. M. Turkevitsch (*J. Méd. Ukraine*, 1940, **10**, 197—215).—Cancerolytic coeff. of serum was investigated by the method of Kavetzky in 231 cancerous patients aged 20—76. 54 of 65 patients operated radically showed a diminished coeff.; after injection of antireticular serum the coeff. increased in 37 patients. 96 out of 110 inoperable patients had a diminished coeff., which increased in 79 after injection of antireticular sérum and became normal in the other 31. Of 32 cancerous patients 22 showed a diminished coeff. before blood transfusion; after transfusion the coeff. increased in 18 and became normal in 5. Injection of normal heterogeneous serum had no effect. In most cases the coeff. varied with the clinical progress. Cytotoxic antireticular serum exercises a sp. stimulating effect on active mesenchyme, which is inhibited in cancer. M. K.

Disturbed acid–base balance in cancer. M. N. Pasternak (*J. Méd. Ukraine*, 1940, **10**, 217—228).—20 cancerous patients and 10 rabbits inoculated with the Brown–Pearce tumour showed an increase of serum-K (32 against 19·5 mg.-%). Arterial–venous O_2 difference was 2·8 against 5—6 vols.-%. There was a corresponding decrease in CO_2 formation and resulting alkalosis. Injection of antireticular serum (1 c.c. for 3 consecutive days) in dogs showed in 9 of 10 animals inhibition of active mesenchyme and blood alkalosis; blood-K decreased while c.s.f.-K was raised. M. K.

XVIII.—NUTRITION AND VITAMINS.

Food composition tables.—See B., 1941, III, 266.

Nutrition and defence. A. F. Morgan (*Amer. J. digest. Dis.*, 1941, **8**, 156—160).—A study of the possible effects of war on distribution of essential foods, with special reference to vitamins. N. F. M.

Methods and computation in fæcal analysis with reference to the red fox. T. G. Scott (*Iowa State Coll. J. Sci.*, 1941, **15**, 279—285).—Red foxes (*Vulpes regalis*) were fed known wts. and varieties of food (chicken, rodents) and the fæces examined for undigested remains. The frequency of occurrence of individual foods in the fæces is the best indication of the relative quantities of foods consumed. The assumption that any undigested part represents one individual consumed is erroneous, for red foxes often consume parts only of a mouse or a chicken. Methods are discussed. J. L. D.

Ketogenic diet in the treatment of epilepsy. J. Pereyra Käfer (*Rev. sudamer. endocrinol.*, 1936, **19**, 509—510).—Clinical improvement does not accompany acetonuria. Temporary relief is due to the restriction of food. Ch. Abs. (*el*)

Food value of broccoli. H. Nicol (*Chem. and Ind.*, 1941, 696).—The dry material of broccoli curd contains 40% of protein, and it is also rich in CaO and PO_4''', all of which are present in a very digestible form. Except that it contains only small amounts of oil or fat, it has practically the same food val. as dried milk. J. N. A.

Chemical determination of quality in animal protein concentrates. H. J. Almquist (*J. Nutrition*, 1941, **21**, 347—350).—The author's method (A., 1936, 102) is applied to the examination of fish meals. Results are compared with those from the biological method. A. G. P.

Optimum level of protein intake for growth and fattening of pigs. R. C. Miller and T. B. Keith (*J. Nutrition*, 1941, **21**, 419—429).—The optimum protein level in rations for pigs from 40 to 210 lb. live wt. was 15—17%. Higher levels had little advantage except for pigs from weaning up to a wt. of approx. 75 lb. A. G. P.

Chemical substitutes for dietary protein. E. C. Owen, J. A. B. Smith, and N. C. Wright (*Nature*, 1941, **147**, 710; cf. A., 1941, III, 516).—Urea, fed in correct amounts in a suitable mixture, is of val. as a partial substitute for protein in the feeding of dairy cattle. It is eaten readily by the animals without ill effects on their general health or on milk yield and quality. *In vitro* incubations of rumen contents demonstrated the conversion of non-protein-N into protein. This conversion, although small, is sufficient to account for the effective utilisation of more urea than would be included normally in the diet of the lactating cow. L. S. T.

Feeding experiments with decomposition products of proteins. XVI. S. Mayeda, K. Ueda, M. Tsurumi, and C. C. Pan (*Bull. Inst. Phys. Chem. Res. Japan*, 1941, **20**, 301—307).—Rats fed on a ration in which decomp. products of proteins replaced whole proteins were identical in total protein, ash, protein- and amino-acid-N contents with rats fed on unsplit protein. J. L. D.

Effect of food phosphatides on chemical composition of body. A. K. Pickat, O. I. Kurtsina, and N. S. Zenin (*Voprosui Pitaniya*, 1935, **4**, 68—77).—In white rats addition of 50 mg. of lecithin per 100 g. body-wt. to a mixed or fat-free diet led to a storage of lipin chiefly as neutral fat and to increased liver- and muscle-glycogen. Lecithin and cholesterol concns. did not exceed normal. Ch. Abs. (*el*)

Sterol requirements of larva of the beetle, *Dermestes vulpinus*, Fabr. G. Fraenkel, J. A. Reid, and M. Blewett (*Biochem. J.*, 1941, **35**, 712—720).—Certain sterols are essential in the diet of the larva of *D. vulpinus*. Cholesterol, 7-dehydrocholesterol, and certain of their esters are active, whilst the products of their irradiation or reduction, sitosterol, ergosterol, etc., are inactive. The min. requirements are 1 mg. of cholesterol and 0·5 mg. of 7-dehydrocholesterol per 3 g. of food. *Drosophila* differs from *D. vulpinus* in that ergosterol is active. P. G. M.

Calcium requirements of growing pigs. C. E. Aubel, J. S. Hughes, and W. J. Peterson (*J. Agric. Res.*, 1941, **62**, 531—542).—Low-Ca rations for pigs are associated with the appearance of anorexia, emaciation, rough hair coat, failure

of normal growth and bone development, poor utilisation of food, and, usually, unsteadiness in legs, and posterior paralysis. 0·25% of Ca in the ration was inadequate and 0·41% satisfactory for normal development. A. G. P.

Utilisation of milk-calcium by adults. H. Breiter, R. Mills, J. Dwight, B. McKey, W. Armstrong, and J. Outhouse (*J. Nutrition*, 1941, **21**, 351—362).—In 7 adult subjects, the % utilisation of milk-Ca ranged from 15·3 to 35·1. A. G. P.

Potassium in animal nutrition. E. Orent-Keiles and E. V. McCollum (*J. Biol. Chem.*, 1941, **140**, 337—352).—Young rats, fed on a diet adequate except in its K content (0·01%), grew at a subnormal rate, but the length of life was unaffected. There was some roughening and thinning of the fur, a striking alertness, and a peculiar pica. Food consumption was subnormal, and water intake, low at first, eventually became greater than normal. N storage and mineral retention, except for Mg and K, were the same as with control animals. The experimental animals were in equilibrium with respect to K, and stored 2·5 times the normal Mg; Cl balance was negative. Ovulation in the low-K rats was irregular and slow, sexual maturity delayed, spermatozoa were defective, and no mating took place even with rats of known fertility. A. L.

Arsenic and goitre. G. R. Sharpless and M. Metzger (*J. Nutrition*, 1941, **21**, 341—346).—In non-toxic proportions (0·005% of the diet), As had a slight, but not significant, goitrogenic effect on rats. Addition of 0·02% of As to the diet caused a diminution in growth and in thyroid-I and an increase in thyroid wt. Feeding of five times the min. requirement of I with 0·02% of As resulted in only a slight enlargement of the thyroid but a decrease in thyroid-I. 0·02% of As in the diet more than doubled the I requirement. A. G. P.

Sympathetic nervous system and vitamin-*A* metabolism. W. Thiele and P. Guzinski (*Klin. Woch.*, 1940, **19**, 345—347).—Injection of 0·25—0·5 mg. of adrenaline in 26 patients suffering from various diseases raises the serum-vitamin-*A* level. Experiments on guinea-pigs show that this is due to mobilisation of -*A* from liver, kidney, and other organs. M. K.

Vitamin-*A* in blood and its relation to body reserves. P. C. Leong (*Biochem. J.*, 1941, **35**, 806—812).—In young puppies fed on a vitamin-*A*-free diet supplemented by graded doses of the vitamin, the blood-*A* levels rose gradually and were proportional to the intake. When the supplements were withheld the blood levels decreased to less than 5 i.u. per 100 ml. of blood, but even after 10 months no signs of -*A* deficiency were observed. A. L.

Histological distribution of vitamin-*A* in human organs under normal and pathological conditions. H. Popper (*Arch. Path.*, 1941, **31**, 766—803; cf. A., 1940, III, 586).—Vitamin-*A* fluorescence is given by lipins of the epithelial and Kupffer cells of liver, epithelial cells of adrenal cortex, tubular and Leydig cells of testicle, granulosa, lutein cells and cortical stroma of ovary, adipose tissue and fat cells, and glands of lactating breast and of pathological kidneys. Great variations occur in the amount and distribution under normal, and yet greater under pathological, conditions. The fluorescence in the liver and the adrenals is influenced by the age of the subject; that in the liver, adrenals, and fat tissue, by the nutritional state; that in the gonads and breasts, by the functional stage of the organ. Liver fluorescence is reduced in damage to liver cells and that in the adrenals in infections. -*A* fluorescence of kidney indicates pathological permeability of the glomeruli. (18 photomicrographs.) C. J. C. B.

Vitamin-*A* in swordfish (*Xiphus gladius*) **and tuna** (*Thunnus thynnus*). W. W. Johnston (*Progr. Rep. Atlant. Biol. Stat.*, 1941, **29**, 17—19).—Swordfish liver contains 100,000 i.u. of vitamin-*A* per g. of oil. Gut oil contains 10 times as much -*A* as cod-liver oil ("gut" means contents of body cavity minus liver and sex organs). Tuna-liver oil contains 200 times as much -*A* as cod-liver oil. A. S.

Vitamin-*A* content of vegetable oils. A. Scheunert (*Klin. Woch.*, 1940, **19**, 342—343).—All vegetable oils were practically free from vitamin-*A*. Owing to their high carotene content palm oils have a considerable -*A* effect, exceeding that of carrots, greens, or summer butter. M. K.

Palm oil carotenoids. H. Wilkinson (*Biochem. J.*, 1941, **35**, 824; cf. A., 1941, III, 315).—α-Carotene isolated from "Sherbro" palm oil had only half the vitamin-*A* activity of β-carotene, thus confirming the results of Kuhn *et al.* (A., 1934, 118). A. L.

Blood-sugar in chickens with vitamin-B_1 deficiency. I. I. Nitzescu and V. Ioanid (*Compt. rend. Soc. Biol.*, 1940, **133**, 490—491).—The blood-sugar is lowered in chickens during the first 10—14 days they are fed on a vitamin-B_1-deficient diet. The blood-sugar then increases and at the convulsion crisis may be 100% above normal. Injection of cryst. aneurin brings the blood-sugar back to its initial val. P. C. W.

Vitamin-B_1 and blood-sugar. I. I. Nitzescu and V. Ioanid (*Compt. rend. Soc. Biol.*, 1940, **133**, 492—495).—In chickens intravenous vitamin-B_1 injection lowers the normal blood-sugar level or the hyperglycæmia produced by -B_1 deficiency. After -B_1 injection the blood-sugar curve following orally-administered glucose is lowered. P. C. W.

Vitamin requirements of the rice moth *Corcyra cephalonica*, **Staint (Lep.).** B. G. L. Swamy and M. Sreenivasaya (*Current Sci.*, 1940, **9**, 493—494).—The larvæ of the rice moth fed on vitamin-B_1-deficient diets for 30—120 days grow very little until -B_1 is added to the diet, when full growth is quickly reached. E. M. W.

Urinary excretion of thiamin in normal children. R. A. Benson, C. M. Witzerberg, and L. B. Slobody (*J. Pediat.*, 1941, **18**, 617—620).—The urinary excretion of thiamin in 22 normal children aged 4—10 years was 92—602 μg. per day (average 268 μg.). For children in this group, an intake of 45 μg. (15 i.u.) of thiamin per 100 calories, or 990 μg. (330 i.u.) daily, seemed adequate for good health. The average amount of thiamin excreted was 27% of that ingested. Morning urine thiamin determinations do not bear a const. relationship to the total 24-hr. output. C. J. C. B.

Free and combined aneurin in milk. N. Halliday and H. J. Deuel, jun. (*J. Biol. Chem.*, 1941, **140**, 555—561).—Approx. 60% (average 23·4 mg.-%) of the aneurin in milk is free; this is dialysable and directly adsorbable. The average total aneurin of Holstein milk after treatment with papain and diastase is 40·5 mg.-%. R. L. E.

Destruction of thiamin in evaporated milk. A. L. Daniels (*Amer. J. Dis. Child.*, 1941, **62**, 127—129).—Rats were fed raw and evaporated milk, with a diet complete except for thiamin. 40% of the thiamin in raw milk is destroyed in the evaporation process. C. J. C. B.

Vitamin-B_1 content of rice. Y. Sakurai, S. Omori, and S. Huzita (*Bull. Inst. Phys. Chem. Res. Japan*, 1941, **20**, 308—315).—The vitamin-B_1 content of rice varies from 3·0 to 4·9 μg. per g. Polishing, washing, and cooking diminish the -B_1 content. J. L. D.

Distribution of vitamin-B_1 in rice grain.—See B., 1941, III, 262.

Determination of vitamin-B_1 in urine, blood, and cerebrospinal fluid by the thiochrome method. P. N. Gerasimov (*Biochimia*, 1941, **6**, 140—145).—A modification of Jensen's thiochrome method, applied to aneurin determinations, involves freeing aneurin from fluorescent substances, exact adjustment to the desired p_H, determination of the amount of oxidising agent required to convert aneurin into thiochrome, and selection of adsorbents of Russian origin. W. McC.

Thiochrome reaction. M. Hosino (*J. Pharm. Soc. Japan*, 1940, **60**, 180—181).—The Jansen vitamin-B_1 extract (0·5 c.c.) in methyl alcohol (1 c.c.), $K_3Fe(CN)_6$, and 10% NaOH (3 c.c.) are shaken for 1 min., then treated with ethyl alcohol (12 c.c.) and K_2CO_3 (4 g.) and shaken. After 20—30 min., the alcohol layer is separated. The thiochrome is determined by its fluorescence within 1 hr. The colour in ethyl is only slightly less than that in *iso*butyl alcohol, but fades. R. S. C.

Effect of ingestion of nicotinic acid on determination of aneurin in urine by thiochrome method. H. L. Mason and R. D. Williams (*J. Biol. Chem.*, 1941, **140**, 417—422).—The thiochrome method of Hennessy and Cerecedo (A., 1939, III, 287) is valid only when nicotinic acid is supplied by a normal diet and the excretion of aneurin is more than 100 μg. When the latter is very low or when nicotinic acid is administered in therapeutic doses of 300—500 mg. daily, non-thiochrome material, which accompanies aneurin throughout the analytical

procedure and is not destroyed by ultra-violet light, may account for the major part of the fluorescence. H. G. R.

Human riboflavin requirement estimated by urinary excretion of subjects on controlled intake. W. H. Sebrell, R. E. Butler, J. G. Wooley, and H. Isbell (*U.S. Publ. Health Repts.*, 1941, **56**, 510—519).—7 women on an institution diet excreted 357 μg. of riboflavin daily in the urine. 10 women on rations containing 0·5 mg. of riboflavin per 2400 calories excreted 77 μg. of riboflavin daily. Data are presented on the urinary excretion of riboflavin which indicate that a daily intake of 3 mg. is sufficient for an adult. C. G. W.

Deficiency of white flour in riboflavin. G. Fraenkel and M. Blewett (*Nature*, 1941, **147**, 716—717).—Tests using the flour beetle, *Tribolium confusum*, show that pupation takes place on wholemeal flour after 25—28 days; on highly-milled patent flour, after 32—48 days; on national straight-run flour, after 29—32 days; and on patent flour containing an addition of 2—4% of wheat germ, after 25—28 days. Admixture of dried brewer's yeast to patent flour produces a slightly more favourable effect than that of wheat germ. Addition of pure vitamin-B_1 to patent flour alters its nutritional qualities only when riboflavin is added as well; 0·031 mg. of riboflavin per 2 g. of food produces marked effects. The same favourable effect is produced without adding -B_1; most of the deficiency of patent flour is remedied by addition of riboflavin. Addition of riboflavin to national straight-run flour produced a marked improvement. Addition of 1% of MacCollum's salt mixture showed no significant effect. The efficiency of patent and of national flour both supplemented with riboflavin is practically identical. The deficiency in riboflavin of both flours is serious, and is not remedied by addition of -B_1. The results obtained using *Tribolium* agree with those obtained using the white rat (A., 1941, III, 284). L. S. T.

Urinary riboflavin excretion in man. A. E. Axelrod, T. D. Spies, C. A. Elvehjem, and V. Axelrod (*J. Clin. Invest.*, 1941, **20**, 229—231).—The daily urinary riboflavin excretion of 5 patients consuming riboflavin-low diets and 2 patients on a hospital diet was determined. There was a marked variation in the daily urinary riboflavin excretion which was correlated with the dietary intake of riboflavin. Riboflavin saturation tests, employing intravenous injections of 200 and 400 μg. of riboflavin per kg. body-wt., showed no correlation between the amount of the test dose of riboflavin retained and the daily urinary riboflavin excretion. No diagnostic val. could therefore be attached to the "saturation" tests performed on the subjects of this study. The rate of excretion of riboflavin into the urine after injection was very rapid. C. J. C. B.

Selenium toxicosis. Ætiologic or causative factor in pellagra? R. de R. Barondes (*Amer. J. digest. Dis. Nutrit.*, 1936, **3**, 330—331). Ch. Abs. (*el*)

Vitamin-B_6. I. Isolation of vitamin-B_6. T. Matukawa (*J. Pharm. Soc. Japan*, 1940, **60**, 216—217).—Vitamin-B_6 [hydrochloride, m.p. 206—207°; picrate, m.p. 156°; triacetate (hydrochloride, m.p. 152°; picrate, m.p. 123°); tribenzoate, m.p. 122°] is isolated from rice bran by fractional adsorption, acetylation, ether extraction, and hydrolysis. A. Li.

Vitamins in rumen content of sheep and cows fed on vitamin-low diets. IV. Pantothenic acid. L. W. McElroy and H. Goss (*J. Nutrition*, 1941, **21**, 405—409).—The dry contents of the rumen and reticulum of sheep receiving a diet low in vitamin-*B* contained 25, and that of cows 20—30, times the pantothenic acid content of the diet. The amount of pantothenic acid excreted in the cow's milk was double that of the food intake. A. G. P.

Action of *l*-ascorbic acid on the *in-vitro* respiration of liver tissue from guinea-pigs on a restricted diet. I. A. E. Kellie and S. S. Zilva. **II.** G. A. Snow and S. S. Zilva (*Biochem. J.*, 1941, **35**, 783—786, 787—800; cf. Harrison, A., 1933, 1340).—I. The increase in respiration after addition of ascorbic acid to liver slices of animals on a normal diet is less than that of animals on a restricted or scorbutic diet, but the total respiration of the latter after addition of ascorbic acid is greater than that of liver tissue of animals on a normal diet.

II. Respiration of liver tissue of growing or adult animals on restricted diets saturated with vitamin-*C* or containing sufficient -*C* to prevent microscopic and macroscopic lesions of scurvy is increased by 95% on addition of ascorbic, reductic, or *d*-glucoascorbic acid, although only 30% of the animals on a normal diet respond. The effect is more pronounced at low concns. of ascorbic acid but a level is reached at which no further effect is observed. The effect cannot be explained by breakdown of ascorbic acid to oxalic and *l*-threonic acids or to complete oxidation. It is abolished by phloridzin, P_2O_7'''', and hydroxymalonate but not affected by maleate, AsO_3'''', malonate, or cinnamate. Iodoacetate inhibits the respiration of tissue from normal animals; ascorbic acid prevents this, but the addition together with ascorbic acid to tissue of animals on a restricted diet enhances the effect of the latter. F′ decreases the respiration of tissue of animals on a restricted diet only in absence of ascorbic acid and the relative increase produced by ascorbic acid is the same in tissue from guinea-pigs on a restricted diet in presence of CN′ in spite of the great reduction produced by the latter. H. G. R.

Defect in the metabolism of tyrosine and phenylalanine in premature infants. Identification and assay of intermediary products. Spontaneous occurrence and eradication by vitamin-*C*. S. Z. Levine, H. H. Gordon, and E. Marples (*J. clin. Invest.*, 1941, **20**, 206—218; cf. A., 1940, III, 435).—Premature infants receiving diets of relatively high protein content (5 g. or more per kg. per day) exhibit a spontaneous defect in their metabolism of tyrosine and phenylalanine, manifested by the excretion of *l*-*p*-hydroxyphenyl-lactic and *p*-hydroxyphenylpyruvic acids in the urine. It may be accentuated by feeding these amino-acids in pure form. This defect was noted as early as the 6th day of life and persisted for as long as vitamin-*C* was withheld. The administration of *l*-ascorbic acid completely eradicated the defect without necessarily raising the plasma-ascorbic acid levels, *d-iso*Ascorbic acid had a transient and partial effect, and large doses, either singly or in combination, of thiamin, riboflavin, nicotinic acid, -B_6, -*H*, pantothenic acid, choline chloride, α-tocopherol, adrenal cortical extract, rice polishings, yeast powder, and liver extract (orally) were without effect. In one of 4 infants, a crude liver extract by injection resulted in a transient decrease in excretion of hydroxyphenyl compounds. Full-term infants fed similar diets showed no spontaneous defect in their metabolism of aromatic amino-acids. The defect was precipitated by the ingestion of a single dose of 1·0 g. per kg. of phenylalanine in one infant and of tyrosine in another. The artificially induced defect in these subjects was readily abolished by the administration of *l*-ascorbic acid and, in one infant, by the parenteral administration of whole liver extract. C. J. C. B.

Effect of iron on oxidation of ascorbic acid in animal tissues. B. I. Goldstein and D. V. Volkenzon (*Biochimia*, 1940, **5**, 602—615).—Ascorbic acid oxidation in normal liver depends on a system containing Fe, and involving autoxidisable Fe complexes. Oxidation is limited by the Fe content and by a second component of the complexes. This oxidation is irreversible, unlike that in growing tissues or tumours. Inhibition of tumour growth might be effected by substituting autoxidisable Fe complexes, *e.g.*, pyrocatechol–Fe, for the mechanism normally controlling ascorbic acid oxidation in the tumour. R. L. E.

Production of ascorbic acid from natural products. V. N. Bukin (*Biochimia*, 1941, **6**, 184—200).—The purification of vitamin-*C* from natural products is effected with activated *C* which has been deprived of oxidising action by treatment with reducing agents (S_2O_4'', Na_2S, alkaline sugar solutions) and of adsorbing action by treatment with antiabsorptive agents (*e.g.*, alcohol, ethyl acetate). The high-mol. and cyclic compounds of natural products have adequate antiabsorptive power. Dried concentrates from unripe walnuts yield cryst.-*C* when treated with org. solvents. W. McC.

Ascorbic acid content of citrous fruits. Y. Iwasaki and T. Komatsu (*J. Agric. Chem. Soc. Japan*, 1941, **17**, 427—432).—The amount of ascorbic acid in the pulp and rind of Satsuma oranges increases as the fruit ripens. The amount of acid in each segment of a given orange is the same. The rind of the upper part of the orange where the style has been attached contains less ascorbic acid than that of the lower part where the pedicel has been attached, but the pulp from both parts contains almost the same amount. The outer rind contains more ascorbic acid than does the albedo. The amount of ascorbic acid in other citrous fruits is determined. J. N. A.

Vegetables as food. M. Olliver and W. B. Adam (*Nature*, 1941, **147**, 711—712).—The loss of vitamin-*C* during the cooking and canning of vegetables has been exaggerated. Normal portions of such vegetables can supply adequately the full daily requirement of this vitamin. L. S. T.

Vegetables as food. V. H. Booth, L. W. Mapson, and T. Moore (*Nature*, 1941, **147**, 711).—Exception is taken to the statement that carrots contain less carotene than spinach, watercress, or broccoli. Carrots rarely have less than 18,000 i.u. per 100 g.; usually they contain 20,000, and often 38,000 i.u. per 100 g. Few leafy vegetables approach it in carotene content. Watercress has 2500—5000, Brussels sprouts 200—600, and common cress 1500 i.u. per 100 g. Under average household conditions of cooking and processing the loss of vitamin-*C* from cabbage is approx. 40—50%; under improved conditions of min. boiling or casserole cooking, it may be only 20%. L. S. T.

Vegetables as food. M. Pyke (*Nature*, 1941, **147**, 807—808).—A reply to criticism (cf. preceding abstracts). Previous statements concerning the high loss of vitamin-*C* from cabbage during cooking etc. are defended. L. S. T.

Determination of vitamin-*C* in urine. G. T. Meiklejohn and C. P. Stewart (*Biochem. J.*, 1941, **35**, 761—769).—The method of Scarborough and Stewart (A., 1938, III, 132) has been modified, the more rapid hydrolysis being combined with the reduction, which is effected by $SnCl_2$ and dil. HCl. Cucumber oxidase is sp. except for a few substances of the same dienol type as ascorbic acid the presence of which in urine has not been confirmed. The concn. of vitamin-*C* in scorbutic urine is low and that in dried vegetables is of the same order as in cooked vegetables retaining their tissue water but without the cooking water. H. G. R.

Clinical method for determination of ascorbic acid in plasma and urine. E. Stotz (*J. Lab. clin. Med.*, 1941, **26**, 1542—1545).—A modification of the Bukatsch method (*Z. physiol. Chem.*, 1939, **262**, 20) is described. C. J. C. B.

Effect of renal damage on toxicity of hypervitaminosis-*D* in rats. L. Opper (*Arch. Path.*, 1941, **31**, 569—577).—Of 40 rats fed on a diet deficient in vitamin-*A* several times in the course of 4—7 months and given daily 6000 i.u. of -*D*, 37 showed at autopsy arterial calcification, the extent of which was related to the degree of renal damage due primarily to successive depletions of -*A*. 27 young rats were partially nephrectomised by removal of one kidney and ligation of the upper half of the other kidney. 13,000—29,000 i.u. (U.S.P. XI) of -*D* given for 6—19 days raised serum-P markedly, but serum-Ca was only slightly higher than normal. C. J. C. B.

Changes in nerve and muscle excitability during hypervitaminosis-*D*. I. I. Nitzescu, C. Angelesco, and D. Timus (*Compt. rend. Soc. Biol.*, 1940, **133**, 516—518).—In the dog peripheral excitability during hypervitaminosis-*D* is decreased while the blood-Ca is raised. When the latter val. becomes very high (18 mg.-%) or at death the neuro-muscular excitability is increased above normal vals. Cortical excitability is also increased at this stage. P. C. W.

Inapplicability of the Tortelli-Jaffé reaction to determination of vitamin-*D*. L. A. Rutkovski (*Biochimia*, 1940, **5**, 528—534).—Since the colours produced when Br reacts with irradiated and non-irradiated ergosterol are practically indistinguishable the reaction cannot be used for determination of vitamin-*D*. W. McC.

Brain degeneration in young chicks reared on iron-treated vitamin-*E*-deficient ration. F. B. Adamstone (*Arch. Path.*, 1941, **31**, 603—612).—Nutritional encephalomalacia can readily be produced in young chicks reared on a natural ration treated with $FeCl_3$ in ether to destroy vitamin-*E*, if heat is used to evaporate the ether. The disease does not occur when the ether evaporates spontaneously in the cold. The destruction of -*E* by $FeCl_3$ is a necessary preliminary, since the use of ether alone in treating the food and its subsequent evaporation with heat produce no results. It is concluded that nutritional encephalomalacia is caused by a deficiency of -*E* and the lack of some other heat-labile substance or substances, or the failure or inability of the animal to utilise some substances, if present, under conditions of -*E* deficiency. (7 photomicrographs.) C. J. C. B.

Erythrophagocytosis in chicks reared on vitamin-*E*-deficient ration supplemented with halibut-liver oil. F. B. Adamstone (*Arch. Path.*, 1941, **31**, 613—621).—Prolonged feeding of newly hatched chicks on a ration treated with $FeCl_3$ in ether to destroy vitamin-*E* (see preceding abstract), but supplemented with halibut-liver oil, produced anæmia. There was a gradual loss of colour in the shanks and head furnishings and the development of a pale grey colour in the irises. At autopsy the liver was frequently swollen, friable, and marked by dark mahogany-brown spots. The marrow of the long bones was firm and dark red; no change occurred in the spleen. Histologically the brown areas in the liver were characterised by a widening of the sinusoids, an enlargement of the liver cells, and an unusual mobilisation of monocytes and Kupffer cells. The increase in the phagocytes was accompanied by extensive destruction of the red blood cells and deposition of hæmosiderin as small granules in and among the liver cells and in the phagocytes. (6 photomicrographs.) C. J. C. B.

Histological evidence indicative of natural occurrence of vitamin-*E* deficiency in chick. F. B. Adamstone (*Arch. Path.*, 1941, **31**, 622—626).—Supposedly normal embryos may show spontaneous hæmorrhage and a histological picture which is apparently identical with that encountered in vitamin-*E*-deficient embryos. (6 photomicrographs.) C. J. C. B.

Relation of vitamin-*E* to effectiveness of testosterone injected into capons. F. B. Adamstone (*Arch. Path.*, 1941, **31**, 706—716).—Castrated male fowls reared on a diet deficient in vitamin-*E* were given injections of testosterone propionate after regression of the male secondary sex characteristics. 4 of the birds were given dietary supplements of α-tocopherol; 4 were maintained throughout the experiment on the original -*E*-deficient ration. Birds receiving both testosterone and α-tocopherol responded to the androgen more rapidly and effectively than those not receiving the -*E* supplement. In the fowl a certain level of -*E* in the diet is necessary to insure the most effective utilisation of androgen. C. J. C. B.

Cholesterol content of brain in nutritional encephalomalacia of vitamin-*E*-deficient chicks. F. B. Adamstone (*Arch. Path.*, 1941, **31**, 711—716).—Normal brain contains a higher proportion of cholesterol per 100 g. of dry substance than brain of chicks suffering from nutritional encephalomalacia. The decrease in cholesterol content of the brains of diseased chicks occurs during the 3rd week, progressing rapidly thereafter. In vitamin-*E*-deficient chicks there is little increase in cholesterol content after the 2nd week, whereas there is a marked increase in the normal brain. C. J. C. B.

Reticulum cell sarcoma following ulceration of intestine in vitamin-*E*-deficient chicks. F. B. Adamstone (*Arch. Path.*, 1941, **31**, 717—721).—The tumours were produced only in those groups of experimental chicks which had a vitamin-*A*+-*D* supplement in the form of cod-liver oil or sardine oil in their diet. The production of tumours may be due to lack of some necessary substance in these oils or to a disturbance in utilisation of the -*D* supplied under conditions of -*E* deficiency. (5 photomicrographs.) C. J. C. B.

Relation of vitamin-*E* to substances of anthracene group. F. B. Adamstone (*Arch. Path.*, 1941, **31**, 722—730).—The structures affected by vitamin-*E* deficiency are all associated with substances of the anthracene group. C. J. C. B.

Isolation of biotin (vitamin-*H*) from liver. V. du Vigneaud, K. Hofmann, D. B. Melville, and P. György (*J. Biol. Chem.*, 1941, **140**, 643—651; cf. A., 1941, III, 779).—Crude biotin from 5 l. of liver concentrate yields 70 mg. of methyl ester, $C_{11}H_{18}O_3N_2S$, m.p. 166—167°, $[\alpha]_D^{22}$ +57° in $CHCl_3$, when esterified, twice adsorbed from $CHCl_3$ on Al_2O_3, eluted with acetone–methyl alcohol (9 : 1), and re-esterified. W. McC.

Nutritional cytopenia in monkeys receiving Goldberger diet. P. L. Day, W. C. Langston, W. J. Darby, J. G. Wahlin, and V. Mims (*J. Exp. Med.*, 1940, **72**, 463—477; cf. A., 1938, III, 927; 1939, III, 498).—The Goldberger diet supplemented with nicotinic acid, riboflavin, thiamin, and ascorbic acid did not maintain health in young rhesus monkeys. The animals developed leucopenia, gingivitis, and diarrhœa, and died. These manifestations are ascribed to deficiency of an unidentified component of the vitamin-*B* complex (vitamin-*M*). A. C. F.

Perosis due to a vitamin deficiency. A. G. Hogan, L. R. Richardson, H. Patrick, and H. L. Kempster (*J. Nutrition*, 1941, **21**, 327—340).—A form of perosis in which the long bones become abnormally short and thick can be induced in chicks receiving considerable amounts of Mn. This is due to deficiency of certain sp. org. nutrients, *e.g.*, choline, but is unrelated to the supply of Ca, P, Fe, Al, or Zn. A. G. P.

Concentration and assay of avidin, the injury-producing protein in raw egg-white. R. E. Eaken, E. E. Snell, and R. J. Williams (*J. Biol. Chem.*, 1941, **140**, 535—543; cf. A., 1941, III, 121).—Avidin is assayed by its inactivation of biotin in a yeast growth test, 1 unit inactivating 1 μg. of biotin. Six other proteins tested had no biotin-inactivating power. Avidin is conc. by (*a*) extraction with aq. NaCl from an acetone ppt. of egg-white, (*b*) removal of other proteins with $(NH_4)_2SO_4$ and acetic acid, and (*c*) fractional heat-coagulation. R. L. E.

Biological specificity of inositol. D. W. Woolley (*J. Biol. Chem.*, 1941, **140**, 461—466).—*d*- and *l*-Inositol, pinitol, quebrachitol, and quercitol are inactive as anti-alopecia factors for mice or as growth factors for yeast. Inositol hexa-acetate, phytin, and soya-bean kephalin are active for mice but not for yeast, whilst quinic acid and inosose (not tested on mice) are inactive for yeast. Mytilitol has some activity for both organisms and inositol mono- and tetra-phosphates have 5 and 2%, respectively, of the potency of inositol for yeast. H. G. R.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Skin temperatures of pig, goat, and sheep under winter conditions. R. C. Lee, N. F. Colonos, and E. G. Ritzman (*J. Nutrition*, 1941, **21**, 321—326).—Variation in skin temp. of the animals with change in environmental temp. (16° to −12°) is examined. Sheep and goat temp. are maintained within close limits in spite of wide variations in environment. Changes in skin temp. are not indicative of metabolic changes. Differences in the external protective coat and fat insulation in and beneath the skin may account for wide variations in skin temp. unrelated to heat production. A. G. P.

Basal metabolism and heat loss of young women at temperatures from 22° to 35°. J. D. Hardy, A. T. Milhorat, and E. F. du Bois [with G. F. Soderstrom] (*J. Nutrition*, 1941, **21**, 383—404).—The basal metabolic rate of young women at 22—27° was the same as that of men. At higher temp., vals. for women were considerably less than those for men. The average skin temp. of women was higher at the higher temp. and lower at lower temp. than that of men. Conductance of peripheral tissues indicated 20% greater insulation in women than in men. Sweating began at higher temp. in women. Differences in the mechanism of temp. regulation of men and women were most marked in the reduction of heat loss and heat production in the warmer comfort zone. A. G. P.

Basal energy metabolism and creatinine in the urine. I. Children. N. B. Talbot (*Amer. J. Dis. Child.*, 1936, **52**, 16—24).—The basal energy metabolism is more accurately evaluated when referred to the excretion of creatinine per 24 hr. than when referred to other variables of growth. Ch. Abs. (*el*)

Respiration in living cell. P. S. Tang (*Quart. Rev. Biol.*, 1941, **16**, 190—207).—A review. J. D. B.

Adequacy of acceptor respiration. I. I. Ivanov (*Biochimia*, 1941, **6**, 236—242).—When CN′ is added to suspensions of spermatozoa in saline in absence of sugar the cells very soon cease to move owing to inhibition of respiration which is the only source of energy under the given conditions, and respiration is not restored by addition of methylene-blue. Respiration of spermatozoa in presence of methylene-blue is of a purely formal kind and has no physiological significance, and the energy of this respiration cannot be used by the cell for mechanical functions. In light, respiration of spermatozoa proceeds chiefly through this unnatural catalyst, and "aërobic asphyxia" results with accompanying loss of motility. Under aërobic conditions methylene-blue not only inhibits utilisation of respiration energy, but also inhibits to a considerable extent utilisation of energy liberated in glycolytic oxidation–reductions. Reduced methylene-blue has no photodynamical effect on spermatozoa. There is no sound reason for the use of methylene-blue as an antidote in CN′ poisoning. J. N. A.

Oxidative metabolism of skeletal muscle from chronically morphinised rats. M. H. Seevers and F. E. Shideman (*J. Pharm. Exp. Ther.*, 1941, **72**, 35).—O_2 uptake of minced skeletal muscle, measured in a Warburg apparatus, was markedly increased in muscle from rats to which ascending doses of morphine sulphate (20—240 mg. per kg.) were administered for 13—15 weeks. The effect of morphine added *in vitro* is greater in normal than in chronically morphinised muscle. The extra O_2 uptake due to added pyruvate is less in chronically morphinised than in normal rat muscle and the synergistic effect of morphine on pyruvate oxidation observed in normal muscle is absent in chronically morphinised muscle. Malonate produces a greater % inhibition of oxidation in chronically morphinised than in normal muscle. H. H. K.

***In vitro* effects of morphine on the respiratory metabolism of skeletal muscle.** F. E. Shideman and M. H. Seevers (*J. Pharm. Exp. Ther.*, 1941, **72**, 36).—Morphine (0·12%) added *in vitro* produced a mean increase of 34% above the no-substrate Q_{O_2} of rat skeletal muscle mince. The extra O_2 uptake is due not to the increased oxidation of glucose, lactate, citrate, fumarate, or acetate since the mean morphine increase remains the same and is superimposed on the substrate Q_{O_2} when these substances are added. Morphine affects synergistically the oxidation of pyruvate, and to a small extent succinate. The morphine increase persists in the presence of added co-enzymes I and II, and hence is not due to an inhibition of dephosphorylation of these substances. Malonate (0·02M.) abolishes completely the increase above the no-substrate Q_{O_2} produced by morphine. Iodoacetate (1 : 10,000), which does not reduce the no-substrate Q_{O_2}, partly prevents the morphine increase. H. H. K.

Effect of morphine on *in vitro* respiration of certain tissues of rat, rabbit, and cat. F. E. Shideman and M. H. Seevers (*J. Pharm. Exp. Ther.*, 1941, **72**, 36).—Effects of 0·12% morphine on the no-substrate Q_{O_2} of various tissues are studied. Respiration of cerebral mince and kidney mince of rats is not affected. In rabbits, respiration of spleen, pancreas, and adrenal, and to a smaller extent liver and submaxillary gland, is inhibited; heart muscle is unaffected; respiration of skeletal muscle, uterus, and spinal cord is markedly increased. The O_2 uptake of cerebral and cerebellar cortex, supramedullary ganglia, and medulla of cats is inhibited. No uniform effect in spinal cord has been obtained. H. H. K.

Oxygen consumption and carbon dioxide formation in normal and diabetic dog tissue. S. G. Genes and N. T. Dementii (*Biochimia*, 1941, **5**, 636—647).—Carbohydrate metabolism and energy production are not reduced in depancreatised animals; increased carbohydrate formation from non-carbohydrate sources and increased ketogenesis occur. The R.Q. of depancreatised animals differs little from that after recovery, and is about 1. The low R.Q. of the whole isolated pancreas is associated with increased O_2 consumption and reduced liberation of CO_2; CO_2 may even be retained by the liver for increased urea formation. R. L. E.

Intermediate carbohydrate and gaseous metabolism of muscle during functional disturbance of the liver. H. Sugimoto (*Tohoku J. Exp. Med.*, 1935, **27**, 191—206).—Dogs with livers damaged by P or tolylenediamine or by ligation of the bile duct were treated intravenously with Na lactate. Rise in blood-lactic acid occurred with P (especially) or tolylenediamine, but not with ligated animals. Before injection of Na lactate blood-sugar was usually subnormal; sugar consumption was normal. After injection blood-sugar became greater than normal, and returned slowly to the original level. O_2 consumption of the muscles of the treated animals was below normal; it was increased by Na lactate injection and maintained much longer than in the controls. The velocity of blood flow through the muscle was little affected by P poisoning but was considerably increased by tolylenediamine poisoning or ligation of the bile duct. Ch. Abs. (*el*)

Rôle of hydroxypurines in ascorbic acid metabolism. G. Ç. Bunjatjan (*Biochimia*, 1941, **6**, 155—162).—In presence of Cu, hydroxypurines inhibit the oxidation of ascorbic acid by sliced tissues (liver, kidney) in water, Ringer's solution, or PO_4''' buffer (p_H 7·4). Thus uric acid and xanthine (concn. 0·1 mg. per ml.) in Ringer's solution very greatly inhibit the

oxidation in presence of 0·003 mg. of Cu. The inhibitory power increases with increase in no. of OH groups and in concn., although direct proportionality does not exist and low concns. are relatively more active than are high. Hypoxanthine is less active than xanthine, which is itself less active than uric acid. The anti-oxidative action of cystine is much inferior to that of the purines. The findings are explained on the assumption that purines yield Cu salts having oxidation–reduction potentials lower than that of $Cu^{\cdot\cdot}$ or that dehydroascorbic acid is reduced at the expense of oxidation of the hydroxypurines. W. McC.

Synthesis of flavin-adenine dinucleotide in animal tissues. A. V. Trufanov (*Biochimia*, 1941, **6**, 301—311).—Formation of flavin-adenine dinucleotide occurs when slices of rat muscle, liver, and heart are incubated in presence of riboflavin. Formation is greatest in muscle and least in heart and it depends on the integrity of the cells. It is highest in slices, less in minced tissue, and still lower in tissue dispersions. No synthesis occurs in minced liver and heart. The optimum p_H for the reaction is approx. 8·4; it requires O_2, and occurs only during the first 5—6 min. incubation at 37°. Further incubation causes hydrolysis of the dinucleotide. This hydrolysis is most pronounced in liver and it is increased considerably in an acid medium. Max. synthesis of the dinucleotide occurs when 1—2 mg. of riboflavin per g. of fresh tissue is used. J. N. A.

Amino-acid metabolism. VII. Metabolism of *l*(+)-arginine and *dl*-lysine in rats. J. S. Butts and R. O. Sinnhuber (*J. Biol. Chem.*, 1941, **140**, 597—602).—In fasting rats, administration of *l*(+)-arginine slightly increases liver-glycogen and decreases the ketonuria due to oral administration of Na butyrate. *dl*-Lysine has no such effects. W. McC.

Utilisation of methyl group of methionine in biological synthesis of choline and creatine. V. du Vigneaud, M. Cohn, J. P. Chandler, J. R. Schenck, and S. Simmonds (*J. Biol. Chem.*, 1941, **140**, 625—641; cf. A., 1940, III, 753).—The prep. of deuteromethionine and deuterocholine chloride by treatment in liquid NH_3 of Na homocysteine and aminoethanol, respectively, with deuteromethyl iodide is described. The carcases of young rats which have consumed deuteromethionine in a diet free from methionine and choline yield choline and creatinine containing the deuteromethyl group, whilst their urine yields deuterocreatinine. The location of the D entirely in the methyl groups of deuterocholine is proved by oxidising it with alkaline aq. $KMnO_4$ and determining the D content of the trimethylamine obtained. When the diet is free from methionine and choline but contains deuterocholine and homocystine, the carcases and urine yield deuterocreatine and deuterocreatinine, respectively. The results demonstrate the biological transfer of methyl groups from methionine to choline and creatine and from choline to creatine, the nature (proportion transferred to choline and creatine approx. equal) and extent (85% in 14 weeks) of the transfer indicating that no dietary precursor of methyl groups other than the compounds studied is involved. Support is given to the hypotheses that methionine is a precursor of choline as far as methyl groups are concerned and that the body, being unable to generate methyl groups for certain methylations, obtains these groups in biologically labile form (as in methionine and choline) from the diet. W. McC.

Formation of creatinine from glycocyamine in liver. Intestinal excretion and bacterial decomposition of creatine and creatinine. M. Bodansky, V. B. Duff, and M. G. McKinney (*J. Biol. Chem.*, 1941, **140**, 365—371).—The liver of normal and nephrectomised rats can convert glycocyamine (administered by stomach tube) into creatine, although the storage there is transitory with normal animals. The normal creatine content of the liver is 15% of the chromogenic substance; after nephrectomy this val. may reach 80%. In both cases, creatine is excreted into the intestinal tract, the bacterial flora of which can decompose both creatine and creatinine. A. L.

Hæmochromatosis associated with acanthosis nigricans. R. D. Lawrence (*Proc. Roy. Soc. Med.*, 1941, **34**, 556).—A case is reported. H. H. K.

Fat metabolism and susceptibility to carbon tetrachloride. J. C. Forbes, B. E. Leach, and E. L. Outhouse (*J. Pharm. Exp. Ther.*, 1941, **72**, 202—210; cf. A., 1940, III, 337, 707).—Protective action of xanthine against liver damage from CCl_4 is not directly related to the decrease in serum-esterase (tributyrin-hydrolysing power) which follows its subcutaneous administration to normal rats. Animals with fatty livers starved for 24 hr. are slightly more susceptible to CCl_4 than normal rats starved for the same period. However, the oral administration of fat several hr. before the time of poisoning increases markedly an animal's susceptibility irrespective of the concn. of liver fat. Xanthine administration does not affect the concn. of serum-lipins of fasting rats or the blood-lipin concn. following oral administration of butter fat. Xanthine injections exert no effect on the degree of ketonæmia which results from starvation. H. H. K.

Relationship between body-fat and body-chloride. E. G. Weir (*Amer. J. Physiol.*, 1940, **130**, 608—612).—The marked variation in Cl′ content per kg. body-wt. in dogs is due mainly to variations in fat content. Expressed in terms of fat-free body-wt. Cl′ content of normal dogs varies slightly from the average val. of 1·4 g. of Cl′ per kg. body-wt. (within the range previously reported for dogs; cf. A., 1940, III, 241). Total water content was 74·0±1·5% of the fat-free wt. or 64·8±4·2% of the total body-wt. M. W. G.

Rate of absorption of various fatty acids by rats. H. J. Deuel, jun., L. F. Hallman, and A. Reifman (*J. Nutrition*, 1941, **21**, 373—382).—Of a series of fatty acids (acetic to tridecoic) fed to rats, absorption was most rapid in the case of butyric, octoic, and decoic, slower in that of nonoic, and still slower for propionic, valeric, and heptoic acids. Absorption of Na acetate was much slower than might be anticipated from data for triacetin. Slow absorption of lauric acid may result from its solidification in the stomach; trilaurin (higher m.p.), however, is more rapidly absorbed. A. G. P.

Urinary excretion of thiamin on high-fat and -carbohydrate diets. W. M. Cahill (*J. Nutrition*, 1941, **21**, 411—418).—Wide variations in the ratio of fat to carbohydrate in the diets of young men did not affect the urinary excretion of aneurin at const. levels of intake whether adequate or low. This also applied to aneurin fed after a period of depletion on high-fat or -carbohydrate diets. A. G. P.

Ketosis. XIX. Endogenous ketonuria in rats. H. J. Deuel, jun., and L. F. Hallman (*J. Biol. Chem.*, 1941, **140**, 545—554; cf. A., 1938, III, 748).—Ketonuria in fasting rats following a high-fat diet is at a max. after 9 days on the fatty diet. One day on the fatty diet produces an appreciable ketonuria. Females are more affected than are males and lose excess of liver-fat more rapidly on fasting. The max. level of ketonuria occurs before the max. liver-fat is reached, and ketonuria subsides before the liver-fat is reduced to normal. Both fall more rapidly when betaine is fed. R. L. E.

Utilisation of acetone bodies. IV. Relation between concentration and rate of utilisation of β-hydroxybutyric acid by rats. N. Nelson, I. Grayman, and I. A. Mirsky (*J. Biol. Chem.*, 1941, **140**, 361—364).—The utilisation rate of the nephrectomised rat for intravenously injected hydroxybutyrate increases progressively with increasing blood concn. up to 10 mmol. of acetone per l., after which further increase in concn. produces a relatively reduced utilisation rate. A. L.

Rôle of metals in carbohydrate metabolism. Z. T. Wirtschafter (*J. Lab. clin. Med.*, 1941, **26**, 1093—1104).—A crit. review. C. J. C. B.

Effect of adrenaline on some biochemical transformations of the carbohydrates in muscle tissue. M. M. Eidelmann (*Biochimia*, 1940, **5**, 658—670).—After extraction with aq. $NaHCO_3$–KCl, frog, rabbit, and dog skeletal muscle, and dog heart muscle retain some bound glycogen and an enzyme able to convert it into reducing substances. Lactic acid and hexose monophosphate are not formed in this process. The desmoglycogen in rabbit skeletal muscle is more resistant to salivary amylase than that of frog and dog skeletal and dog heart muscle. Adrenaline stimulates formation of reducing substances in washed frog muscle by salivary amylase, but does not affect its action on free glycogen or starch. Adrenaline inhibits hydrolysis of added glycogen by the bound enzyme of washed frog muscle. Adrenaline stimulates the enzyme if previously inhibited, or inhibits the enzyme if it has been activated by tissue autolysis. R. L. E.

Hormonal influences on carbohydrate metabolism during work. E. Asmussen, J. W. Wilson, and D. B. Dill (*Amer. J. Physiol.*, 1940, **130**, 600—607).—Carbohydrate utilisation

during muscular exercise was studied in 2 normal subjects (32 and 26 years old). Adrenaline increased R.Q., blood-sugar and -lactate; insulin increased R.Q., decreased blood-sugar, and increased -lactate; adrenaline and insulin simultaneously increased R.Q., produced small fluctuations in blood-sugar level, and increased -lactate. Glucose increased R.Q. and blood-sugar but produced no change in -lactate. Glucose and insulin together increased R.Q. and produced fluctuations in blood-sugar but no change in -lactate. Blood-acetone was unchanged. M. W. G.

Glycogen in *Prodenia eridania*, with special reference to ingestion of glucose. F. H. Babers (*J. Agric. Res.*, 1941, **62**, 509—530).—The literature on carbohydrate metabolism of insects is reviewed. Glycogen occurs in the egg of the southern armyworm, disappears on hatching, reappears after feeding begins, increases to a max. at pupation, falls steadily during pupation, and increases sharply in the adult. The glycogen content of female consistently exceeds that of male moths. When glucose was fed to mature sixth instars blood-glucose increased rapidly to a max. in 1·5 hr. and returned to normal in 6 hr. Tissue-glycogen rose to a max. 7 hr. after feeding. The southern armyworm effectively converts glucose into glycogen, the chief site of glycogen formation being the fat body. A. G. P.

Glycolysis in animal organisms with special regard to lactic acid formation in its dependence on glycogen content. W. Diemair and K. Mollenkopf (*Z. anal. Chem.*, 1940, **119**, 201—216).—The formation of lactic acid and its dependence on glycogen content in freshly-slaughtered flesh of cattle, calf, and pig stored in the cooling-house and in the refrigerating chamber have been investigated. The pre-treatment of the material and the extraction of the lactic acid have been made by the method of Ernst and Takacs; the lactic acid has been determined by the colorimetric method described by Diemair *et al.* (B., 1941, III, 285). The numerous data recorded show that for the same parts of the body, viz., the shoulder-blade and the midriff, the increase in lactic acid formation during the first 24 hr. after slaughtering is very steep, the max. is reached in 48 hr. and remains for 24 hr., after which a slow fall sets in. This is parallelled by a decrease in the glycogen content. For the selected tissues, and for different kinds of flesh, the p_H, the lactic acid formation, and the glycogen decrease after slaughtering show certain differences, which depend mainly on the kind, breed, feeding, and condition of the animals. The freezing process produces no change in the lactic acid and glycogen contents, and p_H is altered only slightly. In minced flesh, lactic acid formation and glycogen decomp. set in more rapidly than during cold-house storage. The lactic acid content falls at the onset of noticeable putrescence of the meat, and the glycogen disappears before this. L. S. T.

Dystrophia myotonica: results of glucose tolerance tests. M. R. Rymer and A. Ravin (*J. Lab. clin. Med.*, 1506, **26**, 1506—1512).—Glucose tolerance tests were performed on 7 patients with dystrophia myotonica and on 6 controls. In each patient the test was performed once with 50 g. of glucose and once with 100 g., and in each test both capillary and venous blood were examined. The fasting blood-sugar and the glucose tolerance curves were normal in all patients; no glycosuria was evident. Composite glucose tolerance curves showed slight differences. The glucose tolerance curves were slightly flatter in the patients. The composite curves for 100 g. tended to remain elevated in the patients at the 2nd and 3rd hr., especially in the capillary blood. The capillary–venous differences remained slightly higher in patients than in controls receiving 100 g. of glucose. C. J. C. B.

Galactose tolerance in jaundice and hyperthyroidism. N. F. Maclagan (*Proc. Roy. Soc. Med.*, 1941, **34**, 602—606).—A discussion. H. H. K.

Xanthoma eruptivum (xanthoma diabeticorum). F. C. Combes and H. T. Behrman (*Arch. Dermat. Syphilol.*, 1941, **43**, 927—941).—A review. C. J. C. B.

Metabolic studies of the changes in body-electrolyte and distribution of body-water induced experimentally by deficit of extracellular electrolyte. D. C. Darrow and H. Yannet (*J. clin. Invest.*, 1936, **15**, 419—427).—In dogs, deficit of extracellular electrolyte caused symptoms of dehydration until NaCl was administered. Deficit of Na and Cl was accompanied by loss of N, P, and K in proportions indicating muscle starvation. With large deficit of Na and Cl little restoration of concn. of serum-electrolyte occurred, but with a smaller deficit enough water was excreted almost to restore the concn. of serum-electrolyte. Ch. Abs. (*el*)

Water metabolism in centenarians. I. V. Bazilevitsch (*J. Méd. Ukraine*, 1940, **10**, 181—196).—Centenarians show absence of thirst, low water intake, low urine flow, and diminished respiration. Intake of 0·5—1·5 l. of water causes abrupt fluctuations in blood composition. M. K.

Lability of skeletal magnesium reserves. Influence of rates of bone growth. J. Duckworth and W. Godden (*Biochem. J.*, 1941, **35**, 816—823).—Apart from bone salt, the Mg of which is highly labile, the organism has very little Mg reserve. By adjustments to the Ca intake of young rats on a Mg-deficient diet, the rate of bone growth was varied. Under these conditions large differences were observed in the amount of Mg liberated by the skeleton, the net quantity liberated being related to the rate of bone growth. In the first phase of Mg deficiency, soft tissue gains of Mg from the skeleton occur, and in the second phase no further Mg exchange takes place. A. L.

Fasting catabolism and food utilisation of magnesium-deficient rats. M. Kleiber, M. D. D. Boelter, and D. M. Greenberg (*J. Nutrition*, 1941, **21**, 363—372).—Rats receiving a Mg-deficient diet gradually lost appetite and ceased to grow after 60 days. Controls were maintained at similar wts. by restricting the intake of a normal Mg-containing diet to 83%. Carcases of deficient rats contained approx. 50% of the normal Mg content but the proportions of water, ash, fat, and protein were unaffected. Mg deficiency did not affect body length but caused a slight increase in dry wt. of heart and liver and a notable increase in that of thyroid and adrenals. The rate of fasting catabolism was greater, and the efficiency of energy and protein utilisation less, in the deficient animals. Mg deficiency probably increases the loss of unoxidised matter in excreta or increases the calorigenic action of the food. A. G. P.

Absorption and excretion of minor elements by man. I. Silver, gold, lithium, boron, and vanadium. N. L. Kent and R. A. McCance (*Biochem. J.*, 1941, **35**, 837—844).—With a severe case of generalised argyria less than 2 mg. of Ag per week was excreted, all in the fæces. Of 550 mg. of Au given intramuscularly 6·7 and 9·1 mg. were excreted in two successive weeks, 78% of this in the urine. Sol. Li salts added to the diet were readily absorbed and quantitatively excreted in the urine. Li in natural foods was, however, poorly absorbed, and only 25% of the Li in brown bread was recovered in the urine. B, taken as H_3BO_3, and present in food, was rapidly excreted in the urine, 92% being recovered in the second case. 81% and 9% of V injected intravenously as Na vanadate was excreted by the 7th day in the urine and fæces respectively. A. L.

Copper and iron metabolism. H. L. Keil and V. E. Nelson (*J. Lab. clin. Med.*, 1936, **21**, 1119—1121).—Rats of the 1st and 2nd generations fed on milk diets supplemented by $FeCl_3$ and $CuSO_4$ showed no sterility or testicular degeneration, but the ovary wt. was slightly less than with controls. Urinary NH_3-N and creatine-N were greater than for controls. Ch. Abs. (*el*)

Radioactive iodine as indicator of the metabolism of iodine. III. Effect of thyrotropic hormone on turnover of thyroxine and di-iodotyrosine in thyroid gland and plasma. M. E. Morton, I. Perlman, and I. L. Chaikoff (*J. Biol. Chem.*, 1941, **140**, 603—611; cf. A., 1941, III, 604).—In guinea-pigs, 2 and 26 hr. after administration of radioactive I, the radioactive I content of the thyroid gland is increased by previous administration of thyrotropic hormone. Approx. 90% of the radioactive I enters into org. combination, most of it in di-iodotyrosine, the rest in thyroxine and as inorg. I. The proportion present in thyroxine is increased, and that in di-iodotyrosine is decreased, by administration of the hormone. This administration also increases the proportion of org. radioactive I in the plasma, where, 2 hr. after injection of radioactive I, more of it is present in di-iodotyrosine than in thyroxine, whilst 26 hr. after injection much more of it is present in thyroxine than in di-iodotyrosine. W. McC.

Geochemical aspects of animal ecology. R. G. Thomas (*Austral. J. Sci.*, 1940, **3**, 33—40, 53—59).—Geochemical

processes are discussed in relation to the factors which affect the mineral metabolism of animals and their well-being.
L. S. T.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Toxicity, absorption, and chemotherapeutic activity of 2-sulphanilamidopyrimidine (sulphadiazine). W. H. Feinstone, R. D. Williams, R. T. Wolff, E. Huntington, and M. I. Crossley (*Johns Hopkins Hosp. Bull.*, 1940, **67**, 427—456).—The acute toxicity (L.D. 50) of sulphadiazine for mice is 175—200 mg. per 100 c.c. of blood by parenteral administration. Toxic doses (L.D. 50) of Na salts of sulphathiazole and sulphapyridine result in blood concns. of about 80 and 65 mg.-%, respectively. Blood concns. resulting from given doses are generally higher with sulphadiazine than with sulphanilamide or sulphathiazole. Sulphadiazine is effective in the treatment of experimental pneumococcal, streptococcal, staphylococcal, and Friedlander's bacillus *B* infections in mice.
T. F. D.

Absorption, excretion, and distribution of sulphanilamide, sulphapyridine, sulphathiazole, and sulphamethylthiazole. E. Strauss, F. C. Lowell, F. H. L. Taylor, and M. Finland (*Ann. int. Med.*, 1941, **14**, 1360—1382).—Blood concn. and urinary excretion of sulphanilamide, sulphapyridine, sulphathiazole, and sulphamethylthiazole and of the Na salts of the last 3 were determined after administration of a 5-g. dose by various routes. Intravenous or oral administration of the Na salts produced higher blood levels; these high concns. were obtained more rapidly; the highest levels were obtained with Na sulphathiazole. The latter was more rapidly excreted in urine than sulphanilamide or sulphapyridine. Only 60% of administered sulphamethylthiazole was recovered from the urine, regardless of the route by which it was given. Sulphathiazole showed the least amount of conjugation, sulphapyridine the most. After oral administration of Na sulphapyridine, the amount of acetylated drug in blood and urine was considerably lower than after oral administration of sulphapyridine. Different subjects varied with regard to absorption, excretion, and conjugation of the different drugs. The results with sulphathiazole were more uniform. Sulphanilamide was the only drug which was well absorbed from the rectum. The *p*-acetyl derivatives of sulphanilamide, sulphapyridine, and sulphathiazole were poorly absorbed after oral administration; only a small % of these drugs was deacetylated in the body. Sulphanilamide was found in higher concn. in the red cells than in plasma, sulphapyridine was equally distributed, sulphathiazole was found in higher concn. in plasma than in red cells, and sulphamethylthiazole was mostly found in the plasma. Sulphathiazole was cleared from the blood at a greater rate, sulphamethylthiazole at a lower rate, than sulphanilamide or sulphapyridine. Tubular reabsorption was greatest for sulphamethylthiazole and least for sulphathiazole. There were considerable variations of drug concns. in body fluids and organs of 19 cases who died during treatment. The concn. in bile was higher, that in c.s.f. lower, than in blood; the sulphathiazole concn. in c.s.f. was ⅓ that in blood. The concns. of sulphapyridine and sulphathiazole in the kidney were considerably higher than in blood and other organs; sulphanilamide was equally distributed. The concn. of acetylated drugs in the liver was less, that of free drugs higher, than in blood.
A. S.

Distribution of sulphapyridine and its sodium salt in ocular fluids and tissues after local application. S. Y. P'an (*J. Pharm. Exp. Ther.*, 1941, **72**, 31).—100 mg. of finely divided sulphapyridine was applied to one eye of each of 8 rats. 1 hr. later, the concns. of the drug in ocular fluids and tissues were: conjunctiva 47, cornea 30, sclera 11, aq. humour 5, and lens 2·4 mg.-%. The chorioretinal layers and vitreous humour, all tissues and fluids of untreated eyes, and the blood contained no sulphapyridine. 100 mg. of Na sulphapyridine was applied locally to 8 rabbits. Concns. of drug 1 hr. later were: cornea 157, aq. humour 88, conjunctiva 76, sclera 22, lens 18, and chorioretinal layers 12 mg.-%. Na sulphapyridine caused marked congestion and chemosis of the conjunctiva while sulphapyridine produced no reaction.
H. H. K.

Inhibition of sulphonamide action by *p*-aminobenzoic acid. E. Strauss, F. C. Lowell, and M. Finland (*J. clin. Invest.*, 1941, **20**, 189—197).—There is a roughly linear relationship between the concns. of sulphonamides that have bacteriostatic action on pneumococci in blood broth and the min. concns. of *p*-aminobenzoic acid which inhibit that action. The inhibitory effect of *p*-aminobenzoic acid is most marked against sulphanilamide, less against sulphapyridine, and least against sulphathiazole. The action of sulphapyridine on pneumococci can be nullified at any stage by the addition of *p*-aminobenzoic acid. The resulting growth of pneumococci is then identical with that of a similar no. of viable organisms freshly inoculated in the same medium without sulphapyridine. *p*-Aminobenzoic acid is readily absorbed after oral administration. Max. blood levels are reached 1—2 hr. after ingestion. Excretion is rapid and is complete in 12 hr. Some of the compound is present in conjugated form in the blood and urine. The drug is found in greater concns. in plasma than in red cells. Within certain limits, *p*-aminobenzoic acid inhibits the bacteriostatic effect of sulphathiazole on the growth of *B. coli* in human urine. Urine obtained after ingestion of *p*-aminobenzoic acid is less active in this respect than urine to which the same concn. of drug has been added *in vitro*. Toxic effects of sulphathiazole therapy (fever and rash) were not prevented or cured by the administration of *p*-aminobenzoic acid in amounts sufficient to nullify the bacteriostatic action of the drug in the blood.
C. J. C. B.

Mode of action of neoprontosil in streptococcus infections in mice. J. T. Litchfield, jun., H. F. White, and E. K. Marshall, jun. (*J. Pharm. Exp. Ther.*, 1941, **72**, 26—27, 291—297).—The median survival blood concn. of sulphanilamide was determined for neoprontosil and for sulphanilamide. The entire chemotherapeutic activity of neoprontosil is due to the sulphanilamide formed from it.
H. H. K.

Comparison of sulphapyridine and sulphathiazole in treatment of pneumonia. J. M. Kinsman and J. W. Moore (*Sth. Med. J.*, 1941, **34**, 497—504).—Sulphapyridine was used in 103 and sulphathiazole in 56 cases of various types of pneumonia. There were 11 cases of empyema in the former and none in the latter group. Sulphathiazole was absorbed more rapidly and reached its max. concn. in the blood in 3 hr.; sulphapyridine concn. became higher than the above after 12 hr. and was doubled after 36 hr. Na sulphapyridine given rectally reached a concn. of 10 mg.-% in 28 hr. (3 times that of sulphathiazole). Blood concn. of sulphathiazole was doubled by giving 1 g. every 2 hr. instead of 4-hourly; 6-hourly doses of 1 g. reduced the concn. to less than 2 mg.-% in 3 of 4 cases. Sulphathiazole disappeared from the blood stream within 24 hr. of cessation of treatment, sulphapyridine required 2 or more days for its elimination. Sulphathiazole was less toxic. The fatality rates were 10·7% for sulphathiazole and 5·8% for sulphapyridine.
E. M. J.

Intravenous use of sodium sulphapyridine in treatment of lobar pneumonia. C. W. Strickler, jun., A. P. McGinty, and J. B. Peschau, jun. (*Ann. int. Med.*, 1941, **14**, 1595—1606).—54 patients suffering from lobar pneumonia were given intravenous injections of Na sulphapyridine monohydrate (0·06 g. per kg. body-wt.); 8 died. The average age of the whole group was 38, that of the survivors 34, and that of the fatalities 64. 6 patients had a normal temp. within 24 hr., 16 within 36 hr., 10 within 48 hr., and 5 within 72 hr., after commencement of therapy. Administration of the drug was stopped in 11 surviving patients because of hæmaturia, rash, encephalopathy, or hæmolytic anæmia. 15 patients showed a decrease in the red cell count of 1—2 million, 5 a decrease of more than 2 million below the admission count, 2 showed a decrease of the white cell count below 4000. The variation of free sulphapyridine blood levels was as great after intravenous as after oral administration. Nausea and vomiting occurred in 31 patients, frequently beginning 15 min. after the beginning of an injection. The vomit of 4 patients contained more free sulphapyridine than the blood. 3 patients developed empyema after treatment was started; one died.
A. S.

Chemotherapy in pneumonia cases treated by private practitioners. W. B. McClure (*Canad. Med. Assoc. J.*, 1941, **45**, 26—28).—In 386 cases of pneumonia treated by chemotherapy, 92% were given only sulphapyridine. Over 80% of the type 1 and type 2 cases were under 50 years of age; persons over 60 years of age constituted 70% of the deaths. The case fatality of pneumonia in sulphapyridine-treated cases was 3·7%. The average amount of sulphapyridine given per case was 18·4 g.
C. J. C. B.

Pneumonia control [in Pennsylvania]. D. C. Stahle (*Penn. Med. J.*, 1941, **44**, 440—445).—During 1939—40 5935 cases were treated by sulphapyridine, 187 by serum, 1175 by sulphapyridine and serum (a group more severely ill than the first), 330 by sulphathiazole, and 175 by non-sp. means with mortalities of 10, 14·4, 13·7, 10·0, and 21·7%, respectively. Most of the cases were typed. E. M. J.

Sulphathiazole in treatment of pneumonia. L. Schwartz and H. F. Flippin (*Penn. Med. J.*, 1941, **44**, 446—450).—300 cases of various types were treated with a mortality of 10% including 32 bacteræmic cases with a 32% mortality. 5% of cases had a massive effusion, 1% empyema, and 1% some other complications. 25% of cases complained of nausea, 21% of vomiting which was severe in 1%, 9% showed microscopical hæmaturia, 4% dermatitis, and 11% other toxic reactions. E. M. J.

Sulphamethylthiazole in pneumococcal pneumonia. J. M. Ruegsegger and M. Hamburger (*Ohio Sta. Med. J.*, 1941, **37**, 25—27).—Report of 50 cases with 2 deaths in those showing the highest blood levels (14 and 18·2 mg.-%). E. M. J.

Treatment of pneumonia. R. A. Reading and C. H. Millikan (*Ohio Sta. Med. J.*, 1941, **37**, 28—29).—Mortality rates of 16, 6, and 6·8%, respectively, were observed in 106 cases of untreated pneumonia, 44 cases treated with type-sp. serum, and in 102 cases treated with sulphapyridine alone. E. M. J.

Sulphapyridine in capillary bronchitis. A. F. Risser (*Minnesota Med.*, 1941, **24**, 566).—Disappearance of symptoms and signs was noticed within 24 hr. of starting treatment with sulphapyridine in 3 attacks of capillary bronchitis in a 2½ year-old girl and in a 3½-year-old boy. E. M. J.

Hæmolytic streptococcal pneumonia and empyema; study of 55 cases with special reference to treatment. C. S. Keeper, L. A. Rantz, and C. A. Rammelkamp (*Ann. int. Med.*, 1941, **14**, 1533—1550).—In 13 patients the pneumonia was preceded by an infection of the upper respiratory tract; in an additional 10 it was associated with pneumococcal infection. The pneumonia was primary in 10 cases. 13 patients had suffered from chronic pulmonary diseases, *e.g.*, asthma, bronchiectasis, bronchitis. 6 of the 10 deaths occurred in patients over 40. 3 out of 16 patients with empyema died. Cases with empyema showed marked leucocytosis (12,000—78,000). 7 of the 55 patients showed bacteræmia; 4 died. 15 out of 32 identified strains belonged to group XV—XVII hæmolytic streptococci; 5 cases belonged to group XIII. The characteristic changes in the lungs were those of interstitial or confluent bronchopneumonia. Sulphanilamide or sulphapyridine did not reduce the incidence of empyema and did not shorten the course of the disease. The mortality rate was reduced to 7% in non-bacteræmic cases. The best results were obtained with a combination of chemotherapy and thoracotomy in cases with empyema. A. S.

Recovery following streptococcal septicæmia treated with neoprontosil. K. E. Voldeng (*J. Kansas Med. Soc.*, 1941, **42**, 248—249). E. M. J.

Sulphathiazole in treatment of gonorrhœa. E. N. Cook and D. A. McCannel (*Proc. Staff Mayo Clin.*, 1941, **16**, 401—403). H. H. K.

Treatment of male gonorrhœa with sulphathiazole. J. G. Strohm, W. E. Nielsen, and P. B. Potampa (*Northw. Med.*, 1941, **40**, 202—204).—31 cases of acute gonorrhœa were cured within 1—14 days by a course of sulphathiazole; 24 of these had previously been treated unsuccessfully for 4—108 days with sulphanilamide. E. M. J.

Sulphonamide treatment of gonococcal urethritis. O. S. Culp (*Minnesota Med.*, 1941, **24**, 553—559).—Cures were obtained in 50% of 56 cases treated with sulphanilamide alone; in 68% of 57 cases who in addition received urethral irrigations; in 7 of 10 cases given sulphapyridine; in 7 of 8 treated with neoprontosil; and in 92% of 25 cases treated with sulphathiazole. In a few cases a second course effected cures when recurrence followed the first course; in others a change of compound was necessary. Toxic manifestations were noted with sulphanilamide and sulphapyridine which necessitated cessation of treatment before a cure had been effected. E. M. J.

Sulphonamide therapy of male gonorrhœa. R. Deakin, M. Wortman, and R. La Force (*Amer. J. Publ. Health*, 1941, **31**, 682—686).—Results of treatment of 519 males show that sulphathiazole is superior to sulphanilamide, benzenesulphondimethylamide and its Na salt, sulphanilamide–MgO, sulphapyridine, and sulphamethylthiazole in efficiency for treatment of gonorrhœa. It is well tolerated, relatively non-toxic, and rapidly effective in producing a non-infectious condition. W. McC.

Treatment of lymphogranuloma inguinale with neoprontosil. C. B. Kennedy, J. K. Howles, G. Smullen, and M. E. Kopfler (*New Orleans Med. J.*, 1941, **93**, 460—464).—19 acute and 9 chronic cases were given ⅛ grain per lb. body-wt. daily for 1 week, followed by ¼ grain per lb. for at least 4 weeks. Clinical cure was obtained in 14 acute cases by an average of 98·7 g. in 34·9 days. 6 of the chronic cases improved in general health, wt., and bowel habits; no change in rectal pathology, however, was seen. E. M. J.

Sulphonamide drugs in treatment of experimental dysentery infection in mice. M. L. Cooper and H. M. Keller (*J. Pediat.*, 1941, **18**, 458—467).—Sulphathiazole gave complete protection against injection into mice of 2 min. fatal doses of *Shigella paradysenteriæ*, Flexner, when administered 3 hr. before or after the culture. Delayed treatment with 1 and 2 doses of 2 mg. of sulphathiazole and sulphanilamide in mice infected with 1 min. fatal dose showed that 2 doses 3 hr. after the culture were of more val. than 1 dose and that 1 and 2 doses offered considerable protection when administered 8 and 12 hr. respectively after injection of the culture. Sulphathiazole, sulphapyridine, and sulphamethylthiazole were equally efficient, but sulphanilamide was less so. Repeated doses of the 4 sulphonamide compounds every 3 hr. for 36 hr. did not offer much more protection than a single dose 3 hr. after injection. Blood concn. in infected mice 1 hr. after administration of 1 mg. of the 4 sulphonamide compounds was 2—3 mg.-% and ½ hr. after a 2nd dose 3—5 mg.-%. In normal mice 2 mg. of the drugs resulted in blood levels of 6—9 mg.-% ½ hr. after administration of the drug. C. J. C. B.

Chemotherapy of bacillary dysentery [in children]. S. F. Ravenel and D. L. Smith (*Sth. Med. J.*, 1941, **34**, 504—510).—20 cases of bacillary dysentery in children were successfully treated by sulphapyridine and sulphathiazole. Dosage varied from 1·5 to 2 grains per lb. body-wt. on the first and 1 to 1·5 grains per lb. on subsequent days given for 4—6 days. E. M. J.

Sulphathiazole therapy in infantile diarrhœa. G. Taylor (*J. Pediat.*, 1941, **18**, 469—473).—Sulphathiazole was effective in treatment of 27 children with diarrhœa or bacillar dysentery, particularly the latter. C. J. C. B.

Serum and sulphanilamides in treatment of influenzal meningitis. R. Aleman (*New Orleans Med. J.*, 1940, **93**, 25—33).—A review and report of 2 cases. E. M. J.

Meningitis due to *B. Friendlanderi* [treated with sulphapyridine]. C. W. Robertson (*Canad. Med. Assoc. J.*, 1941, **45**, 70—71).—Report of case with recovery. C. J. C. B.

Sulphapyridine in pneumococcal meningitis. H. D. Pass (*Northw. Med.*, 1941, **40**, 210—212).—Two fatal cases are reported in whom only traces of sulphapyridine were present in the c.s.f. although the blood level was 11 and 17 mg.-% respectively. A review is given. E. M. J.

Sulphapyridine in pneumococcal meningitis complicated by pulmonary tuberculosis with recovery. S. Schaefer (*New Orleans Med. J.*, 1940, **93**, 83—86).—Case report. E. M. J.

Staphylococcal meningitis treated with sodium sulphathiazole. T. J. Donovan (*J. Pediat.*, 1941, **18**, 518—523).—A case of *S. aureus* meningitis in a 7-month-old male infant is reported with recovery following large oral and intravenous administration of sulphathiazole and its Na salt (102 g. in 32 days). A high level of sulphathiazole (9·5 mg.-%) was obtained in the c.s.f. by the use of the Na salt intravenously. C. J. C. B.

Treatment of otitic meningitis. M. H. Kaiden (*N.Y. Sta. J. Med.*, 1938, **38**, 1026—1027).—Recovery is reported in a case due to hæmolytic streptococci after radical mastoidectomy, 3 intramuscular injections of 5 c.c. of prontosil within 24 hr., and 2 g. of prontylin by mouth for a week. E. M. J.

Chemotherapy and antitoxin in acute osteomyelitis with staphylococcal septicæmia. L. D. Baker (*Sth. Med. J.*, 1941, **34**, 619—625).—Sulphapyridine and sulphanilamide increased

the mortality rate obtained by treatment with staphylococcus antitoxin serum alone; sulphathiazole depressed it to 11% in 9 cases. 143 cases of septicæmia, 86 of which also had osteomyelitis, are analysed. E. M. J.

Rapid recovery of severe case of Vincent's angina after neoprontosil treatment. L. Pelner (*N.Y. Sta. J. Med.*, 1941, **41**, 1358—1359). E. M. J.

Exfoliative dermatitis (Ritter's disease) treated with sulphathiazole. A. G. De Sanctis and F. C. De Lorenzo (*N.Y. Sta. J. Med.*, 1941, **41**, 1361—1362).—A 16-day-old male infant was cured in 4 days after an initial dose of 4 grains and a maintenance dose of 1 grain of sulphathiazole every 4 hr. 25 mg. of ascorbic acid and 2 drops of oleum percomorphum were also given twice daily. E. M. J.

Results of sulphanilamide therapy in children. B. W. Carey (*N.Y. Sta. J. Med.*, 1938, **38**, 1531—1536).—In a series of 56 children treated with sulphanilamide and prontosil sol. there were 7 deaths, namely 2 of 10 cases of erysipelas, all 4 cases of peritonitis due to *Strep. hæmolyticus*, and 1 case of *B. proteus* meningitis. 5 cases of septicæmia, 4 of meningitis secondary to mastoiditis, and 1 of perisinus abscess all due to *S. hæmolyticus* recovered, as did 6 cases of meningococcal meningitis. Improvement was seen in 3 of 8 cases of otitis media, 3 of 4 cases of gonococcal vulvo-vaginitis, and in 11 cases of *B. coli* infection of the urinary tract. E. M. J.

Brucellosis [and its treatment]. I. Fisher (*Minnesota Med.*, 1941, **24**, 106—108).—8 of the 10 cases reported responded favourably to sulphanilamide treatment. E. M. J.

Use of sulphanilamide in peritonitis. M. L. Michel (*New Orleans Med. J.*, 1941, **93**, 419—425).—15 cases of peritonitis 10 of which were classified as appendiceal were given 250 c.c. of a 0·8% solution of sulphanilamide in saline 6-hourly by hypodermoclysis for 4—5 days, giving an average blood level of 6·9 mg.-%. The most frequent toxic manifestation was cyanosis, seen in 9 patients. Intestinal intubation was applied in 7 cases. There were no deaths. A review is given. E. M. J.

Sulphathiazole in urinary infections. H. F. Helmholz and N. Larson (*Proc. Staff Mayo Clin.*, 1941, **16**, 404—408).—Sulphathiazole employed when the urine from patients had a p_H of 6·5 was bactericidal in concns. of 5 mg.-% in 51—92% of experiments on *Staph. aureus* and on the Gram-negative bacteria commonly found in the presence of urinary infection, excepting *Pseudomonas aëruginosa*. H. H. K.

Local use of sulphonamide drugs. G. Crile, jun. (*Cleveland Clin. Quart.*, 1941, **8**, 149—153).—The absorption of sulphonamides from wounds after local application is much slower than after oral administration. The blood concn. does not exceed 2 mg.-% although 5 g. or more was applied. Absorption is more rapid from the peritoneal cavity; the blood level in mg.-% may be expected to rise to the same figure as the amount of the drug in g. implanted into the abdomen. There is no evidence that the healing of clean wounds or the epithelialisation of clean burns is delayed following the local use of sulphonamides. Sulphathiazole was only used in obstinate staphylococcal infections. The drugs were not sterilised before use. After incision or excision of a carbuncle the wound should be packed with sulphonamide. The drugs were also successfully used in phagedænic ulcers, after careful surgical *débridement*. A. S.

Action of sulphonamides on *C. diphtheriæ*. J. F. Murray (*South Afric. J. Med. Sci.*, 1940, **5**, 110—116).—Soluseptasine and sol. sulphapyridine have a bacteriostatic action *in vitro* on virulent strains of *C. diphtheriæ*; sulphapyridine is more potent. Different strains of *C. diphtheriæ* showed different degrees of susceptibility to the drugs. Heavy primary inoculum obscures the bacteriostatic effect; varying with each strain there is a drug concn. above which the organisms fail to grow if the primary inoculum is not too great. Serial subculture of *C. diphtheriæ* in a medium containing sol. sulphapyridine failed to show any diminution of virulence after 11 subcultures. There is no protective action of the sulphonamides against intracutaneous inoculation of virulent cultures of the organism in guinea-pigs. Local application of sol. sulphapyridine (1 in 50) to the throat of patients convalescent from diphtheria failed to shorten the period required to obtain 3 successive negative swabs. A. S.

Toxicity of sulphonamides. P. H. Long, J. W. Haviland, L. B. Edwards, and E. A. Bliss (*J. Amer. Med. Assoc.*, 1940, **115**, 364—368).—A lecture. C. A. K.

Toxic manifestations following use of sulphanilamide. D. Greenberg (*N.Y. Sta. J. Med.*, 1938, **38**, 1394—1395).—A toxic dermatitis with attacks of hyperpyrexia was seen after administration of 80 grains of sulphanilamide daily for 10 days. Another case repeatedly developed severe vertigo, ataxia, and Rombergism after doses of 15—35 grains of the drug. E. M. J.

Toxic effects of sulphathiazole used in treatment of chancroidal infection. E. A. Glicklich and D. S. Sherman (*Arch. Dermat. Syphilol.*, 1941, **43**, 992—996).—The toxic symptoms observed were headache, malaise, marked prostration, nausea, fever, burning and itching of the eyes, injection of the sclera and conjunctiva, dermatitis, and tender and swollen joints with effusion. C. J. C. B.

Hypersensitivity to small doses of sulphathiazole. M. H. Stiles (*Penn. Med. J.*, 1941, **44**, 823—824).—4 patients developed nervousness, chills, malaise, fever up to 105° F., and digestive symptoms after 0·5 g. of sulphathiazole, having tolerated a short course of the drug 2—5 weeks previously. E. M. J.

Allergic pneumonia [following prontosil]. R. V. Ellis and C. A. McKinlay (*J. Lab. clin. Med.*, 1941, **26**, 1427—1432).—A case of massive, migrating, atypical pneumonia accompanied by high fever grossly disproportional to the degree of prostration, and marked eosinophilia is described. The condition developed within a few days after initial prontosil administration, continued while the drug was used for 6 weeks, and cleared up rapidly when the drug was stopped. A recurrence of similar pulmonary symptoms was reported by the patient following a subsequent trial of prontosil. C. J. C. B.

Anuria and ureteral obstruction due to sulphapyridine. J. E. Williams (*Ohio Sta. Med. J.*, 1941, **37**, 134—135).—The condition arising after the intake of 22 g. of sulphapyridine for bronchopneumonia was cured by pulverisation of the concretions with the ureteric catheter. E. M. J.

Changes in urinary tract and other organs after administration of three sulphanilamide derivatives. W. Antopol, D. Lehr, J. Churg, and H. Sprinz (*Arch. Path.*, 1941, **31**, 592—602).—After repeated intraperitoneal injections of the Na salts of sulphapyridine, sulphathiazole, and sulphamethylthiazole in rats, intrarenal pptn. of the drug, urolith formation, and severe damage to kidneys and liver were common after injection of Na sulphamethylthiazole or of Na sulphathiazole. On chronic administration, renal concretions were produced by all 3 compounds consisting of acetylated derivatives. These were accompanied by calcifying nephrosis, mainly of the distal convoluted tubules, but sometimes of the collecting tubules. A single intravenous injection of any of the acetylated derivatives in the form of the Na salt produced severe, extensive calcifying nephrosis of the type described. C. J. C. B.

Chemotherapy and experimental gas gangrene. A. R. Armstrong and M. V. Rae (*Canad. Med. Assoc. J.*, 1941, **45**, 116—118).—Cultures of *Cl. welchii* are more inhibited by *p*-tolylamidine hydrochloride than by sulphanilamide, sulphamethylthiazole, sulphapyridine, or prontosil. Gas gangrene produced in guinea-pigs could not be controlled by oral administration of these drugs. Sulphanilamide, sulphathiazole, sulphapyridine, and *p*-tolylamidine hydrochloride injected into the tissues at the site of the disease were effective agents against the infection, curtailing spread and reducing mortality. C. J. C. B.

Diphtheria and chemotherapy. H. E. Thelander (*J. Pediat.*, 1941, **18**, 479—482).—A review. Chemotherapy has no effect on the diphtheria bacillus. C. J. C. B.

Drug prophylaxis and treatment of malaria. H. C. Clark (*Sth. Med. J.*, 1941, **34**, 703—708).—A review. E. M. J.

Effect of quinine on urinary metabolites of fasting dogs. A. T. Milhorat and W. E. Bartels (*J. Pharm. Exp. Ther.*, 1941, **72**, 28—29).—Quinine administered to fasting female dogs reduced the urinary output of total N, urea, P, and S, but did not affect the amounts of NH_3, amino-acid-N, preformed creatinine, creatine, org. S, or vitamin-*C*. This effect was slight or absent on the day when the drug was given; it

appeared on the subsequent 2 days. The reduction in urinary output of these substances was greater after a single dose than when the drug was given daily for several days. The effect diminished with prolonged use. H. H. K.

Specific chemotherapy of *Giardia* infections [by atebrin]. J. T. Culbertson (*J. Lab. clin. Med.*, 1941, **26**, 1465—1470).—*Giardia* parasites can be easily eliminated from man, rats, and mice by atebrin. Relapses following treatment were not observed in 2 human infections or in infections of laboratory animals which were followed for shorter periods. Acriflavine is equally effective in the rat, but is less well tolerated than atebrin. Neither atebrin nor acriflavine in the dose given to cure *Giardia* infections is effective in eliminating infections with *Trichomonas muris*, *T. parva*, *Chilomastix bettencourti*, *Hexamina muris*, or *Endamœba muris* from the rat. C. J. C. B.

Correlation of agar cup-plate data with antiseptic dilution data. R. E. Miller and S. B. Rose (*Amer. J. clin. Path.*, 1941, **11**, 414—424).—The agar cup-plate method (cf. A., 1940, III, 526) yields equally satisfactory results with various dilutions of antiseptics. The presence of even 1% of blood in the test medium reduces the antiseptic potency of Hg compounds by ½. A correlation of data from the agar cup-plate method with those from broth serial antiseptic dilutions shows a comparable inactivation by blood. In general Hg compounds yield somewhat higher results by the agar cup-plate method. C. J. C. B.

Theory and practice of bactericidal action of various kinds of disinfectants. K. Kojima (*Japan. J. exp. Med.*, 1940, **18**, 439—441).—The bactericidal power of thymol and carvacrol is increased by halogenation, especially by monohalogenation; chlorothymol, iodothymol, and chlorocarvacrol have greatly increased bactericidal power. These halogen derivatives act selectively on the Gram-positive bacteria. C. J. C. B.

Fungistatic value of ointments. F. J. O'Brien and W. J. Bonisteel (*J. Amer. Pharm. Assoc.*, 1941, **30**, 191—196).—The results of tests (agar plate method) of the fungistatic val. of U.S.P. ointments of phenol, yellow HgO, ammoniated Hg, S, and I and ointment of benzoic acid compound, N.F., against *Monilia albicans* and *Trichophyton interdigitale* are given and discussed. The fungistatic effect of an ointment is not related to the bacteriostatic effect and depends on the base used for the ointment. F. O. H.

Analysis of vasopressor and other "nicotinic" actions of acetylcholine. T. Koppanyi, C. R. Linegar, and R. P. Herwick (*Amer. J. Physiol.*, 1940, **130**, 346—357).—Sympathomimetic substances which are liberated following acetylcholine injections produce definite physiological responses when transferred from one animal to another. This substance (or substances) produced through ganglionic stimulation by acetylcholine has many adrenaline-like actions but is not identical with adrenaline. M. W. G.

Modification of electrical potential of frog skin by acetylcholine. T. C. Barnes (*Amer. J. Physiol.*, 1940, **130**, 557—561).—Stimulation of the nerves of frog skin preps. with a tetanising current produces large changes in skin potential which outlast the stimulus. Acetylcholine (0·10%) increased the skin potential by 61% when applied to the outside surface and depressed the potential by 13% when applied to the inside surface. With 0·66% acetylcholine the vals. were +128 and −62%, respectively; with 1% +95 and −61%, respectively. Acetylcholine has little or no effect on O_2 consumption of the skin. M. W. G.

Effect of dihydro-oxycodeinone (eucodal) on the action of acetylcholine on leech muscle. P. Dodel, G. Dastague, and A. Bresson (*Compt. rend. Soc. Biol.*, 1940, **133**, 429—430).—Eucodal has a sensitising action on the leech muscle to acetylcholine of the same order of magnitude as that of eserine though its anti-esterase activity is 100 times less. P. C. W.

Elimination of prostigmine. D. G. Friend and O. Krayer (*J. Pharm. Exp. Ther.*, 1941, **72**, 15—16).—Inhibition of choline-esterase activity of serum was used as indicator for the presence of prostigmine. Determinations were performed by a manometric method. After a single intravenous injection of 0·25 mg. of prostigmine methosulphate to dogs of 10—15 kg., the max. inhibition of choline-esterase in the serum was reached within a few min. In 7 animals it took 4½—9 hr. for the activity of the enzyme to return to the normal level. Samples of thoracic lymph collected within 20 min. after intravenous injection of the drug showed max. inhibition of lymph choline-esterase. Some of the prostigmine is destroyed in serum; this could also be demonstrated *in vitro*. A large part of the recovery of choline-esterase activity *in vivo* is due to the removal of prostigmine by the activity of the kidney. H. H. K.

Pharmacology of saponins of *Dumaria* and other saponins *in vivo*. P. Dodel, G. Dastague, and Villedieu (*Compt. rend. Soc. Biol.*, 1940, **133**, 431—432).—Soapwort saponin is fatal to minnows in concn. of 1 : 4000. The toxic doses of the saponins of *Dumoria*, soapwort, and guaiac in different species were respectively as follows: intraperitoneally in guinea-pigs 5, 7·5, and 60 mg. per 100 g.; intravenously in rabbits 8, 17, and 150 mg. per kg. Hypotensive doses in the urethanised rabbit were 0·5, 5, and 150 mg., respectively. The hypotensive effect is abolished by vagotomy or atropine injection. Tested on eserinised, denervated leech muscle the saponins of *Dumoria* and soapwort contained insufficient acetylcholine to produce this hypotension. P. C. W.

Comparison of effect of atropine and α-phenylvaleric ester of diethylamino-ethanol on gastric secretion of dog. B. N. Halpern (*Compt. rend. Soc. Biol.*, 1940, **133**, 400—402).—Dogs were given a meat-broth test meal. The synthetic ester ("propivane") in a dose of 10 mg. per kg. caused no change in the p_H or composition of gastric juice. Atropine (0·1 mg. per kg.) caused complete inhibition of free HCl secretion. P. C. W.

Atropine-like action of pilocarpine. R. P. Herwick and T. Koppanyi (*J. Pharm. Exp. Ther.*, 1941, **72**, 20).—Pilocarpine in doses of 0·5—2·0 mg. per kg. gradually abolishes the electrical excitability of the vagus and antagonises the vaso-depressor effects of small doses of acetylcholine and pilocarpine. 2·0 mg. of pilocarpine produces complete vagal paralysis and reduces markedly the vasodilator effects of large doses of cholinotropic drugs. Prostigmine or eserine antagonises these actions. $BaCl_2$ diminishes or abolishes the vasodilator effects of cholinotropic drugs. H. H. K.

Effect of sparteine on autonomic nervous system. T. Koppanyi and C. R. Linegar (*J. Pharm. Exp. Ther.*, 1941, **72**, 23).—Sparteine in doses of 10—40 mg. per kg. paralyses the parasympathetic and sympathetic ganglia as evidenced by abolition of electrical excitability of the vagus and pressor effects of nicotine. Parasympathetic and sympathetic effectors peripheral to the ganglia are not affected; acetylcholine, pilocarpine, and adrenaline effects are not diminished. The adrenaline pressor effect is, however, markedly potentiated in both height and duration. Prostigmine or eserine antagonised the nicotine-like ephedrine-like action of sparteine. H. H. K.

Correlation between structure and ratio of inhibitory to pressor activity of sympathomimetic amines. A. S. Marrazzi (*J. Pharm. Exp. Ther.*, 1941, **72**, 28). H. H. K.

Two new physiological properties of ibogaine shared by cocaine. Raymond-Hamet (*Compt. rend Soc. Biol.*, 1940, **133**, 426—429).—Ibogaine, the principal alkaloid of *Tabernanthe iboga*, Baillon, injected intravenously in the chloralosed dog (4 mg. of the hydrochloride per kg.) augments the pressor response to adrenaline and abolishes the pressor response to occlusion of the carotids. P. C. W.

Pressor drugs. I. Chemistry and pharmacology of an analogue of adrenaline. J. C. Munch, V. H. Gattone, and H. J. Pratt (*J. Amer. Pharm. Assoc.*, 1941, **30**, 183—186).—Colour tests for the differentiation of adrenaline and vaponefrin are described. Vaponefrin has approx. ⅔ the toxicity (mouse, rat) and pressor activity (monkey, dog, cat) of adrenaline and is more stable in aq. solution at p_H 4 than is adrenaline. Discoloured vaponefrin solutions retained their pressor activity. F. O. H.

Pharmacological actions of morphothebaine dimethyl ether. J. A. Gunn (*J. Physiol.*, 1941, **100**, 64—79).—This alkaloid (3 : 4 : 6-trimethoxyaporphine) is closely related to bulbocapnine and corydine, and less closely to *apo*morphine. The $L.D._{50}$ for mice by intraperitoneal injection is 0·11 g. per kg., and for frogs, by injection into the dorsal lymph sac, 0·25 g. per kg. In mice it produces, in large doses, clonic convulsions, followed by central motor paralysis, with death from respiratory failure; there is a primary stimulation of

the central nervous system above the spinal cord. In frogs there is merely central motor paralysis. Small doses stimulate respiration in mammals. It lowers the blood pressure in rabbits and cats and depresses muscle of the heart, vessels, uterus, spleen, and intestine. It antagonises adrenaline, resembling ergotoxine in many ways but, unlike the latter alkaloid, it has no primary stimulating action on smooth muscle and has a very transient effect in the intact animal. J. A. C.

Biological determination of small quantities of papaverine. J. Lévy (*Compt. rend. Soc. Biol.*, 1940, **133**, 374—376).—The antagonism between the actions of acetylcholine and papaverine on the rat duodenum is quant. and may be used for determination of small quantities of the latter (60—100 μg.). P. C. W.

Use of paredrinol [veritol] to correct fall in blood pressure during spinal anæsthesia. D. Anderson, jun. (*Minnesota Med.*, 1941, **24**, 335—337).—A single intramuscular dose of 20 mg. of paredrinol (veritol) maintained the blood pressure above 100 mm. Hg after an initial fall below 90 mm. in 23 out of 31 cases, and maintained a normally low blood pressure in 2 cases; a second dose was necessary in 4 cases; 2 cases did not respond. E. M. J.

Action of drugs on the calibre of coronary vessels. E. Lindner and L. N. Katz (*J. Pharm. Exp. Ther.*, 1941, **72**, 306—310).—In a modified Langendorff prep. the coronary vessels of an isolated fibrillating heart were perfused under const. pressure with defibrinated-heparinised dog's blood at 37°. Digitalis derivatives, *k*-strophanthin, ouabain, and digifolin produced sometimes constriction of coronary vessels even in therapeutic doses. Metrazol and glucose were mild coronary dilators. $CaCl_2$ was a powerful dilator. Ca gluconate showed mild dilatation only with large doses. Aminophyllin and caffeine Na benzoate produced coronary dilatation. Papaverine hydrochloride prevented ventricular fibrillation and produced powerful long-lasting coronary dilatation. H. H. K.

Use of digitalis to prevent exaggerated acceleration of heart during physical exercise in patients with auricular fibrillation. W. Modell and H. Gold (*J. Pharm. Exp. Ther.*, 1941, **72**, 29).—27 experiments were performed on 11 patients with auricular fibrillation. Physical exercise to the limits of endurance produced the same acceleration of the heart as complete blocking of the vagi by atropine. However, after "extravagal" digitalisation complete blocking of the vagi rarely allows the ventricles to beat faster than 100 per min. Exercise to the limits of endurance similarly fails to accelerate the ventricle above 100 per min. after "extravagal" digitalisation. H. H. K.

Are results of U.S.P. frog method for assay of digitalis applicable to man? H. Gold, McK. Cattell, N. T. Kwit, and M. Kramer (*J. Pharm. Exp. Ther.*, 1941, **72**, 17).—Results obtained by the cat and frog methods have been applied to tests on man with auricular fibrillation and regular sinus rhythm by a technique in which comparisons are carried out on one and the same subject. Assays with the U.S.P. frog method are not applicable to man. Assays with the cat method give results that are more nearly so with the digitalis leaf. A final assay of a digitalis prep. must be based on direct determinations on man. H. H. K.

Statistical method for calculating mortality percentages in digitalis assays. H. N. Wright (*J. Amer. Pharm. Assoc.*, 1941, **30**, 177—180).—Application of the statistical method of Dragstedt and Lang (*J. Pharm. Exp. Ther.*, 1928, **32**, 215) to the 1-hr. frog assay is described. The method, which is based on the simultaneous integration of survivals and deaths at all dosage levels, has an accuracy of approx. ±1% throughout the 25—75% mortality range. F. O. H.

Alcohol of lung air as index of alcohol in blood. H. W. Haggard, L. A. Greenberg, D. P. Miller, and R. P. Carroll (*J. Lab. clin. Med.*, 1941, **26**, 1527—1541).—The coeff. of distribution of alcohol between air and blood determined *in vitro* and *in vivo* was 1 : 1300, not 1 : 2000 as usually reported. The discrepancy is, in part, due to the loss of alcohol in condensed water vapour in containers used to collect expired air. The concn. of alcohol in lung air cannot be correctly calc. from the concn. in mixed expired air on the basis of CO_2 content of these airs. Alcohol diffuses more rapidly into the air of the respiratory dead space than does CO_2. The diffusion does not affect the concn. in the alveolar or venous air. The concn. of alcohol in the venous air corresponds with that in the alveolar air. A method is described for obtaining venous and alveolar air without loss of alcohol. C. J. C. B.

Colloid laxatives available for clinical use. H. Gray and M. L. Tainter (*Amer. J. digest. Dis.*, 1941, **8**, 130—139).—A review with original data on physical properties of the colloids and the stools produced by them. The products are classified as colloidal clays, dried fruits, marine mucilages, acacia, tragacanth, and psyllium. Psyllium seeds produced a constipating effect; tragacanth increased the total daily wet and dry wt. of stools, the latter by an amount equal to that of the ingested tragacanth. N. F. M.

Fæcal impaction due to hygroscopic gum laxative. S. P. Waud (*Amer. J. digest. Dis.*, 1940, **7**, 297—298).—A case report. C. J. C. B.

Carthartic effectiveness of parenterally administered phthalein laxatives in monkey. S. Loewe (*J. Pharm. Exp. Ther.*, 1941, **72**, 27).—Fresh dil. alcoholic or acetone solution of phenolphthalein and isacen or an aq. solution of peristaltine was injected into *rhesus* monkeys. No laxative action was obtained intramuscularly with isacen in doses up to 120% of the oral D_{50}, nor with peristaltine in doses 100 times the oral D_{50} of phenolphthalein. The min. intramuscularly effective dose of U.S.P. phenolphthalein was 65% of the oral D_{50}. H. H. K.

Absorption and elimination of phenolphthalein in normal and pathological states. B. Fantus, F. Steigmann, and J. M. Dyniewicz (*J. Pharm. Exp. Ther.*, 1941, **72**, 252—264).—Alcoholic solution of phenolphthalein is readily absorbed from the gastro-intestinal tract in man. The absorbed substance is excreted mainly through bile and partly through urine. The biliary excretion is impaired in liver damage; the urine excretion and the blood level are consequently much increased. The urinary excretion is decreased in chronic nephritis but the blood level remains normal. In malignant nephrosclerosis, the urinary excretion is decreased, but the blood level is normal or higher than normal. H. H. K.

Influence of aloes and podophyllum on flow of bile. L. W. Hazelton (*J. Pharm. Exp. Ther.*, 1941, **72**, 20).—Intravenous injection of extract of aloes or of podophyllum resin increased production of hepatic bile in dogs anæsthetised with Na pentobarbital. H. H. K.

Irritant effect of aloin. M. W. Green (*J. Amer. Pharm. Assoc.*, 1941, **30**, 186—187).—Comparative tests of the irritant effect of U.S.P. and unofficial aloins on the mucosa of the guinea-pig intestine *in situ* are described. F. O. H.

Anthelmintic properties of alkylcresols and their chloro-derivatives. M. H. Hu, P. P. T. Sah, and H. H. Anderson (*J. Pharm. Exp. Ther.*, 1941, **72**, 21).—*In vitro* 6-hexyl-*m*-cresol killed all of 10 pig ascarides in 1 hr.; 6-hexyl-*o*-cresol and 2-hexyl-*p*-cresol were less effective; the *p*-isomeride required 2 hr. to kill all worms. Cl-derivatives also were less effective; 4-chloro-6-hexyl-*m*-cresol and 6-chloro-2-hexyl-*p*-cresol at 2 hr. were not lethal, whilst 4-chloro-6-hexyl-*o*-cresol in this time was effective. Of the 6 compounds tested *in vivo* in 25 dogs, 2-hexyl-*p*-cresol was the most active; 66% of ascarides were killed at a dose range of 0·2—0·4 c.c. per kg. Other agents, in similar amounts, in decreasing order of effectiveness were 6-hexyl-*o*-cresol, 6-chloro-2-hexyl-*p*-cresol, 6-hexyl-*m*-cresol, 4-chloro-6-hexyl-*m*-cresol, and 4-chloro-6-hexyl-*o*-cresol. H. H. K.

Histamine and intrapleural pressure. J. Troisier, M. Bariéty, and D. Kohler (*Compt. rend. Soc. Biol.*, 1940, **133**, 413—417).—The effects of intravenous histamine on intrapleural pressure in the choralosed dog depend on the dose: 0·01—0·1 mg. produces a slight temporary decrease, 1 mg. greater and longer decrease, 5 mg. increased intrapleural pressure, generally followed by a decrease. P. C. W.

Rôle of blood cells in anaphylactic histamine release. G. Katz (*J. Pharm. Exp. Ther.*, 1941, **72**, 22).—Sensitised white, red, and whole blood cells release histamine when they are washed and suspended in Locke's solution containing antigen. At 37°, the greater part of the histamine release takes place within 2 min.; the release is completed within 7 min. The min. antigen (cryst. egg albumin) concn. giving a max. release is 1 : 1000; the min. concn. occasionally giving a detectable release is 1 : 250,000. Blood cells from animals sensitised up to 100 days previously to the experiment released

histamine in *in-vitro* shock. Besides histamine, an unknown substance is released which does not stimulate isolated, atropinised guinea-pig's ileum. The unknown substance lowers atropinised cat's blood pressure and causes adrenaline secretion in cats. H. H. K.

Sulphanilamide and some of its derivatives on reaction of mice to anæsthetics. T. C. Butler, H. L. Dickison, W. M. Govier, C. M. Greer, and P. D. Lamson (*J. Pharm. Exp. Ther.* 1941, **72**, 25, 298—305).—Sulphanilamide renders mice more easily anæsthetised by pentobarbital, ether, and $CHCl_3$. H. H. K.

Intra-cranial pressure during general anæsthesia. F. W. G. Smith (*Brit. J. Anæsth.*, 1941, **17**, 85—91).—Intracranial pressure was increased by 6·7 mm. Hg, the intraocular pressure by 5·6 mm. Hg, and the retinal diastolic-arterial pressure by 15·5 mm. Hg on the average in 42 patients under a general anæsthetic. H. H. K.

Anæsthesia in surgical shock. E. M. Chivers and W. E. F. Evans (*Brit. J. Anæsth.*, 1941, **17**, 92—97).—A discussion. H. H K.

Casualty anæsthesia in [British] Emergency Medical Service. F. B. Mallinson (*Brit. J. Anæsth.*, 1941, **17**, 98—107).—A discussion. H. H. K.

Anæsthetic action of *cyclo*propyl ethyl ether. J. C. Krantz, jun., C. J. Carr, S. E. Forman, W. E. Evans, jun., and H. Wollenweber (*J. Pharm. Exp. Ther.*, 1941, **72**, 233—244).—"Cypreth ether," a volatile, colourless liquid of characteristic ethereal odour, has b.p. 68°, *d* 0·780. It has a marked anæsthetic effect in monkeys, dog, and man which vies with $CHCl_3$ and has an anæsthetic index double that of ethyl ether. No liver damage was observed in the monkey. The drug produced no arrhythmias in monkey's heart. Blood pressure and pulse remained normal in anæsthetised dogs. Concn. in the respired air required to produce anæsthesia was ½—½ that required for ethyl ether. Anæsthetic concns. in the blood were about half those of ethyl ether. Induction period was 1 min. in man and was not unpleasant (2 experiments). Pain reflexes were abolished and recovery was rapid. H. H. K.

***cyclo*Propane and avertin anæsthesia [in thoracoplastics].** A. C. Ambler (*Sth. Med. J.*, 1941, **34**, 520—522).—There were 1·3% of post-operative tuberculous pneumonia and 1·9% of fatalities in a series of 220 cases. E. M. J.

Intravenous evipal in minor gynæcological operations. E. E. Pinnell (*Ohio Sta. Med. J.*, 1941, **37**, 449—450).—Good relaxation was obtained in 67% of 121 cases with 1 g. of evipan in 10 c.c. of distilled water; 25% of cases needed supplementary anæsthesia. Pulse rate increased 12 per min. and systolic blood pressure fell 15 mm. on an average. E. M. J.

Clinical use of intravenous anæsthesia alone and with other anæsthetics. E. B. Tuohy (*Sth. Med. J.*, 1941, **34**, 42—45).—A review. E. M. J.

Pentothal sodium oxygen anæsthesia in general surgery. G. W. Hawk (*Penn. Med. J.*, 1941, **44**, 886—890).—Report on 652 cases in which the average amount required for induction was 3·33 c.c. of a 5% and 5·61 c.c. of a 2·5% solution with a range of 2—18 and 2—12 c.c., respectively. E. M. J.

Evipan soluble rectally in obstetrics. S. L. Siegler and I. Beris (*N.Y. Sta. J. Med.*, 1938, **38**, 1071—1074).—72 women in labour were given 30 or 45 c.c. of a 3·3% solution of evipan soluble per rectum as their wt. was below or above 150 lb.; in addition 1/150 grain of hyoscine was injected hypodermically. In no case was labour retarded. 56 cases were delivered spontaneously. 10 cases required some ether or N_2O while the head was being born, and 6 cases needed full anæsthesia. 52 cases were completely analgesic and amnesic; amnesia wore off within 3 hr. of delivery in 38 out of 54 cases. 43% of cases showed some fall in blood pressure. No deleterious effect on the newborn was seen. E. M. J.

Spinal anæsthesia in general surgery. O. R. Clark (*J. Kansas Med. Soc.*, 1941, **42**, 195—202).—A survey of 400 cases. E. M. J.

Continuous spinal anæsthesia. W. T. Lemmon and G. W. Paschal, jun. (*Penn. Med. J.*, 1941, **44**, 975—980).—A 5% solution of procaine hydrochloride in c.s.f. was used in 500 cases. The very flexible lumbar puncture needle was left *in situ* throughout the operation; a specially designed mattress with a cut-out part allowed the patient to remain in the supine position. The needle was connected to a 10-c.c. syringe by 30 in. of small-calibre thick-walled rubber tubing and a stopcock. 2—3 c.c. of the solution were used for induction, the patient being kept in 5° Trendelenburg position. Anæsthesia was easily prolonged by small fractional injections when needed. Premedication consisted of 3 grains of nembutal by mouth 3 hr. and ¼ grain of morphine sulphate and 0·01 grain of scopolamine hydrobromide hypodermically 1 hr. before the operation. Operations lasted for 5 min.—3 hr. 35 min. (total gastrectomy) with an average of 53 min. 25—2100 mg. of novocaine (average 242 mg.) were used. Blood pressure fell on an average by 11%. The operation mortality was 5·4% but none was due to the anæsthetic. E. M. J.

Evaluation of continuous spinal anæsthesia. J. D. Spaid (*Ohio Sta. Med. J.*, 1941, **37**, 637—640). E. M. J.

Facilitation and summation—their relation to local anæsthesia. C. Dillon (*Brit. Dent. J.*, 1940, **70**, 333—335).—A discussion on its importance in dental surgery. H. H. K.

Ointment for relief of discomfort due to severe irradiation epidermitis. H. H. Ashbury (*Radiology*, 1941, **36**, 739).—0·5—1·0% of tetracaine (*p*-butylaminobenzoyldimethylaminoethanol hydrochloride) relieved the pain due to the radiation reaction of the skin and mucous membrane in a case of carcinoma of the vulva. E. M. J.

Tetrahydrocannabinol homologues with marihuana activity. See A., 1941, II, 331.

Action of chemical components of cannabis extracts. S. Loewe and W. Modell (*J. Pharm. Exp. Ther.*, 1941, **72**, 27). H. H. K.

Organotropy of tribromoethanol, tribromoacetaldehyde, and tribromoacetic acid. J. L. Morrison and G. A. Emerson (*J. Pharm. Exp. Ther.*, 1941, **72**, 30).—Neutral dil. solution of drugs were given intramuscularly to cats, in amounts equiv. in Br content to 0·2 g. per kg. As judged from relative Br contents of blood and tissues, tissue affinities are high for avertin, particularly with brain, glands, bile, heart, lungs, and red bone marrow. Tissue affinities for the 2 other agents are low. Brain does not show higher affinities for avertin than other tissues. H. H. K.

Effect of dilantin on metrazol convulsions in mice and rats. L. Goodman and B. J. Lih (*J. Pharm. Exp. Ther.*, 1941, **72**, 18).—Twice daily doses of 30 mg. per kg. of dilantin (Na diphenylhydantoinate) for 4—7 days produced a marked inhibitory effect on metrazol convulsions. Single large doses of dilantin potentiated the metrazol effect. H. H. K.

Metabolism of diphenylhydantoin. C. H. Hine and F. L. Kozelka (*J. Pharm. Exp. Ther.*, 1941, **72**, 20—21, 276—279, 280—283).—In man and dogs some of the drug is excreted in the urine unchanged. 9—10% is excreted as diphenylhydantoic acid. Presence of diphenylacetic and benzilic acids could not be demonstrated. Relative concns. in various tissues decrease in order, liver, brain, kidney, blood, and muscle. The drug disappears from the body in 16 hr. after a single intravenous administration. It accumulates in brain after oral administration of repeated large daily doses. H. H. K.

Pharmacology of some new synthetic hypnotics. J. W. Nelson, S. C. Lyster, and G. F. Cartland (*J. Amer. Pharm. Assoc.*, 1941, **30**, 180—182).—The compounds (87 substituted derivatives of acetylurea and acetamide; cf. Blicke and Centolella, A., 1939, II, 62) were studied by intraperitoneal injection in rats for determination of the therapeutic ratio (min. lethal dose : min. hypnotic dose) and 6 of the most promising were further examined by oral administration in rabbits. Only one compound, acetethyl-*n*-butylamide, was more active than carbromal by both tests. F. O. H.

Simple rapid qualitative test for barbiturates. H. L. Motley (*J. Pharm. Exp. Ther.*, 1941, **72**, 30).—Addition of 5—25 mg. of sol. barbiturate to 10 c.c. of water in a test-tube containing 0·04 c.c. of $HgNO_3$ test solution (U.S.P. XI) produces a white to grey gelatinous or flocculent ppt., except for Na barbital and pentothal Na where the ppt. is of a finer type. Subsequent addition of 0·08 c.c. of KI test solution (U.S.P. XI) produced a greenish-coloured colloidal solution, with a change of the ppt. to one with no visible particles. Determinations of light transmission from 400 to 700 mμ. with a spectrophotometer revealed spectroscopic differences in the control from

those with a barbiturate present. Theobromine and theophylline were the only drugs which gave similar results to the barbiturates. H. H. K.

Interrelations of pharmacodynamic properties of morphine and its derivatives. H. Krueger (*J. Pharm. Exp. Ther.*, 1941, **72**, 24). H. H. K.

***N*-Allylnorcodeine and *N*-allylnormorphine, two antagonists to morphine.** E. R. Hart (*J. Pharm. Exp. Ther.*, 1941, **72**, 19).—*N*-Allylnorcodeine stimulated respiration of rabbits. Intravenous administration of *N*-allylnorcodeine or *N*-allylnormorphine antagonised the respiratory effects of twice the quantity of morphine similarly administered in rabbits. H. H. K.

Antagonism between strychnine and ethanol and/or ethylbutylbarbituric acid in rat. L. Olszycka (*Compt. rend. Soc. Biol.*, 1940, **133**, 422—424).—Tolerance of rats to an intravenous injection of strychnine is increased by a previous injection of ethanol (2·4 mg. per g.) or of ethylbutylbarbituric acid (0·06 mg. per g.). If both hypnotics are given together tolerance is summated. P. C. W.

Present status of benzedrine sulphate therapy. E. C. Reifenstein, jun., and E. Davidoff (*N.Y. Sta. J. Med.*, 1939, **39**, 42—57).—A review. E. M. J.

Dysmenorrhœa and its treatment by benzedrine sulphate. W. J. Larkin (*Penn. Med. J.*, 1941, **44**, 994—997).—52% of a group of 366 student nurses complained of dysmenorrhœa. 159 of these were divided into 4 types according to the severity of the symptoms. Benzedrine was then given as an initial dose of 5 mg. followed if necessary by 10 mg. 2 hr. later and another 10 mg. after 4 hr. 66% of the 2 milder types which comprised 84% of the series, and only 16% of the more severe types, benefited by this treatment. E. M. J.

Influence of metrazol on "neurotic pattern" in rats. J. Sacks, N. R. Maier, and N. M. Glaser (*J. Pharm. Exp. Ther.*, 1941, **72**, 33—34).—Auditory stimuli sometimes cause in rats a period of violent, undirected running which may be followed by a convulsion. Sub-convulsive doses of metrazol increase the % of animals showing this abnormal reaction. H. H. K.

Distribution, excretion, and rate and site of detoxication of metrazol. H. J. Tatum and F. L. Kozelka (*J. Pharm. Exp. Ther.*, 1941, **72**, 284—290).—Metrazol in blood, liver, muscle, and brain was determined at hourly intervals in rabbits and found to be equally distributed in the tissues. Only traces of metrazol were excreted unchanged in urine of dogs and man after large doses. The liver plays an important part in detoxication while kidney has no such action. H. H. K.

Comparative physiological actions of phenyl-, thienyl-, and furyl-*iso*propylamines. G. A. Alles and G. A. Feigen (*J. Pharm. Exp. Ther.*, 1941, **72**, 265—275).—Intravenous injection of phenyl- and thienyl-*iso*propylamines into anæsthetised dogs produce rise of blood pressure of the same intensity and duration. 3 times as much furyl*iso*propylamine is required to produce the same pressor effect. Small doses of the 3 drugs contract isolated rabbit's gut which is antagonised by atropine. Greater concns. decrease tone, but the range of dosage in which furyl*iso*propylamine acts only to increase tone is much greater than for phenyl- or thienyl-*iso*propylamine. Phenyl- and thienyl-*iso*propylamines injected intraperitoneally into mice are more active motor stimulants than furyl*iso*propylamine. Thienyl*iso*propylamine is less toxic than the phenyl compound in mice; furyl*iso*propylamine is only one fourth as toxic as the other 2 compounds. Phenyl-*iso*propylamine is more effective on blood pressure and central nervous system in man after oral administration. H. H. K.

Use of erythritol tetranitrate as diuretic. W. M. Nicholson and V. E. Moseley (*Sth. Med. J.*, 1941, **34**, 331—335).—Marked diuresis was produced in 6 of 8 patients with the nephrotic syndrome of subacute glomerulonephritis by daily doses of 96—160 mg. of erythritol tetranitrate. No effect on urinary excretion was seen until the 2nd—4th day of treatment. E. M. J.

Constituents of "senso." XII. Identification of a pure substance with diuretic action. H. Kondo and S. Ohno (*J. Pharm. Soc. Japan*, 1940, **60**, 230—232).—The diuretic action of impure ψ-bufotalin bromide and cinobufotalin is traced to the presence of suberic acid. Acids, $[CH_2]_n(CO_2H)_2$ (n = 1—12), with the exception of those for which n = 1—3, exhibit diuretic activity which attains its max. with sebacic acid. Suberic acid is not harmful to the heart and its diuretic activity is increased by the presence of steroids. H. W.

Effect of aluminium hydroxide on acid–base balance and renal function. J. B. Kirsner (*Amer. J. digest. Dis.*, 1941, **8**, 160—163).—A clinical and chemical study of 23 cases showed that even massive doses of $Al(OH)_3$ were without effect on acid–base balance or renal function, and had no adverse effects in the presence of renal impairment. N. F. M.

Agranulocytosis following administration of arsphenamines and bismuth. A. T. Mays (*N.Y. Sta. J. Med.*, 1938, **38**, 1234—1235).—A man, aged 46, over a period of 20 months received 29 injections of 0·2 g. of arsphenamine, 14 of 0·3 g. of neoarsphenamine, and 51 of Bi salicylate; he developed jaundice and agranulocytosis (3% polymorphs, 65% lymphocytes, 32% immature cells of the myeloid series, total white cells 2800 per cu.mm.). Recovery followed 5 injections of 10 c.c. of pentnucleotide, infusions of glucose, and a high-carbohydrate diet. E. M. J.

Nitritoid crisis following injection of tryparsamide. H. Lehmann (*Canad. Med. Assoc. J.*, 1941, **45**, 129—133).—A case report. C. J. C. B.

Damage to optic tract produced in monkeys by tryparsamide. B. J. Longley, N. M. Clausen, F. A. Davis, M. E. Nesbit, and A. L. Tatum (*J. Pharm. Exp. Ther.*, 1941, **72**, 27—28).—5 *rhesus* monkeys were treated with increasing doses of tryparsamide. 4 of the 5 animals which received higher doses became blind. There was pallor of the optic nerve papilla and nystagmus. H. H. K.

Fatality after mapharsen [in syphilis]. G. W. Creswell and G. B. Roth (*Med. Ann. Columbia*, 1941, **10**, 230—233).—306 cases of syphilis which showed severe toxic reactions after arsphenamine were given mapharsen; 14% had reactions of a milder and 14% of a more or equally serious type. A man, aged 36, with early latent syphilis had had several courses of arsphenamine + Bi over a period of 5 years, the Wassermann reaction remaining positive. 2 years later he received 6 injections of mapharsen and 18 months after that a new course was started, Bi being given concurrently. 5 days after the 5th injection when a total of 0·62 g. of mapharsen had been reached bruises and petechiæ were noticed on the extremities. A blood count showed 4·9 million red, 3600 white cells, and 25,000 platelets. He received intravenous vitamin-*C* and intramuscular injections of pentnucleotide, but 6 days later the count had fallen to 3·7 million red and 1700 white cells with 15% granulocytes. 2 blood transfusions of 500 c.c. each were given but he died on the 17th day after his last dose of mapharsen. E. M. J.

Treatment of schistosomiasis japonica with fouadin. R. A. Turangui and P. J. Aguila (*Phillipine J. Sci.*, 1941, **75**, 69—73).—19 out of 34 patients who received complete courses of 40 c.c. of a 6·3% solution of fouadin (Na Sb pyrocatechol-disulphonate) were apparently cured. Toxic symptoms were slight. V. J. W.

Argyria due to silver arsphenamine. O. Steinbrocker (*N.Y. Sta. J. Med.*, 1938, **38**, 1335).—Argyria and a spectroscopic density of the Ag line in an excised piece of skin equiv. to a retention of 10—15 g. of Ag arsphenamine were seen in a man, aged 35, who during the previous 3½ years had received 133 intravenous injections of 0·3 g. of Ag arsphenamine and 133 intramuscular injections of Bi in oil (dose unknown). The Bi content of the skin was also excessive. E. M. J.

Mercury poisoning. G. A. Kiloh (*Proc. Roy. Soc. Med.*, 1941, **34**, 559).—A case is reported. H. H. K.

Toxicological studies on ammoniated mercury. O. S. Gibbs, H. Pond, and G. A. Hansmann (*J. Pharm. Exp. Ther.*, 1941, **72**, 16—17).—Nearly all common foods contain Hg. This varies from 0·1 to 6·0 μg.-%. About 20 μg. of Hg per day is ingested by man. The ingestion of traces of Hg and their presence in the excreta have no toxicological significance. 1 g. of 10% ammoniated Hg ointment applied daily in man for 1 month causes a total increase of 0·5 mg. of Hg in the excreta for that period. Erythematous doses of quartz light do not increase the absorption. All animal tissues contain Hg. The distribution is irregular. Kidney, liver, and gut contain most; spleen, skin, lungs next, and brain and bone least. The equiv. of 5 mg. per day per man given to animals caused no pathological lesions. Hg is also excreted by skin. H. H. K.

Incidence and treatment of yaws in western Solomon Islands. A. G. Rutter (*Trans. R. Soc. trop. Med. Hyg.*, 1941, **34**, 429—444).—Over a period of 2 years at least half of the population of the islands of Vella Lavella and Ranono suffer from active yaws lesions, either cutaneous or bony. A standard treatment of 3 consecutive injections of sobita (Na bismuthyl tartrate) produced healing in 66% of secondary, in 71% of early tertiary, and in 78% of late tertiary lesions. Novarsenobenzol used in adults gives equal results when 3 injections are given (84% "immediate cure"); when only 1—2 injections can be given in series it is more effective than sobita. The relapse rate is high (83% in 18 months). C. J. C. B.

Paralysis of legs after treatment with spirozid. G. Mahler (*Jahrb. Kinderheilk.*, 1938, **101**, 351—361).—Flaccid and spastic paralysis of legs in 4 infants with congenital syphilis is reported. M. K.

Comparison of effects of large doses of calcium gluconate idonate, calcium gluconate, and calcium chloride. E. R. B. Smith (*J. Lab. clin. Med.*, 1940, **25**, 10, 1018—1021).—$CaCl_2$ given orally to rats or intravenously to dogs is more toxic than Ca gluconate idonate or Ca gluconate. Ca gluconate idonate and Ca gluconate differ little in their toxicity for dogs and rats. Given over 70 days Ca gluconate proved lethal to 2 of 10 rats and Ca gluconate idonate to none of 10. Intravenous injections of 0·205M. solutions continued to the point of cardiac arrest (from ventricular fibrillation) showed no differences between the effects of Ca gluconate and Ca gluconate idonate. C. J. C. B.

Treatment of lead poisoning. I. Gray and I. Greenfield (*N.Y. Sta. J. Med.*, 1938, **38**, 1313—1319).—Two patients were treated on a low-Ca diet + large doses of NH_4Cl for an acute exacerbation of occupational Pb poisoning; after several months they developed Pb polyneuritis and were put on a high-Ca, high-P, high-vitamin diet. The 24 hr. urinary Pb output fell in 7 days from 0·98 to 0·05 mg. and from 0·14 to 0·02 mg.; blood-Pb fell from 0·05 to 0·03 mg.-% in one case and remained at 0·04 mg.-% in the other. Pb excretion was increased in 4 cases with blood-Pb levels of 0·02—0·13 mg.-% on a high-Ca, low-P diet with additional oral Ca lactate and intramuscular Ca gluconate; it fell to or below the previous level of 0·07—0·16 mg. per l. on a subsequent low-Ca, high-P diet with the addition of 10 g. of NH_4Cl and daily administration of 15 g. of Na_3PO_4. E. M. J.

Treatment of chronic arthritis with gold sodium thiosulphate. J. C. Thompson and C. K. Elliott (*Nebraska Sta. Med. J.*, 1941, **26**, 44—50).—Marked improvement was seen in 3 out of 4 patients receiving more than 700 mg. out of a series of 18. E. M. J.

Chronic toxicity of cadmium. O. G. Fitzhugh and F. H. Meiller (*J. Pharm. Exp. Ther.*, 1941, **72**, 15).—Albino rats at the age of 3 weeks were placed on a diet containing $CdCl_2$ in concns. of 15, 45, 75, and 135 p.p.m. for at least 6 months. Concns. of 45 p.p.m. produced slight toxic symptoms. In animals on 135 p.p.m. marked anæmia and often death occurred. Bleaching of the incisor teeth was observed in all animals. Toxicity of Cd was increased by low-protein diets. H. H. K.

Effect of traces of tin on rate of growth of goldfish. A. J. Finkel and W. C. Allee (*Amer. J. Physiol.*, 1940, **130**, 665—670).—Sn, as Sn^{++} in concns. of 0·000005M., accelerates the growth of goldfish during brief assay periods. M. W. G.

Fate of selenium in the organism. B. B. Westfall and M. I. Smith (*J. Pharm. Exp. Ther.*, 1941 **72**, 245—251).—Most of the urinary Se excreted by rabbits fed on seleniferous wheat appears with the ethereal and neutral S presumably as org. Se, with only about 15% as inorg. H. H. K.

Blood-bromide after oral ingestion. F. B. Flinn (*J. Lab. clin. Med.*, 1941, **26**, 1325—1329).—The ingestion of 30—45 grains of NaBr daily over a period of 4 months gave a blood-Br level of 16 and 50 mg.-%, respectively. It did not affect the blood picture or the nervous system. The blood-Br drops rapidly after the medication stops. C. J. C. B.

Toxicity and actions of trimethylene glycol. W. Van Winkle (*J. Pharm. Exp. Ther.*, 1941, **72**, 227—232).—Intramuscular and oral administration of trimethylene glycol was twice as toxic as propylene glycol in white rats. The same was found in rabbits after intravenous injection. Oral administration of 3 c.c. per kg. to 3 cats produced loss of wt. and death within a week. No glycogenic action was observed in rats. H. H. K.

Intravenous toxicity of acetins in dogs and rabbits. R. C. Li and H. H. Anderson (*J. Pharm. Exp. Ther.*, 1941, **72**, 26).—Lethal dose of monoacetin was 5 c.c., diacetin 3 c.c., and triacetin 1·5—2 c.c. per kg. in 12 days. In 23 rabbits monoacetin was lethal at 4 c.c., diacetin at 1·5 c.c., and triacetin at 0·75 c.c. per kg. Animals exhibited severe dyspnœa, muscular tremors, retraction of the neck, and occasionally convulsions immediately before death, which occurred 2—22 min. after the injection. Animals dying from diacetin and triacetin showed varying degrees of hæmorrhage in lung tissue. Sections of heart, liver, spleen, and kidneys showed no pathological changes. H. H. K.

Management of strychnine poisoning. D. C. Browne and G. McHardy (*New Orleans Med. J.*, 1941, **93**, 525—526).—A 20-year-old male, weighing 122 lb., accidentally took 0·325 g. of strychnine; 20 min. later he was given a dil. solution of tannic acid, and gastric lavage with $KMnO_4$ was performed after intravenous injection of 0·5 g. of Na amytal 35 min. after ingestion of the drug. The injections were repeated 4 times during the next 12 hr. for renewed convulsions. Catheterisation then performed yielded 550 c.c. of urine containing 27·5 mg. of strychnine; the bladder was lavaged with 1 : 1000 $KMnO_4$. 0·25 g. of Na amytal were given intramuscularly every 4 hr. for the next 24 hr. and the patient finally recovered. E. M. J.

Sodium acid sulphate poisoning. J. Beeman (*Northw. Med.*, 1941, **40**, 21).—17·9 g. of $NaHSO_4$ were isolated by dialysis from the 600 c.c. of brown viscid gastric contents of a man found dead in bed with black burns of the face, neck, and shoulders, produced by vomiting the same fluid. Underwear had numerous holes of the type produced by an acid. The lips were black, but not charred. Charring was present at the lower end of the œsophagus and in the gastric mucosa, which was dark brown and varied in thickness from 0·6 to 1·2 cm. The corrosive findings extended through the duodenum to the jejunum. A water glass at the bedside contained a small amount of dark-coloured fluid and nearby was found a can of "Saniflush" which proved to be an 85% solution of $NaHSO_4$. Gastric lavage with a 50% solution of "Saniflush" in a rabbit produced similar appearances. E. M. J.

Toxicity of theophylline–ephedrine–barbiturate mixtures. R. K. Richards (*J. Pharm. Exp. Ther.*, 1941, **72**, 32). H. H. K.

Single dose toxicity of some glycols and derivatives. H. F. Smyth, jun., J. Seaton, and L. Fischer (*J. Ind. Hyg.*, 1941, **23**, 259—268).—The compounds were administered to rats and guinea-pigs by stomach tube in single doses. Deaths usually occurred within 2 days, but deaths up to 14 days were considered. The $L.D._{50}$ figures are given for 60 compounds, including glycols, ethers, ether acetates, Cl-compounds, and N compounds. In the ethylene glycol series toxicity decreases as mol. wt. increases; glycol ethers have a higher toxicity than the glycol, but their esters have a lower toxicity. Cl-compounds have a high toxicity. Fatal doses of glycols or esters produced no narcosis, but varying degrees of depressed function; the ethers, ether acetates, and Cl-compounds produced narcosis at $L.D._{50}$ or above; the N compounds were primarily irritant depressants. E. M. K.

[Action of cream and lotions on] skin respiration [Warburg technique]. L. G. Nutini and E. S. Cook (*Arch. Dermat. Syphilol.*, 1941, **43**, 949—955).—The technique for use of Warburg's method with human skin is described and discussed. Lotions and creams applied to animal or human skin depress respiration under the conditions of study. C. J. C. B.

Contact dermatitis due to nail lacquer (*Arch. Dermat. Syphilol.*, 1941, **43**, 1007—1008).—Report of 2 cases. C. J. C. B.

Discoloration of nails due to nail enamel. H. Shellow (*Arch. Dermat. Syphilol.*, 1940, **42**, 480—481).—A case report. C. J. C. B.

Contact dermatitis of face due to nail polish. W. S. Eisenstadt (*Minnesota Med.*, 1941, **24**, 180). E. M. J.

Venom of "Boomslang" (*Dispholidus typus*). E. Grasset and A. W. Schaafsma (*Sth. Afric. Med. J.*, 1940, **14**, 236—241).—The coagulating and proteolytic actions of the venom

resemble those produced by Viperidæ venom, using human and horse blood and gelatin. The toxicological effects differ from those produced by the proteroglyphe Colubridæ. The *Dispholidus* venom is very little neutralised by highly anti-neurotoxic anti-colubrine sera, but anti-viperine sera afford a certain degree of protection. A. S.

Effects of cigarette smoking on metabolic rate, heart rate, oxygen pulse, and breathing rate. W. A. Hiestand, H. J. Ramsey, and D. M. Hale (*J. Lab. clin. Med.*, 1940, **25**, 1013—1017).—Cigarette smoking caused an average increase of 9% in metabolic rate in 82% of 39 subjects; in 13% a decrease occurred. The max. effect on basal metabolism of smoking one cigarette was reached immediately in some cases, and was delayed for 45 min. in others. The first rise was typically followed by a second, reaching its summit 45 min. later. Smoking increased heart rate in 72% of subjects and decreased it in 26%. After 15 min. the heart rate became slower than normal. The rate of breathing decreased immediately after smoking, returning to normal in 45 min. Smoking immediately reduced the O_2 pulse val. followed by an increase for at least 45 min. Greatest physiological effects of smoking were shown by confirmed smokers who inhaled the smoke, and by persons who were unaccustomed to smoking. Women showed more marked changes than men. C. J. C. B.

Treatment of postoperative urinary retention by instillation of mercurochrome. F. L. Johnson (*Ohio Sta. Med. J.*, 1941, **37**, 635—636).—Catheterisation after gynæcological operations, mainly hysterectomies, were reduced from 80 to 24% by instillation of 30 c.c. of a 0·5% solution of mercurochrome at the end of operation. Frequency and dysuria were occasionally seen after this procedure, but did not last more than 24 hr. E. M. J.

Pectin. T. D. Morson (*Chem. and Ind.*, 1941, 665).—Apple pectin is beneficial in the treatment of colitis, particularly when compounded with specially purified kaolin. J. N. A.

Treatment of chronic infectious arthritis. M. W. Matthews (*New Orleans Med. J.*, 1941, **93**, 396—402).—A review. E. M. J.

Bee sting therapy in rheumatoid arthritis. E. E. Nicholls (*N.Y. Sta. J. Med.*, 1938, **38**, 1218—1220).—Discouraging results were seen in 27 patients, 20 of whom received an average of 453 stings. E. M. J.

Physical therapy in rheumatoid and osteoarthritis. I. Levin (*Med. Ann. Columbia*, 1941, **10**, 225—229). E. M. J.

Tonic in chronic pulmonary tuberculosis. H. W. Leetch and J. N. Hayes (*N.Y. Sta. J. Med.*, 1938, **38**, 1069—1070).—98 cases were given an alcoholic extract of garlic, cypress, eucalyptus, creosote, and menthol for 6—26 weeks; 43% showed a gain in wt. and some others in appetite. E. M. J.

Curare in treatment of tetanus. S. E. Isacson and S. A. Swenson, jun. (*Nebraska Sta. Med. J.*, 1941, **26**, 136—137).—Case report. E. M. J.

Action of sulphoricinoleate on [dental] tartar. O. Hofer (*Zahnärztl. Rundsch.*, 1938, **47**, 721—723; *Chem. Zentr.*, 1938, ii, 3952).—The action of a 58% sulphoricinoleate solution on tartar *in vitro* shows that the latter is dispersed colloidally without mechanical aid. "Solidox" tooth-paste contains 6% of a sulphoricinoleate. A. J. E. W.

Treatment and complications of common cold. H. M. Goodyear (*Ohio Sta. Med. J.*, 1941, **37**, 121—123). E. M. J.

Isotonic, buffered, and preserved intranasal ephedrine sulphate solutions. G. A. Tozer and L. Arrigoni (*J. Amer. Pharm. Assoc.*, 1941, **30**, 189—191).—The construction of a suitable formula (*e.g.*, ephedrine sulphate 0·5, KH_2PO_4 0·5, Na_2HPO_4 0·5, KCl 0·15, NaCl 0·15, glucose 0·997% in water) is described. F. O. H.

[Pharmacognosy of] *Nepeta glechoma.* J. H. Graham and L. M. Bitto (*J. Amer. Pharm. Assoc.*, 1941, **30**, 187—188).—The air-dried plant (ash 11·6%) yielded, on steam-distillation, a small amount of a semi-cryst., waxy substance showing phenolic and aldehydic characteristics. F. O. H.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Effect of muscular work on lactic acid, sugar, and adrenalin-ergic substances in blood. T. Sato (*Tohoku J. exp. Med.*, 1935, **27**, 207—217).—Blood-lactic acid was immediately increased by 66%, and became normal in 30 min. Blood-sugar was immediately increased by 11% and after 30 min. was 5% above normal. Blood-adrenalinergic substances increased by 15%, by 38% in 30 min., and by 8% in 90 min. The heart-beat and respiration rates were normal 30 min. after exercise. Ch. Abs. (*el*)

Glutathione in blood and tissues of animals in training. I. I. Nitzescu and M. Suciu-Stan (*Compt. rend. Soc. Biol.*, 1940, **133**, 518—520).—Exercised rats have a greater concn. of reduced glutathione in blood, muscle, heart, liver, and kidney than normals. The increase is more than 30% in blood and heart. P. C. W.

Inhibitory effects of aluminium compounds in silicosis. L. U. Gardner, M. Dworski, and A. B. Delahant (*Bull. Amer. Ceram. Soc.*, 1941, **20**, 281—284).—A vitrified saggar marl containing 50% of free SiO_2 and 20% of mullite ($3Al_2O_3,2SiO_2$) when injected as a fine powder (10 μ. or less) intraperitoneally into guinea-pigs produced no silicotic reaction within 1 year, as did the corresponding amount of free SiO_2 alone. It is considered that silicosis would be much more prevalent in the pottery industry were it not for the inhibiting effect of the Al in the clay minerals almost universally used in the bodies. J. A. S.

Pulmonary asbestosis. P. Ellman (*Proc. Roy. Soc. Med.*, 1941, **34**, 557).—A 45-year-old woman worked 31 years ago for 12 months in an asbestos factory. *X*-Ray examination revealed pulmonary asbestosis. Asbestos bodies were detected in sputum. H. H. K.

Toxicology of oxides of nitrogen. I. Toxic concentrations. L. W. La Towsky, E. L. MacQuiddy, and J. P. Tollman. **II. Physiological effects and symptomatology.** E. L. MacQuiddy, L. W. La Towsky, J. P. Tollman, and A. I. Finlayson. **III. Gross and histological pathology.** J. P. Tollman, L. W. La Towsky, E. L. MacQuiddy, and S. Schonberger (*J. Ind. Hyg.*, 1941, **23**, 129—133, 134—140, 141—147).—I. 112 animals of different species were exposed to concns. of oxides of N (expressed as NO_2) varying from 30 to 1000 p.p.m. The proportion dying rose from 0% at 30 p.p.m. to 100% at 800 p.p.m.; 55 p.p.m. was the lowest concn. to produce harmful effects, and it was rare for any species to withstand more than 100 p.p.m. (74% died in this concn.). Death occurred at times varying from 19 min. at 1000 p.p.m. to 318 min. at 100 p.p.m. The literature on the toxicity of oxides of N is summarised.

II. In animals acutely poisoned by oxides of N, deaths occurred from pulmonary œdema (88%), asphyxia (6%), or pneumonitis (6%). As a result of pulmonary œdema, the red cell count and hæmoglobin content of the blood rose markedly; methæmoglobin appeared in all animals after an exposure of 1 hr. to a concn. of 150 p.p.m. There was a marked drop in blood pressure, with hyperpnœa followed by respiratory failure. Calc. amounts of HNO_2 and HNO_3 formed in the lungs of a human breathing various concns. of NO_2 are given.

III. Death from asphyxia due to methæmoglobin was rapid; death from asphyxia due to pulmonary œdema occurred during or after exposure, with necrosis and desquamation of epithelium in smaller bronchioles and dilatation and congestion of alveolar capillaries. Death from pneumonitis occurred several days to several weeks after exposure, with patchy consolidation, thickened and adherent pleura, abscesses, and gangrene. There were no changes in recovered animals that were killed. E. M. K.

Effect of vitamin-*C* on workers exposed to lead dust. S. W. Marchmont-Robinson (*J. Lab. clin. Med.*, 1941, **26**, 1478—1481).—The daily administration of 50 mg. of ascorbic acid protects workers exposed to Pb dust against the usual effects of chronic Pb absorption. The rate of urinary excretion of Pb in workers continually exposed to Pb dust is not decreased by this treatment. C. J. C. B.

Lead hazards in certain phases of printing. (A) R. A. Kehoe. (B) E. L. Belknap (*J. Ind. Hyg.*, 1941, **23**, 159—160, 161—162).—(A) The urinary Pb concns. found by Ruf and

Belknap (A., 1941, III, 384) are inconsistent with negative clinical and hæmatological findings, and are of the order associated with severe and hazardous Pb exposure. The author stresses possibilities of contamination in the collection of samples and suggests that the determinations reported are invalid for this reason.

(B) The modified Fairhall method employed is described in detail, with the precautions taken to avoid contamination of samples. The author suggests that the discrepancy between Pb exposure and the urinary concn. indicates that the latter is inconclusive as an index of Pb poisoning. E. M. K.

XXII.—RADIATIONS.

Early erythema and pigmentation from superficial Roentgen therapy. L. H. Rosenthal (*Arch. Dermat. Syphilol.*, 1941, **43**, 1004—1006).—An early effect of superficial Roentgen ray irradiation in doses of 150 r. or more is an erythema appearing within 4—8 hr., reaching its max. in 14 hr. and then fading. Pigmentation was produced in 85% of 24 patients. C. J. C. B.

Dependence of the secondary electronic emission produced by γ-radiation on the direction of the radiation.—See A., 1941, I, 358.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Moving boundary electrophoretic study of insulin. A correction. J. L. Hall (*J. Biol. Chem.*, 1941, **140**, 671; cf. A., 1941, I, 335).—The insulin mobility vals. of Wintersteiner and Abramson should have been multiplied by 10 before being plotted in Fig. 5 of the previous paper; the same factor should be used to reduce those of Howitt and Prideaux to the same scale. E. M. W.

Electrical polarisation of frog skin by direct currents. O. Gatty (*Proc. Roy. Soc.*, 1941, **B**, **130**, 83—103).—Results obtained from the electrical polarisation of frog skin by d.c. show that the skin is electrically non-homogeneous and in a state of disequilibrium. The electrical behaviour of skin is tentatively represented by a model consisting of a series resistance and local action between an anodic area and a cathodic area. The implications of such a model are discussed. F. O. H.

Isoelectric points of acetylated and deaminated cucurbitin. A. Kizel and V. Jurkevitsch (*Biochimia*, 1941, **6**, 276—279).—The isoelectric points of cucurbitin, deaminocucurbitin, acetylcucurbitin (prepared by acetylation in aq. $NaHCO_3$ or pyridine), and acetyldeaminocucurbitin (prepared by acetylation in pyridine) are 6·3, 4·9, 5·5, and 6·4 and 3·7, respectively. The importance of this artificial displacement of the isoelectric point of proteins for enzymic investigations is emphasised. J. N. A.

Properties of aqueous colloidal sterol solutions. E. A. Markarjan (*Biochimia*, 1941, **6**, 292—300).—Cholesterol and irradiated and non-irradiated ergosterol sols prepared by a vac. process are polydisperse, and are stable at neutral or weakly alkaline reaction. At p_H 6·0 there is a change in the degree of dispersion which is manifested by a change in turbidity of 20—35%. The ability of salts to coagulate the sols depends on the valency of the cation, and 0·01M-$K^·$ and -$Na^·$ are active. The acidity of blood is insufficient to affect the stability of an injected irradiated ergosterol sol, but the cation concn. is greater than that which causes coagulation of the sol *in vitro*. J. N. A.

Molecular-kinetic studies with calf thymus nucleohistone.—See A., 1941, I, 413.

XXIV.—ENZYMES.

Influence of vitamin-*C* on deactivation of enzymes by ultra-violet light. K. V. Giri (*J. Indian Chem. Soc.*, 1941, **18**, 141—145).—Vitamin-*C* completely protects liver-phosphatase (at p_H 8·5 or 5·0), sweet potato amylase (p_H 5·6), and pepsin (p_H 1·5) from deactivation by ultra-violet light. A. Li.

Inhibition of succinic dehydrogenase by phenothiazone. H. B. Collier and D. Allen (*J. Biol. Chem.*, 1941, **140**, 675—676).—Phenothiazone completely inhibits the action of untreated succinic dehydrogenase from ox heart whilst in the presence of KCN and methylene-blue the O_2 uptake is reduced by more than half. E. M. W.

Oxidation–reduction of α-hydroxy- and α-keto-acids. G. P. Toropova (*Biochimia*, 1941, **6**, 122—127).—Experiments with homologous α-hydroxy- and α-keto-acids in presence of lactic dehydrogenase and cozymase show that the reversible group-sp. activity of the dehydrogenase causes transfer of H in the oxidation–reduction systems. Although oxido-reductions liberate no energy, they possibly lead to formation of new biological products. W. McC.

Ascorbic acid oxidase from cucumber. G. T. Meiklejohn and C. P. Stewart (*Biochem. J.*, 1941, **35**, 755—760).—After removal of " free " Cu and other extraneous materials from autolysed cucumber juice by prolonged dialysis, ascorbic acid oxidase activity is proportional to the Cu present, complete removal of which inactivates the enzyme. The activity of this Cu is much greater than that of ionic Cu or Cu loosely combined with protein. The activity of dialysed juice inactivated by further dialysis with NaCN and reactivated by excess of inorg. Cu is greater than the activity of the Cu salt used for reactivation. The enzyme is a metal–protein complex, not identical with polyphenol oxidase. H. G. R.

Enzymic oxidation of carotene. H. Süllmann (*Helv. Chim. Acta*, 1941, **24**, 646—657).—The soya-bean enzyme that causes the oxidation of carotene in presence of an unsaturated fat or fatty acid retains its activity after dialysis for 24 hr. Castor oil and ricinoleic acid can be used as unsaturated fat and fatty acid, respectively. There is a limit to the amount of carotene that can be oxidised in the presence of a fixed amount of fat or fatty acid; quantitatively, linseed oil is more effective than linoleic acid. Peroxidase is present in the soya-bean enzyme solution. Added H_2O_2 cannot replace unsaturated fat or fatty acid in the oxidation of carotene. H_2O_2 restricts the oxidation of carotene caused by unsaturated fat. The oxidation of guaiacum resin is also facilitated by unsaturated fats or fatty acids in presence of the enzyme; in unit time the blue colour caused by linoleic acid is more intense than that caused by linseed oil. In most of the experiments, a delay of the carotene decolorisation by NaCN is not observed; also the oxidation of guaiacum resin in presence of linoleic acid is not restricted by CN′, whilst under identical conditions the peroxidase action is completely inhibited by CN′. H. W.

Peroxidase action. Oxidation of mesidine.—See A., 1941, II, 326.

Pyruvic and α-ketoglutaric carboxylases of animal tissues. D. E. Green, W. W. Westerfield, B. Vennesland, and W. E. Knox (*J. Biol. Chem.*, 1941, **140**, 683—684).—A crude enzyme prep. from pig heart and other sources catalyses the decarboxylation of pyruvic and α-ketoglutaric acids. The mechanism is briefly discussed. E. M. W.

Carbonic anhydrase. D. A. Scott and J. R. Mendive (*J. Biol. Chem.*, 1941, **140**, 445—451).—The enzyme is of protein nature and contains 1·3, 4·1, and 0·15% of cystine, tyrosine, and Zn, respectively. It is stable in alkalis but is reversibly inactivated in an acid medium. H. G. R.

Properties of desulphurase. M. Laskowski and C. Fromageot (*J. Biol. Chem.*, 1941, **140**, 663—669).—Dog liver is the best source of desulphurase. Optimum stability, measured by H_2S production from cysteine substrates, is at p_H 6—8. Desulphurase is not poisoned by $Pb^{··}$ until pptn. occurs. 40—60%-saturated $(NH_4)_2SO_4$ and Na_2SO_4 ppt. the active enzyme whilst 50% acetone causes pptn. with denaturation. $Ca_3(PO_4)_2$ gel is used for adsorption at p_H 6 in purification. Products of 3 times the activity of the crude material are obtained. E. M. W.

Splitting of carnosine by intestinal enzymes. P. G. Garkavi (*Biochimia*, 1941, **5**, 671—680).—The carnosine-splitting enzymes found in the small intestines of the dog, cat, and rat are adsorbed on and eluted from $Fe(OH)_3$ under the same conditions as dipeptidase. Carnosine is split by dogs' intestinal dipeptidase but not by other enzymes from the dog's intestinal wall or by dipeptidase or aminopolypeptidase from pigs' intestines. A pancreatic enzyme which attacks *l*-leucylglycine and a carboxypolypeptidase from ox pancreas are inactive, although the latter hydrolyses chloroacetyltyrosine. R. L. E.

Enzymes of purine catabolism in insects. G. Duchateau, M. Florkin, and G. Frappez (*Compt. rend. Soc. Biol.*, 1940, **133**, 436—437). P. C. W.

Pharmacological effects of trypsin. M. Rocha e Silva and C. A. Dragstedt (*J. Pharm. Exp. Ther.*, 1941, **72**, 36—37).—The capacity to liberate histamine from various tissues is a fundamental characteristic of trypsin and is supported by experiments on isolated smooth muscle of guinea-pigs, blood of rabbits, and rabbit's skin. H. H. K.

Determination of activity of proteolytic enzymes and protein-resistance in wheat. N. I. Sosedov, A. B. Vakar, and Z. B. Drozdova (*Biochimia*, 1940, **5**, 464—474).—The enzyme is extracted by autolysis of the flour for 24 hr. at 30° in 0·2M-NaH_2PO_4, and its activity determined by the reduction in viscosity of a substrate of 15% gluten in 12% Na salicylate. Using this substrate the resistance of gluten to proteolysis is determined by its reduction in viscosity under the action of 0·05% papain. E. M. W.

Kinetics of starch hydrolysis by pancreatic amylase. III. S. I. Pronin (*Biochimia*, 1940, **5**, 648—657).—The relation between initial rate (v) of starch hydrolysis by pancreatic amylase and substrate concn. (S) is better expressed by $v = V_{max}.S^n/(K_s + S^n)$ (valid up to 65% hydrolysis) than by $v = V_{max}.S/(K_s + S)$. At 27° $n = 3$, at 17° $n = 2$. K_s is not independent of enzyme concn., indicating that the reaction is heterogeneous. R. L. E.

Liberation of inorganic phosphate and trans-esterification from adenosinetriphosphoric acid in aqueous muscle extracts. N. E. Sakov (*Biochimia*, 1941, **6**, 163—177).—Adenosine-polyphosphoric acids are determined in presence of other phosphoric esters by a method involving pptn. with $Hg^{"}$. In aq. muscle extracts containing Neuberg's ester, the labile PO_4''' of adenosinetriphosphoric acid is partly trans-esterified and partly converted into inorg. PO_4'''. The reactions are not coupled; conversion into inorg. PO_4''' predominates in acid media and trans-esterification in alkaline media. In aq. muscle extracts, conversion into inorg. PO_4''' is brought about by enzymes distinct from myosin, the optimum p_H being approx. 6. Adenosine triphosphatase is separated from the phosphatase of Neuberg's ester by fractional pptn. with $(NH_4)_2SO_4$, the pptn. concns. of this salt being 25 and 25—40%, respectively. Adenosinediphosphoric acid does not differ from the triphosphoric acid in regard to the transfer of PO_4''' to Neuberg's ester. W. McC.

Hydrolysis of adenosinetriphosphoric acid by myosin. Production of adenosinediphosphoric acid. M. N. Liubimova and D. Pevsner (*Biochimia*, 1941, **6**, 178—183).—When adenosinetriphosphoric acid is repeatedly pptd. with purified myosin, only one PO_4''' is eliminated, adenosinediphosphoric acid remaining unaffected. $Mg^{"}$ inhibits the action of myosin but activates the decomp. of adenosine diphosphate by impure myosin. A method of preparing the di- from the tri-phosphate based on these findings is described, the yield being 90% when the purity of the myosin is 94%. W. McC.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Phosphorylation of glucose in initial static phase of alcoholic fermentation in living yeast. Z. Dische (*Compt. rend. Soc. Biol.*, 1940, **133**, 380—384).—Phenanthroline does not affect cellular respiration but inhibits phosphorylation in the initial phase of alcoholic fermentation in yeast. Phosphorylation is therefore connected with the oxidation–reductions taking place in the initial phase which do not evolve alcohol or CO_2. That the coupled phosphorylation of this phase is of glucose and not a resynthesis of the " labile pyrophosphoric fraction " (l.p.f.) with coupled oxidation–reductions is probable since the hexose esters then found in excess with 0·25% glucose disappear slowly (6—7 min.) even in presence of l.p.f. during the initial P oscillation. The oxidation of glyceraldehyde-3-phosphoric acid only attains the speed of fermentation if it is linked with glucose phosphorylation. The l.p.f. is synthesised during fermentation by trans-phosphorylation between its carrier and phosphopyruvic acid. The process is analogous with the coupled phosphorylation and counter-balancing spontaneous dephosphorylation of the pyrophosphate fraction occurring in blood cells. P. C. W.

Changes in p_H during growth of yeast on sulphite waste liquor. P. Roine and J. Erkama (*Suomen Kem.*, 1941, **14**, **B**, 2—3).—Growth of an inoculum (4 g. per l.) of *Torula utilis* in sulphite pulp waste liquor (initial p_H 5·16, total sugars 2·35%) causes a slight fall in p_H (to 5·1) during the lag period, then a rise (to p_H 5·73), followed by a further fall (to p_H 4·9) at the point of max. growth. As nutrient material becomes exhausted and growth falls off, the p_H rises again rapidly to above 5·7. M. H. M. A.

Increased yield of nucleic acid-like substances from irradiated yeast. J. R. Loofbourow, M. E. Englert, and C. M. Dwyer (*Nature*, 1941, **148**, 113—114).—Irradiation of starch-free yeast (*S. cerevisiæ*), suspended in distilled water or 1% glucose, with ultra-violet light until not less than half the cells were killed gave a subsequent yield of crude nucleic acid which was greater than that from non-irradiated yeast. Both preps. from the irradiated and non-irradiated yeast showed growth-stimulating activity (cf. A., 1940, III, 426), that from the irradiated yeast being approx. twice that of the other. L. S. T.

Substances in yeast which reduce Tillmans' indicator. J. Tikka and E. K. Heino (*Suomen Kem.*, 1941, **14**, **B**, 1).—Yeast contains a substance which is decomposed by light, readily oxidised by atm. O_2, and reduces Tillmans' reagent; it is probably vitamin-*C*. M. H. M. A.

Film-forming yeasts. I. Media and methods. V. E. Graham and E. G. Hastings (*Canad. J. Res.*, 1941, **19**, **C**, 251—256).—Media for enrichment cultures are examined. Means of preparing test-tube gypsum cultures and of examining pseudomycelium are described. A. G. P.

Behaviour of *Scopulariopsis brevicaulis* towards choline. C. Simons (*Biochem. J.*, 1941, **35**, 749—754).—A separation of choline, colamine, and *NN*-dimethyl- and *N*-methyl-aminoethanol by fractional crystallisation of the picrates is described. Choline is not broken down by the organism to lower homologues, unless these are bound as an essential cell constituent in the mycelium, but is probably converted into NH_3 salts, trimethylamine, or other N products. Choline has been suggested as the methylating substance in biological methylation of As_2O_3 by fungi. H. G. R.

Mechanism of dehydrogenation by *Fusarium lini*, Bolley. XIX. Dehydrogenation of higher primary and secondary alcohols. G. J. Goepfert (*J. Biol. Chem.*, 1941, **140**, 525—534; cf. A., 1937, III, 66).—*F. lini* grown on *n*- and *iso*-propyl, *n*- and *sec.*-butyl alcohol, and on propylene glycol produces propaldehyde, acetone, butaldehyde, methyl ethyl ketone, and acetol, respectively. Formaldehyde is also formed from acetone and propylene glycol. Dehydrogenation is more rapid with *sec.* than with primary alcohols, and the ketones formed accumulate in larger quantities than the aldehydes. R. L. E.

Pigments of marine diatom *Nitzschia closterium*. N. Pace (*J. Biol. Chem.*, 1941, **140**, 483—489).—*N. closterium* grown in pure culture contain β-carotene 65·9, chlorophyll-*a* 2172 and -*b* 155, cryptoxanthin 11·1, lutein 87·9, *iso*lutein 22·2, and two further unidentified xanthophylls 339·1 and 90·2 mg. per 100 g. of dry wt. (average). H. G. R.

Artificial infection and immunisation of man with cultures of *Leishmania tropica*. H. A. Senekji and C. P. Beattie (*Trans. R. Soc. trop. Med. Hyg.*, 1941, **34**, 415—420).—Baghdad boils were produced in 200 men by the inoculation of culture material. The average incubation period in the adult was 2—4 weeks, and in children 2 months. 3 of those inoculated subsequently developed a natural boil, but in none of them had the artificial boil healed. Re-inoculation of persons who had unhealed boils produced another boil. Inoculation of persons who had healed natural or artificial boils resulted in a reaction of allergic type. There is thus no abs. natural immunity to Baghdad boils. Immunity follows infection and takes a considerable time to develop, not being complete until the boil has healed. In places where cutaneous leishmaniasis is prevalent immunisation with live cultures of *L. tropica* is worthy of trial. C. J. C. B.

Experimental production of agglutinins for *Trypanosoma cruzi*. A. Packchanian (*U.S. Publ. Health Repts.*, 1940, **55**, 2116—2124).—*T. cruzi* on the medium of Novy and MacNeal

grew luxuriantly and formed colonies. From such cultures desired amounts of micro-organisms were removed and used for serological and immunological studies. Anti-*cruzi* serum with a titre of over 1 : 260,000 was obtained in one instance by the injection of rabbits with washed trypanosome cultures. The first 7 injections consisted of formalinised antigen whilst the subsequent injections (10 to 30) were live suspensions of washed *T. cruzi*. C. G. W.

Oxidation–reduction potential and bacterial metabolism. H. Fukumi (*Japan. J. exp. Med.*, 1940, **18**, 443—451).—Largely confirmation of the findings of Hewitt (A., 1930, 1622) and Gillespie and Rettger (A., 1937, III, 357). C. J. C. B.

Vessel for measurement of p_H and oxidation–reduction potential of bacterial cultures. F. L. Wynd and P. L. Varney (*J. Lab. clin. Med.*, 1941, **26**, 1513—1516).—The p_H and the oxidation–reduction potential of a series of bacterial cultures may be observed over long periods, without disturbance, by means of a series of vessels within a metal incubator, each containing a glass, Pt, and HgCl electrode, properly connected to a vac.-tube amplifier through the wall of the incubator. Observations were obtained successfully over periods as long as 6 days without removing the cultures from the incubator. C. J. C. B.

Action of nitrites on bacteria. H. L. A. Tarr (*J. Fish. Res. Bd. Canada*, 1941, **5**, 265—275).—The effect of 0·02% $NaNO_2$ on the growth of 12 different micro-organisms (4 species of *Micrococcus*, 3 of *Achomobacter*, and one each of *Flavobacterium*, *Pseudomonas*, *Escherichia*, *Aërobacter*, and *Torula*) in nutrient broth buffered to different p_H vals. with phosphate or acetate buffers has been studied. Above p_H 7, $NaNO_2$ did not inhibit growth significantly whilst between p_H 5·7 and 6·5 growth of all but 2 species (both *Micrococcus*) was almost completely inhibited. In fish muscle, nitrite inhibits the growth of the bacterial flora only if the p_H is made less than 7. R. G. W.

Surface tension reducents in bactericidal solutions : their *in vitro* and *in vivo* efficiencies. L. Gershenfeld and B. Witlin (*Amer. J. Pharm.*, 1941, **113**, 215—236).—The bactericidal and bacteriostatic efficiencies of antiseptics (phenolic, mercuric, and halogen) are not increased by the addition of up to 1% of surface tension depressants. The rates of healing of experimental puncture wounds in rabbits and of penetration of inorg. substances through unbroken skin are not affected by the addition of these substances to antiseptics. Toxicity to rabbits of the wetting agents employed is negligible. H. G. R.

Further correlation of physical and biological properties in an acridine series. A. Albert, R. Goldacre, and S. D. Rubbo (*Nature*, 1941, **147**, 709).—The partition coeffs. between olive oil and water of the 5 monoaminoacridines are tabulated. A tabulation of other properties shows that the compounds most active against bacteria are the most basic and the most hydrophilic, whilst the least basic and most hydrophobic have only feeble antiseptic properties. L. S. T.

Protection of microbes against heat by oils. A. Dubois and M. Ballion (*Compt. rend. Soc. Biol.*, 1940, **133**, 448—449).—Various vegetable and mineral oils when sealed in glass ampoules were found difficult to sterilise by heat. Many types of sporing and non-sporing microbes survived temp. which they would not survive in water. P. C. W.

Antiseptic action of phenols, phenolcarboxylic acids, which participate in the formation of lichen substances, and their esters. IX. Antiseptic action on shoyu of orsellinic esters, orcinoldicarboxylic esters, and derivatives of hydroxydiphenylmethane. F. Fuzikawa and J. Fushimi (*J. Pharm. Soc. Japan*, 1941, **61**, 38—39; cf. A., 1939, III, 929).—Antiseptic action is shown by n-*amyl orsellinate* and *p*-hydroxydiphenylmethane but not by n-*hexyl* or n-*octyl orsellinate*, methyl H and diethyl orcinoldicarboxylate, methylenedi-orcinol, -β-orcinol, -gallic acid, and -phloroglucinol. H. W.

Luminescent oxidation of luciferin.—See A., 1941, II, 329.

Utilisation of carbon dioxide by heterotrophic bacteria. H. D. Slade, H. G. Wood, A. O. Nier, A. Hemingway, and C. H. Werkman (*Iowa State Coll. J. Sci.*, 1941, **15**, 339—341; cf. A., 1940, III, 262).—*Staph. candidus*, *Aërobacter aërogenes*, *Strep. paracitrovorus* (A), *Cl. welchii*, and *Cl. acetobutylicum* were grown in glucose or citric acid media enriched with 0·05—0·125N-$NaHCO_3$ containing about 5% of ^{13}C. The metabolic products were fractionated and oxidised and the ^{13}C contents of the oxidation products determined by means of the mass spectrometer. All these organisms assimilate CO_2. *Staph. candidus* and *Cl. welchii* fix CO_2 in the carboxyl group of lactic acid; *Aërobacter* and *Cl. welchii* fix it in acetic acid. *Staph. candidus*, *Strep. paracitrovorus*, and *Aërobacter* fix CO_2 in succinic acid. βγ-Butylene glycol and butyric acid never contain significant amounts of fixed C. *Proteus vulgaris* reacts like *Staph. candidus*. J. L. D.

Bacterial synthesis of some dicarboxylic acids by means of radioactive carbonic acid. Y. Nishina, S. Endo, and H. Nakayama (*Sci. Papers Inst. Phys. Chem. Res. Tokyo*, 1941, **38**, 341—346; cf. Wood and Werkman, A., 1938, III, 763; 1940, III, 262, 353; Krebs and Eggleston, A., 1941, III, 123).—A suspension of *Bact. coli* in N/15-PO_4''' buffer (p_H 7) containing Na pyruvate was treated with $^{11}CO_2$ at 40° for 15 min., acidified, boiled, neutralised, and filtered. The filtrate, heated with Na malate, *p*-bromophenacyl bromide, and 95% alcohol, yielded radioactive *p*-bromophenacyl malate, indicating that malate is formed from pyruvate by *B. coli*. Na fumarate was also produced and isolated as a *p*-nitrobenzyl ester which was strongly radioactive. If glucose was substituted for pyruvate fumarate was formed. On replacing pyruvate by alcohol, malate and probably fumarate and succinic acid were formed. Similarly, glycerol, lactic acid, and galactose, but not formic and acetic acid and acetaldehyde, yielded dicarboxylic acids. Pyruvate treated with $^{11}CO_2$ in N/15-PO_4''' buffer containing *B. coli* and NH_4Cl at 40° for 45 min. yields radioactive aspartic acid. J. L. D.

Nitrogen fixation by *Azotobacter chroococcum* in the presence of soil protozoa. R. J. Hervey and J. E. Greaves (*Soil Sci.*, 1941, **51**, 85—100).—In liquid cultures of *A. chroococcum* N fixation was increased in presence of protozoa, notably ciliates. In agar media the effect was much smaller and, in some cases, fixation was depressed. Fixation in soil cultures was increased by protozoa in presence of mannitol but, in some instances, decreased if mannitol was not supplied. Ciliates (*Colpoda*, *Oxytricha*) and, to a smaller extent, flagellates and amœbæ produced a substance which stimulated *Azotobacter*. The substance persisted in suspensions of heat-killed (65°) *Colpoda*, was destroyed by prolonged autoclaving, and did not pass a Seitz filter. A. G. P.

Mechanism of biological nitrogen fixation. VII. Molecular hydrogen and the nitrogen partial pressure function of *Azotobacter*. O. Wyss, C. J. Lind, J. B. Wilson, and P. W. Wilson (*Biochem. J.*, 1941, **35**, 845—854).—With cultures of azotobacter grown at decreasing vals. for N_2 partial pressure (pN_2) in the presence of He, A, and in partial vac., no consistent change is observed in the N fixation rate until pN_2 is reduced to 0·15 atm. The rate then decreases slowly. In the presence of H_2 a significant reduction in the fixation rate occurs at pN_2 0·45 atm. (pH_2 0·35), and the rate decreases rapidly with decreasing pN_2. This inhibitory effect of H_2, which does not occur with NH_4NO_3 as N source, is reversible and competitive. The similarity between the N-fixing system of *Azotobacter* and that of red clover inoculated with the sp. root nodule bacteria supports the view that the responsible enzyme systems are identical. A. L.

Protein production by nitrogen-fixing bacteria under conditions of continuous aëration. L. A. Allen (*Biochem. J.*, 1941, **35**, 801—805).—The principle of the activated-sludge process for sewage treatment is applied to N-fixing bacteria (from sewage sludge) in an aërated medium containing glucose or mannitol and chalk. Under suitable conditions the sludge settles quickly, though there is a crit. val. for the sludge concn. above which settling is slow. Optimum conditions gave a fixation of 7 mg. of N per g. of glucose utilised. The method may be used to produce bacterial protein. A. L.

Dissimilation of glucose by *Chaetomium funicola*, Cke. I. Glucose-carbon partition. G. Semeniuk (*Iowa State Coll. J. Sci.*, 1941, **15**, 261—268).—*C. funicola* (isolated from baled cornstalks) was subcultured on Czapek–Dox medium and maintained, constantly aërated, at 28°. 55% of the glucose in the medium was utilised in 33 days, the rate of dissimilation being greater in the later stages. The formation of mycelium and CO_2 accounted for the greater part of the glucose-C. The non-glucose-C in the residual medium was greatest between the 18th and 26th day of culture and accounted for

35% of the glucose dissimilated during that period. Insignificant amounts of non-volatile acids and volatile neutral substances and very small amounts of volatile acids were formed throughout the test period. The total recovery of C was 96·2—101·2%, assuming a mycelium-C content of 50% (cf. Birkinshaw and Raistrick, A., 1931, 1092). The conc. medium yielded an ether-sol. substance, m.p. 113—113·5°, and an oil, d 0·880, η 1·5107, which decomposed when distilled at 760 mm. When the original culture was not aërated and contained 10% of sucrose, a reddish-brown ether-sol. material was formed. Other unidentified cryst. substances were also obtained from the ether extract. When the original culture medium was vigorously aërated, the mycelium grew throughout the medium, the p_H became slightly higher, and glucose was dissimilated no more rapidly. J. L. D.

Production from sucrose of a serologically reactive polysaccharide by a sterile bacterial extract. E. J. Hehre (*Science*, 1941, **93**, 237—238).—The production from sucrose of such a polysaccharide by an enzyme or similar heat-labile principle contained in sterile filtered extracts prepared from cultures of *Leuconostoc mesenteroides* is described. Data on substrate specificity and the general mode of action on sucrose are recorded. The action of the extract on sucrose appears to be that n mols. of sucrose are converted into n mols. of fructose and a dextran polymeride of n glucose anhydride units. L. S. T.

Myxobacteria. I. Distribution in central Iowa with description of a new species. II. Rôle of myxobacteria as bacterial parasites. J. M. Beebe (*Iowa State Coll. J. Sci.*, 1941, **15**, 307—317, 319—337).—I. Pure cultures of myxobacteria are difficult to prepare from soil and dung because of the luxuriant growth of associated moulds. The latter were gradually eliminated by subculturing the myxobacterial fruiting bodies on plates of dung decoction–agar and subsequently in a culture medium (sterilised) containing growths of *Escherichia coli*, *B. subtilis*, or *Serratia marcescens*. Pure cultures were maintained on dung plates. Species isolated and described included *Chondrococcus blasticus* nov. sp. The genera *Myxococcus* and *Podangium* were the most widely distributed in Iowa.

II. Many species of myxobacteria fail to grow well except in the presence of certain (mostly unidentified) true bacteria. The dead cell bodies of the associated bacteria (large and small spore-forming bacteria and *Sarcina*) were lysed by extracellular enzymes produced by the myxobacterium, the growth of the latter being proportional to the cell content of the medium. With higher cell concns., the tendency to form myxobacterial fruiting bodies is increased. *B. subtilis*, *Escherichia coli*, *Sarcina* sp., and *Serratia marcescens* reacted similarly though the effect of each was different. The Gram-negative forms were the more effective. J. L. D.

Diagenesis versus mutation. S. Mahdehassan (*Current Sci.*, 1940, **9**, 495—496).—Two symbiotic bacteria have been isolated from *Cicadella viridis*, one a short rod forming yellow pigment and the other a long rod forming red pigment. The former grow easily in pure culture; the latter can be grown independently on prune juice–agar + nicotinic acid. The natural growth of the bacteria is discussed. E. M. W.

Bacteriological examination of water samples with reference to direct and secondary incubation at 44°. L. F. L. Clegg (*J. Path. Bact.*, 1941, **53**, 51—62).—A comparison is made between direct and secondary incubation at 44° (methods III and IV of Wilson *et al.*, 1935, *Brit. Med. Research Council Report* 206, London). Of 837 samples, 413 showed *Bact. coli* by one or both methods. The ratio of total probable *Bact. coli* yielded by method III to that obtained by method IV is 72·6 : 100. In 353 out of 413 samples the probable number of *Bact. coli* obtained by the 2 methods differed. Statistical analysis shows that although the proportion of samples in which the results differ significantly is small, the no. in which method IV gave a higher count than method III is significant. While method IV gives a higher probable count than method III, a combination of both methods should be used in view of the speed with which results can be obtained by method III. C. J. C. B.

Case of microbe variation. G. Demelenne-Jaminon (*Compt. rend. Soc. Biol.*, 1940, **133**, 440—442).—*B. coli* of a certain strain (strain 6) produce a substance inhibiting the growth of a different strain (strain 7). Certain individuals (0·004—0·005%) of the latter strain are, however, resistant to the inhibition and if cultured give rise to 2 distinct types of *B. coli* (types 7 I and 7 II) in the proportion 2 : 1. The 7 I type is completely resistant to the inhibitory action, the 7 II type only partially. P. C. W.

Toxins produced by *Clostridium welchii* in simple medium. A. W. Taylor and J. Stewart (*J. Path. Bact.*, 1941, **53**, 87—94).—A medium consisting only of peptone, casein, salts, and water is described in which the *Cl. welchii* group grow readily. No toxin lethal for mice is produced by types *A* and *D* in this medium but potent toxin is formed by types *B* and *C*. The addition of trypsin permits the production of type *D* toxin by types *B* and *D*. A similar effect is obtained by the artificial maintenance of the p_H of cultures at 7—6 during growth. C. J. C. B.

***In-vitro* production of toxin from strains of *Cl. welchii* recently isolated from war wounds and air raid casualties.** M. Robertson and J. Keppie (*J. Path. Bact.*, 1941, **53**, 95—104).—26 strains of *Cl. welchii* were tested for their capacity to produce toxin *in vitro* by a method described. The yield was 5—80 intravenous mouse m.l.d. per c.c., 61% of the strains tested showing a toxicity of 10—20 mouse m.l.d. per c.c. The strains were isolated from cases which ranged from acute gas gangrene to those in which the organism had only been transitorily present without creating recognisable symptoms. C. J. C. B.

Glycolysis, hydrolysis, and phosphorolysis in *Corynebacterium diphtheriæ*. J. Leibowitz and S. Avinery-Shapiro (*Nature*, 1941, **147**, 745).—Both *C. diphtheriæ gravis* and *mitis* glycolyse glucose and maltose, but only *gravis* glycolyses glycogen. Both *gravis* and *mitis* yield, *in vitro*, cell-free extracts or autolysates which convert glycogen into fermentable reducing sugar. It is concluded that in glycolysis the glycogenase of living cells does not necessarily come into play; *gravis* achieves the degradation of polysaccharide into lactic acid probably through a reaction path in which hydrolysis takes no part. Extracts of *gravis*, but not of *mitis*, contain an active phosphatase. The desmolytic degradation of complex carbohydrates *in vivo* by muscle, yeast, and bacteria may proceed not through hydrolysis, but by direct attack on the saccharide mol. through phosphorolysis. L. S. T.

Diphtheria prophylaxis: modern methods of preparing and assaying prophylactic agents, with note on essential nature of toxoid–antitoxin floccules. A. F. Watson, R. A. Taggart, and G. E. Shaw (*J. Path. Bact.*, 1941, **53**, 63—75).—The methods of preparing diphtheria prophylactic agents, formol-toxoid, alum-pptd. toxoid, and toxoid–antitoxin floccules and their biological assay by the test laid down in the regulations of the British Therapeutic Substances Act (1931 and 1935) are described. Formol-toxoid made from culture filtrates of *C. diphtheriæ* grown on papainic muscle digest media is a useful source of the other two agents. It has a low content of dissolved matter and a high immunising potency in horses. Toxoid–antitoxin floccules, when their prep. includes heating to 80°, have high immunising properties. The activity of this antigen is due to the presence, either in suspension or in solution, of purified conc. diphtheria antigen derived from the formol-toxoid. The optimal conditions for preparing solutions of this purified antigen are described. These solutions have a high immunising val. in guinea-pigs and under certain conditions can be titrated *in vitro* against diphtheria antitoxin. C. J. C. B.

Physical properties of diphtheria antitoxic horse sera. R. A. Kekwick and B. R. Record (*Brit. J. exp. Path.*, 1941, **22**, 29—44).—Diphtheria antitoxic horse sera contain two antitoxins which are associated with the β- and γ-globulins respectively. In addition to a difference in electrochemical constitution, which has made possible their isolation, the antitoxins show differences in flocculation time, *in vivo*/*in vitro* ratio, and amount of antitoxin-N contained in the floccules formed in the toxin. F. S.

Pityriasis rosea following injection of antidiphtheritic vaccine. H. Reiss (*Arch. Dermat. Syphilol.*, 1941, **43**, 1008—1010).—Report of a case. C. J. C. B.

Active immunisation against bacillary dysentery. R. Prigge (*Klin. Woch.*, 1940, **19**, 337—342).—A review. M. K.

Occurrence of *B. Flexneri* race *P* 119 in South Africa. C. de V. Bevan (*Sth. Afric. Med. J.*, 1940, **14**, 234—235).—The

P 119 type was identified in South African cases of dysentery. The biochemical reactions of this type are identical with those of the classical members of the Flexner group. Its agglutination spectrum is the *V* to *Z* type with a secondary *X* component. The spectrum of agglutinogenesis shows a secondary *X* component of moderate, and a secondary *Z* component of high, degree. Using the absorption test, neither *X* nor *Z* antisera can be deprived of their primary agglutinins when absorbed with *P* 119, and *X* and *Z* types are incapable of exhausting the homologous primary antibodies from *P* 119 serum. A. S.

Treatment of acute experimental dysentery in rabbits by transfusion of fresh citrated blood. G. I. Chomenko and E. A. Grinberg (*J. Méd. Ukraine*, 1940, **10**, 127—137).—Intravenous injection of 0·2 c.c. of an emulsion of Shiga–Kruse bacilli into rabbits produces acute dysentery to which the animals succumb in 3—4 days; the nervous system is affected during the first hr. after infection. Transfusion of fresh citrated blood within 30 min. of the infection was life-saving in 50% of animals; it was ineffective if performed 24 hr. after the infection. Large doses of antidysenteric serum injected during the first 3 hr. of the infection were more effective than blood transfusion. M. K.

Comparative behaviour of two toxins of *B. Shiga* to their corresponding antibodies. A. Boivin and A. Delaunay (*Compt. rend. Soc. Biol.*, 1940, **133**, 376—380).—The glucolipin endotoxin of *B. Shiga* when mixed with its antiserum *in vitro* produces an immediate ppt. over a wide range of concns. The antiserum will, however, only neutralise 10 fatal doses of the endotoxin per ml. Corresponding mixture of the neurotoxin and its antiserum only causes flocculation over a narrow concn. range some hr. after mixing. This antiserum neutralises 2500 fatal doses of toxin per ml., behaving therefore more like an exotoxin antibody. P. C. W.

Cultural and biochemical properties of *Erysipelothrix Rhusiopathiæ*. A. G. Karlson and I. A. Merchant (*Amer. J. Vet. Res.*, 1941, **2**, 5—10).—When isolated from mice the organism is a short rod 1—2 μ. in length; on prolonged culture it forms long threads 4—15 μ. long. Both forms are Gram-positive but decolorise on prolonged incubation. The first type forms small round colonies, the second irregular and uneven colonies, which are opaque in contrast to the translucent colonies of the short form. In gelatin-stab cultures the growth radiates in test-tube brush fashion. A narrow zone of α-hæmolysis develops in blood agar; a slight acid reaction may occur in litmus milk; potatoes do not support growth. Indole is not formed and nitrates not reduced; æsculin is not hydrolysed; Pb acetate is blackened by formation of H_2S. The Voges–Proskauer reaction, methyl-red, methylene-blue reductase, and catalase tests are negative. No gas is formed on fermentable media. Acid is produced from glucose, fructose, lactose, and galactose. A delayed reaction is seen on mannose and cellobiose. No acid is formed on arabinose, xylose, rhamnose, maltose, melibiose, sucrose, trehalose, raffinose, melezitose, dextrin, starch, inulin, amygdalin, salicin, glycerol, erythritol, adonitol, mannitol, sorbitol, dulcitol, or inositol. The organism grows under reduced O_2 tension and anaërobically. The optimum p_H is 7·2—7·6. Guinea-pigs are resistant, mice and pigeons susceptible, to inoculation. Virulence increases on passage through susceptible animals. A. S.

Infectious mononucleosis. Relationship of organisms of genus *Listerella* to the disease, as studied by agglutination reaction. C. A. Janeway and G. J. Dammin (*J. clin. Invest.*, 1941, **20**, 233—239).—The sera of 5 normal adults, 15 patients with miscellaneous diseases, and 13 patients with infectious mononucleosis were tested for agglutinins against sheep cells and a representative strain of each of the 2 known serological groups of the genus *Listerella* (*Bact. monocytogenes*). The *Listerella* agglutination tests showed a slightly elevated titre in the sera of the patients with infectious mononucleosis compared with controls. There was no change in *Listerella* agglutinin titre during the course of the disease or recovery from it. There is no ætiological relationship between the known *Listerella* organisms and infectious mononucleosis. C. J. C. B.

Morphology of malarial parasites in thick blood films; identification of species and phase. J. W. Field (*Trans. R. Soc. trop. Med. Hyg.*; 1941, **34**, 405—414).—Detailed descriptions and photomicrographs of the different species and phases are given. C. J. C. B.

Reaction between type II pneumococcus antiserum and a glycuronide azoprotein. B. Woolf (*Proc. Roy. Soc.*, 1941, **B**, **130**, 60—69).—Euxanthic acid (a natural glycuronide) with diazotised atoxyl yields atoxylazoeuxanthic acid, reduced ($Na_2S_2O_4$–HCl) to *aminoeuxanthic acid* which, after diazotisation, can be coupled with ovalbumin and horse serum-globulin. These azoproteins give ppts. with type II pneumococcus antiserum, which are inhibited by glycuronides. The effect of variations in azoprotein/serum ratio on the amount and composition of the ppt. is similar to the effect of variations in ratio of the components on the ppt. formed by sp. polysaccharide and serum. Rabbits and mice could not be immunised with the glycuronide azoproteins which, however, ppt. part of the antibody to type II pneumococcus from the antiserum. The results indicate that glycuronic acid, or some closely related group, is a determinant group (hapten) responsible for at least part of the specificity between the type II antiserum and the type polysaccharide. F. O. H.

Quantitative studies of effect of haptens on reaction between antigens and antibodies. B. Woolf (*Proc. Roy. Soc.*, 1941, **B**, **130**, 70—83; cf. preceding abstract).—The systems (*a*) pneumococcus type II polysaccharide and type II antiserum, (*b*) partly hydrolysed cherry gum and type II antiserum, and (*c*) atoxylazo-ovalbumin and atoxylazoglobulin antiserum were investigated with regard to the inhibitory effect of Na euxanthate for (*a*) and (*b*) and of atoxyl for (*c*). With all 3 systems, the inhibition by a given concn. of hapten varied little over a wide range of antigen/antibody ratios. Whilst the amount of ppt. depends mainly on the total amounts of antigen and antibody, the degree of inhibition depends on the concn. and not total amount of hapten. For the same concn. of hapten, the inhibitory effect is much greater in (*b*) than in (*a*). In (*c*), the antibody/azoprotein ratio in the ppt. is lowered by the presence of the hapten. Wide variations occur in sera from different rabbits in the concn. of hapten required to give the same degree of inhibition. The bearing of the results on quant. aspects of the combination of hapten with receptive areas of the antibody is discussed. F. O. H.

Antipneumococcal rabbit serum. T. D. Gerlough, B. S. Reuben, R. Blumenthal, and J. W. Palmer (*J. Lab. clin. Med.*, 1941, **26**, 1461—1465).—A high degree of correlation (0·84) was found between the temp. rise produced in rabbits and the incidence of chill reactions in patients with pneumonia following the administration of conc. antipneumococcal rabbit serum. C. J. C. B.

Biochemical activity of *Pseudomonas pyocyanea*. N. G. Pandalai (*J. Path. Bact.*, 1941, **53**, 150—152).—None of the 85 strains of *Ps. pyocyanea* examined produced indole; all formed acid but not gas from glucose and galactose. The fact that pyocyanin turns red in an acid medium possibly accounts for the positive indole reaction reported by some workers. *Ps. pyocyanea* forms alkali during growth on media containing no fermentable carbohydrate. C. J. C. B.

Congenital *Bacillus pyocyaneus* infection. E. J. Kraus and M. P. Hunter (*Arch. Path.*, 1941, **31**, 819—824).—Congenital *B. pyocyaneus* infection in a boy, who died 20 hr. after birth, is reported. Cutaneous rash, dyspnœa, cyanosis, and leucopenia with related lymphocytosis were observed. The autopsy revealed septicæmia due to *B. pyocyaneus*, with acute inflammatory and necrotic processes in the lungs, epicardium, leptomeninges, and many other tissues. The source of the infection appeared to be a mild *B. pyocyaneus* infection of the mother just before and during delivery, marked by chills, fever, drowsiness, abdominal pain, and diarrhœa. (3 photomicrographs.) C. J. C. B.

Pathogenic, biochemical, and cultural properties of *Ristella clostridiiformis* (Burri and Ankersmit). **P. 1938.** A. R. Prévot (*Compt. rend Soc. Biol.*, 1940, **133**, 384—386).—*R. clostridiiformis* is one of the anaërobic organisms of the human intestine. It acts as an enzyme on sugars, producing, in broth, ethyl alcohol, NH_3, volatile amines (including trimethylamine), and aldehydes. It does not secrete either toxin or hæmolysin but produces a toxic substance causing death with non-sp. symptoms when injected in mice. P. C. W.

Sodium citrate: a spirochæticide. R. S. Leadingham (*J. Lab. clin. Med.*, 1936, **21**, 922).—Addition of Na citrate to suspensions of spirochætes from a laryngeal lesion of Vincent's

angina caused immediate cessation of movement and apparent eventual dissolution of the organisms. Ch. Abs. (*el*)

Cervical abscesses of guinea-pigs [due to *Streptobacillus moniliformis*]. W. Smith (*J. Path. Bact.*, 1941, **53**, 29—37).—An organism belonging to the *S. moniliformis* group was isolated from 5 cases of cervical abscess in guinea-pigs, in 3 of the cases by preliminary inoculation of mice and rabbits when direct culture of abscess material yielded no growth. The organism was pyogenic and pathogenic for guinea-pigs, rats, mice, and rabbits, but except in mice its invasive power was very low. Dark-ground illumination showed that some of the bizarre forms described are composed of non-living elements. Changes of form indicative of a development cycle were observed. C. J. C. B.

Physiology of capsulated streptococci. J. E. Morison (*J. Path. Bact.*, 1941, **53**, 1—12).—The effect on the capsules of group *A* streptococci of a variety of physical and chemical agents is described. Physiological variations of p_H and conc. salt solutions have little action. A substance behaving like hyaluronic acid is a chemically linked constituent. The capsule is rapidly destroyed by heat, and this change, resulting from enzyme autolysis, makes the production of stable suspensions of capsulated organisms difficult. The enzyme-like factor has been separated from cells and its activity demonstrated, but it has not been purified. (7 photomicrographs.) C. J. C. B.

Capsulation of streptococci and its relation to diffusion factor (hyaluronidase). D. McClean (*J. Path. Bact.*, 1941, **53**, 13—27).—Some strains of *Str. pyogenes* develop capsules in young cultures; others produce hyaluronidase and diffusing factor which may be identical. Capsules and hyaluronidase cannot co-exist in the same group *A* or *C* strain, since the capsular substance hyalonuric acid is destroyed by this enzyme. The inclusion of hyaluronidase in the medium prevents the appearance of capsules. Hyaluronidase-producing strains respond to the inclusion of hyaluronic acid in the medium by increased formation of hyaluronidase. This response may assist the extension of infections by streptococci and other organisms that produce this enzyme. Virulent type I pneumococci produce hyaluronidase and respond in the same way as streptococci to the inclusion of hyaluronic acid in the medium. Pneumococcal hyaluronidase destroys streptococcal capsular substance, but the capsules of this pneumococcus are not attacked by pneumococcal hyaluronidase or that from other sources. C. J. C. B.

Biochemical properties of streptococci isolated from war wounds. J. Levaditi and J. Giuntini (*Compt. rend. Soc. Biol.*, 1940, **133**, 408—410).—Though all of 12 streptococcus samples collected from war wounds differed in one or more respects from the types in Bergey's classification, 11 of them were of the *S. pyogenes* type and the 12th of the *S. fæcalis* type. Samples collected early after the wound had gelatinolytic properties which they later lost. P. C. W.

Biological variation in behaviour of streptococci samples from war wounds treated with sulphonamide derivatives. J. Levaditi and J. Giuntini (*Compt. rend. Soc. Biol.*, 1940, **133**, 410—413).—Streptococcus samples from wounds which were resistant to various forms of sulphonamide treatment did not differ from primitive samples except in loss of gelatinolytic power and attenuation of virulence when tested in mice. The two factors were not proportional. P. C. W.

Bactericidal action of irradiated pine oil on hæmolytic streptococcus. F. A. Stevens (*J. Lab. clin. Med.*, 1936, **21**, 1040—1046).—Sterile NaCl solution shaken with pine oil retains enough to be bactericidal. Irradiated oil, having a higher content of peroxides and aldehydes (which are extracted by the NaCl solution), is more effective than untreated oil. Ch. Abs. (*el*)

Streptococcus toxin–antitoxin flocculation and its relation to rabbit skin test. H. Proom (*J. Path. Bact.*, 1941, **53**, 39—50).—Hæmolytic streptococcus (scarlet fever) toxin can be recovered from toxin–antitoxin floccules by the action of heat and trypsin. The recovered toxin has both erythrogenic and flocculating properties. Some horses may at one period during the course of immunisation show a high *in-vivo*/*in-vitro* ratio. This ratio is altered by treatment with pepsin, the *in-vivo* val. coming much closer to the *in-vitro* val. C. J. C. B.

Relation of streptococcic antifibrinolysin to acute rheumatic fever. J. A. Lichty (*Amer. J. Dis. Child.*, 1941, **62**, 92—100).—Of 72 children 28% had typical rheumatic fever, without increase in antifibrinolysin during the active stage of the disease. Correlation of the antifibrinolysin titre with various clinical features of the acute rheumatic attacks provided no explanation for the marked differences in titre. C. J. C. B.

Antistreptolysin content of sera of normal infants and children. J. E. Gordon and J. H. Janney (*J. Pediat.*, 1941, **18**, 587—591).—The mean antistreptolysin titre of sera from newborn infants is higher than at any other time in life. It is greater than the average titre of the mothers of the infants but is related to that of the mother, being high for infants with mothers of high titre and low when the mother's titre is low. The high titre declines sharply to reach a low point at 3—6 months. Thereafter a progressive increase occurs, so that at 15 years the titre again almost reaches the birth level. C. J. C. B.

Prevention of non-specific and prezone reactions in Wassermann test with sera and spinal fluids by addition of egg-albumin to complement. J. A. Kolmer and E. R. Lynch (*Amer. J. clin. Path.*, 1941, **11**, 402—413).—Egg-albumin–complement mixtures are highly effective in the prevention of non-sp. complement fixation reactions sometimes observed in tests employing c.s.f. They reduce the sensitivity of complement fixation reactions with both syphilitic c.s.f. and sera but not sufficiently to reduce the incidence of positive reactions. C. J. C. B.

False positive serological reactions for syphilis in infectious mononucleosis. R. E. Kaufman (*J. Lab. clin. Med.*, 1941, **26**, 1439—1446).—A review of the literature of false positive serological tests for syphilis during the course of infectious mononucleosis is made. 3 additional cases were observed among 64 patients who had Wassermann tests performed. Patients should not be treated for syphilis until serological tests, suspected of being falsely positive, have had a sufficient chance (12 weeks) to become negative. C. J. C. B.

Effect of spinal section or destruction on experimental tetany in guinea-pig. P. Sedallian, G. Morin, and G. Fournie (*Compt. rend. Soc. Biol.*, 1940, **133**, 528—530).—Tetanus toxin was injected in the hind leg of guinea-pigs in which either the spinal cord was separated from the medulla or the lumbar-sacral cord completely destroyed. Section did not affect the nature or development of convulsions. After cord destruction the hind legs showed no tetanic contractions. The convulsions appeared in the fore limbs and parts of the body with medullary innervation but only after a latent period. The survival of these animals was prolonged. P. C. W.

Active tetanus immunisation and combined tetanus–typhoid immunisation with tetanus anatoxin and typhoid endotoxoid vaccine. E. Grasset and A. I. Girdwood (*Sth. Afric. Med. J.*, 1940, **14**, 169—175).—Active tetanus immunisation can be safely combined with typhoid or diphtheria immunisation. There is a high tetanus-antitoxic content in the blood of animals or man. The combined tetanus antoxin and typhoid endotoxoid administration results in high immunity against the two infections; reactions are negligible. The results of tetanus antitoxin and *H* and *O* antityphoid agglutinin determinations agree with those obtained by others. A. S.

Immunity to tetanus induced by combined alum-precipitated diphtheria and tetanus toxoids. M. M. Peshkin (*Amer. J. Dis. Child.*, 1941, **62**, 9—25).—Of 186 children, 95% had protective levels of tetanus antitoxin following two doses of alum-pptd. combined toxoids injected at intervals of 1—10 months. The remainder who had inadequate antitoxin levels (0·003 unit per c.c. of blood serum) were given the toxoid at intervals of 1—4 months. Nine of these 10 children were given a third or " stimulating " dose of combined alum-pttd. toxoids, and within 1 month all had adequate antitoxin levels. C. J. C. B.

" Lethal dose " of toxin in experimental tetanus. A. Lamont, W. M. Firor, and H. B. Shumacker, jun. (*Johns Hopkins Hosp. Bull.*, 1940, **67**, 25—40).—A review. T. F. D.

Action of dilute heavy water on tubercle bacilli. T. Titani, M. Ito, and K. Inoshita (*Coll. Pap. Fac. Sci. Osaka*, 1936 (1935), **C**, **3**, No. 12).—Decrease in p_H of Long's medium inhibits, but increase in [D] increases, the growth of both human and bovine tubercle bacilli. Ch. Abs. (*el*)

Improved simple medium for cultivation of tubercle bacilli. W. L. Wallenstein (*Amer. J. clin. Path., Tech. Suppl.*, 1941, **5**, 108—110).—A new glycerin–egg medium is described. C. J. C. B.

Relation of inhibitory phenomenon of tubercle bacillus and Mantoux reaction and rate of sedimentation of blood corpuscles. T. Miwa (*Kitasato Arch. exp. Med.*, 1941, **18**, 13—29).—The growth of tubercle bacilli in whole blood of 152 normal persons, tubercular and other patients was tested by Wright's slide cell culture method. There is no relationship between the Mantoux reaction and growth rate of tubercle bacilli. In tubercular cases the growth rate falls as the sedimentation rate rises, but in terminal cases growth may not be inhibited. There is no relationship between sedimentation rate and Mantoux reaction. The growth of various types of tubercle bacilli is good in healthy guinea-pigs, rabbits, or men, but there are wide individual differences. In whole blood of tuberculous guinea-pigs, rabbits, and men the growth is inhibited. (6 photomicrographs.) C. J. C. B.

Recovery of pathogenicity of B.C.G. by passage through white rats. N. Nonaka, J. Harazawa, and F. Hoshika (*Kitasato Arch. exp. Med.*, 1941, **18**, 30—38).—B.C.G. recovered its pathogenicity for white rats by 4 passages through these animals, but after such treatment showed no increased virulence to guinea-pigs or rabbits. C. J. C. B.

Property of tubercular serum anergic to the tuberculin skin reaction. A. Rouslacroix and J. Brahic (*Compt. rend. Soc. Biol.*, 1940, **133**, 486—488).—*In-vitro* flocculation tests with tuberculin, acetone, and methanol extracts of tubercle bacilli were inconst. with the first two preps. but the last antigen gave pptn. reactions with tubercular serum and could be used for complement fixation tests. Using intradermal injections in healthy guinea-pigs anergic tubercular serum gave a positive cutaneous reaction more frequently than did allergic serum. P. C. W.

Dissociation between focal and cutaneous allergy in tubercular adults. I. Tetu and M. Blechmann (*Compt. rend. Soc. Biol.*, 1940, **133**, 495—498).—102 patients with pulmonary tuberculosis of whom 72 also had tubercular laryngitis were injected intradermally with tuberculin. Of the 72 cases, 25 showed cutaneous and laryngeal reactions, 30 showed cutaneous allergy and laryngeal (focal) anergy, and the remaining 17 cutaneous anergy and focal allergy. The laryngeal reaction was erythematous, œdematous, or hæmorrhagic and was observed in none of the 30 control cases. P. C. W.

Oral typhoid–paratyphoid vaccine. D. W. Martin and D. H. Fogel (*J. Pediat.*, 1941, **18**, 516—517).—107 university students whose sera did not agglutinate typhoid and paratyphoid *A* and *B* antigens and who had not had typhoid–paratyphoid immunisation were given oral typhoid–paratyphoid vaccine. 6 weeks later, none of them had significant agglutination titres against typhoid or paratyphoid antigens. C. J. C. B.

Antigenic properties of typhoid lysates prepared with essential oil solutions. F. de Potter (*Compt. rend. Soc. Biol.*, 1940, **133**, 454—456).—Typhoid bacilli were incubated in an aq. solution of essential oils. After centrifuging the supernatant fluid possessed antigenic properties for the elaboration of agglutinogens when injected in rabbits. These properties are compared with those of bacilli killed in other ways and are also shown to be more pronounced than those of a simple emulsion of bacilli in essential oil solution. P. C. W.

Chemical properties of typhoid bacilli antigens. E. Soru and C. Combiesco (*Compt. rend. Soc. Biol.*, 1940, **133**, 498—500).—3 fractions were derived by short mild hydrolysis (0·04N-acetic acid at 100°) of antigen *O* from typhoid bacilli: a water-sol. fraction containing the polyholosides and org. P; an ether-sol. fraction of palmitic and stearic acids; and an ether- and water-insol. fraction containing all the N. The last fraction on hydrolysis with strong acid gives rise to ether-sol. and reducing fractions. P. C. W.

Salt effects on antigenic components of Vi form of *B. typhosus*; action of calcium chloride. S. Kisida (*Kitasato Arch. exp. Med.*, 1941, **18**, 1—11).—Bacterial growth of Vi strains of *B. typhosus* on medium containing a high concn. of neutral salt is less influenced by an acid than by an alkaline reaction. Salt effects on bacterial growth and Vi-agglutinability of Vi strain run parallel, in terms of M. concn. in the order: Na, K, Sr, Ca, Mg, Ba. Vi strain culture on a medium containing high concn. of neutral salts generally loses its Vi-agglutinability, complement-fixing power with Vi antibody, and its immunising capacity in mice against infection of living Vi bacilli, but these cultures can still absorb Vi-agglutinin. C. J. C. B.

Vi antigen of *Eberthella typhi*. T. Ogawa (*Japan. J. exp. Med.*, 1940, **18**, 435—437).—Vi antigen was found in most freshly isolated typhoid bacilli. Mice were actively immunised by using freshly isolated Kauffmann's *VW* type typhoid bacilli and another group of mice were passively immunised by using the immune serum of a rabbit immunised with living strains of the same typhoid bacilli. Examination of the anti-bacterial power of mice showed that in all cases the animals possessed protective power against typhoid bacilli. C. J. C. B.

Chemical properties of complete antigen extract from cholera vibrio. A. Damboviceanu and C. Barber (*Compt. rend. Soc. Biol.*, 1940, **133**, 501—503).—The acid-sol. antigen obtained from cholera vibrio is a complex gluco-lipin containing amino-N and P. P. C. W.

Toxicity of sodium and potassium ions towards bacteriophage. A. Gratia (*Compt. rend. Soc. Biol.*, 1940, **133**, 443—444).—The chlorides and nitrates of Na and K inactivate the bacteriophage (Meg *C*) derived from *B. megatherium*. They have no action below M./32 or above M./4 and have max activity at M./8—M./16. The inactivation is irreversible. The active concn zones with other salts seem to depend on the valency of the anions and are: acetate M./4—M./32, sulphate M./64, oxalate M./4—M./150, and citrate M./8—M./550. P. C. W.

Antagonism of alkaline-earth ions to toxicity of sodium and potassium ions in bacteriophages. A. Gratia (*Compt. rend. Soc. Biol.*, 1940, **133**, 445—447).—M./50,000 $Ca(NO_3)_2$ neutralises the toxic effect of 0·1M-KNO_3 solution on bacteriophage (Meg *C*) derived from *B. megatherium*. If 0·1M-$Ca(NO_3)_2$ is added its own toxic effect is substituted for that of the KNO_3. $Mg^{\cdot\cdot}$ and $Ba^{\cdot\cdot}$ have 75% of the antagonistic effect of $Ca^{\cdot\cdot}$; $Sr^{\cdot\cdot}$ has only 50% of the activity. P. C. W.

Occurrence of *Rhizobium meliloti* bacteriophage in soils. H. Katznelson and J. K. Wilson (*Soil Sci.*, 1941, **51**, 59—63).—The phage was detected in all lucerne fields examined but in only one case among soils not bearing leguminous crops. Incidence of the phage was not correlated with soil type or reaction or with the age of the lucerne crop. In differently manured soils inoculated with *Rh. meliloti* the latter disappeared within 6 months when the reaction was unfavourable (p_H below 5·6) but persisted in soils of higher p_H. The phage occurred only in soils treated with CaO and other soil amendments although reaction was not the sole limiting factor. A. G. P.

Virus diseases: some laboratory phases. F. D. Stimpert (*J. Pediat.*, 1941, **18**, 429—439).—General discussion. C. J. C. B.

Pathology of virus disease. E. W. Goodpasture (*J. Pediat.*, 1941, **18**, 440—446).—General discussion. C. J. C. B.

Antibody development to lymphocytic choriomeningitis in mice. R. A. Lyon (*U.S. Publ. Health Rept.*, 1940, **55**, 2178—2180).—A period of 5 days is required for the development in white mice of immunity by subcutaneous inoculation of lymphocytic choriomeningitis virus, as tested by intracerebral inoculation. C. G. W.

Colorado tick fever. N. H. Topping, J. S. Cullyford, and G. E. Davis (*U.S. Publ. Health Repts.*, 1940, **55**, 2224—2237).—Colorado tick fever is a clinical entity with a characteristic symptomatology and epidemiology. Its present geographical distribution is limited to the range of the tick, *D. andersoni*. Its seasonal distribution coincides with the seasonal distribution of this tick. The cases reported give a consistent history of tick bite usually 4 or 5 days before the onset of illness; no other source of infection was revealed by this study. C. G. W.

Absence of virulicide activity from serum of animals resistant to poliomyelitis. M. Paraschivesco (*Compt. rend. Soc. Biol.*, 1940, **133**, 508—509).—No substance capable of neutralising the poliomyelitis virus was found in the serum of the mouse, rat, guinea-pig, rabbit, chicken, pigeon, or duck. P. C. W.

Epidemiology of anterior poliomyelitis. M. Bashford (*Arch. Pediat.*, 1941, **58**, 301—328).—A review of the literature. C. J. C. B.

Demonstration of lymphogranulomatous corpuscles by silver impregnation. R. Schoen (*Compt. rend. Soc. Biol.*, 1940, **133**, 397—399).—The corpuscles are easily demonstrable in paraffin sections of contaminated tissues by Ag impregnation according to Dieterle's method (*Arch. Neurol. Psychiat.*, 1927, **18**). P. C. W.

Treatment of measles with convalescent serum and concentrated adult normal serum. J. L. Kohn, I. F. Klein, and H. Schwarz (*J. Pediat.*, 1941, **18**, 476—478).—Intravenous injection of 40—50 c.c. of convalescent serum in the pre-eruptive stage of measles usually modifies the course of the disease, but injection of 40—105 c.c. in the eruptive stage had little effect. Intravenous injection of 30—70 c.c. of normal adult serum conc. to $\frac{1}{3}$—$\frac{1}{4}$ vol. had no effect on the subsequent course of the measles in 12 children. C. J. C. B.

Evaluation of convalescent serum in prevention of mumps. J. H. Lyday (*J. Pediat.*, 1941, **18**, 473—475).—There were 11 failures to prevent the disease after treating 86 exposed susceptible persons with 10 c.c. of convalescent mumps serum. 6 of the failures occurred in children who had been re-exposed to the disease after having attained an apparent immunity to the 1st exposure. C. J. C. B.

Active and passive immunity in "Q" fever infected and immunised guinea-pigs. I. A. Bengtson (*U.S. Publ. Health Repts.*, 1941, **56**, 327—345).—Vaccines were prepared from the spleens and livers of mice and the spleens of guinea-pigs inoculated with high-titre "Q" fever-infected yolk sac suspensions. Vaccines prepared from 2½% suspensions of such infected tissue immunised guinea-pigs against 10^4—10^7 min. infective doses. Hyperimmune sera were produced in guinea-pigs and rabbits by the inoculation of killed cultures followed by live cultures. These agglutinated suspensions of "Q" fever rickettsiæ in dilutions up to 1 : 10,240. C. G. W.

Comparison of fast and slow desiccation of virus of rabies and of Aujeszky's disease. P. Remlinger and J. Bailly (*Compt. rend. Soc. Biol.*, 1940, **133**, 395—397).—Slow desiccation causes much less attenuation of the virus of Aujeszky's disease than of the rabies virus. In both cases rapid desiccation causes little loss of virulence. It is suggested that slow desiccation causes loss of rabies virulence due to the action of a proteolytic enzyme, which is neutralised by the action of a special neurolytic enzyme in the Aujeszky virus. With rapid desiccation both enzymes are inhibited. P. C. W.

Histology of human yellow fever when death is delayed. E. Villela (*Arch. Path.*, 1941, **31**, 665—669).—In 23 such cases in which eosinophilic Councilman bodies could not be found, the presence of bright ochre-coloured granular bodies was used as a basis for the diagnosis of yellow fever (the colour of these granular bodies is believed to result from the impregnation of the disintegrating Councilman bodies with bile pigment). There were also fatty degeneration, slight jumbling of trabeculæ in the midzone, an increase in the size of the nuclei of parenchymal cells, hyperplasia of Kupffer cells, and the presence of small groups of leucocytes, also usually in the midzone. Mitotic figures were extremely rare. C. J. C. B.

Acylated derivatives of tobacco mosaic virus protein. P. Agatov (*Biochimia*, 1941, **6**, 269—275).—Up to 28,000 acyl groups can be introduced into the tobacco mosaic virus protein mol. without destroying its virulence. The latter does not depend on free amino-groups, the hydroxyl group of tyrosine, the amidine group of arginine, or the glyoxaline ring of histidine. J. N. A.

Utility of alum-precipitated toxoid. H. H. Anderson (*Arch. Pediat.*, 1941, **58**, 370—392).—A general review. C. J. C. B.

Effect of variations in technique on rapid or plate agglutination test for Bang's disease. M. H. Roepke and W. D. Murdock (*Cornell Vet.*, 1940, **30**, 449—464).—Lack of uniformity in results obtained by different investigators using the plate method is largely confined to sera of intermediate titres if a plate antigen of uniform sensitivity is used. Sera of intermediate titre constitute 5% of all samples. The different distances from which the readings are made by various observers, and the difficulty of reading sera showing fine agglutination, contribute to lack of uniformity of results. Strict accuracy is required to prevent variations in the titre (*e.g.*, spot size, amount of mixing, time interval between rotation of the plate and reading, method of reading). A. S.

Titration of mallein *in vivo* and *in vitro*. A. Urbain, J. P. Thiery, A. Nevot, and R. Courtade (*Compt. rend. Soc. Biol.*, 1940, **133**, 344—345).—Horse serum having a high antimalleinic potency was obtained by a single subcutaneous injection of glanders bacilli emulsified in an oily excipient (1 part of lanoline to 9 parts of olive oil and petroleum jelly). Power of antibody or alexin fixation in the presence of such a serum gives an estimate of the antigenic potency of a mallein sample. The results were checked by *in-vivo* experiments with horses having glanders. P. C. W.

Effect of olive oil or phloridzin on positive Forssman reaction of dog kidney. E. Renaux and J. Alexander (*Compt. rend. Soc. Biol.*, 1940, **133**, 438—440).—Injection of olive oil subcutaneously in the dog (10 ml. daily for 3 days) causes reduction of the hæmolysin fixation of the kidney. Olive oil has an affinity for Forssman antigen. Phloridzin diabetes has no effect. P. C. W.

Antibody production as a special example of protein synthesis *in vivo*. F. M. Burnet (*Austral. J. Sci.*, 1939, **1**, 172—173).—It is suggested that antigens are broken down by intracellular enzymes in the reticulo-endothelial system. An adaptive enzyme is developed and antibodies are formed in the antibody-producing cells by a process of partial replica production, the modified proteinase remaining an integral part of the cell and any descendant cells resulting from its multiplication. These cells can then respond to further stimuli by multiplication of the proteinase units within the cell and by cell multiplication, both giving rise to increased antibody production and possible further qual. modification of the proteinases. H. G. R.

Ineffectiveness of histaminase in anaphylactic shock in guinea-pigs. A. F. Knoll (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 606—609).—Results of Karaday and Browne (*J. Immunol.*, 1939, **37**, 463) who described a protective effect of histaminase against egg-white anaphylaxis are not confirmed. V. J. W.

Effects of histaminase on Shwartzman phenomenon. M. D. Bosse (*J. Lab. clin. Med.*, 1941, **26**, 1432—1434).—Little or no effect on the Shwartzman phenomenon was noted by pretreatment with histaminase administered orally, subcutaneously, or intravenously in large doses. C. J. C. B.

Rectal tests for gastro-intestinal allergy. J. W. Thomas and R. J. F. Renshaw (*Sth. Med. J.*, 1941, **34**, 528—530; cf. A., 1941, III, 445).—267 tests were done in allergic and non-allergic patients. The skin and proctoscopic reactions agreed positively in 33 and negatively in 153 instances; the proctoscopic test only was positive in 26 and the skin test only in 55 cases. E. M. J.

Accelerated reappearance of allergy in guinea-pigs reinfected after spontaneous desensitisation. A. Saenz and G. Canetti (*Compt. rend. Soc. Biol.*, 1940, **133**, 352—354).—Guinea-pigs which have been sensitised with BCG and in the ensuing 1—2 years have lost their sensitivity were resensitised with virulent tubercular vaccine. The allergic response to a succeeding tuberculin injection could be elicited as soon as 4 days after the sensitising injection and was much more pronounced than normally. P. C. W.

Bacterial allergy: ætiological factor in dermatitis herpetiformis. J. L. Callaway and T. H. Sternberg (*Arch. Dermat. Syphilol.*, 1941, **43**, 956—961).—The case reported recovered rapidly under vaccine desensitisation. C. J. C. B.

Skin testing in newborn. B. Zohn (*Arch. Pediat.*, 1941, **58**, 339—343).—In 150 infants, 3—8 days of age, who were tested with milk, egg, and wheat, no positive wheal reactions were obtained. Skin tests with histamine performed on 25 cases gave positive wheal reactions in every instance. Skin tests with irritating extracts, such as dust, wool, and feathers, gave 3 equivocal positive wheal reactions to dust. C. J. C. B.

XXVI.—PLANT PHYSIOLOGY.

Prevailing direction of enzyme action as index of drought-resistance in cultivated plants. V. Diurnal rhythm of trend of enzyme action in withering. N. Sisakjan and A. Kobjakova (*Biochimia*, 1941, **6**, 103—112).—Experiments with a drought-resistant and a non-resistant type of wheat grown on soil and allowed to wither until loss of turgor at the stage of stalk formation occurred show that, under normal conditions of vegetation, the trend of enzyme action is subject to a diurnal rhythm which is disturbed by alterations in the conditions (particularly by water deficiency). Under identical conditions of dehydration, resistant wheat maintains, and non-resistant wheat loses, the periodicity in the trend of enzyme action. W. McC.

Changes in protease–protein complex in germinating and ripening wheat seeds. N. I. Proskuriakov, A. A. Bundel, and E. V. Bucharina (*Biochimia*, 1941, **6**, 347—354).—During maturing of wheat there is a gradual decrease in proteolytic activity from early milk- to full ripeness, which is due to simultaneous decrease in proteinase activity and increase in resistance of the proteins to enzymic hydrolysis. During germination of wheat the opposite series of changes is observed. J. N. A.

Enzyme action in resting and bursting buds. A. Kursanov and K. Briuschkova (*Biochimia*, 1940, **5**, 521—527).—Winter buds of *Syringa vulgaris* pass through a resting stage characterised by absence of growth and hydrolysis and occurrence of marked synthetic invertase action. During the intermediate phase which follows, synthetic action gradually declines in proportion as hydrolytic action increases but no growth occurs. This is succeeded by a second resting stage during which synthesis almost ceases, hydrolysis continues to increase, and growth begins. Finally, the buds burst, synthesis re-commences, hydrolysis declines, growth becomes vigorous, and photosynthesis begins. Probably, the alterations in the extent of action of invertase are due to the state of adsorption which it takes up after the zymogenic stage is passed, synthetic action being favoured by adsorption. Increase in synthetic action of proteinases also occurs with bursting of the buds. Common points in the behaviour of invertase and protease in bursting buds and germinating seeds are discussed and it is suggested that the activity changes described always occur when plant material passes from the stage of rest to that of active vegetation. W. McC.

Amylase in the chloroplasts. L. Nezgovorov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **29**, 624—627).—Amylase activity of extracted plastids accounts for 1—15% of the total leaf amylase (17 plant species). The activity of the plastids is unaffected by small variations in the method of prep., or by freezing or severe grinding. R. L. E.

Enzyme activity in ripening wheat. A. Kursanov and K. Bruischkova (*Biochimia*, 1941, **5**, 681—686).—Invertase and proteinase activity are studied in relation to ripening. Hydrolytic activity is followed by synthesis when seed reserves are being laid down, all enzyme action ceasing when ripeness is complete. These phenomena depend either on dehydration or on transition of the enzymes into an inactive state. The intermediate synthetic phase is probably associated with a form of adsorption of the enzymes. R. L. E.

Synthetic action of amylase in living plant tissue. B. A. Rubin, E. V. Artzichovskaja, N. S. Spiridonova, and O. T. Lutikova (*Biochimia*, 1940, **5**, 687—696).—In 3-hr. vac. infiltration experiments more starch is formed from sucrose than from a mixture of glucose and fructose; none is formed from maltose. Starch formation is very rapid, and starch takes an active part in leaf carbohydrate metabolism. Formation of sucrose followed by its hydrolysis to active furanose units is probably an intermediate stage in starch synthesis in the plant. R. L. E.

Biochemical synthesis of carbon chains of isoprene type. A. Kuzin and N. Nevrajeva (*Biochimia*, 1941, **6**, 261—268).—In presence of glycine and at low temp. acetone and acetaldehyde condense to give β-hydroxy*iso*valeraldehyde which contains a branched chain of isoprene type. It is concluded that this supports the theory of Euler of the participation of acetone and acetaldehyde in the synthesis of terpenes and shows that amino-acids play an important part in the process. J. N. A.

Synthesis and hydrolysis of sucrose in higher plants under conditions of inhibited phosphorylation. N. Kriukova (*Biochimia*, 1940, **5**, 574—583).—In plants, 0·005M-iodoacetate and 0·125M-NaF inhibit phosphorylation and synthesis of sucrose but the inhibition of phosphorylation does not appreciably affect the rate of hydrolysis of sucrose. Phloridzin does not affect phosphorylation or sucrose synthesis. Iodoacetate slightly inhibits respiration, causing a small decrease in the R.Q. The accompanying complete inhibition of sucrose synthesis is not due to lack of available energy. The results show that phosphorylation is essential for sucrose synthesis. W. McC.

Changes in tannins during growth of plants. A. Kursanov and N. Kriukova (*Biochimia*, 1941, **6**, 326—334).—The formation of tannins in the cell from simple polyphenols occurs slowly, and the tannides are only intermediates in the series of reactions which lead to the highly condensed water-insol. products. Although there is an energetic formation of polyphenols in growing cells, the rate decreases considerably as the age of the cells increases, whilst the rate of condensation of polyphenols to tannides and later to phlobaphens increases with the age of the cell. Generally the stage of evolution of tannins corresponds with the stage of evolution and age of the cells, but the age of the latter cannot be deduced from the composition of the tannin, for in a few cases there is no agreement between them. J. N. A.

Laminarin and mannitol of brown algæ. II. Seasonal variation of their content in *Eisenia bicyclis*. III. Variation of content during growth. K. Nisizawa (*Sci. Rep. Tokyo Bunrika Daigaku*, 1940, **5**, **B**, 9—14, 14—19; cf. A., 1939, III, 216).—II. The amount of laminarin increases slowly from Feb. to June and then rapidly at the end of July, becoming max. in the middle of Aug. There is then a pronounced decrease to Oct. and a further gradual decrease during the winter. The max. and min. contents are 3·4 and 0·1% of the dry wt. respectively. It is concluded that laminarin is utilised by the alga for fructification in the late autumn. The amount of mannitol varies inversely as the amount of laminarin, and throughout the year it is always greater than the latter.

III. The amounts of laminarin and mannitol increase with the growth of the alga, and it is concluded that both substances are utilised for growth. J. N. A.

Respiration of leguminous root nodules. G. F. Asprey and G. Bond (*Nature*, 1941, **147**, 675; cf. A., 1940, III, 173).—The O_2 intake and CO_2 evolution of detached nodules moistened with inorg. nutrient have been determined at 25°. The nodules were taken from Manchu soya-bean plants inoculated with Wisconsin strain No. 505 of the nodule organism. O_2 intake ranged from 2·31 to 6·25 cu.mm. per hr. per mg. dry wt. of tissue, and the R.Q. from 1 to 1·25. Detached younger parts of the roots of the soya-bean plants gave 1·70—2·17 cu.mm. of O_2 absorbed, and R.Q. about 1. The intensity of respiration within leguminous nodules and roots may vary in material from different sources. In the nodules from soya-bean plants, there is no tendency for the R.Q. to be greater in larger than in smaller nodules. For *Pisum sativum* nodules, O_2 intake is 1·89—3·24 and R.Q. 1·05—1·25. L. S. T.

Effect of calcium deficiency on respiration of etiolated seedlings. W. R. Mullison (*Bot. Gaz.*, 1939, **100**, 828—835).—The total respiration (roots and tops) of seedlings was in the (descending) order pea, squash, maize, irrespective of Ca supply, vals. for Ca-deficient plants being the lower in all cases. Deficiency of Ca lowered the respiration of the tops in all three species and that of roots of pea and squash but increased respiration in maize roots. The respiration of roots of pea and maize was approx. double that of the tops; roots and tops of squash respired to substantially the same extent. A. G. P.

Vitamin-B_1 in relation to meristematic activity of isolated pea roots. F. T. Addicott (*Bot. Gaz.*, 1939, **100**, 836—843).—The growth-promoting action of vitamin-B_1 on roots arises from stimulation of meristematic activity rather that of cell elongation. In roots to which -B_1 was not supplied elongation, differentiation, and maturation of cells were normal although meristematic activity was considerably retarded. A. G. P.

Synthesis of vitamin-B_1 in vegetable tissue cultures. P. Nobécourt (*Compt. rend. Soc. Biol.*, 1940, **133**, 530—532).—Carrot tissue cultured in a medium (Nobécourt, A., 1937, III, 498) free from aneurin, 4-methyl-5-β-hydroxyethylthiazole, and 3-methyl-4-aminomethylpyrimidine synthesises vitamin-B_1. P. C. W.

Vitamin-*C* and oxidation enzymes in high mountain plants. S. O. Grebinski (*Biochimia*, 1941, **6**, 253—260).—The leaves of plants on high mountains contain increased amounts of vitamin-*C* and show increased catalse and peroxidase activity, and the increase is proportional to the severity of the climatic conditions. The increase in -*C* is especially marked in plants from dry, well illuminated southern slopes, and the increase in catalase activity is as strongly marked as is the increase in -*C* content. J. N. A.

Photosynthesis in intermittent illumination. G. E. Briggs (*Proc. Roy. Soc.*, 1941, **B**, **130**, 24—31).—With an intense flash of light of short duration, 1 mols. of CO_2 is reduced per 2000 mols. of chlorophyll; when the duration of the flash is greatly increased, 300 or more mols. of CO_2 are reduced. This is explained by assuming that chlorophyll sensitises the activation of a substance *A* which, by handing on its energy, causes the reduction of CO_2 in combination with a substance *S*. The decay of activated *A* is a relatively rapid process, whilst that of activated CO_2–*S* is relatively slow. The yield for short flashes is determined by *A* and that for long flashes by *S*, the ratio of *S* to *A* being of the order of 100. F. O. H.

Chlorophyll–protein compound of the green leaf. E. L. Smith (*J. Gen. Physiol.*, 1941, **24**, 565—582).—Aq. extracts of spinach and *Aspidistra* leaves are very opalescent and differ markedly in spectrum and fluorescence from chlorophyll in org. solvents. This is due to the fact that chlorophyll in the leaf is combined with protein and this complex is extracted by water. Acid and alkali modify the absorption spectrum, acid converting the compound into the phæophytin derivative, and alkali hydrolysing the esterified groups of the chlorophyll. Heating, drying, or treatment with low concns. of alcohol or acetone denatures the protein. Detergents such as deoxycholate clarify the leaf extracts but denature the protein. Agents inhibiting photosynthesis have no effect on the absorption spectrum of the chlorophyll–protein compound. The average chlorophyll content of the purified chloroplasts is 7·86%, protein content 46·5% corresponding with a chlorophyll content of 3 mols. of chlorophyll *a* and 1 of chlorophyll *b* for the Svedberg unit of 17,500. D. M. N.

Action of sodium dodecyl sulphate on the chlorophyll–protein compound of spinach leaf. E. L. Smith (*J. Gen. Physiol.*, 1941, **24**, 583—596).—Na dodecyl sulphate attacks the chlorophyll–protein compound, modifying its protein properties and absorption spectrum. Mg is removed from the mol., the chlorophyll being converted into phæophytin at a rate directly proportional to $[H^+]$. At const. p_H, the rate is proportional to the dodecyl sulphate concn. until a max. rate is reached. The chlorophyll or phæophytin remains attached to the protein, since the prosthetic group cannot be separated by ultrafiltration, dialysis, or fractional pptn. This suggests that Mg plays no part in binding chlorophyll to the split protein fragments, but may be concerned in binding the larger units. D. M. N.

Absorption of light by chlorophyll solutions.—See A., 1941, I, 398.

Boron as a factor in the calcium metabolism of the maize plant. R. P. Marsh and J. W. Shive (*Soil Sci.*, 1941, **51**, 141—151).—In continuous-flow solution cultures the optimum B requirement of maize plants is met by nutrient solutions containing 0·1—0·25 p.p.m. of B. B tends to maintain Ca in an available condition within the plant but has little influence on the actual rate of intake of Ca. The sol. Ca in maize tissue is not controlled by the total Ca of the plant but by the B content and this in turn depends on the B content of the substrate. The proportion of sol. B in plants is high and is directly related to the total B content and to the amount of B in the substrate. Relationships are shown between the B and pectin contents of active plant tissues and between B and fat metabolism in which Ca is also concerned. A. G. P.

Physiology of plant nutrition. XI. Effect on growth of rubidium with low potassium supply; modification of this effect by other nutrients. I. Effect on total dry weight. F. J. Richards (*Ann. Bot.*, 1941, **5**, 263—296; cf. A., 1940, III, 361).—Barley grown in solutions of high $[K^+]$ and containing NH_4^+, a min. of Ca^{++}, and no Na^+ is more than normally sensitive to K deficiency. In such solutions diminution in K supply to low levels causes early death of the plants; in these conditions moderate supplements of Rb permit normal growth to continue. Large $[Rb^+]$ causes abnormalities in leaf and root growth. Rb affects growth in three possible ways: (i) a sp. toxic action, (ii) a restriction of P intake especially in media of high Ca content, (iii) elimination of toxicity of NH_4^+. In respect of (iii) Rb may serve as a substitute for K; other alkali metals do not show this property. A. G. P.

Use of *Lemna* for nutrition studies on green plants. R. A. Steinberg (*J. Agric. Res.*, 1941, **62**, 423—430).—Use of "reagent" chemicals in the prep. of culture media for *Lemna* led to symptoms of deficiency of Fe, Mn, and Cu when these elements were not specially added. Further purification of the nutrient salts by the $CaCO_3$ method intensified the deficiency symptoms, and rendered necessary the addition of Mo, Ga, and B as well as Fe, Mn, and Cu to produce normal growth. Use of *Lemna* cultures in detecting deficiencies of "trace" elements in crop plants is indicated. A. G. P.

Action of saponin on cells of *Spirogyra*. G. Yamaha and Z. Araki (*Sci. Rep. Tokyo Bunrika Daigaku*, 1939, **4**, **B**, 129—138).—*Spirogyra B* cells can exist in 0·5 and 1% saponin solution at 20° for 24 hr., but afterwards visible changes occur in the cells, and there is disorderly arrangement of the spiral chloroplasts which finally become detached from the cell wall. Cells of *Spirogyra A* are considerably more sensitive, and the chloroplasts contract after 4 hr. whilst the cells die after 10 hr. In saponin-treated cells protoplasmic streaming and the Brownian movement of the disperse phase in the cytoplasm are significantly quicker than in normal cells. The cytoplasm is also much darker. The effect of saponin is to decrease the viscosity of the protoplasm. The stability of the cells towards methyl alcohol also decreases but the effect is reversible and resistance is regained after immersion in water. The time of plasmolysis of the cells by $Ca(NO_3)_2$ and KNO_3 is considerably decreased, whilst with $MgSO_4$ there is no plasmolysis. Treatment of the cells with saponin increases the ability to stain with neutral-red, eosin, and rhodamine-B, but if the cells are placed in a solution of the dye and saponin, then staining is completely inhibited. J. N. A.

Colorimetric determination of indolyl-3-acetic acid. J. W. Mitchell and B. C. Brunstetter (*Bot. Gaz.*, 1939, **100**, 802—816).—The red coloration produced by treatment of indolyl-3-acetic acid with $FeCl_3$ and H_2SO_4 (Albaum *et al.*, A., 1938, III, 630) affords a basis for determining the acid in solutions containing 0·02—0·1 mg. per c.c. A more stable colour results from the reaction of the acid with KNO_2–HNO_3. Max. intensity is obtained at p_H 2·5 and the addition of gum acacia prevents the formation of the cherry-red ppt. A satisfactory technique is described for determining 0·01—0·015 mg. of indolyl-3-acetic acid per c.c. by this method. Indole, but not tryptophan, gives a similar reaction. Indolyl-butyric (and the methyl ester) and -propionic acids give a yellow coloration with these reagents. A. G. P.

Effect of chemical constitution and physical properties in action of cyclic hydrocarbons on plant karyokinesis and morphogenesis. P. Gavaudan and N. Gavaudan (*Compt. rend. Soc. biol.*, 1940, **133**, 348—352).—Germinating seeds of *Triticum vulgare* were immersed in the vapour of 1 : 4-dibromo-, 1 : 3 : 5-trichloro- or -tribromo-benzene, 2 : 4 : 6-trichloro- or -tribromo-aniline, or 2-chloro- or -bromo-naphthalene. Dichlorobenzene was more toxic than dibromobenzene; both stimulate karyokinesis. Trichloro-benzene and -aniline retard the development of the plant, producing swelling of the coleoptile and root; polyploid cells are formed. Br_3-derivatives have similar but less activity. 1-Chloro- and -bromonaphthalene kill the seeds but the 2-compounds are less toxic. Some of the plants developed from seeds treated with the latter compounds do not have swollen roots or shoots. Disordered karyokinesis occurs. The activity of the various compounds is more closely related to m.p. than to b.p. The variations in activity with changes in chemical structure are discussed. P. C. W.

Production of a *Triticum timopheevi* × *T. durum*, var. *Hordeiforme 010*, amphidiploid by colchicine treatment. A. R.

Shebrak (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **29**, 604—607; cf. A., 1940, III, 365).—Amphidiploids have been produced by colchicine treatment of *T. timopheevi* × *T. durum*, var. *Hordeiforme 010*, hybrids. *T. timopheevi* crosses readily with hard wheat. R. L. E.

Effect of *X*-irradiation on colchicine-treated roots. R. Villars (*Compt. rend. Soc. Biol.*, 1940, **133**, 424—426).—Roots of *Pisum sativum* and *Allium cepa* seedlings were placed in 1 : 2000 solution of colchicine and *X*-irradiated after 40, 48, 96, and 120 hr. immersion. The treatment had no effect up to prophase but the stathmometaphasic chromosomes agglomerate and fuse into one mass, spindle formation being inhibited. P. C. W.

Competition between related strains of nodule bacteria and its influence on infection of the legume host. H. Nicol and H. G. Thornton (*Proc. Roy. Soc.*, 1941, **B**, **130**, 32—59).—When two strains of nodule bacteria (*Rhizobium*) are present in the surroundings of their host's root system, the strain having the higher growth rate may almost completely check multiplication of the other strain outside the plant. This dominant strain will then be responsible for nearly all the nodules. In peas and soya beans, where root growth is rapid and of comparatively short duration, the nodule-producing capacity of the plant may be partly or wholly satisfied by the nodules produced within the first few weeks so that further infection by the same or by a different strain is prevented; with slowly growing roots (*e.g.*, clover), the first formed nodules may be subsequently supplemented by others from the same or from a different strain. The relative no. of nodules produced by two strains applied simultaneously to the roots is conditioned by the sp. infectivity peculiar to each strain unless some other factor, *e.g.*, competition outside the plant, masks this effect. The bearing of the results on agricultural practice is briefly discussed. F. O. H.

Symbiosis of leguminous plants and nodule bacteria. I. Respiration and extent of utilisation of host carbohydrates by nodule bacteria. G. Bond (*Ann. Bot.*, 1941, **5**, 313—337).—Respiration rates (CO_2 evolution) of the various organs of solution-cultured soya-bean plants are determined at various stages of growth. The respiration of nodules averaged three times that of roots and shortly before flowering amounted to 25% of the total respiration of whole plants. Between flowering and early root formation nodules consumed 16% of the total carbohydrate synthesised by the plant. Approx. 75% of the respiration of nodules is accounted for by the bacteria. A. G. P.

Malformation of cotton leaves. R. S. Vasudeva (*Current Sci.*, 1940, **9**, 497—499).—A disease of the leaves of cotton plants (particularly April-sown) is described. The affected leaves are thick and brittle, and have lower total sugar, reducing sugar, sucrose, and starch, and higher ash content, than normal leaves. E. M. W.

XXVII.—PLANT CONSTITUENTS.

Ammonia and volatile amines in plants. O. M. Efimenko and T. N. Naugolnaja (*Biochimia*, 1940, **5**, 630—635).—*Gossypium herbaceum*, *Cicer arietinum*, *Abutilon avicennæ*, *Hibiscus esculentus*, and *Chenopodium album* contain NH_3 and amines, free and in compounds decomposed by Na_2CO_3. All the plants give off vapour of NH_3 and amines. R. L. E.

Removal of ash from peptones and their partial fractionation by means of electrodialysis. L. I. Ilina and L. T. Soloviev (*Biochimia*, 1940, **5**, 616—623).—Ash can be removed from peptone by electrodialysis with a loss of 2·9—14·4% of the total N. Most of the peptones studied had neutral or slightly acid isoelectric points; among others there were more in the distinctly alkaline than in the distinctly acid range. As the N-rich fractions move towards the cathode, the method can be used to fractionate products of incomplete protein hydrolysis. R. L. E.

[Determination of] boron [in plant materials]. J. S. McHargue (*J. Assoc. Off. Agric. Chem.*, 1941, **24**, 518—520).—The quinalizarin method (B., 1940, 73) for the determination of B is satisfactory. Max. sensitivity is at 92% H_2SO_4. The use of MgO_2 or K_2CO_3 to prevent loss of B during ashing is unnecessary. Good correlation between the spectrographic and the quinalizarin colorimetric method was observed. A. A. E.

[Determination of] zinc in plants. H. Cowling (*J. Assoc. Off. Agric. Chem.*, 1941, **24**, 520—525).—Collaborative results obtained by the author's photometric dithizone method (A., 1941, III, 713) are recorded. The final extract should be exposed only to electric light. The method requires an aliquot of plant ash solution equiv. to only 0·5 g. Appreciable variations are attributed partly to unfamiliar technique. A. A. E.

Sterol from the seeds of *Momordica cochinchinensis*, Spreng.—See A., 1941, II, 321.

Determination of phloroglucinol in plants. A. L. Kursanov (*Biochimia*, 1941, **6**, 128—139).—Phloroglucinol exists in plants in at least three forms, viz., free, combined in ether-insol. form, and as glucoside or high-mol. tannin compound. The first two forms respond to the vanillin–HCl test, which, in a modified form, is applied to the colorimetric determination of the phloroglucinol fractions (0·4—100 μg. per ml.) and to the demonstration of their mode of distribution in plants. The phloroglucinol content of plants rich in tannins is high (*e.g.*, dry tea leaves 3, willow bark 1·5%). Plants that contain condensed tannins are characterised by appreciable phloroglucinol content, little or none being present in those which contain hydrolysable tannins. W. McC.

Extraction of carotene from plant material. L. A. Moore and R. Ely (*Ind. End. Chem.* [*Anal.*], 1941, **13**, 600—601).—The material is macerated and extracted by an assembly of knives rotating at 10,000 r.p.m. in a mixture of 98% ethyl alcohol and light petroleum (30 : 70), and the carotene determined in the petroleum extract after removal of alcohol. The sp. mixture forms a foam which prevents splashing losses at high revolutions of the knives. J. D. R.

[Determination of] chlorophyll and carotene in plant tissue. E. J. Benne (*J. Assoc. Off. Agric. Chem.*, 1941, **24**, 526—539).—Results of determinations on lucerne meal, spinach leaves, and other fresh tissue, and comments of collaborators, are recorded. The principal methods employed were those of Peterson *et al.* (B., 1937, 616) and of Petering *et al.* (A., 1940, III, 549), a sample of chlorophyll providing a common primary standard, and pigment concns. being determined by means of photo-electric colorimeters and spectrophotometers. The range of variation of results obtained by the latter procedure was greater than with the former. Carotene vals. obtained by the two adsorption techniques were lower than those resulting from the Willstätter–Stoll phasic separation. The diacetone method gave higher results than did the other methods. Extraction with 95% ethyl alcohol gave a val. for chlorophyll in maize leaves higher than that obtained by acetone extraction. A. A. E.

Vitamins in wheat germ. H. H. Bunzell (*Science*, 1941, **93**, 238—239).—Highly-purified wheat germ from hard spring wheat contains a water-sol., heat-stable component that stimulates yeast cells to an activity greater than can be accounted for by their known vitamin contents. The effect may be due to a single or to mixture of essential food factors not yet recognised. L. S. T.

Vitamin-*C* contents of various plants. M. Ida and M. Murakami (*J. Pharm. Soc. Japan*, 1940, **60**, 191—192).—141 kinds of plants were investigated for ascorbic acid content by the dichlorophenol-indophenol method. Pure crystals of the acid were isolated from the leaves of *Diospyros*. The green leaves of plants, *e.g.*, *Rhaphanus*, L., and *Gladiolus* etc., contain more ascorbic acid than do the stems and roots, but the acid from *Rhaphanus* is rapidly oxidised, indicating the presence of ascorbic acid-oxidase. A. T. P.

Dulcitol in *Cassytha filiformis*, L. F. Fuzikawa, I. Nakamura, and K. Asami (*J. Pharm. Soc. Japan*, 1940, **60**, 209).—Dulcitol has been isolated from *C. filiformis*, L., by extraction with methyl alcohol and pptn. with Pb acetate. A. Li.

Soya-bean carbohydrates. M. M. MacMasters, S. Woodruff, and H. Klaas (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 471—474).—The sugar, pentosan, and galactan contents of edible varieties of soya beans are determined at different stages of maturity. All sugars decreased, but pentosan and galactan increased, with increasing maturity, and the sugar decrease may be related to the pentosan and galactan increase. Seasonal and varietal differences in carbohydrate constituents are marked. Hemicelluloses of Willomi soya beans gave fractions composed of arabinose, galactose, and galacturonic acid, probably galacto-arabans containing the uronic acid.

The various fractions differ in physical properties and in the relative proportions of the constituents. J. D. R.

Fructosan content of some grasses adapted to Iowa. Preliminary survey. A. G. Norman, C. P. Wilsie, and W. G. Gaessler (*Iowa State Coll. J. Sci.*, 1941, **15**, 301—305).—All grasses analysed contained fructosan (usually 2—4%; highest val. 7·6%). J. L. D.

Polyuronide hemicelluloses isolated from sap-wood and compression wood of white pine, *Pinus strobus*, L. E. Anderson, J. Kesselman, and E. C. Bennett (*J. Biol. Chem.*, 1941, **140**, 563—568; cf. A., 1940, II, 324).—Pectic material and polyuronide hemicelluloses were isolated from compression and sap-wood, the former yielding more hemicellulose and more mannan free from uronic acids. The pectic material (probably a pectinic acid) was the same as that from hardwoods. A hemicellulose containing a monomethyluronic acid, a chain of 5 or 6 xylan units, and mannan units is present. The form in which hemicellulose units are combined is discussed. R. L. E.

Resistance of starch from different sorts of wheat to the hydrolysing action of amylase. V. F. Milovskaja (*Biochimia*, 1940, **5**, 589—595).—Starches from different strains of wheat vary in resistance to hydrolysis by amylase. These variations are chiefly in the outer part of the starch grain, the inner, earlier deposited fractions being fairly const. in resistance. The structural character of the starch also depends on conditions of growth. R. L. E.

Structure of starch granules in different types of pea and changes in their properties with age of the seed. M. M. Kurgatnikov (*Biochimia*, 1940, **5**, 417—431).—The thick membrane surrounding the starch granules of wrinkled peas is resistant to heat and to amylase so that low starch vals. are found for wrinkled peas by the diastatic method. The amylase-resistant constituent, a hemicellulose, is present in round peas in smaller amounts than in wrinkled peas. The starch granules of both types of pea are similar in the first phase of development. The P content of the starch granules of wrinkled peas decreases with age whilst that of round peas first increases, then decreases, and finally increases. E. M. W.

Determination of starch in plant materials. N. I. Proskuriakov and A. N. Koshevnikova (*Biochimia*, 1941, **5**, 624—629).—Chinoy's method in a modified form is better than Fellenberg's: it is more rapid and sufficiently accurate. R. L. E.

Mucilage from Indian wheat, *Plantago fastigiata*. E. Anderson, L. A. Gillette, and M. G. Seeley (*J. Biol. Chem.*, 1941, **140**, 569—574).—The mucilage is fractionated into mucilage acid, mucilage-*A* sol. in 25% alcohol, and water-sol. mucilage-*B*. Analyses of these and results of hydrolysis are given. *d*-Galacturonic acid, *l*-arabinose, and *d*-xylose were isolated. R. L. E.

"Crossed fibrillar" structure of plant cell walls. R. D. Preston (*Nature*, 1941, **147**, 710).—An explanation of this type of structure is discussed in terms of the type of folding in protein structure elaborated by Astbury and Bell (A., 1941, II, 343). L. S. T.

Fine structure of phloem fibres. II. Untreated and swollen jute. R. D. Preston (*Proc. Roy. Soc.*, 1941, **B**, **130**, 103—112; cf. A., 1940, III, 175).—Examination of jute fibres by *X*-ray methods, polarising microscope, and after swelling by aq. NaOCl, 10% NaOH, or 55% H_2SO_4 indicates that the optical heterogeneity of the wall is not due to changes in direction of the cellulose chain. The wall is composed of cellulose chains forming a single, steep spiral, which becomes steeper as the cell elongates until the onset of wall thickening. The phenomenon of "ballooning" and transverse cracking, which occur with hemp fibres, are not apparent in jute fibres on swelling; this is probably connected with the lower lignin content of the outer layers in the jute fibre wall. The misleading nature of observations on swollen material is confirmed. F. O. H.

Use of chloroform to accelerate cyanogenesis in analysis of cyanogenetic plants. J. F. Crouch and R. R. Briese (*J. Washington Acad. Sci.*, 1941, **31**, 285—288).—Treatment of macerated plant tissue with $CHCl_3$ to facilitate production of HCN resulted in lower vals. for HCN recovery than were obtained by the $HgCl_2$ method. Aëration methods were also unsatisfactory. A. G. P.

Cyanogenesis in white clover (*Trifolium repens*, L.). I. Cyanogenesis in single plants. L. Corkill. **II. Isolation of the glucosidal constituents.** J. Melville and B. W. Doak. **III. Linamarase, the enzyme which hydrolyses lotaustralin.** I. E. Coop. **IV. Methods of determination and general considerations.** J. Melville, I. E. Coop, B. W. Doak, and I. Reifer (*New Zealand J. Sci. Tech.*, 1940, **22**, **B**, 65—67, 67—71, 71—83, 144—154).—I. White clover leaves were tested for the presence of cyanoglucoside by the Guignard picrate-paper test. Those which gave negative results were tested in the presence of added lotaustralin or linamarase. In this way 4 groups of plants were identified, namely, those containing both glucoside and enzyme, those containing neither, and those containing either glucoside or enzyme.

II (cf. Finnemore *et al.*, A., 1938, III, 633). Freshly collected clover was heated to inactivate enzymes, finely chopped, washed with 50% alcohol, and treated with basic Pb acetate. The filtrate was freed from Pb (H_2S), evaporated, and extracted with ethyl acetate to yield cryst. lotaustralin. Hydrolysis (linamarase) of the glucoside produces acetone equiv. to 20—25% admixture of linamarin in lotaustralin. The dinitrophenylhydrazone of the hydrolytic product was a mixture.

III. Ether-extracted, ground linseed meal was extracted with water and to the extract Na acetate and 0·2N-acetic acid were added. The filtrate was cooled below 10° and treated with ½ vol. of alcohol. Alcohol was added to the filtrate to 60% concn. and the collected ppt. containing the enzyme was dissolved in water. The enzyme was adsorbed on Al_2O_3 gel, eluted with 0·01N-PO_4''', and the solution dialysed and centrifuged. The centrifugate contained the enzyme (protein content approx. 10%), which was dried by pptn. with acetone at 0°. A much less active prep. was obtained from clover leaves because adsorption did not increase concn. For either enzyme, the optimum p_H is 6·0 (95% of max. activity from p_H 5·6 to 6·2) in the hydrolysis of lotaustralin at 37°. The reaction velocity is proportional to concn. of enzyme but increases to a max. with increasing concns. of substrate. K_m was 0·0024N. (linseed) and 0·0027N. (clover). Both preps. had similar temp. coeffs. below 40°; the more rapid inactivation of the clover prep. above 50° was probably due to impurities. K_2SO_4, KNO_3, KI, and $KClO_4$ had slight inhibitory effects on the enzyme (cf. Helferich and Schmitz-Hillebracht, A., 1935, 1163). Linamarase hydrolyses linamarin about half as rapidly as it does lotaustralin; K_m = 0·0057N. Both preps. of linamarase hydrolyse amygdalin slightly and salicin rapidly. The ratio between the rates of hydrolysis of amygdalin and salicin is not const. for different preps., indicating that the linamarase prep. probably contains other enzymes.

IV. Clover leaves after treatment with $CHCl_3$ were incubated at 37° with aq. linamarase and the HCN formed was distilled into 2N-NaOH and determined titrimetrically ($AgNO_3$). Distillation in a vac. and by aëration gave low yields of HCN. The Guignard picrate method is much less sensitive when applied to HCN obtained from clover leaves (0·005% HCN may give a negative result) than when applied to pure HCN solutions. These leaves produce a green coloration or a fading of the colour (violet) of a mixture of 4% $NiCl_2,6H_2O$ (0·2 c.c.) and conc. NH_3 (0·2 c.c.). Leaves analysed 15 min. after collection contain an appreciable amount of free HCN. This amount is unchanged for 24 hr. and then slowly diminishes. Plants which contain the glucoside but no enzyme contain no free HCN. These findings are explained. J. L. D.

Mercuric chloride as preservative of cyanogenetic plants for chemical analysis. R. N. Briese and J. F. Couch (*J. Agric. Res.*, 1941, **62**, 493—507).—By the method previously described (A., 1939, III, 215) samples were satisfactorily preserved for 6—24 months. Young tissues were more difficult to preserve than were older tissues. The amount of $HgCl_2$ required was 1% of the wt. of the sample for materials containing 100—125 mg. of HCN per 100 g. and 2—3% for those containing larger proportions. No advantage attached to use of more than 3% of $HgCl_2$. Max. amounts of HCN were obtained on analysis after 3—8 weeks' storage in 1% $HgCl_2$ or after 6—12 months when larger proportions of $HgCl_2$ were used. Cyanogenesis in preserved samples was increased by addition of suitable enzymes. Dhurrinase and prunase did not affect aq. $HgCl_2$ over a period of 15½ weeks. $HgCl_2$ was superior to Hg_2Cl_2 or HgO as a preservative.

HCN vals. obtained with samples macerated in water were lower than with those treated with $HgCl_2$. A. G. P.

Constituents of tuber of "Coquí" (*Cyperus rotundus*, L.). I. Preliminary examination of tuber and composition of fatty oil. C. F. Asenjo (*J. Amer. Pharm. Assoc.*, 1941, **30**, 216—218).—The tuber (protein 3·63, ether-sol. matter 2·31, crude fibre 7·86, ash 4·1% of dry wt.) of *C. rotundus* ("nut grass") yields approx. 2% of a fatty oil, d^{20} 0·9500, n^{20} 1·4967, I val. (Hanus) 87·95, sap. val. 134·3, acetyl vol. 63·3, unsaponifiable fraction 22·8%, acid vol. 35·2, containing approx. 2·7% of a wax, m.p. 97—98°, linolenic, linoleic, oleic, stearic (?), and myristic acids, and sitosterol. F. O. H.

Constituents of the bark of *Fraxinus* species. H. Simada (*J. Pharm. Soc. Japan*, 1940, **60**, 200—201).—Æsculetin is a common constituent of the plants of the genus *Fraxinus*, which grow wild in Japan. From *F. pubinervis*, some fraxetin was also isolated. A. T. P.

Flavonol glucoside from *Euphorbia thymifolia*, L. M. Nagase (*J. Agric. Chem. Soc. Japan*, 1941, **17**, 483—484).—The leaves and stems of *E. thymifolia* contain 5 : 7 : 4′-trihydroxyflavone-7-glucoside. J. N. A.

Cucurbit seed-globulins. I. Amino-acids present and nutritive value. H. B. Vickery, E. L. Smith, R. B. Hubbell, and L. S. Nolan (*J. Biol. Chem.*, 1941, **140**, 613—624).—A method of extracting the cryst. globulins in yields of 6·2—15·4% is described. Determination of the N, S, ash, arginine, tyrosine, and tryptophan contents of seed-globulins shows that those of squashes and pumpkins (*Cucurbita moschata, C. pepo, C. maxima*) are indistinguishable as regards these contents. The seed-globulins of water-melon (*Citrullus vulgaris*), cantaloupe (*Cucumis melo*), and cucumber (*Cucumis sativus*), which contain more arginine and tryptophan than do those of the squashes and pumpkins, are chemically distinguishable and differ from each other especially in arginine content. Water-melon seed-globulin contains 17·9% of arginine. Feeding experiments with young rats on diets in which the globulin of *C. moschata* is sole protein show that the squash globulin is equal to edestin in nutritive val. Water-melon seed-globulin is inferior in nutritive val. to squash seed-globulin. W. McC.

Tanning substances in a cotton affected with verticillose. B. P. Strogonov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **29**, 628—630).—Tannin is high in all parts of cotton plants affected by *Verticillium*. Living bark or wood soaked in 1% tannin solution has less tannin than when soaked in water; the difference is greater in affected tissues. 2% glucose causes an increase in tannin, but the medium on which the fungus has grown has no effect. R. L. E.

Determination of various forms of tannin in plants. A. Kursanov (*Biochimia*, 1941, **6**, 312—325).—A scheme for the determination of tannin components in plant materials is described. Sol. and insol. tannins are separated and each of these fractions is separated into tannides and free polyphenols. The latter consist of phloroglucinol, pyrocatechol, and pyrogallol, quinol, and gallic acid, the last three being determined together. The leaves and bark of various plants contain different tannin fractions, and generally leaves have a high content of polyphenols, in some cases 46% of the total tannin content. The polyphenol fraction consists mainly of phloroglucinol and pyrocatechol which serve as starting materials for the synthesis of the quercetin ring of condensed tannides. In the elaboration of tannins in plants it is assumed that polyphenols form simple condensation products of the depside type which are further condensed to tannides, and the latter are converted into difficultly sol. and finally insol. products. J. N. A.

Constituents of "chih-shih" (*Citrus fusca*, Lour.).—See A., 1941, II, 315.

Skimmiol and skimmione from Japanese *Skimmia*.—See A., 1941, II, 327.

Isolation of aspidospermine from *Vallesia glabra* and *V. dichotoma*. V. Deulofeu, J. de Langhe, R. Labriola, and V. Cárcamo M. (*Bol. Soc. Quim. Peru*, 1941, **7**, 73—75).—The main alkaloid constituent of the leaves of *V. glabra* and *V. dichotoma* is aspidospermine. F. R. G.

Alkaloids of *Rauwolfia canescens* (Linn.).—See A., 1941, II, 341.

Anthocyanins. VII. Natural selection of flower colour. G. H. Beale, J. R. Price, and V. C. Sturgess (*Proc. Roy. Soc.*, 1941, **B**, **130**, 113—126).—The anthocyanins have been identified in the flowers, fruits, or leaves of approx. 200 species of plants and the results have been combined with earlier data to ascertain the frequency with which derivatives of the three main anthocyanin types occur as flower pigments. Pelargonidin derivatives predominate in the flowers of tropical and sub-tropical species, whilst dephinidin derivatives are the most common in temperate and alpine plants. Natural selection favours the survival of red- rather than blue-flowered forms in the tropics. On the basis of the anthocyanins present in the flowers of 32 species of *Tulipa*, the genus falls into two groups in accordance with the morphological classification. F. O. H.

Constituents of *Zinnia elegans* (Jacq.); synthesis of apigenin glucoside.—See A., 1941, II, 330.

Constitution of erythrin.—See A., 1941, II, 322.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Closed-circuit metabolism apparatus for studying oxygen consumption of control and thyroactivator-treated guinea-pigs. H. A. Teitelbaum and O. G. Harne (*J. Lab. clin. Med.*, 1941, **26**, 1521—1524).—The apparatus is described. O_2 consumption of a guinea-pig treated with thyroactivator hormone was increased while the O_2 consumption of a colony of 15 young guinea-pigs was comparable, no certain sex variations being observed. C. J. C. B.

Eyepiece micrometer for use in dust counting.—See A., 1941, I, 431.

Direct-reading flowmeter: use in plant respiration studies. S. G. Gilbert and J. W. Shive (*Soil Sci.*, 1941, **51**, 55—58).—A water manometer is used to measure pressure differences set up by a constriction in the gas circuit. A method of calibration is described. A. G. P.

Simple constant injection apparatus. H. Necheles and W. H. Olson (*J. Lab. clin. Med.*, 1941, **26**, 1647—1649).—A constant injection pump is described in which speed and stroke are adjustable. Simple and efficient rubber membrane valves are used which do not leak and have a minimum of elasticity to back pressure. C. J. C. B.

Cellophane straw used as ink-writing pointer in kymographic work. E. Friedman (*J. Lab. clin. Med.*, 1941, **26**, 1650—1651). C. J. C. B.

Automatic pipette and inexpensive pipetting machine. J. H. Lewis (*J. Lab. clin. Med.*, 1941, **26**, 1668). C. J. C. B.

Inexpensive mouse cage. E. W. Cook (*Science*, 1940, **92**, 538).—A cylinder of wire netting is placed on a tin pie plate and covered with a second pie plate. E. R. S.

New form of diffractometer. R. T. Cox and E. Ponder (*J. Gen. Physiol.*, 1941, **24**, 619—624).—A simple diffractometer is described, in which monochromatic light is focussed on a pinhole, rendered parallel, and passed through a film of red cells or other objects the size of which is sought. The diffraction patterns are photographed on special plates, and the positions of the first min. and first max. are found by use of a simplified microphotometer. D. M. N.

Application of photo-electric colorimeter. Determination of bismuth in biological materials. R. C. Sproull and A. O. Gettler (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 462—465).—Factors affecting the application of the KI method to the determination of Bi in biological materials have been investigated by means of a photo-electric colorimeter. The Lambert–Beer law is obeyed for concns. up to 2 mg. of Bi per 100 ml. of solution. The effects of variations in the concns. of the reagents, viz., H_2SO_4, Na_2SO_3, and KI, and of $Fe^{...}$ have been determined. Revised procedures for the determination of Bi in urine, kidney, liver, and muscle are detailed, and test analyses recorded. L. S. T.

Use of infra-red film for electrophoretic and untracentrifugal analyses.—See A., 1941, I, 432.

Method for determining solubility of gases and vapours in liquids by means of Van Slyke–Neill apparatus. S. A. Peoples (*J. Pharm. Exp. Ther.*, 1941, **72**, 31).—The usual appar-

atus is modified by the introduction of a heating coil in the water jacket by means of which the chamber temp. can be controlled. H. H. K.

Microchemical colorimetric determination of carbon disulphide in air, water, and biological fluids. R. W. McKee (*J. Ind. Hyg.*, 1941, **23**, 151—158).—The fluid containing CS_2 is aërated, and the CS_2 absorbed by a modified Viles reagent (B., 1940, 644) and the yellow Cu^{II} diethyldithiocarbamate produced is determined by a photo-electric colorimeter. The method gives a high degree of recovery and can be used also for finely ground tissues. The apparatus and method are described in detail. E. M. K.

Determination of thiocyanate in biological fluids. L. C. Chesley (*J. Biol. Chem.*, 1941, **140**, 135—141).—A method is described for the determination of CNS′ in plasma, serum, and urine, in which the intensity of colour of $Fe(CNS)_3$ is measured by a photo-electric colorimeter with a filter allowing max. transmission at 490 mμ. The error is usually ±1% and never exceeds 5%. Plasma or serum is deproteinised by the method of Folin and Wu; with urine, serum-protein is added in solution in Na tungstate, and addition of H_2SO_4 ppts. the protein together with the urinary pigments. J. N. A.

Determination of ammonia and urea by modification of the Conway diffusion method.—See A., 1941, I, 426.

Gasometric determination of amino-acids. D. Zuverkalov (*Biochimia*, 1941, **6**, 243—246).—Amino-acids can be determined gasometrically in the apparatus used for the determination of alkali reserve. The results agree with those obtained by the Van Slyke method. J. N. A.

Colour reaction given by some α-amino-acids. A. C. Kurtz (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 339—340).—A few mg. of the acid are dissolved in 2 c.c. of 5% NaOH and shaken with 2 c.c. of saturated solution of *p*-nitrobenzoyl chloride in CCl_4. Addition of 5—10 c.c. of *n*-butyl alcohol, and shaking, causes a violet colour which after a few min. becomes reddish and colourless. V. J. W.

Determination of trigonelline in urine and foodstuffs. E. Kodicek and Y. L. Wang (*Nature*, 1941, **148**, 23—24).—The new method is based on the hydrolysis of trigonelline with alkali in alcoholic solutions. Methylamine splits off and leaves the ring open. The resulting product can be combined with aromatic amines (best benzidine) to give coloured compounds suitable for quant. measurement. The orange-red colour given by benzidine serves for the determination of 1·0 μg. of trigonelline per ml. of urine. *N*-Methylpyridinium hydroxide, but not pyridoxine, nicotinic acid, nipecotic acid, or nicotine, reacts similarly to trigonelline. Details of procedure are given. Data for the excretion of trigonelline and nicotinic acid by a normal human being on a coffee-free diet and after dosing with 50 and 100 mg. of nicotinic acid are tabulated. The assessment of the nutritional status of human subjects in the anti-pellagra vitamin by measurements of the urinary excretion of nicotinic acid or related substances is discussed. L. S. T.

Determination of small amounts of ketones. T. E. Weichselbaum and M. Somogyi (*J. Biol. Chem.*, 1941, **140**, 5—20; cf. Van Slyke, A., 1929, 1190).—Small amounts of ketones in blood are determined by laking, deproteinisation [$Ba(OH)_2$ + $ZnSO_4$], desaccharification (basic Pb acetate + Na_2HPO_4 + Na_2SO_4), oxidation–distillation (20N-H_2SO_4–2·5% $K_2Cr_2O_7$) pptn. with Denigès' reagent, and iodometric titration. 16 samples of normal human blood contained 0·33—0·94 mg. (mean 0·53 mg.) per 100 c.c. (as β-hydroxybutyric acid). A. Li.

Determination of inositol. D. W. Woolley (*J. Biol. Chem.*, 1941, **140**, 453—459).—The method depends on the growth response of yeast to inositol added to a basal medium that supports no growth under experimental conditions. Corn, oats, lucerne meal, ox liver and heart, brewer's yeast, and milk contain 0·5, 1·0, 2·1, 3·4, 16·0, 5·0, and 0·5 μg. per mg. dry wt., respectively. H. G. R.

Micro-determination of glucose, free and conjugated glucuronic acid. III. Use of *Saccharomyces sake* No. 6 as fermentative yeast. S. Kakinuma and T. Tamura (*J. Pharm. Soc. Japan*, 1940, **60**, 211).—*S. sake* No. 6 can be used in place of No. 2 in the determination of total glucuronic acid (A., 1940, II, 241). A. Li.

Determination of uronic groups in soils and plant materials. W. V. Bartholomew and A. G. Norman (*Iowa State Coll. J. Sci.*, 1941, **15**, 253—260).—Automatic control of reaction temp. and aëration rate are introduced into the apparatus previously described (cf. Dickson *et al.*, A., 1930, 453; Campbell *et al.*, A., 1939, II, 51). When many natural and treated celluloses are boiled with HCl (as in the determination of uronic groups) more CO_2 is liberated than is likely to be obtained from non-uronic sources. The rate of CO_2 evolution (sharp increase at 30 min.) during boiling with HCl indicates the presence of uronic groups in cellulose from Canadian spruce and cotton, the curves being analogous to that given by pectin. Sucrose and fructose give a similar peak in the curve; glucose shows an ill-defined peak at approx. 75 min. after which the rate of evolution of CO_2 scarcely alters. Hexosans liberate appreciable quantities of CO_2 under the above conditions. J. L. D.

Dissolution and diazotisation of bilirubin in chloroform and other organic solvents. R. S. Hubbard and N. Heilbrun (*J. Lab. clin. Med.*, 1941, **26**, 1206—1210).—Solutions containing as much as 400 mg.-% of bilirubin can be prepared by dissolving the pigment in $CHCl_3$ containing 10% of phenol. Solutions of bilirubin in org. solvents containing phenol are more stable than in pure org. solvents. Phenol, unless present in high concns., has no effect on the colour given by bilirubin treated with diazo-reagents. Diazotisation of bilirubin dissolved in various org. solvents can be successfully accomplished by the use of a diazotising solution prepared in methyl alcohol. C. J. C. B.

New diazo-methods for determination of bilirubin in blood and urine. L. D. Scott (*Brit. J. exp. Path.*, 1941, **22**, 17—23).—This simple and rapid method is based on the prevention of an albuminous ppt. by carefully selected proportions of diazo-reagent and diluted alcohol, thus avoiding the loss of bilirubin by adsorption on the protein ppt., an error inherent in the Van den Bergh indirect technique. F. S.

Reaction of Folin's reagent with proteins and biuret compounds in presence of cupric ion. R. M. Herriott (*Proc. Soc. Exp. Biol. Med.*, 1941, **46**, 642—644; cf. A., 1936, 244).—Traces of $CuSO_4$ increase markedly the colour given by a no. of proteins and peptides with Folin's reagent. V. J. W.

Humin formation during protein hydrolysis. A. Kizel and E. Kirjanova (*Biochimia*, 1941, **6**, 280—283).—The fluctuations in the amino-acid content of protein hydrolysates, which are due partly to humin formation, are discussed. After addition of 10% of tannin, 10% of cotton, and 10 and 20% of sucrose, the amounts of humin formed and the simultaneous disappearance of various amounts of amino-acids are determined. Under these conditions tyrosine is readily attacked. J. N. A.

Determination of certain organic iodine compounds and inorganic iodide in plasma and urine. H. L. White and D. Rolf (*Proc. Soc. Exp. Biol. Med.*, 1940, **45**, 433—437).—The method previously described (A., 1940, III, 503) is modified by substituting NaOH for acid in the MnO_4′ digestion stage of the process. V. J. W.

Determination of lead in biological material. Mixed colour dithizone method. F. L. Kozelka and E. F. Kluchesky (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 492—494).—In determination of Pb with dithizone $Fe^{...}$ and $Sn^{..}$ interfere, as $Fe^{...}$ oxidises and $Sn^{..}$ combines with dithizone as does Pb. Interference is eliminated by treating the digested sample with SO_2 which reduces $Fe^{...}$ to $Fe^{..}$ and oxidises $Sn^{..}$ to $Sn^{....}$. The Pb may then be determined colorimetrically with dithizone, and considerable precision is obtained. The method is applied to determination of Pb in urine, blood, and bone in presence of Sn, Tl, and Bi. J. D. R.

Electrolytic deposition of lead from biological material. K. Bambach and J. Cholak (*Ind. Eng. Chem.* [*Anal.*], 1941, **13**, 504—505).—A solution of the ashed sample is electrolysed directly without previous separation of the Pb. The electrodes are washed and other metals converted into complexes, and the Pb deposit on the cathode is obtained almost free from other substances. The Pb can then be determined by dithizone or polarographically. J. D. R.