BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

JULY, 1940.

(i) GENERAL ANATOMY AND MORPHOLOGY.

Brachial plexus of elephant. Y. Mayeda and T. Suzuki (Morph. Jahrb., 1939, **84**, 154—168). W. J.

Variability of segmental innervation of rectus abdominis in dog. G. van Rijnberk (Arch. néerland. Physiol., 1939, **24**, 76—78).—Continuing previous work (*ibid.*, 1929, **14**, 71) a new variety of innervation is described. The muscle was not bilaterally symmetrical; it was longer on the right, and the 6th inscriptio tendinea was more cranial on the left. P. W. N.

Head of *Xenopus lævis*. N. F. Paterson (Quart. J. Micr. Sci., 1940, **81**, 161—232).—A full account of the musculature, blood vessels, chondrocranium, and cranial nerves of this aglossan amphibian. J. D. B.

Rate and degree of restoration of lost organ tissue. T. Addis and W. Lew (J. Exp. Med., 1940, **71**, 325—333).—If half of the kidney, adrenal, ovary, or testis is removed, the remainder grows independently of the rate of growth of the intact organ. No growth follows similar treatment of the prostate, seminal vesicle, or uterine horn. The halved testicle grows to 56% of the original tissue and the kidney, adrenal, and ovary up to 70%. Growth is initially rapid but ceases by 40 days. A. C. F.

Weight of salivary glands of white rats after raw meat, vegetable, or mixed diet. H. Brieger (Arch. Entw.-Mech. Org., 1939, **139**, 493—505).—On raw meat diet the wt. of salivary glands increases slightly but there is no change in wt. of the lacrimal glands. W. J.

Sphincters of colon. R. Balli (Radiology, 1939, **33**, 372—376).—Spasm of the colonic sphincters is not pathognomic of an abdominal lesion, but a general sign of irritation. W. F. F.

***X*-Ray study of male pelves.** W. W. Greulich and H. Thoms (Anat. Rec., 1939, **75**, 289—305).—The shape and dimensions of the pelvic inlet of 69 white adult males were determined by *X*-ray pelvimetry. The average pelvic index was 100·5. In most the fore-part of the inlet was more rounded and its pubic portion rather wider than suggested by the usual description. The plane of max. transverse diameter of the inlet was situated slightly nearer the sacral promontory than in females. In most the ischial spines were distinctly heavier than those of the female and projected further into the pelvic cavity. The pelvic inlet in two adult hypogonadal males was indistinguishable in size and shape from the normal male type. W. F. H.

Development and ossification of fibula in sheep and goat. G. Passantino (Arch. ital. Anat. Embriol., 1940, **43**, 90—98). J. D. B.

Chemical processes in experimental bone atrophy. F. A. Volinski and A. I. Kudrjavtzeva (Ukrain. Biochem. J., 1939, **14**, 145—169).—Excision of the flexor or extensor leg muscles of dogs and rabbits is followed by atrophic changes in all the bones to which the given group of muscles was attached. These changes are progressive, and consist in fall in Ca and P contents, and rise in water and org. substances. R. T.

Rare malformation of os sacrum. W. Blume (Morph. Jahrb., 1939, **84**, 39—54).—A 44-cm. human embryo with cranioschisis and rachischisis ant. and post. is described. The intervertebral discs of the sacral vertebræ are replaced by soft connective tissue. This resulted in considerable dislocation of the sacral vertebræ. W. J.

Growth disorder of skull in mongolism. C. E. Benda (Amer. J. Path., 1940, **16**, 71—86).—A histological study of the spheno-occipital spheno-ethmoidal synchondroses, and of tissue from the vertebræ, in mongolism is presented. Proliferation of the cartilage is absent or insufficient. The growth disorder in mongolism is not restricted to the cartilaginous epiphyseal lines but involves also the membranous bones. (9 photomicrographs.) C. J. C. B.

Hereditary cleidocranial dysostosis. E. Rubens (Arch. Pediat., 1939, **56**, 771—779).—2 cases of cleidocranial dysostosis with features of hypertelorism are reported. The family history can be traced for 5 generations. C. J. C. B.

Osteochondritis ischiopubica in childhood. F. J. Corper (Amer. J. Dis. Child., 1938, **56**, 957—964).—General discussion with report of 4 cases. C. J. C. B.

Osteochondritis dissecans. R. C. Burr (Canad. Med. Assoc. J., 1939, **41**, 232—235).—A review with 3 case reports. C. J. C. B.

Influence of nervous system on bone and joints. K. B. Corbin and J. C. Hinsey (Anat. Rec., 1939, **75**, 307—317).—In cats no changes were seen in bones and joints completely denervated (deafferented and sympathectomised) for as long as 3 years. It is concluded that these structures are not supplied with nerves having a sp. trophic function. W. F. H.

Macroscopic staining of brain. D. B. Brown (Anat. Rec., 1939, **75**, 419—425).—A method is detailed for staining macroscopic brain sections whereby the normal colour differences between grey and white matter are exaggerated. The function of phenol in

improving macroscopic staining is discussed. A simple cerebrotome is illustrated. W. F. H.

(ii) DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Morphology of human sperm and egg. J. B. Gatenby and O. Aykroyd (Proc. Roy. Irish Acad., 1940, **46**, 39—51).—The human egg is alecithal and contains no neutral fat. The human sperm has no middle piece bead and the sensillæ amœboidea of Popa and Marza can rarely be found and are regarded as broken and still adherent parts of the spermatid cell walls, and inadmissible as true parts of the normal spermatozoon. J. D. B.

Maturation of human ovarian ova. G. Pincus and B. Saunders (Anat. Rec., 1939, **75**, 529—536).—The ova were subjected to one of four treatments: (1) culture in human serum; (2) immersion for 15—30 min. in a balanced salt solution containing cytolised human sperm; (3) exposure to a temp. of 46° for 3 min.; (4) immersion in 1·8% NaCl for 5—6 min. Nuclear maturation was observed in about 40% of ova in all series cultured in serum at 37° for 2 hr. All ova that formed meiotic chromosomes did not necessarily produce polar bodies. Ova which formed polar bodies exhibit the granular cytoplasm characteristic of functional ova. The presence of arrested maturation spindles in ova cultured for longer than 2 hr. indicates that maturation division is not necessarily carried to completion once initiated. Transplantation of ova to rabbit uterine tubes after exposure to sperm extracts does not increase the % activated. W. F. H.

Maturation and cleavage figures in ovarian ova. E. W. Dempsey (Anat. Rec., 1939, **75**, 223—235).—Normal and abnormal maturation figures were observed in large nos. in the ova of atretic follicles from guinea-pigs killed just after ovulation or after injection of luteinising hormone. They occur less frequently in animals killed at other times in the reproductive cycle following injection of progesterone and after hypophysectomy. It is concluded that pituitary hormones are not essential for the initiation of maturation changes. Ovarian ova may differentiate into structures containing giant cells morphologically similar to trophoblast giant cells. They ultimately degenerate and are absorbed. W. F. H.

Growth of ovarian ovum, maturation, fertilisation, and early cleavage in Monotremata. T. T. Flynn and J. P. Hill (Trans. Zool. Soc. London, 1939, **24**, 445—608).—A detailed account of the early development of *Echidna* and *Platypus*. J. D. B.

Mechanism of kidney development in human embryos as revealed by agenesis of ureteric buds. P. Gruenwald (Anat. Rec., 1939, **75**, 237—247).—The ureteric bud induces cell multiplication of metanephrogenic tissue soon after it comes in contact with it. Change in position of the permanent kidney is due to shifts by growth of surrounding tissue and not to a pushing activity of the ureter. W. F. H.

Development of sympathetic chain in chicks. E. V. Staudacher (Arch. ital. Anat. Embriol., 1940, **43**, 99—118).—Portions of the neural crest, dorsal part of neural tube, or both were destroyed by electrolysis in 48-hr.-old embryos which were then allowed to develop for a further 6 days. 30 out of 45 operated embryos developed and were studied. When, through destruction of part of the neural crest, some spinal ganglia fail to develop the sympathetic chain is formed although some of its ganglia are smaller than normal. After destruction of a portion of the posterior part of the neural tube, the sympathetic chain is formed normally; in this case, groups of preganglionic cells (preganglionic nuclei), present in uninjured parts of the cord, send their axons to the sympathetic ganglia either across, to the opposite side, or upwards or downwards in places where the cord failed to develop. The formation of the sympathetic ganglia is ascribed to an organising and directing action of the preganglionic centres but some influence is possibly exerted by the spinal ganglia. S. O.

Experimental study of development of amphibian cloaca. R. J. O'Connor (J. Anat., Lond., 1940, **74**, 301—308).—Localised excision, transplantation of tissues, and localised vital staining were used. At the site of union of cloaca and pronephric duct the cloaca forms diverticula; these can be formed in the absence of pronephric duct, which latter unites with the cloaca only at their site of formation. The pronephric duct is formed primarily by the caudal extension of the pronephric rudiment, but the cloaca may contribute. E. E. H.

Regeneration of mesonephric tubules of larval salamander after partial removal. H. Schwenk (Arch. Entw.-Mech. Org., 1939, **159**, 506—535).—Tubules of the mesonephros of *Salamandra* do not regenerate. Cut tubules can fuse with neighbouring intact tubules and may thereby be preserved as functioning units. The mesonephros of the intact side shows increase in the diameter of its tubules. No new formation was observed. W. J.

Capacity of amphibian iris for lens formation. A. Mouroy (Arch. Entw.-Mech. Org., 1939, **139**, 536—555).—Formation of a lens takes place from pieces of iris, with some retina attached to it, when implanted in the abdominal cavity. Isolated iris does not give rise to a lens. No lens was formed from iris with or without retina when it was reimplanted into the orbit after removal of the eye. Also subcutaneous implants of iris with and without retina failed to form lenses and degenerated. In most intraorbital and intra-abdominal implants retina was regenerated from iris cells by metaplasia after depigmentation. From intraorbital implants of retina or regenerated retina nerve fibres grew into the diencephalon. W. J.

Somites of *Amblystoma punctatum*. H. B. Adelmann (Anat. Rec., 1939, **75**, 155—173).—Somites 5—8 from a donor in stage 30 were substituted for 2—4 of a host in stage 25. Muscle buds originating from the implanted somites were not retarded and in some cases advanced in the

formation of their ventral extensions. Somites 2—4 from donors in stage 25 were substituted for 5—7 in hosts of the same age. Their ventral processes formed segments 4, 5, and 6 of the thoracicohyoid normally derived from 5, 6, and 7. Somites 2—5 appear to be potentially equiv. and there is no evidence of a mosaic of muscle anlagen. W. F. H.

Effect of ultra-violet light on amphibian morphogenesis. I. Irradiation of organiser centre. J. Brandes (Arch. Biol., 1940, **51**, 219—292).—The results obtained by irradiation (using the Tchachotine–Dürken apparatus and λ 2800 A. for periods varying from 5 to 20 min.) of the young gastrulæ of *Discoglossus*, *Amblystoma*, and *Pleurodeles* are described. Mortality of eggs after such dosage is insignificant. It is concluded that the use of ultra-violet rays in non-lethal doses is an effective method for studying the relations between future organs and the dorso-marginal zone as it causes alterations in the morphogenetic potentialities of the latter region without interfering with the physiological unity of the developing organism. J. D. B.

Initial factors in morphogenesis in *Anura*. III. Effects of rotation of 135° on unsegmented egg with grey crescent. IV. Axial centrifugalisation of the fertilised but unsegmented egg. J. Pasteels (Arch. Biol., 1940, **51**, 103—150, 335—385; cf. A., 1940, III, 278).—III. From experiments on 100 eggs it is concluded that the following rules are observed by the dorsal lip of the blastopore: (1) it is not always and necessarily in relation with the grey crescent; (2) the horns of the crescent do not appear to exercise any influence; (3) when the vitelline margin is near the centre of the crescent the dorsal lip usually appears at this point; (4) the region of the vitelline margin which is found at the posterior part of the trajectory followed by the vitellus is a preferential zone for the formation of the dorsal lip.

IV. Centrifugalisation (460 *g*) of the fertilised but unsegmented eggs of *Rana* and *Discoglossus* provoked inhibition of gastrular invagination and inhibition of post-gastrular organogenesis. The results are interpreted as due to interference with the vitelline gradient, which is important in the mechanism of invagination, and to the centripetal displacement of the precursor of the organiser substance which the author, following Brachet, regards as constituted in part by thiolproteins with a pentosenucleic acid radical. The author concludes that it is dangerous to maintain the distinction between "living" protoplasm and "dead" inclusions: morphogenesis is the result of complex interaction and changes in which, sooner or later, all the material of the egg is involved without distinction as to physical state and microscopic visibility. J. D. B.

Histochemical study of proteins in development of fish, amphibia, and birds. J. Brachet (Arch. Biol., 1940, **51**, 167—202).—The distribution of proteins was studied during oögenesis, maturation, segmentation, gastrulation, neurulation, and in later stages of development of various amphibian types. Less extensive investigations were made on cyclostome, teleost, and chick material. It is concluded that there is a close relationship between thiolproteins and morphogenesis. The methods used were chiefly the nitroprusside reaction and Unna's fluid (pyronine) on fresh material and after fixation with trichloroacetic acid or Helly's fluid. J. D. B.

Segmentation of eggs of *Rhabdites pellio*. Nucleus–plasma ratio and synthesis of thymonucleic acid. A. Stefanelli (Boll. Soc. ital. Biol. sperim., 1939, **14**, 519—520).—The total nuclear vol. and the nucleus : plasma ratio remain const. in the developing egg up to the 8th division, *i.e.*, the initiation of differentiation. Feulgen's staining technique indicates a synthesis of thymonucleic acid during this period. F. O. H.

Vitellogenesis of *Gasterosteus aculeatus*. B. N. Singh and W. Boyle (Quart. J. Micr. Sci., 1940, **81**, 83—106).—A study of vitellogenesis in the stickleback using the ultra-centrifuge. J. D. B.

Breeding and development of viviparous fish, *Heterandria formosa*. E. A. Fraser and R. M. Renton (Quart. J. Micr. Sci., 1940, **81**, 479—520).—The ripe ovum has very little yolk. The mechanism of fertilisation is discussed and the earlier stages of development are described. Primitive germ cells are visible at an early stage within the undifferentiated mesendodermic cells. J. D. B.

Reproduction in cyprinodont, *Lebistes reticulatus*. G. L. Purser (Quart. J. Micr. Sci., 1940, **81**, 151—160).—The walls of the ovarian follicles never lose their continuity with the cœlomic (germinal) epithelium. The embryos, surrounded by their fertilisation membranes, remain within the follicles throughout development. An adequate respiratory mechanism is provided by (*a*) a close capillary network in the follicle wall and (*b*) a respiratory portal system developed in the length of the duct of Cuvier. J. D. B.

Regeneration of tail of young trouts. H. Heger (Arch. Entw.-Mech. Org., 1939, **139**, 393—437).—The whole tail fin or part of it was cut off at a stage soon after hatching. After total removal of the fin or fin rays no regeneration was observed. After partial removal muscle regeneration takes place either by myoblasts budding off the end of cut muscle fibres, the newly formed cells dividing mitotically, or by outgrowth of muscle fibres from those near the edge of the wound. Regeneration of fin rays takes place when part of the cartilagineous basale was left intact; its perichondrium gives rise to a new radiale. Connective tissue cells or histiocytes do not take part in the regeneration of cartilage or muscle. W. J.

Early development of head of *Petromyzon planeri*. O. Veit (Morph. Jahrb., 1939, **84**, 86—107).—Notochord material and axial mesoderm for the somites is invaginated through the dorsal tip of blastopore, but the side-plate mesoderm is formed independently by evagination from the endoderm with the appearance of an enterocœlom. Some of the head mesoderm is derived from ectodermal placodes. W. J.

Chemical structure of genes in relation to heredity. E. Abderhalden (Chem.-Ztg., 1940,

64, 3—5).—A review on heredity in relation to protective enzymes. E. B.

Hereditary hypotrichosis in rat. E. Roberts, J. H. Quisenberry, and L. C. Thomas (J. invest. Dermat., 1940, **3**, 1—29).—The difference between the normal and hypotrichotic condition is due to a single gene, and is inherited as a recessive. Hypotrichosis is not linked with non-agouti, hooded, red eye, dilution, colour, and curly. The length of life is shorter for hairless than for normally haired animals. Basal heat production is normal. Hairless females are less fertile than normal in respect to the no. of females producing young. Some do not ovulate, some do so irregularly, and some produce young regularly but for a shorter time than normals. KI, fresh thyroid, cystine, and cysteine fed in the ration had no effect on hair growth. The maintenance of hair on a transplant of skin from a haired to a hairless animal indicates that the cause of hairlessness lies in the skin. Histological examination of the pancreas, thyroid, and adrenal of the hairless rat showed no abnormalities. The spleen, pituitary, thyroids, and testes are normal in wt. C. J. C. B.

(iii) PHYSICAL ANTHROPOLOGY.

Non-metrical morphological characters of western Chinese skulls. C. S. Lu (Chinese Med. J., 1940, **57**, 39—46).—In 100 western Chinese skulls sutural bones occurred more commonly than in those of northern China; the lambdoid ossicles were frequently present, in 6 instances as Inca bone which was absent from Wood-Jones' series of northern Chinese skulls. The nasal spine and foramen of Vesalius were present in the majority. A body spur, prolonged towards the pterygoid process and sometimes forming a notch with the lateral lamina, was present in 16%. Pterygoid tubercles of 5 different types were present. W. J. G.

Brachyocephaly in Europe. E. Hug (Z. Morph. Anthrop., 1940, **38**, 359—582).—Early mediæval skulls from the Aare district are compared with those from central European graves. W. F. H.

Dentition of Fuegian Indians. W. Abel (Z. Morph. Anthrop., 1940, **38**, 349—358).—The form of the dental arch including *X*-ray appearances is given for both sexes. Special reference to the pattern of the lower molars is made. Comparison with Indians of Bolivia and Peru is drawn. W. F. H.

Age changes and secular changes in anthropometric measurements. F. Boas (Amer. J. phys. Anthrop., 1940, **26**, 63—68).—Various anthropometric data concerning American-born and foreign-born Hebrew children are noted and compared. The importance of secular changes in the study of age changes in these groups is emphasised. W. F. H.

Typology of growth curves of human body. V. Bunak (Amer. J. phys. Anthrop., 1940, **26**, 69—85).—Indices yielding two principal characteristics of growth are proposed: (1) general level of growth intensity, measured by final size of body, (2) relative growth intensity in different types of growth, *e.g.*, precocious, medium, and tardy development. The relative growth intensity varies independently of the final size. The general level of the intensity of growth and its type are determined in the earliest stages of development. W. F. H.

Margin of error in mixed groups. E. Breitinger (Anthrop. Anz., 1939, **16**, 107—111).—The relative degree of variability of various populations with special reference to skeletal measurements is described. W. F. H.

Calculation of average error. R. Schulz (Anthrop. Anz., 1939, **16**, 112—118).—Mathematical means for the calculation of variability in skeletal measurements is detailed. W. F. H.

Life and writings of Dr. Alěs Hrdlička (1869—1939). T. D. Stewart (Amer. J. phys. Anthrop., 1940, **26**, 3—40). W. F. H.

Relations between physical and social anthropology. M. F. Ashley-Montague (Amer. J. phys. Anthrop., 1940, **26**, 41—61). W. F. H.

(iv) CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Cajal's interstitial cells. G. Ottaviani and P. Cavazzana (Arch. ital. Anat. Embriol., 1940, **43**, 75—89).—The interstitial cells in the muscle wall of the small intestine of the rabbit and guinea-pig form, with their processes, a closed network which, although entering occasionally in contact with the sympathetic network of the Auerbach plexus, does not contribute to its formation. The interstitial cells possess granulopexic activities and take up trypan-blue particles, thus differing from Schwann and ganglion cells which do not. S. O.

Myenteric nerve plexus in some lower chordates. P. Kirtisinghe (Quart. J. Micr. Sci., 1940, **81**, 521—539).—The arrangement of the myenteric nerve plexus is simpler in fish, much simpler in *Amphioxus*, than in the higher forms. Synapses between (*a*) the preganglionic fibres and the enteric neurones, and (*b*) the enteric neurones themselves, are described. The "interstitial" cells of Cajal are found in the muscular gut wall but no connexion between this system and the enteric plexus was observed. The enteric plexuses of fish and *Amphioxus* are not in the form of a nerve-net. Techniques used included $AgNO_3$, $AuCl_3$, and methylene-blue. J. D. B.

Ingestion of fat by differentiated body cells of cat. R. M. Wotton and R. L. Zwemer (Anat. Rec., 1939, **75**, 493—507).—Fat droplets pass through the cuticular border of columnar intestinal cells, leave at basement membrane into the marginal capillary, and thence pass to the liver by the portal system. Parenchymatous liver cells take them up and may become engorged to resemble adipose cells. Some of the fat in the villi reaches the central lacteal; thence it passes to the thoracic duct and right heart to the pulmonary capillary bed, where some is taken up. Fats of high or low m.p., of plant or animal origin, are ingested in the same manner. Mineral oil does not pass through columnar intestinal cells. W. F. H.

Significance of epidermal concentric corpuscles: *Triturus*. G. C. Kent (Anat. Rec.,

1939, **75**, 275—287).—Experimentally produced concentric corpuscles result from keratinisation of active epidermoid cells. A single cell undergoes keratinisation, a space appears between it and adjoining cells, the surrounding cells become oriented concentrically about the initial cell, and keratinisation progresses centrifugally. Concentric strands of squamous cells separated by concentric spaces are thus formed. The experimental tissue is analogous to the thymus with regard to presence of involuting blood vessels and of epithelioid tissue. It is suggested that thymic corpuscles are derivatives of an epithelial anlage, possibly ectodermal in nature. W. F. H.

Fuchsinophile and pale cells in adrenal cortex tissue of fowl. U. U. Uotila (Anat. Rec., 1939, **75**, 439—449).—Fuchsinophiles and pale cells can be clearly differentiated when stained with Broster and Vines' ponceau–fuchsin or Masson trichrome stain after Orth's fixation. Pale cells appear to be precursors of fuchsinophile cells. The no. of the latter and the intensity of the fuchsinophile reaction are greater in males than in females. Androsterone and œstrin suppress this reaction in males but not in females. Anterior pituitary extracts failed to produce definite changes in the fuchsinophile reaction. W. F. H.

Rôle played by so-called dark cells. G. Jasvoin (Compt. rend. Acad. Sci. U.R.S.S., 1939, **24**, 599—601).—Dark cells, differing from the usual light cells in size, angular shape, and intense diffuse staining, occur in many tissues. They have a life cycle which can be divided into two periods: first a loss of water content and gelatinisation of cytoplasm, and second transformation into lighter-staining cells of the same tissue as a plastic degeneration of the cells. W. F. F.

Structure of Golgi apparatus in amphibian tissue. A. W. Pollister (Quart. J. Micr. Sci., 1940, **81**, 235—272). J. D. B.

Histophysiological studies of amphibian kidney. L. Lison (Arch. Biol., 1940, **51**, 49—102).—The study of athrocytosis of a substance by the cells of the kidney cannot be interpreted in terms of the Bowman–Heidenhain or the Ludwig–Cushny theories of renal secretion. It is a mechanism independent of the secretory or absorptive function of the kidney. The determination of the athrocytic polarity of the renal cells gives no clue to the excretory polarity. J. D. B.

Mitotic index of palmar and plantar epidermis in response to stimulation. J. M. Thuringer (J. invest. Dermat., 1939, **2**, 313—326).—The palmar and plantar pads of the cat were examined before and after exercise. In the resting epidermis, the majority of mitoses were found in the lower part of the stratum germinativum, but the lower ⅓ of the stratum spinosum was more active than the stratum basale. The stratum basale and the stratum spinosum responded independently to exercise. The peak of the regenerative response of the former was reached 1 hr. after stimulation, of the latter after 2 hr. Neither the stratum basale nor the stratum spinosum was able to maintain "peak production"; once the max. was attained there was a gradual decrease in the rate of mitoses. C. J. C. B.

Irradiated cell nucleus. P. Wels (Strahlenther., 1939, **66**, 672—676). E. M. J.

Serological tests for homologous serum-proteins in tissue cultures maintained on a foreign medium. K. Landsteiner and R. C. Parker (J. Exp. Med., 1930, **71**, 231—236).—Fibroblasts derived from skeletal muscle of 12-day-old chick embryos were cultured for nearly 8 months in rabbit plasma and rabbit embryo tissue juice diluted with Tyrode's solution. They did not lose their species-specificity. Fluids separated from these cultures gave positive reactions with immune precipitins developed against chicken serum; the reactions did not diminish with an increasing no. of culture generations. It is concluded that connective tissue can produce proteins identical with, or closely related to, serum-proteins. H. L.

Mechanism of induced chromosome rearrangement in *Sciara*. C. W. Metz and M. L. Bozeron (Proc. Nat. Acad. Sci., 1940, **26**, 228—231).—Using a new histological procedure (removal of nucleus from ovum and staining it as a whole mount by the Feulgen method) the resistance of the chromosomes of the oocytes of adult females of *Sciara* to irradiation (Ra and *X*-rays) was studied. In contrast to the sperm of *Sciara*, the treated oocytes showed no direct evidence of chromosome breaks. This may be considered as favouring the "contact" hypothesis of chromosome rearrangement rather than that which assumes a breakage of the chromosome threads followed by subsequent union of these free ends. It is possible, however, that only one or two chromatids of the tetrad are broken at any one point and that consequently the breaks are not visible. J. D. B.

Relation of nucleolus to secondary constrictions. (A) A. M. Melland. (B) R. R. Gates (Nature, 1939, **144**, 980).—(A) The "constriction" is probably due to the nucleolus and is not an active producer of that body.

(B) The secondary constrictions are already determined before the nucleolus appears in telophase. W. F. F.

Nature of chromosome division and duration of nuclear cycle. A. Marshak (Proc. Nat. Acad. Sci., 1939, **25**, 502—510).—Chromosome fragments containing a portion of only one chromonema are found after treatment with neutrons (20 *n*.) or *X*-rays (120%) of the root tip of *Vicia faba*. They occur from 12 to 48 hr. after treatment, a sharp max. being found at 18 hr. attributed to a crit. stage in the synthesis of new chromonemata in the "resting" nucleus. Pairs of fragments are derived from disjoining half-chromatids; the new pair of chromonemata formed in the resting stage are separated from the old pair in the succeeding anaphase. W. F. F.

Routine silver carbonate staining method for oligo-dendrocytes and microglia. J. C. McCarter (Amer. J. Path., 1940, **16**, 233—235).—A modification of Penfield's method for Ag staining of oligo-dendro-

cytes and microglia is reported. The method allows use of the formalin-fixed tissue and is easily applied. C. J. C. B.

Influence of p_H on eosin–methylene-blue method for demonstrating Negri bodies. W. D. Stovall and C. E. Black (Amer. J. clin. Path., Tech. Sect., 1940, **4**, 1—8).—In the use of the eosin–methylene-blue method for the demonstration of Negri bodies, it is important to control the p_H of both the eosin and the methylene-blue staining solutions. In alcoholic solution, ethyl-eosin is superior to eosin-yellowish for the demonstration of Negri bodies, staining them an intense red at p_H 3·0. To obtain uniformly satisfactory results, it is necessary to buffer the methylene-blue staining solution down to about p_H 5·3. C. J. C. B.

Simple staining method. M. A. Darrow (Stain Tech., 1940, **15**, 67—68.)—A 1% solution of chlorazol-black *E* in 70% alcohol, using no mordant or differentiation, gives sharp contrast staining after 5 min.; sections are subsequently treated with 95% alcohol, abs. alcohol, and xylene and mounted. E. E. H.

Delafield's hæmatoxylin and safranine for staining plant materials. H. L. Dean (Stain Tech., 1940, **15**, 61—65).—Staining with Delafield's hæmatoxylin is followed by a short wash in acidulated water and blueing in Li_2CO_3 solution. Tissues are then stained in safranine (5 drops of aniline in 100 c.c. of 1% safranine O in 50% alcohol) and differentiated in 50% ethyl alcohol. E. E. H.

Method for staining mouse pituitary. E. B. Scott (Stain Tech., 1940, **15**, 73—76).—A modification of Mallory's triple stain. E. E. H.

(v) BLOOD AND LYMPH.

Metabolism of rabbit bone marrow in serum. C. D. Warren, jun. (Amer. J. Physiol., 1940, **128**, 455—462).—A comparison was made between the metabolism of slices of rabbit bone marrow suspended in serum and in Ringer's solutions. The use of "neutraliser" serum in bone marrow studies is described. The rate of respiration of slices of normal rabbit bone marrow is 70% higher in serum than in Ringer–phosphate–glucose medium; the rate of anaërobic glycolysis is also about 70% higher in serum than in Ringer–bicarbonate–glucose medium. The metabolism of normal rabbit bone marrow in serum is essentially comparable with that of other adult normal tissues, in particular lymphocytic tissue. A "tumour" type of metabolism in Ringer's solution previously described (cf. A., 1938, III, 419) is not found when the measurements are made in serum. M. W. G.

Economical method of obtaining blood from the canary. H. Beckman and R. K. Ota (Proc. Soc. Exp. Biol. Med., 1940, **43**, 268—269).—Technique for obtaining a drop of blood without subsequent bleeding is described with diagrams. V. J. W.

Basal metabolism in disorders of blood and spleen. A. Aschkerasy (Sang, 1940, **14**, 77—87). C. J. C. B.

Blood and bone marrow counts in chronic polyarthritis and Felty's syndrome. H. Fleischhacker and V. Lachnit (Wien. klin. Wschr., 1940, **53**, 189—193).—13 out of 55 patients suffering from chronic polyarthritis had a red cell count below 4 million; leucopenia was frequent; the thrombocyte count was normal. The no. of plasma and reticulum cells in the bone marrow was increased. Patients suffering from Felty's syndrome (chronic arthritis, enlargement of the spleen) showed marked granulopenia, some of them agranulocytosis. A. S.

Negative results of irradiation therapy of pylorus and Brunner's gland area in patients with polycythæmia vera. K. W. Stenstrom, P. H. Hallock, and C. J. Watson (Amer. J. med. Sci., 1940, **199**, 646—650).—Roentgen therapy applied to the pylorus and duodenum in 4 patients having polycythæmia vera failed to induce any remissions in the blood picture. C. J. C. B.

Anæmias of early infancy. C. H. Smith (J. Pediat., 1940, **16**, 375—395).—A crit. review. C. J. C. B.

Action of nicotinamide on erythrocyte and leucocyte [counts] of normal animals. A. Orrù (R. C. Atti Accad. Ital., 1939, [vii], **1**, 74—79; cf. A., 1939, III, 1070).—Small doses of intramuscularly injected nicotinamide increase the erythrocyte count in rabbits. With guinea-pigs the effect is less, the toxic dose being approached. No effect is observed with pigeons. The leucocyte count in rabbits shows a slight increase. E. W. W.

Effect of drugs on leucocyte count and treatment of leukæmia. W. Szreder (Sang, 1940, **14**, 88—98).—Injections of 10—18 c.c. of 0·1% solution of Na salt of benzenesulphonchloroamide in normal saline lowered the no. of myeloid cells in the blood. Exposure of leukæmic patients to an atm. of 60% O_2 for 3 hr. had a similar effect. C. J. C. B.

Aleukæmic leukæmia. M. Hynes (Quart. J. Med., 1940, **9**, 177—192).—7 of 23 cases of acute leukæmia had persistently normal or subnormal total white cell counts, but immature cells were seen in all; the leucopenic cases showed the crowding of the marrow by cells of the leukæmic series, indistinguishable from those with high counts. Aplastic anæmia is separated by sternal biopsy, agranulocytosis by the steady diminution in the cellularity of the marrow, and Lederer's anæmia by the response to blood transfusion, which is of no val. in acute leukæmia. In leucopenic chronic myeloid leukæmia sternal puncture yields a highly cellular marrow, whilst in myelosclerosis, not distinguishable from it clinically, sternal biopsy gives a fibrotic marrow. 4 of 16 cases of chronic lymphatic leukæmia seen were persistently leucopenic. Lymphosarcoma is distinguished by normal blood count and marrow, although one case was seen with elements of both syndromes. R. K.

Mechanism of leucocytosis with inflammation. V. Menkin (Amer. J. Path., 1940, **16**, 13—32.—Leucotaxine, which increases capillary permeability and cause diapedesis of polymorphonuclear leucocytes, fails to increase the blood-leucocyte level in dog or rabbit; it thus cannot be responsible for the leuco-

cytosis of inflammation. Exudates contain a leucocytosis-promoting factor which can raise the leucocyte level in dogs. This is demonstrable when either the whole or the cell-free exudate is introduced into the circulating blood. Serum, sterile broth, bacterial cultures of exudates, cultures of killed bacteria (*Staphylococcus aureus*), histamine, and adenosine are all ineffective in increasing the blood leucocyte count. The action of the leucocytosis-promoting factor is primarily on the bone marrow, producing an outpouring of immature granulocytes into the circulation. The factor is thermolabile. Heating the exudate to 60° inactivates the material. The factor, after prolonged dialysis of the exudate through a Cellophane membrane, is in large part indiffusible. C. J. C. B.

Method of preserving outlines of leucocytes and malarial parasites in Giemsa-stained thick blood films. J. W. Field (Trans. R. Soc. trop. Med. Hyg., 1940, **33**, 635—638).—Preservation of cytoplasmic contour is obtainable by treating freshly dried films for 1 sec. with an isotonic solution of methylene-blue. C. J. C. B.

Character of granules in neutophil polymorphonuclear leucocytes in tuberculosis in man and guinea-pig. R. Benda and D. A. Urquia (Sang, 1940, **14**, 65—76).—Certain characteristic pathological granules are described in the neutophil polymorphonuclears in tuberculosis in man and in the experimental disease in guinea-pigs. The no. of cells with these granules varies directly with the severity of the disease. C. J. C. B.

Relation of lymphocytes to virulence of pneumococci types III and VII. L. A. Turley and T. F. Dougherty (J. Lab. clin. Med., 1940, **25**, 692—701).—The protective action of lymphocytes against pneumococci was a quant. one, depending on the viability of the lymphocytes, and the mechanism was one of ingestion and intracellular disposal. C. J. C. B.

Follicular lymphoma. A. Fieschi (Klin. Woch., 1939, **18**, 1498—1500).—The clinical and pathological aspects are described. M. K.

Macrocytic anæmias in Kenya. T. F. Anderson and J. I. Roberts (Trans. R. Soc. trop. Med. Hyg., 1940, **33**, 615—622).—5 cases of tropical or nutritional macrocytic anæmia, including a case in an infant of 8 months, are described. Blood examinations, including estimations of cell size, at intervals of a week, showed the return of the blood picture to normal under liver treatment. The presence of target cells in 4 of the cases is reported. C. J. C. B.

Ætiology and prognosis of achrestic anæmia. M. C. G. Israëls and J. F. Wilkinson (Quart. J. Med., 1940, **9**, 163—176).—6 new cases of achrestic anæmia are described, with hyperchromic megalocytic anæmia, megaloblastic marrow, free gastric HCl, and variable response to liver therapy. In all cases reticulocytosis from 7 to 21% was obtained at some time with liver therapy, but 3 needed blood transfusion. True marrow megaloblasts (Ehrlich) are not found in megalocytic hæmolytic anæmia, in aplastic anæmia (even in the rare cases with hyperplastic marrow), or in megalocytic pregnancy anæmias, except the rare pernicious anæmia of pregnancy. The marrow of achrestic anæmia is similar to that of pernicious anæmia, and the mixed megaloblast–normoblast picture seen in partly treated pernicious anæmia is often found; this is consonant with the view that in achrestic anæmia there is some interference with the action of the liver anti-pernicious anæmia factor on erythropoiesis. 3 of the cases were in young, not pregnant, women and in them the prognosis seemed favourable. R. K.

Remission in pernicious anæmia. M. B. Strauss and F. J. Pohle (J. Amer. Med. Assoc., 1940, **114**, 1318—1320).—Treated cases of pernicious anæmia may relapse in 2—10 months on omission of liver extract. The optimum interval between injections is 1—4 weeks. C. A. K.

Hæmolysis in pernicious anæmia and sprue. F. Koller (Schweiz. med. Wschr., 1940, **70**, 54—57).—Urobilin excretion was markedly increased in patients suffering from pernicious anæmia; it was diminished in patients with pernicious anæmia in the course of sprue. Liver treatment diminishes the urobilin excretion in true pernicious anæmia. Below normal vals., serum-bilirubin gradually decreases. A. S.

Effect of aneurin on neurological disturbances in pernicious anæmia. F. Sciclounoff and M. Naville (Schweiz. med. Wschr., 1940, **70**, 166—167).—8 out of 13 patients with pernicious anæmia suffering from neurological disturbances in spite of normal cell counts after liver treatment benefited from daily injections of 4—10 mg. of aneurin over periods of 3 weeks. A. S.

Excretion of anti-pernicious anæmia principle in urine. J. F. Wilkinson, L. Klein, C. A. Ashford, T. S. G. Jones, B. R. S. Mainwaring, and F. X. Aylward (Biochem. J., 1940, **34**, 698—703).—An anti-pernicious anæmic principle was prepared from normal male urine and from urine of treated patients with remissions, but not from urine of untreated patients, either by fractional pptn. by alcohol after concn. at below 30°, or by adsorption on active C at p_H 5 and elution successively by 60% alcohol and 95% phenol followed by treatment with ether and water and separation of the aq. layers. Doses of such preps. equiv. to 8·5—20 l. of normal male urine are required to give positive clinical responses. P. G. M.

Modified Westergren sedimentation tube. H. D. Furniss (J. Amer. Med. Assoc., 1940, **114**, 756). C. A. K.

Method of ensuring verticality of Westergren or Rourke–Ernstene sedimentation tube. F. P. Poster (Amer. J. clin. Path., Tech. Sect., 1940, **4**, 54—55).—The tube is suspended by means of a hairpin. C. J. C. B.

Value of sedimentation time in suppurations of ano-rectal tissues. R. Turell and A. W. M. Marino (Amer. J. clin. Path., 1940, **10**, 300—305).—This test is valuable in the differential diagnosis of acute anal pain. C. J. C. B.

Hæmolysis. D. M. Telang (J. Univ. Bombay, 1940, [ii], **8**, 111—122).—A statistical study suggests that there is no significant correlation between the

fragility of human red cells and any of the factors such as the mean corpuscular size, thickness, vol., hæmoglobin content, hæmoglobin saturation, red cell count in 33 consecutive surgical patients studied. The red blood count shows a negative correlation with the mean corpuscular hæmoglobin content and the mean corpuscular vol. respectively while the mean corpuscular vol. bears a significant positive correlationship with the mean corpuscular average thickness. The mean corpuscular hæmoglobin and the mean corpuscular vol. are also positively correlated. C. J. C. B.

Clinic and treatment of hæmorrhagic diatheses. M. A. Schoch (Schweiz. med. Wschr., 1940, **70**, 25—29, 49—53).—A review. (B.) A. S.

Purpura hæmorrhagica associated with widespread deposits of crystalline material : reticuloendotheliosis. H. Agress and M. G. Smith (Arch. Path., 1940, **29**, 553—560).—A case of purpura hæmorrhagica is reported in which unique changes were observed due to the presence of cryst. material in the reticulo-endothelial system and other unrelated tissues. It is conjectured that this anatomical picture was the result of a metabolic disturbance. (10 photomicrographs.) C. J. C. B.

Preserved blood. E. L. De Gowin, J. E. Harris, and E. D. Plass (J. Amer. Med. Assoc., 1940, **114**, 850—855, 855—858; cf. A., 1939, III, 815).—K diffuses from human erythrocytes into the plasma during storage. The diffusion is rapid during the first 5 days and reaches a max. in 15—20 days. The high plasma vals. attained (*e.g.*, 100 mg. per 100 c.c.) cannot be entirely explained by release of K from hæmolysed cells. C. A. K.

Citrated plasma in secondary shock. M. M. Strumia, J. A. Wagner, and J. F. Monaghan (J. Amer. Med. Assoc., 1940, **114**, 1337—1341).—The successful use of citrated plasma in 10 cases of secondary shock is reported. C. A. K.

Prothrombin in preserved blood. A. J. Quick (J. Amer. Med. Assoc., 1940, **114**, 1342—1343).—The prothrombin concn. of stored plasma may fall to 40% of normal in 48 hr. C. A. K.

Prothrombin changes in banked blood. E. R. Ziegler, A. E. Osterberg, and M. Hovig (J. Amer. Med. Assoc., 1940, **114**, 1341—1342).—The prothrombin content of banked blood, determined by the method of Quick and also by that of Warner, Brinkhous, and Smith, falls steadily and after 7 weeks is 40% of the normal; the prothrombin clotting time increases from 18 sec. to 29 sec. C. A. K.

Preserved blood. Effect of high plasma-potassium. E. L. De Gowin, R. C. Hardin, and J. E. Harris (J. Amer. Med. Assoc., 1940, **114**, 858—859).—The high plasma-K content of blood stored for 30 days was non-toxic when given to 14 cases at rates of less than 43·3 c.c. per min. The plasma-K of the recipient was unaltered and no changes in the e.c.g. were noted. C. A. K.

Preserved blood. Transfusion of cold blood. E. L. De Gowin, R. C. Hardin, and L. W. Swanson (J. Amer. Med. Assoc., 1940, **114**, 859—861).—No ill effects followed rapid transfusions of preserved blood at 15—25° into 10 patients. C. A. K.

Human blood stored at 4°. W. F. Lipp and R. S. Hubbard (Proc. Soc. Exp. Biol. Med., 1940, **43**, 265—267).—Storage for 1 month causes an increase in plasma-proteins and a decrease in sedimentation rate. V. J. W.

Blood preservation. Effects of carbon dioxide. M. E. Smith, E. Tuthill, C. R. Drew, and J. Scudder (J. Biol. Chem., 1940, **133**, 499—501).—During a 14-day period, the increases in plasma-NH_3 and -K and the decrease in -Na are less when the blood is preserved in CO_2 than when it is preserved in air. W. McC.

Clinical application of hippuric acid and prothrombin tests. A. J. Quick (Amer. J. clin. Path., 1940, **10**, 222—233).—A review. C. J. C. B.

Prothrombin in newborn. K. Kato and H. G. Poncher (J. Amer. Med. Assoc., 1940, **114**, 749—753).—The average prothrombin clotting time of 100 mature newborn infants was 43·2 sec. on the first day of life; it fell to normal adult level (25 sec.) by the 10th day. In immature infants the average prothrombin time was 46·5 sec. on the day of birth and subsequently showed much greater fluctuation than in mature babies. The relation of these findings to hæmorrhagic disease of the newborn is discussed. C. A. K.

Effect of anticoagulating substances on blood-glycolysis. C. Inda (Rev. Fac. Cienc. Quím. La Plata, 1939, **14**, 7—13).—Glycolysis of human blood in presence of 0·2% NaF, 0·2% of NaF + Na oxalate (1 : 1), 0·1% of polymerised Na anetholedisulphonate, or glass beads in gentle agitation (control) was compared at 0° and 30°, and at intervals of 1·5, 3, 6, and 24 hr. NaF has the greatest antiglucolytic power, whilst the disulphonate has no action. F. R. G.

Anticoagulant action of neodymium acetate (Auer 144). E. Vincke and H. E. Never (Arch. exp. Path. Pharm., 1940, **194**, 308—315).—"Auer 144" increases coagulation time in rabbits only when injected in doses which damage the heart. H. Bl.

Increased coagulability and anti-coagulant action of *Bothrops jararaca* venom. D. von Klobusitzky (Wien. klin. Wschr., 1940, **53**, 276—280).—There is an inverse relationship between the anti-coagulant action of *B. jararaca* venom and the concn. of the venom; the coagulation time of oxalated and normal horse blood was 170 sec. after addition of 0·1% venom; it was 409 min. after addition of 0·0002%. Anti-coagulant concns. of the venom also produce hæmolysis. A substance with strong coagulability-increasing action was obtained by pptn. of venom with $(NH_4)_2SO_4$ and further pptn. of the globulins by means of Pb acetate and dialysis. This "hæmocoagulase" is not identical with the neurotoxin of snake venom. Good results with hæmocoagulase were obtained in hæmophilia and hæmorrhagic diatheses. A. S.

Production of prothrombin deficiency and response to vitamins-*A*, -*D*, and -*K*. M. C. Elliott, B. Isaacs, and A. C. Ivy (Proc. Soc. Exp. Biol. Med., 1940, **43**, 240—245).—Addition to diet

of 20% of mineral oil caused prolongation of clotting time, which was corr. by 2000 Almquist units of vitamin-*K*, was improved by 500 i.u. of Viosterol, and not affected by 50,000 i.u. of vitamin-*A*. V. J. W.

Decrease in prothrombin titre of human blood during storage. E. D. Warner, E. L. De Gowin, and W. H. Seegers (Proc. Soc. Exp. Biol. Med., 1940, **43**, 251—254).—Citrated blood stored at 5° lost 50% of prothrombin in 3 weeks. V. J. W.

Antihæmorrhagic action of 2-methyl-1 : 4-naphthaquinone in the rabbit; possibility of *K*-hypervitaminosis. P. Meunier, H. Hinglais, D. Bovet, and A. Dreyfuss (Compt. rend., 1940, **210**, 454—457; cf. Flynn *et al.*, A., 1940, III, 469).—The clotting time (photometric method) of the blood of rabbits with jaundice (obstructive or toxic) is diminished in 18—42 hr. by the subcutaneous injection of 2-methyl-1 : 4-naphthaquinone (1 mg.). The effect lasts 3—4 days. Larger doses (10 mg.) at first (1 day) hasten and then (3—5 days) retard clotting; the original clotting time is restored in 7—10 days. J. L. D.

2-Methyl-1 : 4-naphthaquinone in prothrombin deficiency. W. De W. Andrus and J. W. Lord (J. Amer. Med. Assoc., 1940, **114**, 1336—1337).—Intramuscular injection of 2-methyl-1 : 4-naphthaquinone (2 mg.) dissolved in maize oil effectively increased a low plasma-prothrombin level in the absence of severe liver damage, sometimes by as much as 50%. The effect appears in 8 hr. and lasts for 1 week. No toxic actions were noted. C. A. K.

Vitamin-*K* and hæmorrhagic diatheses of newborns. F. Koller and N. Fiechter (Schweiz. med. Wschr., 1940, **70**, 136—140).—The action of lucerne concentrate, 1 : 4-diacetyl- and 1 : 4-disuccinyl-2-methylnaphthaquinol on the coagulation time in newborns was determined using Fiechter's micro-method. The last compound is more effective than natural vitamin-*K* (1 g. = 15—30 million, compared with 12—20 million Dam units of lucerne). The substance was orally administered in doses of 5—10 mg. No untoward effects were observed. This dose prevents the normally occurring increase in coagulation time 3—5 days after birth and cures hæmorrhagic diatheses. A. S.

Photo-electric hæmoglobinometer. G. F. Dick and D. S. Stevens (J. Amer. Med. Assoc., 1940, **114**, 1065—1066). C. A. K.

Preparation of hæmatoporphyrin. R. D. Barnard (J. Lab. clin. Med., 1940, **25**, 747—750).—The prep. of hæmatoporphyrin is described. The material is practically insol. in neutral aq. solutions. It is not toxic by ingestion for *Daphnia polex* and is non-irritating to the human skin. Solutions show a red fluorescence to ultra-violet light and the dried films act as a screen to that part of the spectrum which induces erythema of the skin following irradiation. C. J. C. B.

Forsman antigens in human erythrocytes A_1. H. Brocks (Compt. rend. Soc. Biol., 1939, **132**, 230—233).—It was not possible to demonstrate different quotas of Forsman antigen in human erythrocytes of group A_1 by means of agglutinins derived from rabbits immunised with sheep erythrocytes. P. C. W.

Modification of Huddleson's opsonocytophagic reaction. R. M. Calder (J. Lab. clin. Med., 1940, **25**, 769—770). C. J. C. B.

Cellular reaction to intraperitoneally injected blood. E. L. Sarason (Yale J. Biol. Med., 1940, **12**, 269—276).—The reaction of the rabbit peritoneum to injections of citrated homologous blood is a transitory polymorphonuclear reaction followed by a more prolonged mononuclear response. Fat particles develop in the cytoplasm of the mononuclear cells and this is increased by rendering the rabbits hyperlipæmic by egg feeding. Parallel experiments with kaolin injections produced no development of fat particles and showed that at least part of the fat was derived from blood cells ingested by the mononuclear cells. F. S.

Blood groups in tribes of South Annam. M. E. Farinaud (Compt. rend. Soc. Biol., 1939, **132**, 196—198).—The Phnongs, Stiengs, and Khas all possess population blood groups in which $B > A > O$, a type apparently confined to Indochina. P. C. W.

Development of chemical preservation of complement, especially Rhamy's sodium acetate method. B. W. Rhamy (Amer. J. clin. Path., Tech. Sect., 1940, **4**, 35—40).—Complement preserved by 20% Na acetate + toluol is superior to that preserved by 12% or 20% acetate + 4% boric acid. C. J. C. B.

Cold hæmagglutination. S. Krauter (Wien. klin. Wschr., 1940, **53**, 273—275).—Cold isoagglutination was found in a patient suffering from hyperchromic anæmia. A. S.

Effect of sulphanilamide on cross-matching of blood. S. Kreinin, F. A. Hamblen, and L. Porcelli (J. Lab. clin. Med., 1940, **25**, 690—692).—The inability to cross-match blood following the administration of sulphanilamide is due to changes in the blood brought about by the disease requiring the use of sulphanilamide rather than to the drug itself. C. J. C. B.

Bromine content of blood of healthy individuals. H. L. Wikoff, R. A. Brunner, and H. W. Allison (Amer. J. clin. Path., 1940, **10**, 234—237).—In 170 healthy students between the ages of 19—36 the range of blood-Br was 0·33—1·73 mg.-% (average 0·81 mg.-%); 80% of the cases lay within 0·2 mg. of the average. C. J. C. B.

Washing of corpuscles in determination of blood-chloride. C. Inda (Rev. Fac. Cienc. Quím. La Plata, 1939, **14**, 163—171).—Loss of Cl′ occurs with each washing and it is preferable to determine the Cl′ on the corpuscle layer obtained directly in the centrifuge. F. R. G.

Acute circulatory failure (shock) following subcutaneous injection of hypertonic sodium chloride solution. H. A. Davis (Proc. Soc. Exp. Biol. Med., 1940, **43**, 354—357).—Subcutaneous injection in dogs of 25 c.c. per kg. of 25% NaCl

solution causes death from "shock" in 5—10 hr. with hæmoconcentration and increased blood-sugar. V. J. W.

Absorption of ferrous salts. A. Amann (Arch. exp. Path. Pharm., 1940, **194**, 277—280).—After the injection of lethal doses of $FeCl_2$ and $FeSO_4$ in rabbits (30 mg. Fe" per kg.) blood-Fe remains high for over 2 hr. Fe is also found in the liver. $Fe(HCO_3)_2$ is rapidly autoxidised; its complexes with tartaric or citric acids are not absorbed from the intestine. $Fe(HCO_3)_2$ + pyrocatechol also form a complex which is not absorbed. H. Bl.

Effect of testicular extract on distribution and absorption of subcutaneous saline solution. L. S. Sannella (Yale J. Biol. Med., 1940, **12**, 433—439).—The addition of a 1/1000 extract of bull testis to injections of 130 to 200 c.c. of saline greatly increased the rate of absorption. The extract was antigenic and elicited skin-sensitiveness on re-injection. F. S.

Diurnal variations in acid–base balance. A. B. Hastings and C. W. Eisele (Proc. Soc. Exp. Biol. Med., 1940, **43**, 308—312).—During the morning there was a rise in plasma-HCO_3', attributed to ingestion of food, and during sleep a rise in blood-CO_2 tension. V. J. W.

Effect of magnesium sulphate on serum and peritoneal fluid-calcium, -magnesium, and -inorganic phosphorus. V. G. Haury and A. Cantarow (Proc. Soc. Exp. Biol. Med., 1940, **43**, 335—336).—Injection of 50 c.c. of 25% $MgSO_4$ caused in dogs a decrease in serum-Ca without change in Ca of peritoneal fluid. Inorg. P of serum and peritoneal fluid was also decreased. V. J. W.

Blood-iodine in health, in thyroid and cardio-renal disease and leukæmia. K. B. Turner, A. deLamater, and W. D. Province (J. clin. Invest., 1940, **19**, 515—524).—The blood-I of 20 normal males was 3·8—8·6 μg. (average 5·9); in 20 normal females it was 3·5—10·4 μg. (average 6·8). No seasonal trend could be demonstrated. The normal range for blood-I was arbitrarily set at 4·0—10·0 μg. In 20 cases of hyperthyroidism, blood-I was elevated in 14, normal in 6. In 4 of 5 cases of non-toxic adenoma, blood-I was normal; in the fifth patient it was low. In 5 cases of hypothyroidism blood-I was low normal or low. In hypertensive vascular disease it was low or low normal; serum-cholesterol was normal or even high when the basal metabolic rate was increased. In 12 cases of myeloid leukæmia blood-I was abnormally low in 75%, normal in 25%. In 17 patients with lymphoid leukæmia, blood-I was normal in 58%, high in 41%. C. J. C. B.

Polypeptides in blood and cerebrospinal fluid in typhoid fever and anthrax in man. A. Slatineanu, L. Balteanu, L. Potop, and M. Franche (Compt. rend. Soc. Biol., 1939, **132**, 287—290).—In typhoid fever the polypeptides in blood and c.s.f. are increased. There is no relation to the variations in non-protein-N. The vals. obtained in the acute stages are higher than in pellagra or exanthematous typhus. In anthrax the vals. are slightly raised particularly after the injection of therapeutic sera, that is during regression of the symptoms. P. C. W.

Simplified method for obtaining acid-precipitable lipoprotein from serum. M. A. Macheboeuf and L. Dizerbo (Compt. rend. Soc. Biol., 1939, **132**, 268—271).—By half-saturation of serum with $(NH_4)_2SO_4$ an albumin solution is produced. This is adjusted to p_H 4 and $(NH_4)_2SO_4$ added until pptn. occurs. Successive washings of the ppt. with water leave residues with increasing lipin/protein ratios. The lipoproteins in horse serum amount to 4—10 g. per l. Similar results are obtained with dog and fowl serum. In sheep and guinea-pig serum the albumin ppt. is completely sol. whilst in rabbit, ox, and human serum the albumin is relatively insol. and difficult to separate. P. C. W.

Effect of experimental nephritis and hepatitis on blood-nitrogen of dog. E. Aubertin and R. Martinet (Compt. rend. Soc. Biol., 1939, **132**, 264—267).—Hepatitis and nephritis were produced in the dog by various poisons. Oral administration of CCl_4 (3—4 ml. per kg.) produced acute hepatitis with no renal symptoms; ligature of the bile duct produced hepatitis with nephritis without raised blood-urea but with albuminuria; after bleeding and replacement of the lost blood with horse hæmoglobin a nephritis with hæmoglobinuria and azotæmia without hepatic damage was produced; subcutaneous injection of U nitrate caused a hepatonephritis; oral or subcutaneous injection of phosphorated oil produced fatty degeneration of the liver with nephritis producing albuminuria but no rise in blood-urea. In all cases the vals. for non-protein-N, polypeptides, total amino-N, and residual N in the blood were raised. In pure hepatitis there is no elevation of blood-urea but a lowering of the urea-N/residual N ratio, which remains normal in azotæmic nephritis. The raised blood-creatine found in the latter condition is not present in the former. In hepatitis with albuminuric nephritis the blood changes are similar to those in uncomplicated hepatitis. In all cases of hepatitis there is a lowering of the serin/globulin ratio. The results in hepatitis with azotæmic nephritis are not const. P. C. W.

Nephelometric determination of blood-urea by xanthhydrol. M. Viré (Bull. Soc. Chim. biol., 1940, **22**, 185—191).—For clinical purposes, urea is determined nephelometrically in 0·5 c.c. of serum as dixanthylurea. A. L.

Serum-proteins and the reticulo-endothelial system. R. Nico (Rev. Fac. Cienc. Quím. La Plata, 1939, **14**, 173—192).—Rabbits were injected in the marginal vein of the ear with daily doses of 1 c.c. per kg. of Indian ink diluted to 2% for the first 3 days, and to 20% for subsequent days. Blood removed by cardiac puncture after the 15th day shows a diminution in all cases of total proteins and albumins and an increase in globulins and non-protein-N. Further injections produce a greater change of total proteins, albumins, and non-protein-N but the globulin content decreases. These changes are related to modifications in the hydræmia produced by blocking of the reticulo-endothelial system. F. R. G.

Determination of serum-proteins. R. Nico (Rev. Fac. Cienc. Quím. La Plata, 1939, **14**, 61—70). —The colorimetric method of Greenberg and Mirolubova (A., 1938, III, 454) gives results comparable with the micro-Kjeldahl procedure of Howe (A., 1922, ii, 172). The vals. given by the refractometric method of Howe (A., 1904, ii, 303) and the gravimetric method of Merklen *et al.* (A., 1933, 175) are invariably too high. F. R. G.

Glutathione concentration in blood. S. Berenstein (Schweiz. med. Wschr., 1940, **70**, 57—59).—Present methods of determining the blood-glutathione concn. are not sufficiently sp. to study physiological or pathological variations in glutathione concn. A. S.

Blood-alcohol determination. J. Beeman (Amer. J. clin. Path., Tech. Sect., 1940, **4**, 45—46).—A modification of the Gettler method (A., 1931, 1186) is described. C. J. C. B.

Transfer of phosphate during oxidation of hexose diphosphate in hæmolysate of horse erythrocytes. A. Lennerstrand and M. Lennerstrand (Enzymologia, 1940, **8**, 211—218; cf. A., 1937, III, 289).—During the oxidation (R.Q. approx. 0·1; no oxidative decarboxylation) of hexose diphosphate in the system hæmolysed erythrocytes + pyocyanine + cozymase + PO_4''' buffer, the contents of inorg. PO_4''', reducing sugar, and ketose decrease and difficultly hydrolysable ester accumulates, the amount of this ester produced being more than equiv. to that of inorg. PO_4''' esterified. The ester consists, to the extent of 34—57%, of 3-phosphoglyceric acid. The remainder is probably not hexose monophosphate. In the absence of pyocyanine, no 3-phosphoglyceric acid is produced and the content of reducing sugars remains unchanged. The results indicate that the system contains a zymohexase which maintains equilibrium between hexose diphosphate and the phosphoric acids of glyceraldehyde and dihydroxyacetone. Glyceraldehydephosphoric acid, after taking up PO_4''', is oxidised by pyocyanine and O_2 to 1 : 3-diphosphoglyceric acid, which is then dephosphorylated to 3-phosphoglyceric acid. Additional O_2 consumed is probably utilised in further oxidation of the acid without CO_2 production. W. McC.

Choline-esterases in human blood. G. A. Alles and R. C. Hawes (J. Biol. Chem., 1940, **133**, 375—390).—Choline-esterase activity of blood cell enzyme preps. is probably mainly derived from the erythrocytes, which contain the greater part of the activity of whole blood. Plasma possibly acts mainly as a distributing reservoir, although the activity of serum and cells is affected differently by variations in concn. of acetylcholine, the cell enzyme being most active at low concns. and being inhibited by excess of substrate. The cell enzyme is more affected by 0·85% NaCl (max. change +82%) than the serum enzyme (max. change −17%). Variations in p_H (6·8—8·7) also affect the respective enzymes in the same sense in the presence of 0·85% NaCl. P. G. M.

Cholesterolæmia and Kahn and Wassermann reactions. C. A. Sagastume and L. Rovira (Rev. Fac. Cienc. Quím. La Plata, 1939, **14**, 159—162).—Blood-cholesterol was determined in the blood of 165 fasting hospital subjects. No significant correlation with the Kahn, Wassermann, or Wassermann–Auguste reactions was found. F. R. G.

Serum-choline-esterase and -cholesterol. F. Zinnitz (Arch. exp. Path. Pharm., 1940, **194**, 440—451).—Continuous intravenous infusion in cats of cholesterinozonid (an emulsion containing cholesterol) abolishes the effect of vagus stimulation on heart and blood pressure. During the infusion the serum-esterase activity is diminished. H. Bl.

Serum-lipase in diabetics. I. Göbel (Münch. med. Wschr., 1939, **86**, 1698—1699).—The serum-lipase const., determined by Rona and Michaelis' method, was in normal subjects 0·005 at 20°. The serum-lipase content in diabetics was increased, parallel to the increased blood-sugar level. It decreased with dietetic and insulin therapy. A. S.

Relation of hypoglycæmia to symptoms observed in infants of diabetic mothers. H. C. Miller and R. A. Ross (J. Pediat., 1940, **16**, 473—481).—The hypoglycæmia in 6 infants had no direct simple relation to the symptoms. C. J. C. B.

Relative significance of water and of protein loss in dehydration shock. H. A. Davis (Proc. Soc. Exp. Biol. Med., 1940, **43**, 357—359).—The œdema fluid formed at the site of injection (cf. A., 1940, III, 559) has a low protein content, and the shock is therefore due to loss of fluid rather than to loss of blood-protein. V. J. W.

Factors that influence passage of ascorbic acid from serum to cells in human blood. M. Heinemann and P. M. Hald (J. clin. Invest., 1940, **19**, 469—473).—After addition of ascorbic acid to defibrinated human blood, its concn. was followed in serum separated at once and in serum left in contact with cells. At 37°, ascorbic acid enters the blood cells. This transfer is self-terminative and occurs in air or N_2, the latter preventing deterioration of ascorbic acid in serum and in whole blood. The passage of ascorbic acid into the cells is associated with some metabolic activity since it was never observed at lower temp. The rate of transfer of ascorbic acid is enhanced by avoiding sedimentation of the blood. C. J. C. B.

Preservation of ascorbic acid in drawn samples of blood. R. J. Kassan and J. H. Roe (J. Biol. Chem., 1940, **133**, 579—584).—When plasma is separated from the erythrocytes, the amount of ascorbic acid gradually decreases and addition of 8-hydroxyquinoline, orcinol, resorcinol, or salicylic or maleic acid has no effect on the decrease; in presence of the erythrocytes, the ascorbic acid content of the plasma remains unaltered for 16—24 hr. at room temp. and for 52 hr. at 0°. Hæmolysis must be prevented completely in order to preserve ascorbic acid in blood. Pyrex and paraffin- and collodion-lined tubes used as blood containers give better preservation of the plasma-ascorbic acid than do ordinary glass vessels. J. N. A.

Stabilisation and determination of pyruvic acid in blood. E. Bueding and H. Wortis (J. Biol. Chem. 1940, **133**, 585—591).—Pyruvic acid

rapidly disappears from drawn blood at room temp., there being a significant decrease after 1 min. This can be prevented entirely by addition of 0·2% of iodoacetic acid. NaCN greatly increases the rate of disappearance of the acid and, in presence of NaCN, iodoacetic acid has no effect. A modification of Lu's method (A., 1939, III, 540) for determination of pyruvic acid in blood is described. The pyruvic acid content of normal blood varies from 0·77 to 1·16 mg.-%. The content in c.s.f. remains const. even after 1 hr. at room temp. J. N. A.

[Determination of] acetone bodies in blood; application to determination of small amounts of mercury. L. A. CRANDALL, jun. (J. Biol. Chem., 1940, **133**, 539—550).—The protein-free blood filtrate is boiled with Denigès' reagent according to Van Slyke's method (A., 1918, ii, 86), the ppt. is washed and dissolved in conc. HNO_3, excess of $Fe(NO_3)_3$ and a small amount of KCNS are added, and the intensity of the colour is determined in a photo-electric colorimeter. Hg specifically interferes with the colour formed when CNS' is added to excess of $Fe(NO_3)_3$ and the suppression of the colour is proportional to the amount of $Hg^{\cdot\cdot}$. The method can be used for determination of Hg in other materials if interfering ions, especially Cl', SO_4'', and oxalate, are absent. The accuracy is $\pm 5\%$ for the concn. of ketonic substances present during ketosis and within somewhat larger limits for the amounts present in normal blood. J. N. A.

Determination with periodate of glycerol of neutral fat of blood. Arterio-venous differences in neutral fat. L. VORIS, G. ELLIS, and L. A. MAYNARD (J. Biol. Chem., 1940, **133**, 491—498; cf. A., 1937, III, 248).—A modification of Malaprade's method (A., 1934, 1090) is applied to the determination of 0·1—2·5 mg. of glycerol. The vals. obtained for the glycerol liberated by the saponification of the neutral fat of the plasma of cows indicate that, since the neutral fat content of venous is less than that of arterial blood during lactation, the mammary gland removes fat from blood. W. McC.

Florence reaction. Nature of "inhibitory substance" [in blood]. A. CARAYON-GENTIL (Bull. Soc. Chim. biol., 1940, **22**, 99—107; cf. A., 1939, III, 987).—The inhibiting action of trichloroacetic acid and acetone extracts of mammalian blood on the Florence reaction for choline is due to the presence of peptones and polypeptides. A. L.

Components of blood. I. Isolation of dimethyl sulphone from ox blood. L. RUZICKA, M. W. GOLDBERG, and H. MEISTER (Helv. Chim. Acta, 1940, **23**, 559—561).—The acetone extract of dried ox blood gives a water-sol. fraction which contains dimethyl sulphone. H. W.

Glycogen in blood. K. BUCHER and H. STAUB (Arch. exp. Path. Pharm., 1940, **194**, 506—526).—The average blood-glycogen of normal rabbits (starved) is 4·7 mg.-%. There is no change after keeping the blood for 3 hr. If glycogen is injected intravenously, the blood loses the added glycogen after 1 hr. at room temp. The loss of added glycogen is more rapid in whole (citrated) blood than in plasma. Of the total glycogen content of the blood 23% is in the plasma, 72% in the red cells, 5% in the leucocytes. The leucocytes do not take up glycogen added *in vitro* or *in vivo*. After injection of adrenaline and glycogen the leucocytes take up glycogen. Injection of glycogen lowers the leucocyte count. A second injection of glycogen is not followed by a leucopenia. H. BL.

Blood serum changes in dog during recovery from exercise on treadmill. M. MORSE and F. W. SCHLUTZ (Amer. J. Physiol., 1940, **128**, 417—424).—Serum-lactate continues to rise and HCO_3' to fall for some min. after exercise in dogs; the fall in HCO_3' exceeds the rise in lactate. Inorg. PO_4''' and K fall markedly and return to the initial level within 2 hr. Serum-Cl rises for 10 min. after exercise and remained raised above the initial level 2 hr. later; the concn. of serum-protein falls rapidly, below the initial level and fails to return. M. W. G.

Determination of galactose in blood. P. A. LARSSON and S. L. SVEINSSON (Skand. Arch. Physiol., 1939, **83**, 58—68).—Hagedorn and Jensen's technique of determining the blood-sugar is used and the fermentation of galactose in the presence of baker's yeast is measured. A table is given to indicate the galactose concn. corresponding with the amount of $Na_2S_2O_3$ used. A. S.

Blood-glycogen. V. N. GALACHOVA (Ukrain. Biochem. J., 1939, **14**, 289—301).—Pptn. of glycogen is incomplete in absence of salts (K_2SO_4, NaCl). In their presence the results may be higher or lower than theoretical, owing to incomplete pptn. and contamination. None of the known methods of determining blood-glycogen is satisfactory. R. T.

Insulin inactivation in diabetic blood. H. KOHL (Arch. exp. Path. Pharm., 1940, **194**, 452—460; cf. Physiol. Abs., 1937, No. 4710).—Inactivation of insulin is accelerated in blood from diabetic patients. H. BL.

Micro-determination of carbon monoxide in blood. Carbon monoxide content of normal blood. D. E. BLAND (Austral. J. Exp. Biol., 1940, **18**, 35—47).—An I_2O_5 method, applicable to 0·2 c.c. of blood, is described. Normal blood contains 0·1—0·2 vol.-% of CO; this is appreciably increased by smoking. The air contains sufficient CO to account for the amount found in normal blood. Excised guinea-pig brain did not produce CO when kept in warm Ringer's solution, thus affording no confirmation of the alleged production of CO by the central nervous system. D. M. N.

Subcutaneous absorption in toads after destroying lymphatic hearts. R. Q. PASQUALINI (Rev. Soc. argent. Biol., 1939, **15**, 447).—The 4 lymphatic hearts were destroyed by cauterisation in *Bufo arenarum*. Strychnine injected into the ventral lymphatic sac produced the same effects, with respect to dose and time of appearance of symptoms, as in normal toads; it was therefore absorbed principally by the blood capillaries. NaCl and glucose were rapidly absorbed, as shown by the concn. in the blood, but less than in normal animals.

Inulin was absorbed much less and hæmoglobin not at all. 100—130 min. after injection the concn. in the blood of injected substances commenced to decrease in toads whose lymphatic hearts had been destroyed; it continued high or rose in normal animals. J. T. L.

Concentration and detection of dye in abscesses. H. Kroll, S. F. Strauss, and H. Necheles (Proc. Soc. Exp. Biol. Med., 1940, **43**, 228—234).—A monobrominated compound of Evan's Blue was found to be conc. more in an abscess than in body tissues of the dog, and to be the most suitable of various compounds studied. V. J. W.

Influence of splenectomy on erythroblastic crisis occurring in spring in *Bufo arenarum*. M. E. Varela and R. E. Mancini (Rev. Soc. argent. Biol., 1939, **15**, 470—473).—The spleen was removed in 10 toads in August (winter); 10 other animals were submitted to similar trauma, but the spleen was not removed; 10 normal controls were also observed. In these last, the erythroblasts increased considerably in September and October; a smaller increase occurred in the traumatised animals and no increase was observed in the splenectomised series. Since the spleen is not an erythropoietic organ in this species, its influence on the erythroblastic crisis must be due either to a hormonal stimulus acting on the blood-forming tissues or to controlling substances necessary for the formation of the red blood cells. J. T. L.

(vi) VASCULAR SYSTEM.

Functional cardiac tests for military service. B. Steinmann (Schweiz. med. Wschr., 1940, **70**, 125—128). A. S.

Electrocardiographic changes in hyperthyroidism. W. Breu and S. Zollner (Wien. klin. Wschr., 1940, **53**, 216—220).—Variations in shape and size of *P*, *QRS*, and *T*, seen in hyperthyroid patients, are described. A. S.

Effect of thyroidectomy on oxygen debt after effort in patients with cardiac failure. H. Siedeck (Wien. klin. Wschr., 1940, **53**, 147—150).—A no. of patients suffering from severe cardiac failure improved after thyroidectomy; their O_2 debt after effort diminished. A. S.

Coronary insufficiency, cardiac failure, and angina pectoris. H. von Hoesslin (Wien. klin. Wschr., 1940, **53**, 249—251). A. S.

Ventricular fibrillation due to single, localised induction and condenser shocks applied during vulnerable phase of ventricular systole. C. J. Wiggers and R. Wégria (Amer. J. Physiol., 1940, **128**, 500—505).—Brief induction or condenser shock applied to normal hearts of old or young dogs by stigmatic electrodes induces fibrillation only when the shocks fall during the vulnerable period of late systole. Since the effect is obtained by use of stigmatic electrodes passage of the current through the whole or large parts of the myocardium is not necessary to initiate fibrillation. Several implications are discussed. The effectiveness of currents or the variations of myocardial sensitivity to fibrillation cannot be tested experimentally by noting variations in the duration of current flow. M. W. G.

Validity of the electrical doublet theory of cardiac action current. R. Ashman, W. S. Wilde, and C. E. Drawe (Amer. J. Physiol., 1940, **128**, 547—551).—When muscle immersed in solution is invaded from end to end by a wave of excitation, the wave front is preceded by an anode or source, and is followed by a cathode or sink; according to some investigators the source and sink are close together, thus constituting an electrical doublet or electrical couplets. Two experiments on heart muscle strips are described; the results are incompatible with the negativity theory of the origin of action potentials, but support the theory that the initial deflexions are due to the presence of electrical doublets. M. W. G.

Interpretation of electrocardiographic findings in calcareous stenosis of aortic valves. T. J. Dry and F. A. Willius (Ann. int. Med., 1939, **13**, 143—150).—The e.c.g. was studied in 176 cases of calcareous stenosis of the aortic valves; aortic insufficiency was also present in 34·6% of the cases; post-mortem observations were made in 63 cases. 6 of these showed no e.c.g. signs of left ventricular preponderance; 37 cases showed left axis deviation and negative *T* waves in leads I or I and II. 8 out of 10 cases had negative *T* waves, right axis deviation, and auricular fibrillation. Disturbances of conduction were found in 8 cases. Similar changes were found in 85 cases which were clinically studied. A. S.

Ballistocardiogram. II. Normal standards, abnormalities found in diseases of heart and circulation, and their significance. I. Starr and H. A. Schroeder (J. clin. Invest., 1940, **19**, 437—450).—Ballistocardiograms, *i.e.*, records of the heart's recoil and the blood's impacts, were obtained in 300 normal persons and over 400 patients. No special training is needed by the operator and the time required is the same as for an e.c.g. The amplitude of the ballistocardiogram is related to the cardiac output. The form of the ballistocardiogram is determined by the changes of systolic blood velocity in the great vessels. The normal form and common abnormalities are described. C. J. C. B.

Proof of excitability of mammalian ventricles during systole. R. Wégria (Proc. Soc. Exp. Biol. Med., 1940, **43**, 261—263).—In dogs and cats, a single short shock applied to the ventricle during the latter part of systole causes a premature contraction and, if strong enough, ventricular fibrillation. V. J. W.

Painless myocardial infarction. H. M. Pollard and T. H. Harvill (Amer. J. med. Sci., 1940, **199**, 628—635).—In a study of 375 cases of myocardial infarction in which the diagnosis was based on the clinical features, e.c.g. findings, and available necropsy material, there were 17 instances (4·5%) of coronary occlusion in which no pain, substernal pressure, or other "anginal" symptoms had occurred at any time. Among the symptoms which occurred at the time of the accident, the most common were dyspnœa,

nausea and vomiting, dizziness and fainting or collapse. C. J. C. B.

Myocardial lesions resulting from dietary deficiency. R. M. Thomas, E. Mylon, and M. C. Winternitz (Yale J. Biol. Med., 1940, **12**, 345—360).—Rats and hogs develop severe myocardial lesions, characterised by necrosis of muscle fibres and marked cellular infiltration, when they are fed on a diet deficient in both K and vitamin-*B*. Either K or -*B* deficiency alone produces no lesion. -B_6 + K deficiency caused the lesion whereas deficiency of thiamin, riboflavin, and K was without effect. (8 photomicrographs.) F. S.

Effect of amyl nitrite and caffeine on the fibrillation produced by adrenaline–chloroform or –benzene mixtures. L. Dautrebande and R. Charlier (Compt. rend. Soc. Biol., 1939, **132**, 292—296).—The cardiac fibrillation produced when adrenaline is injected in the dog anæsthetised with chloralosan during inhalation of $CHCl_3$ or benzene is due to the hypertensive action of the adrenaline acting on the intoxicated heart. This is shown since simultaneous inhalation of amyl nitrite or injection of caffeine prevents the effect. P. C. W.

Effect of galvanic currents on response of isolated frog heart to acetylcholine. W. Schroeder (Arch. exp. Path. Pharm., 1940, **194**, 589—595).—An isolated frog's heart attached to a Straub cannula is put in Ringer's solution; one electrode is placed in the outside fluid, the other in the cannula. If the latter electrode acts as cathode, the effect of acetylcholine (introduced through the cannula) is diminished; if it acts as anode, the effect of acetylcholine is enhanced. Anodal current prolongs the response to adrenaline and cathodal current diminishes it. H. Bl.

Effect of autonomic-stimulating drugs on refractory period and chronaxie of fish myocardium. D. T. Barry, A. Chauchard, B. Chauchard, and P. Chauchard (Compt. rend. Soc. Biol., 1939, **132**, 216—219).—Acetylcholine and yohimbine diminish the refractory period and chronaxie of heart muscle of the spotted dog-fish and conger eel; atropine and adrenaline raise the two vals. The raising of the vals. coincides with diminution of the activity of the muscle and lowering the vals. coincides with an increased activity. P. C. W.

Comparative effect of pure and commercial benzene on dog's heart. J. Barzin and R. Charlier (Compt. rend. Soc. Biol., 1939, **132**, 296—298).—Benzene was inhaled by anæsthetised dogs with vago-depressor nerves cut. Both pure and crystallisable commercial preps. had toxic effects on the heart: progressive decrease in the amplitude of the beats and increase in the diastolic vol. were caused. The commercial prep. was more toxic than the pure one. The former occasionally produced ventricular fibrillation. P. C. W.

Inorganic constituents of heart muscle of vertebrates. O. V. Lobatschevskaja (Ukrain. Biochem. J., 1939, **14**, 31—58).—The ash content (figures in parentheses refer to females) of cardiac muscle of a no. of vertebrates is: frog 257 (234), grass snake 315 (336), turtle 232 (268), sparrow 451 (348), pigeon 401 (302), suslik 408 (337) mg. per 100 g. fresh tissue. In general the content of individual cations decreases in the order K, Na, Mg, Ca, Fe, Mn. In homeotherms the ratios Ca/Mg, K/Fe, Mg/Fe, Ca/Mg, Ca/Na, and Ca/K are less than for poikilotherms. R. T.

Variations in pressure of aortic circuit after ligature of principal branches of pulmonary artery. E. Moisset de Espanés (Rev. Soc. argent. Biol., 1939, **15**, 501—506).—In rabbits the right and left branches of the pulmonary artery were ligated with pleura intact and natural respiration, or with artificial respiration, the pleura being intact or open. In some experiments the animals died almost immediately on ligating either the right or left branch; in others the aortic pressure fell slightly for 10—15 sec. and then returned to the initial level. J. T. L.

Heart murmurs in newborn infants. R. A. Lyons, L. W. Rauh, and J. W. Stirling (J. Pediat., 1940, **16**, 310—317).—Heart murmurs were detected in 147 of 7673 newborn infants examined during the first week of life. The sex of the infant, the month of birth, the birth wt., and the occurrence of syphilis in the mother did not influence the incidence of murmurs. 92 were followed later in life; 4 had died, and heart disease was found in the autopsies of 2 of these infants. 14 had persistent systolic murmurs which were considered to represent some form of congenital cardiac lesion. Of the 74 remaining patients, 71 were entirely well without any clinical evidence of heart disease and 3 had functional murmurs or extrasystoles. C. J. C. B.

Extravalvular elements in first heart sound. J. R. Smith, W. B. Kountz, and A. S. Gilson (Proc. Soc. Exp. Biol. Med., 1940, **43**, 256—258).—In the exposed dog's heart the first sound can still be heard after all valvular movements are prevented by insertion of rubber balloons. V. J. W.

Chemo-sensitivity of hypertensor reflex of auricles to toxic substances. H. de Waele and J. Van de Velde (Compt. rend. Soc. Biol., 1939, **132**, 310—311).—Injection of Na_2SO_4, ephedrine, coniine, or amines into the auricle or ear vein of the rabbit with carotid sinuses ligatured produces the same vascular and respiratory effects as when injected into the sinus. The effects are abolished, or reduced to those following injection into the circulation, by section of spinal nerve roots Th 1—3. P. C. W.

Effect of compressed air and oxygen excess on hypertensor reflex of auricles. H. de Waele and J. Van de Velde (Compt. rend. Soc. Biol., 1939, **132**, 312).—Inhalation of compressed air, reducing the venous return to the heart in the rabbit, causes a hypertensor reflex even if the carotid sinuses are ligated. With normal pressure, excess of O_2 causes a diminution of the respiration. Neither effect is produced after section of the spinal nerve roots Th 1—3. P. C. W.

Method for simultaneous recording of focal cerebral blood flow, p_H, electrical activity, and blood pressure. H. Jasper and A. Cipriani (Amer.

J. Physiol., 1940, **128**, 488—492).—A simple method of adapting standard condenser-coupled amplifiers and ink-writing recorders to the simultaneous measurement of a variety of physiological variables is described. D.c. voltage changes of the order of 5 μv. are clearly indicated from a quiet base line. There is no drift in the recording system and the type of record obtained is particularly suited to experiments where measurements are made above and below an adjustable zero level. The val. of the method is shown in experiments on the exposed cortex of cats under dial anæsthesia. M. W. G.

Function of pericardium. F. A. Nelemans (Arch. néerland. Physiol., 1939, **24**, 337—390).—The pericardium of dogs and cats contains several layers of fine collagen interconnected fibres; elastic fibres run parallel to them. During diastole, the heart fills the pericardial sac completely. The pericardium has elastic and plastic properties. A. S.

Circulatory failure of capillary origin. V. H. Moon (J. Amer. Med. Assoc., 1940, **114**, 1312—1318). —A review. C. A. K.

Reflex cardiac acceleration and liberation of sympathomimetic substances in unanæsthetised dogs during acetylcholine hypotension. W. B. Youmans, K. W. Aumann, H. F. Hanley, and F. Wynia (Amer. J. Physiol., 1940, **128**, 467—474).—Intravenous injection of acetylcholine (0·03—0·30 mg. per kg.) in intact dogs causes a sharp fall in blood pressure; during this fall the innervated heart is reflexly accelerated and reaches in a few sec. a rate 70 to 300% higher than basal. The rate of the denervated heart increases in 13 sec. after the acetylcholine injection; this acceleration is caused by adrenaline which is reflexely liberated from the adrenal medulla during the low blood pressure. M. W. G.

Effect of pineal extracts on vascular system in frogs. W. Bergmann (Arch. néerland. Physiol., 1939, **24**, 391—397).—Aq. and acetone–ether and alcohol extracts of ox pineal glands annul the vasoconstrictor action of adrenaline on the Trendelenburg frog prep. The active substance is destroyed by heating to 90°. The extracts increase the force of contraction of the perfused frog's heart. A. S.

Effects of cigarette smoking and deep breathing on peripheral vascular system. M. G. Mulinos and I. Shulman (Amer. J. med. Sci., 1940, **199**, 708—719).—Deep breathing alone can account for the greater part of the decreased blood inflow rate, the decrease in vol. and in skin temp. of the hand resulting from the inhalation of cigarette smoke. The subjects who did not inhale cigarette smoke showed a greater vascular response of the hand from 10 deep breaths than from the puffing, and a smaller response than those who inhaled the cigarette smoke. Inhaling the smoke from denicotinised cigarettes resulted in vasoconstriction as great as and occasionally greater than the inhaling of the smoke from a standard brand cigarette. The degree of response of the peripheral vascular system varies markedly among individuals and in the same subject from day to day. C. J. C. B.

Influence of season on severity of diabetes and its [arterio-]sclerotic complications. L. B. Owens and C. A. Mills (Amer. J. med. Sci., 1940, **199**, 705—708).—The highly significant winter increase in admission of diabetic patients whose diabetes is complicated by vascular troubles is due to the effect of the winter season on the vascular complications and not to its effect on the diabetic state. C. J. C. B.

Regulation of circulation in skin and muscles of lower extremities. M. Friedlander, S. Silbert, and W. Bierman (Amer. J. med. Sci., 1940, **199**, 657—668).—7 different methods were employed to alter the circulation in the lower extremities. In all but one of them, changes in the circulation occurred in the skin with opposite or no changes in the muscles. These observations indicate that the circulatory response to therapeutic procedures is not necessarily similar in the superficial and deep structures. Since sympathetic paralysis fails to increase the circulation of the muscles, the use of ganglionectomy for the treatment of intermittent claudication has no physiological basis. Of all the methods studied, the use of intravenous injections of hypertonic salt solution is unique in its ability to increase the circulation in both the skin and muscles. C. J. C. B.

Experimental infectious angiitis. M. C. Winternitz and P. M. LeCompte (Amer. J. Path., 1940, **16**, 1—12).—Various bacteria were introduced under aseptic technique into the adventitial tissue (more rarely on a thread) into the lumen or into a doubly ligated stretch of femoral, jugular, and carotid vessels of goats. By varying the virulence of the organism and the duration of the experiment, lesions of both artery and vein were obtained, ranging from acute suppurative and proliferative reactions with thrombosis to old, fibrous intimal plaques. A potential vascular pathway for passage of infection from vein to artery has been demonstrated in both goat and man by injection methods. (12 photomicrographs.) C. J. C. B.

Indirect blood pressure determinations in dogs by Friedman oscillometer. L. L. Waters (Yale J. Biol. Med., 1940, **12**, 441—443).—Pressures in the occlusive cuff system are read directly from a sphygmomanometer scale, and at the same time they are recorded as a curve on the oscillogram opposite the pulse line. F. S.

Gonadotrophic hormone in cerebrospinal fluid in experimental hypertension. A. van Bogaert and F. van Baarle (Compt. rend. Soc. Biol., 1939, **132**, 335—340).—In 3 of 17 dogs rendered hypertensive by section of the sino-aortic nerves, gonadotrophic hormone was demonstrated in the c.s.f. during the first 2—3 months after the operation, and then gradually diminished. P. C. W.

Pressor effect of kidney extracts of intact and partially nephrectomised rats. J. R. Beckwith and A. Chanutin (Amer. J. Physiol., 1940, **128**, 562—564).—Saline extracts of the kidney remnant of hypertensive, partly nephrectomised rats produced little or no pressor effect when injected into normal rats. This is in marked contrast to the

consistent and striking pressor effect obtained with extracts of normal rat kidneys. M. W. G.

Relation of renin to adrenal gland. B. Friedman, E. Somkin, and E. Oppenheimer (Amer. J. Physiol., 1940, **128**, 481—487).—Adrenalectomy lowered the sensitivity of dogs to renin but did not reduce the concn. within the kidneys. Administration of adrenal cortex extract restored the normal response to renin. The concn. of renin in the kidneys of cats was not reduced by adrenalectomy. The loss of sensitivity after adrenalectomy is sp. for renin since ability to respond to other pressor substances is well maintained. M. W. G.

Pharmacological reactions of circulatory system in animals in avitaminosis-B_1. L. de Soldati (Rev. Soc. argent. Biol., 1939, **15**, 438—462).—In vitamin-B_1-deficient dogs and rats adrenaline injected intravenously produced greater hypertension than in normal controls. Sensitiveness to acetylcholine was not altered. Atropine did not modify the bradycardia of avitaminotic rats; in dogs it produced no effect or lowered the heart rate. Pitressin produced only a slight bradycardia in dogs and rats in avitaminosis, but considerably reduced the heart rate in normal controls. The vagal threshold was not modified by avitaminosis in dogs. These changes in response to drugs are attributed to modifications in the metabolism of the cardiac muscle fibres and to vascular changes, but not to alterations in the innervation of the heart. J. T. L.

Blood pressure-raising substance in the blood of ischæmic kidneys. E. Braun Menéndez, J. C. Fasciolo, L. F. Leloir, and J. M. Muñoz (Rev. Soc. argent. Biol., 1939, **15**, 420).—A blood pressure-raising substance ("hypertensin") extracted from the blood of ischæmic kidneys was sol. in 75% acetone and in glacial acetic acid, insol. in ether and amyl alcohol, very resistant to acid hydrolysis, and could be dialysed. The same substance was obtained by incubating "renin" with normal serum, or the pseudoglobulins of the serum. Injected intravenously into dogs it raised the blood pressure; its activity which was not modified by Fourneau 933. This substance is therefore not "renin," pitressin, urohypertensin, adrenaline, or tyramine. "Renin" seems to be an enzyme of the papain type, the substratum being the pseudoglobulins and "hypertensin" the product. J. T. L.

Essential hypertension: comparison of hypertensive and non-hypertensive phases following coronary thrombosis. H. Gross and H. Engelberg (Amer. J. med. Sci., 1940, **199**, 621—628).—100 autopsied cases of hypertension and severe coronary artery disease were studied. 15 had hypertension persisting up to the final closure; 7 had low blood pressure for several months prior to the closure. Analysis of the course of blood pressure subsequent to acute coronary occlusion was made. 18 cases had persistent hypertension (after recovery from the initial drop). 12 had permanently low blood pressure and in 10 the pressure varied. The same variations in the course of hypertension occurred when no acute occlusion could be diagnosed clinically with certainty. C. J. C. B.

Changes in arterial pressure after bilateral complete or partial ureteral occlusion. R. S. Megibow, L. Friedberg, S. Rodbard, and L. N. Katz (Proc. Soc. Exp. Biol. Med., 1940, **43**, 245—248).—Complete occlusion was followed by a rise to hypertensive levels in 6 out of 7 dogs. Partial occlusion caused a rise in blood pressure lasting for several days and usually returning to normal. V. J. W.

Effect of paredrine on venous system. A. Iglauer and M. D. Altschule (J. clin. Invest., 1940, **19**, 503—514).—Oral, intramuscular, or intravenous injection of paredrine produces a generalised increase of venous pressure in normal man. Evidence is presented that this increase is due to active constriction of the veins produced by local stimulation. Venous constriction is not a factor in the production of arterial hypertension by paredrine. C. J. C. B.

(vii) RESPIRATION AND BLOOD GASES.

Mechanical respirator in poliomyelitis. J. M. Wilson (J. Pediat., 1940, **16**, 462—467).—A review. C. J. C. B.

Differential volumeter for micro-respiration measurements. K. V. Thimann and B. Commoner (J. Gen. Physiol., 1940, **23**, 333—341).—A micro-respirometer on the differential volumeter principle is described. It is of high sensitivity, a drop movement of 1·0 mm. indicating a vol. change of 0·06 cu. mm. The application of the instrument is exemplified. D. M. N.

Neurological sequelæ of paranatal asphyxia. F. Schreiber (J. Pediat., 1940, **16**, 297—309).—A review. The term paranatal was coined to designate the entire period of fœtal life, the period of birth, and the neonatal period within which the results of occurrences during the first 2 periods may become manifest. C. J. C. B.

Activity patterns of respiratory neurones and muscles. R. Gesell, C. S. Magee, and J. W. Bricker (Amer. J. Physiol., 1940, **128**, 615—628).—In the dog there are 3 main types of respiratory discharges: the slowly augmenting type in which activity builds up slowly and subsides abruptly; the rapidly augmenting type in which activity builds up suddenly and subsides slowly; and the steady state type in which activity is periodically maintained at a const. level. Inspiratory potentials are of the slowly augmenting type; expiratory potentials are of the rapidly augmenting and steady state types. This relation between the phase of respiration and discharge pattern is found at all points along the respiratory arc from respiratory muscles through the central nervous system and back along the sensory nerves. M. W. G.

Parasympathomimetic drugs and intrapleural pressure. J. Troisier, M. Bariéty, and D. Kohler (Compt. rend. Soc. Biol., 1939, **132**, 255—259).—Eserine, acetylcholine, and pilocarpine in high dosage in the chloralosed dog produce a diminution of intrapleural pressure. Small doses cause an increase. P. C. W.

Ætiology of idiopathic pneumothorax. H. J. Lorge (Amer. J. med. Sci., 1940, **199**, 635—641).—The primary cause of the idiopathic pneumothorax is to be sought in a constitutional inferiority of the pleural structure. C. J. C. B.

(viii) MUSCLE.

Effect of age and diet on electrolyte changes in rat muscle during stimulation. L. A. Heppel (Amer. J. Physiol., 1940, **128**, 440—448).—The loss of K on stimulation of rat muscles is progressively greater as the duration of contraction is increased; after 30 min. there is no further change for another ½ hr. The gains in water and Cl′ are max. after 5 min. stimulation. There is a sharp drop in the amount of Cl′ gained after isometric stimulation for 1 hr. Young rats (6 weeks) lose more K than adults. Feeding diets low in K or poisoning with monoiodoacetic acid has little or no effect on K changes during stimulation. M. W. G.

Diffusion of radioactive sodium into muscles of potassium-deprived rats. L. Heppel (Amer. J. Physiol., 1940, **128**, 449—454).—The penetration of Na into the muscles of K-deprived rats was studied by means of the artificially prepared radioactive Na isotope. Both the extra- and intra-cellular fractions of the muscle-Na exchanged markedly with the Na in the plasma. K content in spleen, kidney, and heart was decreased in K-deprived rats; in skeletal muscle and serum there was a drop of 50%. M. W. G.

Anaërobic loss of potassium from frog muscle. R. B. Dean (J. Cell. Comp. Physiol., 1940, **15**, 189—193).—Muscles in N_2 lose K at 1% per hr., and, after 1 hr. in iodoacetate solution, rigor occurs with loss of 90% of K. In O_2, loss of K is negligible and rigor occurs after 4 hr. V. J. W.

Distribution of water and electrolytes in skeletal muscle of dolphin (*Tursiops truncatus*). L. Eichelberger, E. M. K. Geiling, and B. J. Vos, jun. (J. Biol. Chem., 1940, **133**, 661—666).—The extra- and intra-cellular phases of fat-free skeletal muscle in the dolphin amount to 8·5 and 91·5±0·8%, respectively; the former is approx. half that occurring in dog skeletal muscle. The percentage of water in the intracellular phase (72±0·5%) is the same as in the dog. Normal vals. are given for water, Cl′, $Na^{\cdot}$, $K^{\cdot}$, $Ca^{\cdot\cdot}$, and $Mg^{\cdot\cdot}$ in the serum and skeletal muscle of lactating and old female dolphins. P. G. M.

Sodium and potassium in frog muscle. H. B. Steinbach (J. Biol. Chem., 1940, **133**, 695—701).—$Na^{\cdot}$ and $K^{\cdot}$ in isolated frog muscle cells are in equilibrium with the ions of external media. A reversible exchange of $Na^{\cdot}$ for $K^{\cdot}$ occurs on treatment with K-free Ringer's solution, as long as the K content does not fall below 50% of the original concn. and the Cl′ content of the muscle remains approx. const. P. G. M.

Kinetics of hydrolysis of muscle-protein by hydrochloric acid. I. A. Smorodincev and V. P. Shigalov (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 581—583).—Tabulated data for the rate of hydrolysis of ox muscle by conc. HCl at 98°, determined by following the liberation of amino-groups by Van Slyke's method, are discussed. J. N. A.

Preparation and mol. wt. of crystalline myoglobin (muscle-hæmoglobin) of horse. J. Roche and H. Vieil (Compt. rend., 1940, **210**, 314—316; cf. Theorell, A., 1934, 431).—An aq. extract (12 hr. at 0°) of macerated striped muscle is 90—92%-saturated with $(NH_4)_2SO_4$ at 20° and filtered, the filtrate being saturated with $(NH_4)_2SO_4$ so that myoglobin crystallises. It is purified by conversion into methæmoglobin and dialysis at 0°. The mol. wt. of the protein (Adair's method) is approx. 16,800. J. L. D.

Effect of muscle tissue on p_H of surrounding medium. G. J. Gorodisskaja and L. Milotvorskaja (Ukrain. Biochem. J., 1939, **14**, 59—68).—The p_H of HCl or NaOH solutions falls or rises after contact (18 hr. at room temp.) with frog or crayfish muscle, according to whether the p_H of the solution was originally greater or less than that of the given muscle. R. T.

Dehydrogenases of trained and fatigued muscle tissues. I. Succinic dehydrogenase. II. α-Glycerophosphate dehydrogenase. O. P. Tschepinoga (Ukrain. Biochem. J., 1939, **14**, 5—14, 15—29).—I. The succinic dehydrogenase activity of rabbit muscle rises as a result of training, and falls after fatiguing work.

II. The α-glycerophosphate dehydrogenase activity of rabbit muscle is raised by training. It is not significantly affected by fatigue. R. T.

Nature of *Q* granules and their rôle in producing contraction striations in striated muscle. T. Feyel (Compt. rend. Soc. Biol., 1939, **132**, 236—238).—Frog striated muscle was fixed by the Dietrich–Parat method and stained with Altmann–Volkonsky stain. Observations were made during rest and contraction. The *Z* striation in the isotropic band was stained blue and the *Q* granules in the anisotropic portion were stained red. During contraction the *Q* granules approximate and coalesce to form the contraction striation. During extension the contraction band lengthens and breaks up into discrete granules again. The granules are lipo-protein in nature. P. C. W.

Liesegang and muscle pressure waves. E. J. Carey (J. Amer. Med. Assoc., 1940, **114**, 753—755).—Liesegang rings produced in micro-capillary tubules are compared with the transverse striæ of skeletal muscle. It is concluded that "transformation of chemical into mechanical energy of muscle motion appears to be an algebraic summation of multiple micromechanical compressional waves of mildly explosive pressure, radiated from physiochemical reactions constrained within the microcapillary muscle fibre or fibril." C. A. K.

Time course of oxygen consumption of stimulated frog's muscle. D. K. Hill (J. Physiol., 1940, **98**, 207—227).—To permit resolution of phases, in the special method described, the metabolic processes are slowed by working at 0°. The O_2 consumption occurs entirely after activity; with a tetanus of less than 20 sec. it is ½ complete in 6 min. and complete in 30 min. The time course of O_2 consump-

tion is the same as that of oxidative delayed heat under the same conditions. It depends on the duration of stimulus; the greater is the duration the more delayed is the oxidative recovery; this fact is apparent only if the duration of tetanus exceeds 20 sec. There is a max. possible rate of O_2 consumption which depends on $[H^{\cdot}]$ but is not determined by the rate of diffusion of O_2. Consistent with this is the action of caffeine on the time course of activity O_2 consumption. By means of NaN_3 the action of cytochrome oxidase may be inhibited to any extent desired and thus the rate of recovery from activity decreased. J. A. C.

Contraction and structure in a muscle of *Metridium senile*, L. P. J. Kipp (Arch. néerland. Physiol., 1939, **24**, 426—475).—The non-stimulated circular muscle of *M. senile* has elastic and plastic properties as shown by deformation following loading and unloading. The plasticity was shown by three phenomena: retardation of the deformation ("checking"), irreversible elongation under influence of the load ("slipping"), and sudden increase in resistance under rapid deformation ("cramming"). The resistance increases when the muscle lifts a heavy wt. ("recruitment"). Various types of contraction are described in detail. A. S.

Ions, drugs, and mammalian unstriated muscle. I. Singh (J. Physiol., 1940, **98**, 155—162).—Compared with frog plain muscle, adaptation in mammalian plain muscle is slow; this enables the latter to function at higher temp. at which the excitability of frog muscle is low, as adaptation in frog as well as mammalian muscle increases with temp. The majority of the substances, anions, cations, and drugs, affect the excitability to a.c. and K in the same direction, but the two excitabilities can be distinguished by the differential effect of $H^{\cdot}$ and $Ca^{\cdot\cdot}$. Mammalian plain muscle is highly sensitive to both electrical and chemical stimulation owing to slow adaptation. Mammalian plain muscle does not exhibit the a.c. off-contracture. Marked changes in excitability are produced by very small concns. of drugs. Contraction is caused by withdrawal of NO_3', CNS', and $NH_4^{\cdot}$. J. A. C.

Effects of growth and atrophy on strength of skeletal muscle. J. C. Knowlton and H. M. Hines (Amer. J. Physiol., 1940, **128**, 521—525).—The method of expressing tension developed by a muscle in terms of unit cross-section of muscle-cell phase (Cl-free material) was used in studies on rats' intact gastrocnemius muscle under conditions of growth, denervation atrophy, fasting atrophy, and atrophy following tenotomy. The major factor in the development and maintenance of the contractile strength of skeletal muscle is the const. stretch to which an intact muscle is subject by virtue of its insertion in and attachment to the skeletal system. This passive stretch is enhanced by the postural and gross-movement reflexes. M. W. G.

Vitamin-*E* in amyotrophic lateral sclerosis. I. S. Wechsler (J. Amer. Med. Assoc., 1940, **114**, 948—950).—Vitamin-*E* was successfully used in the treatment of 2 cases of amyotrophic lateral sclerosis. C. A. K.

Quinine in dystonia musculorum. F. Lemere (J. Amer. Med. Assoc., 1940, **114**, 1068).—Quinine was successfully used in the treatment of a case of dystonia musculorum. C. A. K.

Vitamin-B_6 in pseudohypertrophic muscular dystrophy. W. Antopol and C. E. Schotland (J. Amer. Med. Assoc., 1940, **114**, 1058—1059).—3-Hydroxy-2-methyl-4 : 5-di(hydroxymethyl)pyridine (vitamin-B_6) produced considerable improvement in 6 cases of pseudohypertrophic muscular dystrophy. Doses up to 250 mg. subcutaneously at weekly intervals were given. C. A. K.

Effect of nerve section on development of nutritional muscular dystrophy in young rats. A. M. Pappenheimer and M. Goettsch (Proc. Soc. Exp. Biol. Med., 1940, **43**, 313—316).—Cutting the sciatic nerve before the 18th day of life prevents the gastrocnemius of that side from developing the dystrophy which vitamin-*E* deficiency causes on the other. V. J. W.

(ix) NERVOUS SYSTEM.

Facilitation and difficilitation effected by nerve impulses in peripheral fibres. J. Erlanger and E. A. Blair (J. Neurophysiol., 1940, **3**, 107—127).—At a discontinuity (block) in a nerve fibre created by anode polarisation, a discontinuity that can be graded by varying the strength of the polarising current, it is possible to demonstrate and to gauge the facilitation effected by blocked action potentials and to demonstrate a phenomenon, designated difficilitation, which is probably identical with "extinction." These two effects can probably be attributed to supernormal and subnormal states in the post fibre. The discontinuity may be held to represent an artificial synapse and the results obtained may have a bearing on the happenings at a real synapse. S. Cr.

Schwann cell versus fibroblast as origin of specific nerve sheath tumour. Observations on normal nerve sheaths and neurilemomas *in vitro*. M. R. Murray, A. P. Stout, and C. F. Bradley (Amer. J. Path., 1940, **16**, 41—60).—Evidence obtained by means of tissue culture is offered that the sp. nerve sheath tumour (neurilemoma) is of Schwannian origin. This evidence is based on morphological and physiological similarities between the Schwannian outgrowth from normal and experimental nerves and the outgrowth from spontaneous tumours. It is inferred that Schwann cells can and do condition the formation of collagen without the intervention of fibroblasts, since these tumours, the outgrowth of which is wholly Schwannian, contain considerable collagen. (18 photomicrographs.) C. J. C. B.

Membrane action potentials from the squid giant axon. H. J. Curtis and K. S. Cole (J. Cell. Comp. Physiol., 1940, **15**, 147—157).—A capillary needle electrode is pushed along the axon of the nerve; the p.d. between its tip and the outside of the nerve is 50—80 mv. at the passage of an impulse. V. J. W.

Nervous affections in man and animals (Proc. Roy. Soc. Med., 1940, **33**, 161—172).—G. M. Findlay. Although roughly the same as in man, injuries to the central nervous system in animals show peculiarities in character and degree of reaction. Virus, demyelinating, and psychopathological diseases in animals are compared with their counterparts in man. J. R. M. Innes. Most of the malformations of the nervous system in man have been described in animals with the exception of tuberose sclerosis. Other aspects of animal nervous disease dealt with include pigmentations, atrophy, intracranial tumours, and canine encephalitis. W. J. G.

Epileptiform fits produced by sudden cooling of spinal cord in frog. M. O. de Almeida (Compt. rend. Soc. Biol., 1939, **132**, 233—235).—By spraying the spinal cord of European frogs with ethyl chloride, temp. below 0° are obtained and epileptiform fits always produced after a latent period of 2—6 min. The temp. necessary to produce the attacks is lower than that required by N. American frogs and lower still than that required in S. American frogs. P. C. W.

Cord potentials in spinal shock: (1) single volleys, (2) multiple stimuli, and (3) crossed effects in monkey, *Macaca mulatta*. J. Hughes, G. P. McCouch, and W. B. Stewart (J. Neurophysiol., 1940, **3**, 139—145, 146—150, 151—155).—In cats, dogs, and monkeys, cord potentials and reflex responses have been recorded at intervals after spinal trans-section ranging from a few sec. to 2 months. In experiments with single afferent volleys, spinal shock has been demonstrated at the internuncial level; it is much more severe in the monkey, where there is also evidence of deep and prolonged shock to the motoneurones. Repetitive stimulation gives a series of internuncial potentials in which little positivity is added to that incident to the initial volley. In the spinal monkey the contralateral component of the intermediary cord potential is scarcely detectable in the acute prep., is small at 12 days after trans-section, but has attained the magnitude of the ipselateral component within 2 months. Further experiments with chronically hemisected, acutely trans-sected animals were carried out. There is evidence that the cord potentials are of internuncial origin and there may be a locus of inhibition downstream, presumably at the cells of the anterior horn. S. Cr.

Relayed impulses in ascending branches of dorsal root fibres. J. B. Hursh (J. Neurophysiol., 1940, **3**, 166—174).—It was shown in cats under dial that when a discharge of impulses evoked by a reflex passes over dorsal root fibres to the periphery, the impulses are also conducted along the ascending branches of these fibres in the dorsal columns of the spinal cord towards the nuclei in the medulla. S. Cr.

Diaphragmatic sensation. J. C. Hinsey and R. A. Phillips (J. Neurophysiol., 1940, **3**, 175—181).—In the cat and dog nociceptive sensibility produced by stimulation of the central portion of the diaphragmatic peritoneum depends on afferent conduction in sensory fibres in the phrenic nerve; it is independent of afferent fibres in the vagus and intercostal nerves and of efferent sympathetic pathways. An observation on man in which the referred pain in the shoulder tip was investigated is also reported. S. Cr.

Some reflexes of dog. G. van Rijnberk and J. Ten Cate (Arch. néerland. Physiol., 1939, **24**, 83—122).—The reflexogenic zone for the preputial reflex is part of the abdomen and the inner aspects of the thighs. The reflex protects the glans from nocuous stimuli affecting the surrounding skin. The reflex is obtained in the decerebrate animal and shows after-discharge. Stimulating the area behind the reflexogenic zone causes a relaxation of the prepuce. A cutaneo-muscular abdominal reflex was observed in one dog only. This reflex is regularly obtained in spinal animals and from isolated spinal cord segments. In normal and spinal animals a musculo-muscular abdominal reflex is present. The cremasteric reflex is well developed in the dog; it is more easily obtained in the spinal animal, but is not found constantly; sometimes the reflex is bilateral or crossed. P. W. N.

Physiology of [cutaneous] localisation. C. Gautier (Compt. rend., 1940, **210**, 416—418).—The scratch reflex is elicited in the decerebrate frog when acetic acid is placed on, but not under, the skin. The skin sensory end-organs thus take part in this reflex. J. L. D.

Nerve impulses from cat's vibrissæ. O. Fitzgerald (J. Physiol., 1940, **98**, 163—178).—The nerve endings are stimulated most effectively by movement of the vibrissæ (tactile hairs of face) in particular directions. The endings are slowly adapting, the frequency of the discharge varying with the extent and rate of development of the main movement. Spontaneous discharges from the endings occur. In a nerve fibre giving a spontaneous discharge the length of the silent period following stimulation is related to the total no. of impulses discharged during stimulation, rather than to either the initial or final discharge frequency. After a silent period the spontaneous discharge returns gradually to its former val. $Na^{\cdot}$ in large amounts leads to spontaneous discharges and an increased initial discharge; $K^{\cdot}$ in much smaller amounts has a similar effect. $Ca^{\cdot\cdot}$ inhibits spontaneous discharges from an ending, decreases the initial response on stimulation, and quickens the rate of adaptation. J. A. C.

Movements of dogs after complete trans-section of spinal cord. J. Ten Cate (Arch. néerland. Physiol., 1939, **24**, 476—485).—Dogs with the spinal cord trans-sected at the level of Th 12 regain some control of the hind parts by contraction of the spinal erector muscles of the fore part; the dogs may be able to stand up, especially if the extensor muscles of the hind limbs develop tone. A. S.

Tail reactions in rats. A. J. Mijerson (Arch. néerland. Physiol., 1939, **24**, 409—413).—Rats in the supine position show certain movements of the tail which persist after double labyrinthectomy; they disappear following immobilisation of the neck. A. S.

Tail reflexes in dogs. G. van Rijnberk and J. Ten Cate (Arch. néerland. Physiol., 1939, **24**, 311—

336).—Muscles and nerves of the dog's tail are described in detail. Reflex contractions of the tail muscles can be obtained by stimulating the skin of the caudal part of the tail; they are controlled by centres in the coccygeal parts of the spinal cord. The proximal part of the tail is controlled by segments S_{2-3}. The dermatome of S_1 does not reach the tail. Withdrawal movements are particularly easy to elicit from distal parts of the tail. Strong stimuli produce a downward movement of the tail, to cover the anus and genital organs. A. S.

Possibility of differential section of spinothalamic tract. O. R. Hyndman and C. van Epps (Arch. Surg., Chicago, 1939, **38**, 1036—1053).—A clinical and histological study of 6 cases of chordotomy under local anæsthesia for relief of pain. A variety of sections in the chord were made and cutaneous sensibility was tested during operation. The spinothalamic tract fibres for pain and temp. extend from midway between the dentate ligament and the anterior roots to midway between the anterior roots and the anterior median fissure. The fibres from the lower parts of the body lie anterior to those from the upper part. It is possible, by differential section, to eliminate sensations of pain and temp. in the chest and retain these in the lower extremities. (4 photomicrographs.) F. S.

Ventricular dilatation in spina bifida. B. Shapiro and V. G. Tosti (J. Pediat., 1940, **16**, 318—325).—6 such consecutive cases are described. C. J. C. B.

Origin of perineural fibroblastoma. I. M. Tarlov (Amer. J. Path., 1940, **16**, 33—41).—Direct staining evidence by a technique that brings out normal and proliferating Schwann cells excludes the Schwann cell as the type cell of the common encapsulated tumour of peripheral nerves. The type cell of these tumours presents the morphological characteristics of the fibroblast. C. J. C. B.

Wernicke's disease. L. Alexander (Amer. J. Path., 1940, **16**, 61—69).—The lesions of Wernicke's hæmorrhagic polioencephalitis occurring in man and a disease produced experimentally in vitamin-B_1-deficient pigeons fed ample supplies of other vitamins are identical in their topographical distribution and in their morphological and histological characteristics. (27 photomicrographs.) C. J. C. B.

Preganglionic nerve regeneration in completely sympathectomised cats. H. Haimovici and R. Hodes (Amer. J. Physiol., 1940, **128**, 463—466).—Cats sympathectomised from the stellate to the pelvic ganglia were studied. Stimulation of the cervical sympathetic trunk caused dilatation of the pupil and retraction of the nictitating membrane on one or both sides. After double vagotomy, afferent nerve stimulation caused no cardiac acceleration in 4 out of 7 animals; in the remaining 3 animals the heart rate increased. Emphasis is laid on the necessity of controlling for sympathetic regrowth in long-term experiments. To keep regeneration at a min. the greatest possible preganglionic destruction should be practised. M. W. G.

Relation of labyrinthectomy to sensitisation of nictitating membrane in cat. L. W. Jarcho and W. S. Root (Amer. J. Physiol., 1940, **128**, 526—531).—Unilateral destruction of the labyrinth in cats produced homolateral protrusion of the nictitating membrane (n.m.) and constriction of the pupil. After labyrinthectomy the homolateral n.m. was sensitised to 0·02 mg. of adrenaline intravenously. The degree of sensitisation was comparable with that caused by the removal of the superior cervical ganglion. Miosis and protrusion of the n.m. were not present after section of the 8th cranial nerve. Division of the 8th cranial nerve produced no sensitisation of the n.m. M. W. G.

Effect of drugs on galvanic skin reflex. K. W. Essen and K. Rogge (Arch. exp. Path. Pharm., 1940, **194**, 527—538).—In patients with autonomic neuroses the psychogalvanic reflex is restored to normal size and duration by strychnine or Ca; luminal prolongs the reflex. In experiments on frogs the reflex still occurs in hind limbs separated from the trunk by a ligature which does not include the nerve. Strychnine still prolongs the reflex under these conditions. H. Bl.

Effect of variation of blood pressure on autonomic nervous system. E. Gellhorn, C. W. Darrow, and L. Yesinick (Proc. Soc. Exp. Biol. Med., 1940, **43**, 236—240).—In the anæsthetised cat (pentothal) increase of blood pressure by adrenaline or infusion of Ringer's solution causes constriction of the pupil and relaxation of nictitating membrane. Fall in blood pressure (amyl nitrite) causes dilatation of the pupil in both normal and sympathectomised animals. V. J. W.

The hypothalamus and central levels of autonomic function (Res. Publ. Assoc. nerv. ment. Dis., 1940, **20**, 1—980).—The authors and details of papers in this symposium are as follows. J. F. Fulton, Historical résumé, xiii—xvi. Reprint of A. Frohlich's paper "Ein Fall von Tumor der Hypophysis cerebri ohne Akromegalie (1901), xvi—xxx. D. McK. Rioch, G. R. Wislocki, J. L. O'Leary, J. C. Hinsey, and D. Sheehan, Précis of preoptic, hypothalamic, and hypophysial terminology with atlas, 3—30. J. W. Papez, Embryological development of the hypothalamic area in mammals, 31—51. E. C. Crosby and R. T. Woodburne, Comparative anatomy of the preoptic area and the hypothalamus, 52—169. E. Scharrer and B. Scharrer, Secretory cells within the hypothalamus, 170—194. W. R. Ingram, Nuclear organisation and chief connexions of the primate hypothalamus, 195—244. A. T. Rasmussen, Effects of hypophysectomy and hypophysial stalk resection on the hypothalamic nuclei of animals and man, 245—269. H. W. Magoun, Descending connexions from the hypothalamus, 270—285. K. H. Finley, Angio-architecture of the hypothalamus and its peculiarities, 286—309. E. H. Craigie, Measurements of vascularity in some hypothalamic nuclei of the albino rat, 310—322. D. W. Bronk, R. F. Pitts, and M. G. Larrabee, Rôle of hypothalamus in cardiovascular regulation, 323—341. S. W. Ranson, Regulation of body temperature, 342—399. A. E. Walker, Hypothalamus and

pilomotor regulation, 400—415. K. Hare, Water metabolism: neurogenic factors, 416—435. I. Gersh, Water metabolism: endocrine factors, 436—448. H. G. Barbour, Hypothalamic control of water movement in response to environmental temperature, 449—485. C. N. H. Long, Evidence for and against control of carbohydrate metabolism by the hypothalamus, 486—500. E. F. Gildea and E. B. Man, Hypothalamus and fat metabolism, 501—524. C. McK. Brooks, Relation of the hypothalamus to the gonadotrophic functions of the hypophysis, 525—550. P. Bard, Hypothalamus and sexual behaviour, 551—579. U. U. Uotila, Hypothalamic control of anterior pituitary function, 580—588. D. Sheehan, Hypothalamus and gastro-intestinal regulation, 589—616. O. Langworthy, Influence of suprasegmental levels on vesical activity, 617—623. J. H. Masserman, Effects of analeptic drugs on the hypothalamus of the cat, 624—634. F. Harrison, Hypothalamus and sleep, 635—656. J. C. Hinsey, Hypothalamus and somatic responses, 657—685. A. R. Vonderake, Changes in the hypothalamus in organic disease, 689—712. P. Bailey, Tumours involving the hypothalamus and their clinical manifestations, 713—724. B. J. Alpers, Personality and emotional disorders associated with hypothalamic lesions, 725—752. L. O. Morgan, Cell changes in hypothalamus in the major psychoses, 753—773. C. Davison, Disturbances of temperature regulation in man, 774—823. H. M. Zimmerman, Temperature disturbances and the hypothalamus, 824—840. W. P. Van Wagenen, Surgery of the hypothalamic region, 841—853. J. C. White, Autonomic discharge from stimulation of the hypothalamus in man, 854—863. F. Kennedy, Medical syndromes of the hypothalamus, 864—874.

Attempt to produce sleep by diencephalic stimulation. F. Harrison (J. Neurophysiol., 1940, **3**, 156—165).—Destructive and stimulating electric currents were applied to the hypothalamus, thalamus, junction of the hypothalamus and thalamus, head of the caudate nucleus, septum pellucidum, and region of the anterior commissure in waking cats. Somnolence was produced by destructive currents in the hypothalamic and thalamic areas but not in the area of the caudate nucleus or by the action of stimulating currents. There was no evidence that sleep is a phenomenon of active inhibition. S. Cr.

Sleep induced by subthalamic lesions with hypothalamus intact. H. R. Miller and E. A. Spiegel (Proc. Soc. Exp. Biol. Med., 1940, **43**, 300—302).—Sleep for 4 days followed by catatonia was caused in cats by bilateral punctures which passed through the posterior part of the thalamus immediately in front of the ganglion habenulæ and corpora mammillaria, and ended dorsally to the inner end of the cerebral peduncle. V. J. W.

Significance of finger reflex. R. Rosner (Schweiz. med. Wschr., 1940, **70**, 210—214).—Trömner's finger flexion reflex is a sign of lesion to the pyramidal tract, analogous to the Rossolimo toe reflex. A. S.

Phasic response to cortical stimulation. C. G. Smith, F. A. Mettler, and E. A. Culler (J. Neurophysiol., 1940, **3**, 182—187).—In cats under light ether anæsthesia cortical stimulation may produce pendular movements called phasic responses. These responses are dependent on inhibitory proprioceptive impulses set up in the contracting muscles and conveyed to the cord by the dorsal roots. The central part of the mechanism involves an uncrossed ascending path which corresponds in position with the ventral spinocerebellar tract. The complete mechanism would appear to include the cerebellum. S. Cr.

Human cortical area producing repetitive phenomena when stimulated. R. M. Brickner (J. Neurophysiol., 1940, **3**, 128—130).—A place was found on the left mesial cortex of area 6, in a patient suffering from grand and petit mal, which on electrical stimulation gave repetition of speech. S. Cr.

Effects of eserine, acetylcholine, and atropine on the electrocorticogram. F. R. Miller, G. W. Stavraky, and G. A. Woonton (J. Neurophysiol., 1940, **3**, 131—138).—Eserine and acetylcholine applied to the cortex of the cat and rabbit cause a reduction in amplitude of the slow waves and of the large fast waves, indicating cortical stimulation. If applied after atropine they fail to produce the typical changes. They are believed to stimulate or facilitate synapses and eserine is also a synaptic sensitiser for acetylcholine. S. Cr.

Sensory cortex (cat) and double representation of feet. E. D. Adrian (J. Physiol., 1940, **98**, 16—18P).—The main region is in the posterior sigmoid gyrus but there is a second region for the feet in the ectosylvian gyrus; the afferent impulses reaching the cortex were recorded in cats deeply anæsthetised with dial or chloralose. J. A. C.

Drugs in epilepsy. W. G. Lennox (J. Amer. Med. Assoc., 1940, **114**, 1347—1354).—A review. C. A. K.

Relative changes of blood- and cerebrospinal fluid-sugar in schizophrenic patients treated with insulin. T. H. Suh, Y. C. Chang, and I. Chang (Chinese Med. J., 1939, **56**, 232—240).—Coma doses of insulin produce a fall in the c.s.f.-sugar which is smaller than, and lags behind, that of the blood. This fall in the c.s.f.-sugar tends to continue for 1—3 hr. after administration of glucose despite a prompt rise in the blood-sugar. W. J. G.

Electrically induced convulsions (Proc. Roy. Soc. Med., 1940, **33**, 261—267).—W. G. Walter. Using large electrodes on the anterior extremity of the frontal lobes, a 50-cycle current of a potential depending on the resistance of the patient is applied for 0·2—0·1 sec. The resulting convulsion, which resembles a cardiazol fit or a brief spontaneous seizure, lasts 45 sec. The stimulus sets up in the cortex, or at a lower level, a process similar to that observed in the resting electroencephalogram of idiopathic epileptics, which can throw the effector system into a state of rapidly alternating rest and max. activity. G. W. T. H. Fleming. In electrically induced convulsions the shock is followed by an immediate

"start" or convulsive movement of all extremities, facial and spinal musculature; tonic and clonic discharges than become evident. W. J. G.

Clinical applications of electrically induced convulsions. W. H. Shepley and J. S. McGregor (Proc. Roy. Soc. Med., 1940, **33**, 267—273).—As compared with other methods, electrically induced convulsion therapy has distinct advantages: it is well tolerated, has no disagreeable sequelæ, and may be applied for prolonged periods. W. J. G.

Action of vitamin-B_1 in migraine. P. Bandler (Schweiz. med. Wschr., 1940, **70**, 190—192).—Patients suffering from severe migrane were successfully treated with large doses of vitamin-B_1. A. S.

Injuries to brain and their sequelæ. J. G. Danson (Proc. Roy. Soc. Med., 1939, **33**, 51—64). W. J. G.

Myokinetic psycho-diagnosis: new technique of exploring the conative trends of personality. E. Mira (Proc. Roy. Soc. Med., 1940, **33**, 173—194).—Myokinetic diagnosis is based on the involuntary expressions of the predominant attitude of reaction, evaluated as a function of the shiftings occurring during blind execution of linear movements in space. W. J. G.

Effect of exercise, training, and fatigue on hexose phosphate content of brain. C. Tscherevskaja (Ukrain. Biochem. J., 1939, **14**, 113—124).—The hexose phosphate content of the brain of untrained guinea-pigs is unaffected by fatiguing muscular exercise in the spring, but is lowered in the autumn; in the case of trained animals the reverse is the case. In general, training is followed by a rise in hexose phosphate content. R. T.

Protein metabolism of brain following trauma. I. Chemical topography of the brain. II. Effect of removing the visual and olfactory organs. I. L. Benkovitsch (Ukrain. Biochem. J., 1939, **14**, 85—95, 97—112).—I. The mean % protein- + lipin-N content of the left hemisphere of the brain of dogs is greater than that of the right hemisphere; the reverse is the case for non-protein-N. This applies both to the hemispheres as a whole and to the respective motor, olfactory, and visual centres, white matter, olfactory bulbs, and optic tubers, analysed separately. II. The non-protein-N/total N ratio falls 5 days after removal of the eyeballs in the motor, visual, and olfactory centres, and in the optic tuber and white matter; it rises in the olfactory bulb. Cauterisation of the nasal mucosa leads to a fall in the ratio in all cases, to a greater degree in the right than in the left hemisphere. R. T.

Effect of concussion on nitrogenous constituents of brain tissue. O. N. Barmina (Ukrain. Biochem. J., 1939, **14**, 69—83).—The non-protein-N content of the grey matter of the cerebral cortex rises after concussion of the skull of rabbits; that of the caudal body and of the white matter falls. Total N falls in all three tissues. Restitution is slow, not being complete until 30 or more days after the trauma, and is slower in the grey than in the white matter. R. T.

Biochemistry of brain tissue. R. A. Peters (Chem. and Ind., 1940, 373—378).—A lecture. J. H. B.

Monoiodoacetic acid, subarachnoid space, and absorption of water from glucose solutions. T. H. B. Bedford (J. Physiol., 1940, **98**, 185—189).—The effect of the acid on the absorption of water from isotonic and twice-isotonic glucose solutions in the subarachnoid space (dog; ether) is studied. The rates of absorption after 1½ hr. at pressures of 300 and 400 mm. normal saline solution are the same as those observed in animals which have not previously been poisoned with the acid. Glucose can be absorbed from the subarachnoid space by a simple physical process. J. A. C.

(x) SENSE ORGANS.

Phenogenetic analysis of the eye colour in *Drosophila melanogaster*. M. E. Neuhaus (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 85—88).—Larvæ of w^e or w flies contain an intracellular substance which can inactivate the cn^+ substance in pulped larvæ and pupæ. The new substance is heat-stable and is thus not the same as the destructive enzymes described by Thimann and Beadle. It is not excreted by the larvæ although cn^+ substance is. C. H. W.

Kynurenine, an agent which causes eye pigment formation in insects. A. Butenandt, W. Weidel, and E. Becker (Naturwiss., 1940, **28**, 63—64).—When 1% aq. kynurenine (a metabolic product of *l*-tryptophan administered to rabbits) is injected into *Ephestia kühniella* pupæ of the α breed the normal bright orange-red colour of the eyes is changed to deep coffee-brown. Similar results are obtained with *v bw Drosophila melanogaster* pupæ or when kynurenine is fed to larvæ. The active eye pigment-forming substance from *Calliphora erythrocephala* is thermostable at 100° and very stable towards dil. acid. It can be dialysed, has an isoelectric point at p_H 6, and is very similar to the active pigment-forming substance from *D. melanogaster* pupæ. The substance is not stable to alkali, and O_2 causes a slow decrease in activity. An identical active substance is formed by *Corynebacterium mediolanum* when grown on agar media or in yeast water at 37° under aërobic conditions in presence of tryptophan. J. N. A.

Eye of *Nyctecebus tardigrada*. S. R. Detwiler (Anat. Rec., 1940, **76**, 295—301).—The eye of this lemur is typically adapted to nocturnal vision. The cornea is strongly curved and occupies more than one third of the perimeter of the bulb. The lens and ciliary muscle are very large. The retina is composed entirely of rods; the pigment epithelium contains pigment only at the periphery. There is no differentiated area centralis retinæ. W. T. A.

Topographic study of orbit and bulbus oculi during part of growth period. W. T. Peyton (Anat. Rec., 1940, **76**, 343—355).—During the period from the 7th month of fœtal life to maturity the orbit doubles in vertical diameter and moves forward and upward relative to the first cervical vertebra. The

sagittal diameter of the eyeball increases by 6·9 mm., the vertical diameter by 6·7 mm. The silhouette area of the eyeball decreases relative to that of the cerebrum. The eyeball fills the orbital cavity more completely at birth than at maturity and during growth the increased separation from the floor is greater than that from the roof. W. T. A.

Ocular complications of irradiation (radium and *X*-ray). A. Dollfuss (Ann. Oculist., Paris, 1940, **177**, 16—41).—The immediate and late results of irradiation on every part of the eyeball and its adnexa are described. The commonest complications are interstitial keratitis, aseptic necrosis of the cornea, and cataract. The latent period of sequelæ may be several years. Ocular accidents of irradiation in the neighbourhood of the orbit are relatively frequent and not always avoidable. It is dangerous to use irradiation in inflammatory lesions of the eye, and divided dosage should be avoided. (B.) W. T. A.

Vortex-shaped dystrophy of cornea. F. J. Bloch (Arch. Ophthal., N.Y., 1940, **23**, 825—830).—A case is described in which a deposit of yellow-brown granules, probably melanin, situated in the deepest layer of the corneal epithelium, formed opaque bands proceeding from the periphery to the centre in a whirlpool arrangement. W. T. A.

Innervation of pupil of dog. I. Extirpation of cervical sympathetic ganglion of one side. II. Destruction of ciliary ganglion of one side. Z. Ryû (Tohoku J. exp. Med., 1939—1940, **37**, 276—316, 530—540).—I. The superior cervical sympathetic ganglion of one side was removed from 11 dogs. After operation the pupil constricted on an average by 1·8 mm. from a pre-operative average diameter of 5·4 mm. under an illumination of 35 lux. The opposite (control) pupil dilated slightly. Adrenaline mydriasis appeared in the operated pupil in 2 days, reached a max. in 3 weeks, and diminished after 10 months. Cocaine had almost no effect on the operated pupil. The constriction, measured by change in pupil diameter, produced by pilocarpine, eserine, and acetylcholine was greater on the control side, although the constricted pupil was usually smaller on the operated side. When the operated pupil was dilated with adrenaline to the same size as the control, acetylcholine had a greater constricting effect on the operated than on the control pupil. There was no indication of the recovery of sympathetic function in the pupil 12 months after operation. The relation between pupil diameter and the logarithm of the luminosity was linear in both operated and control eyes. The slope of the line was greater with increased initial size of the pupil; this fully accounted for the greater total change in response to light in the control than in the operated eye. There was thus no evidence that inhibition of the sympathetic innervation is concerned in the light reflex.

II. The ciliary ganglion of one side was destroyed in 4 dogs. Immediately after operation the affected pupil dilated to its max. and the light reflex disappeared. The opposite (control) pupil contracted slightly. The action of pilocarpine on the operated pupil reappeared after 2—4 days, that of acetylcholine after 4—26 days, that of eserine after 17—51 days. The operated pupil, when constricted by pilocarpine, was maximally dilated by cocaine or atropine; adrenaline had no effect, showing that the sympathetic innervation of the pupil was intact. The operated pupil was constricted by ergotamine. Stimulation of the central end of the cut sciatic nerve, after either one superior cervical ganglion or one ciliary ganglion had been removed, caused dilatation of both pupils but in each case less on the operated than on the control side. It is concluded that the tonic action of the cervical sympathetic on the dilator serves to increase the amplitude of movement of the sphincter. The sphincter muscle is much stronger than the dilator. There is a possibility of a double innervation of the sphincter. W. T. A

Sympathetic action in accommodation for far vision. M. W. Morgan, jun., J. M. D. Olmsted, and W. G. Watrous (Amer. J. Physiol., 1940, **128**, 588—591).—Stimulation of the sympathetic nerve or superior cervical sympathetic ganglion in the rabbit, cat, and dog increases hypermetropia whether the eye is atropinised, the IIIrd nerve is intact or cut, or whether pressure effects on the eyeball are eliminated by cutting the majority of the extrinsic muscles. Since the sympathetic is able to produce hypermetropia in the absence of the oculomotor nerve and the oculomotor nerve to produce myopia in the absence of the superior cervical ganglion, the principle of reciprocal innervation is presumably operating in the processes concerned with the accommodation of the lens for far and near vision. M. W. G.

Glutathione in ocular diseases. C. Srikantia, P. R. S. Rao, and T. P. Ron (Proc. Indian Acad. Sci., 1940, **B**, **11**, 155—161).—The blood-glutathione is unaffected by the presence of senile cataract, but high concns. of oxidised and total glutathione are observed in cases of corneal ulcer. E. M. W.

Electrical cataract from industrial current and from lightning. L. Sironi (Rass. ital. Ottal., 1939, **8**, 545—560).—Reports of 3 cases; 2 were caused by contact with high-voltage current and one by lightning. Similar opacities under the anterior capsule were produced in all 3. The effects of electricity in the eye and the relevant literature are discussed. M. C. B.

Cataract and scleroderma. (Rothmund–Werner syndrome.) A. Rubino (Rass. ital. Ottal., 1939, **8**, 527—544).—Report of a case, with discussion of pathogenesis and relation to endocrine cataracts. M. C. B.

Investigation of the elimination of ascorbic acid in the urine of cataractous patients. M. Bertoldi (Rass. ital. Ottal., 1939, **8**, 572—587).—There was no appreciable difference in the rate of elimination of injected ascorbic acid by cataractous and control patients. M. C. B.

Special form of lens regeneration in secondary cataract in a family with hereditary perinuclear cataract. F. Riedl (Klin. Monatsbl. Augenheilk., 1939, **103**, 169—193).—17 individuals of a family in which hereditary perinuclear cataract had been known to occur in 5 generations were investigated. In 8 affected cases the cataract had been operated on at

an early age yet small secondary cataracts ("lentoids") were present on the iris and cornea and in the vitreous. They were composed of actual lens fibres which had probably originated from lens epithelial cells liberated at the time of operation. Mention is made of the various types of lens regeneration which have been described in man: (1) proliferation of capsule epithelium; (2) Elschnig's pearls; (3) regeneration of normal fibres inside the capsule after needling a young lens; (4) formation of free "lentoids." The latter has not been described previously. D. A. C.

Inter-relationship of retinal and systemic arterial pressures and intraocular tension in normal and syphilitic patients. E. F. Constantine (Amer. J. Ophthal., 1940, **23**, 436—445).—Measurements were made in 38 normal people and in a no. of patients with syphilis of the central nervous system comprising 8 without optic atrophy, 16 with primary optic atrophy, and 5 with an ophthalmic reaction to tryparsamide therapy. The results contradict the theory of Lauber and Sobansky that optic atrophy in syphilis is due to a lowered retinal diastolic pressure which approaches the level of the intraocular tension, resulting in failure of the retinal capillary circulation. No systemic or retinal hypotension was found in patients with syphilis of the central nervous system, with or without optic atrophy. The difference between retinal diastolic pressure and intraocular tension was not reduced in patients with primary optic atrophy or ophthalmic reaction to tryparsamide; on the contrary it was higher than in normal controls. W. T. A.

Growth and differentiation of the retina *in vitro*. J. A. Vinnikov (Compt. rend. Acad. Sci. U.R.S.S., 1939, **24**, 828—831).—A description of the development of the rabbit retina both *in vivo* and *in vitro*. The dedifferentiation of retinal tissue after long cultivation *in vitro* is also described. K. T.

Atropine in optic atrophy. F. W. G. Smith (Lancet, 1940, **238**, 454—455).—Retrobulbar injections of atropine enlarged the field of vision in a case of optic atrophy due to retrobulbar neuritis. C. A. K.

Inheritance of familial optic nerve atrophy (Leber's disease). P. Cibis (Klin. Monatsbl. Augenheilk., 1940, **102**, 824—830).—54 out of 108 related individuals were selected and 5 cases of Leber's optic atrophy were found. It is suggested that a weakly dominant gene is responsible which is not sex-linked. The cases were all young, thus disproving the occurrence of the condition in elderly women only. D. A. C.

Experimental retinoblastoma. A. Weil and L. L. Mayer (Arch. Ophthal., N.Y., 1940, **23**, 591—604).—Lard was distilled in vac. at 250° and the residue injected into the corpus vitreum of the eyes of white rats. This led to neoplastic disease of the retina. Active proliferation appeared in the cells of the ganglion layer in the 1st month, then in the inner and outer nuclear layers. Active mitosis appeared in the latter at about the 6th month. The retina was trasformed into a cellular structure filling the posterior chamber. Rosettes were formed, surrounded by cells of the outer nuclear layer. The optic nerve was invaded by proliferated retinal cells. Olive oil and *iso*oleic acid produced similar but less uniform results. The distillate from lard was inactive. W. T. A.

Vitamin-*A* status of children as determined by dark adaptation. J. M. Lewis and C. Haig (J. Pediat., 1940, **16**, 285—296).—The final rod threshold was determined in 144 sick children 6—12 years old. Dark-adaptation tests revealed normal threshold vals. in all but one instance. The sole exception was in a child who, because of abdominal pain, had been placed on a rigorous diet which was low in -*A*. Administration of 120,000 units of -*A* brought about a fall of the threshold to normal in 35 min. The effect of this enormous dose lasted 20 days. C. J. C. B.

Pathogenesis of retinitis pigmentosa (sclerosis pigmentosa chorioretinalis). II. Local symptomatology. L. Levy-Wolff (Amer. J. Ophthal., 1940, **23**, 418—433; cf. A., 1939, III, 837).—The old theory that the retinal changes are due to vascular degeneration in the choriocapillaris is again advanced to explain the ætiology of retinitis pigmentosa. It is suggested that the characteristic ring scotoma also implies vascular changes in the circle of Willis. No first-hand histological evidence is given. It is suggested that retinitis pigmentosa must be accompanied by degeneration of the ganglion cells of the brain also due to circulatory disturbances and that this assumption, taken in conjunction with the retinal degeneration found in juvenile amaurotic idiocy, justifies the classification of this disease as a form of retinitis pigmentosa. K. T.

Growth and pigmentary responses of eyeless *Amblystoma* embryos reared in light and in darkness. S. R. Detwiler and W. M. Copenhaver (Anat. Rec., 1940, **76**, 241—257).—There was no difference in rate of growth between *Amblystoma* larvæ whose eyes had been enucleated and controls either in light or darkness, but eyeless larvæ metamorphosed earlier than controls. Eyeless larvæ kept in the dark were lighter in colour than controls even when the former had well vascularised transplanted eyes. When exposed to light of moderate intensity eyeless larvæ became darker, more so when on a dark background, but controls became lighter. It is concluded that the eye does not form any substance necessary for normal growth. The presence of eyes inhibits the primitive response of the melanophores to expand in light and contract in darkness by influences exerted on the pituitary through nervous channels. W. T. A.

Fundus and fovea centralis of the albatross (*Diomedea cauta cauta*, Gould). K. O'Day (Brit. J. Ophthal., 1940, **24**, 201—207).—The ophthalmoscopic appearance of the fundus oculi of the albatross is illustrated; the most striking feature is the pecten. The fovea is a narrow oval pit situated to the nasal side of the pecten in a transverse ridge which extends across the retina. The margins of the fovea are formed by the peripheral displacement of the greater part of the bipolar cells from the central area. The displacement is not complete, 3 or 4 layers of nuclei remaining in the central area. There is no

displacement of ganglion cells. Only cones are present at the centre of the fovea; they are elongated in the whole central streak but not especially so in the fovea. In this bird high visual acuity at the fovea is attained without the total displacement of the nuclear layers and the great elongation and attenuation of the cones seen in the foveæ of primates and lizards. W. T. A.

Image expansion by foveal clivus. G. L. Walls (Arch. Ophthal., N.Y., 1940, **23**, 831—832).—It was suggested previously (1937) that the purpose of the foveal depression, at least where it is deep and convex-sided as in the Sauropsidia, is to expand the retinal image locally. This hypothesis is strengthened by the finding of Valentin in 1879 that the refractive index of the retina is higher than that of the vitreous. It is calc. that the fovea of the hawk would bring about an areal expansion of the image by 30%. The shallow concave-sided human fovea would have a much smaller effect; it is suggested that the human fovea has evolved from a much deeper and more abrupt depression. W. T. A.

Temperature and critical illumination for reaction to flickering light. VI. Flash duration varied. W. J. Crozier and E. Wolf (J. Gen. Physiol., 1940, **23**, 531—549).—For the turtle *Pseudemys scripta* the temp. characteristics for excitability of the response to visual flicker are independent of flash frequency, flash intensity, and proportion of light time in the flash cycle. These results are taken to show the simple character of the events in the mechanism controlling excitability and the possibility of separating experimentally such general characteristics as excitability-changes from the rest of the sensory performance, although this latter may involve integrated actions of many individual units. K. J. W. C.

Relation between foveal visual acuity and illumination under reduced oxygen tension. R. A. McFarland and M. H. Halperin (J. Gen. Physiol., 1940, **23**, 613—630).—The visual acuity of 11 subjects was tested using the Landolt split ring seen foveally through a red Wratten filter, the illumination being varied by neutral Wratten filters. Observations were made under normal atm. conditions, while inhaling mixtures of O_2 and N_2 giving 14·3% and 10·3% of O_2 (equiv. to altitudes of 10,000 and 18,000 ft.), and while inhaling 100% O_2. At 10·3% O_2, acuity at 0·144 photon decreased about 0·344 of a log unit, to 45% of its normal val., whilst at 1320 photons it decreased only 0·026 of a log unit, to 94%. These effects were completely counteracted within a few min. by inhaling pure O_2. M. D. V.

Ocular interaction in relation to measurements of brightness threshold. B. H. Crawford (Proc. Roy. Soc., 1940, **B**, **128**, 552—559).—The binocular is always lower than the monocular threshold, but at static conditions of foveal vision at all brightnesses and of parafoveal vision at very low levels, the difference is small and can be explained by the greater probability of seeing the test field with both eyes than with one. For parafoveal vision under static conditions at medium and high brightnesses, binocular vision gives a threshold about 30% lower than monocular while the state of adaptation is changing after cutting off a bright conditioning field, both foveal and parafoveal retinal areas showing a more rapid recovery for binocular than for monocular vision. Threshold measurements made with one eye are completely unaffected by exposure of the other eye to brightnesses up to 130 c. per sq. ft. Effects due to pupil diameter were excluded throughout by using Maxwellian view. K. J. W. C.

Photochemical studies on colour vision. F. Weigert and J. W. Morton (Ophthalmologica, 1940, **99**, 145—179; cf. A., 1939, III, 753).—"Artificial retinæ" were prepared by making gelatin films containing frog visual purple. These were exposed to coloured lights and were found to exhibit a photodichroism which could be measured. This photodichroism is produced only for $\lambda\lambda$ near to that of the incident light and it appears after an induction period the length of which depends on the incident λ. It is suggested that colour-sensitivity is produced in the system during the induction period and that the colour-sensitivities for red and blue light are due to different reactions in artificial retinæ. Photodichroism disappears during continuous exposure of the prep. to a coloured light. Exposure to several $\lambda\lambda$ applied either simultaneously or consecutively produces photodichroism with a single max. at the λ matching the mixed colour for a trichromat observer. Mixtures of $\lambda\lambda > 620$ mμ. with $\lambda\lambda < 490$ mμ. (purple) or mixtures of red or blue with white light produce two max. The max. produced by white light is the same as that produced by λ 530 mμ. It is pointed out that quant. determinations of photodichroism in artificial retinæ ("colour graphs") give an objective method of colorimetry independent of the observer's own colour sense. The relationship of the phenomena observed in artificial retinæ to visual processes is discussed in detail. E. Br.

Simultaneous colour contrast. Instrument for demonstrating it. C. T. Eber (Amer. J. Ophthal., 1940, **23**, 447—449).—The instrument is briefly described in general terms. The main features are an artificial light source of controlled intensity and glass light filters of known spectral vals. W. T. A.

Effect of hypnosis on visual and auditory acuity. K. Sterling and J. G. Miller (Amer. J. Psychol., 1940, **53**, 269—276).—No significant lowering of visual or auditory thresholds was found under hypnosis. It is concluded that in the waking state the senses reach their full capacity, which is determined by physiological limits. K. J. W. C.

How far sensory function participates in operations. (1) Influence of sounds on visual acuity. (2) Influence on working efficiency of the presence and absence of typing sounds in the transmission of messages. (3) Changes in working movements and attitude. K. Huzimaoto and Y. Ueno (Rep. Jap. Inst. Sci. Lab., 1939, No. 44, 1—23).—(1) Kravkov's experiments, showing enhancement of visual acuity by simultaneous or previous tonal stimulation of the contralateral eye, using black objects on a white ground, and decrease of acuity for white objects on a black ground, were

repeated with negative results; Kravkov's results are attributed to random variations.

(2) The sound of his own transmitting key was found of definite assistance to the transmitter, increasing both his speed and accuracy, as compared with silent sending.

(3) In telegraph-transmission and manipulation of a car steering-wheel for periods over 1 hr. auditory cues are of definite assistance; this is interpreted in terms of the rhythm given to the work by the sound-stimuli and the extra cues as to correct or incorrect performance. K. J. W. C.

The residue, a new component in subjective sound analysis. J. F. Schouten (Proc. K. Akad. Wetensch. Amsterdam, 1940, **43**, 356—365).—A new theory of the perception of pitch in complex tones is proposed, viz., that the higher harmonics cannot be perceived separately but are perceived collectively as one component, called the residue, with a pitch determined by the periodicity of the collective wave-form, which is equal to that of the fundamental tone, from which it is subjectively discriminated by its "sharp" character. An optic syren was employed as a sound source, but the wave-form of the resulting sound is not shown, and no evidence is given to prove that it justified the above conclusions. K. J. W. C.

Pressure of cerebrospinal fluid in Ménière's disease. D. Van Caneghem (Ann. Oto-laryng., 1940, 36—44).—Pressure was moderately increased in 15 out of 30 cases. Both frequency and degree of increase were smaller than in a series of cases suffering from various vasomotor disorders. No difference in pressure was found in a case examined before and during an acute attack. Inhalation of amyl nitrite provoked an attack only in some cases. H. L.

Cortical projection of labyrinth. I. Effects of stimulation of labyrinth on electrical activity of cerebral cortex. M. A. Gerebtzoff (Arch. int. Physiol., 1940, **50**, 59—99; cf. A., 1939, III, 970).—The electrical activity of the cerebral cortex was recorded in 40 unanæsthetised cats in which the brain stem had been sectioned in the lower part of the medulla. Records could be continued during rotation of the animal. Stimulation of the labyrinth by rotation produced a well-marked augmentation of the electrical activity of the cortex. The response was obtained in all accessible areas but was most intense and the threshold was lowest at the posterior angle of the suprasylvian gyrus. There were two phases in the response, one accompanying rotation, the other post-rotatory. A depression of electrical activity followed which was abolished, except at the vestibular area above described, by section of the vagi. The intensity of the response varied with the angular acceleration, and with the direction in which the relevant homolateral semicircular canal was stimulated. Ampullipetal stimulation gave a greater response than ampullifugal stimulation. Caloric stimulation of the labyrinth gave a less intense cortical response of longer latent period (½—1 sec.). Faradic stimulation of the 8th nerve showed that the thresholds of reactivity of the acoustic area and the vestibular area were of the same order of magnitude. The acoustic after-discharge was much shorter and weaker than the vestibular after-discharge. The latter was much shorter than the post-rotational response, indicating a persistence of stimulus after rotation. The vestibulo-cortical path was found to be homolateral; it ran in the lateral lemniscus to the posterior corpus quadrigeminum. Relays occurred in this body and in the internal geniculate body. The diffusion over the cortex of the electrical response to labyrinthine stimulation was of subcortical origin. It is suggested that this diffusion arises from the hypothalamic sleep centre and is connected with the immediate awakening observed in the sleeping animal on rotational stimulation. W. T. A.

Rolling movements in pigeon [after labyrinthectomy]. E. Huizinga (Pflüger's Archiv, 1938, **240**, 713—717).—The labyrinth in pigeons is first destroyed on one side; when complete compensation has occurred it is also destroyed on the other side; the reactions which now occur (lateral oscillation and torsion of the head and rolling movements of the animal) are more violent and are observed within a few hr. after operation. The compensation after unilateral destruction necessitates alteration in the vestibulary centres but the subsequent destruction of the remaining labyrinth can no longer be compensated. A rolling movement which hitherto has not been observed in pigeons after such lesions is analysed and illustrated by a film; this movement does not occur spontaneously but is initiated by stimuli. J. A.

(xi) DUCTLESS GLANDS, EXCLUDING GONADS.

Endocrine changes in guinea-pigs exposed to monochromatic light. G. Pighini (Biochim. Terap. sperim., 1940, **27**, 86—91).—The pituitary, adrenals, and especially the thyroid of guinea-pigs (24—70 days old) reared, from birth onwards, in cages illuminated with monochromatic light (red, yellow, green, blue) showed histological signs of hyperfunction, and the gonads were more developed than in controls of the same age. S. O.

Rôle of pituitary in calorigenic action of vitamin-*D*. A. Bartoli, J. Feldman, and C. I. Reed (Amer. J. Physiol., 1939, **127**, 552—556).—Vitamin-*D* was given orally (10,000—15,000 units per kg. body-wt. per day) to hypophysectomised dogs by the oral route, and in 50,000-unit capsules in doses of 39,000 units per kg. per day to dogs hypophysectomised by the temporal route. These animals show no calorigenic response. Mineral metabolism was not affected. The toxic action of -*D* is greatly modified. Both the pituitary and the thyroid are necessary for the calorigenic response to -*D*. M. W. G.

Herring material [bodies] in perch pituitary. T. Kerr (Nature, 1940, **145**, 591).—The origin of the Herring material in the perch pituitary from cells resembling eosinophil leucocytes found in the transitional lobe is described and illustrated. L. S. T.

Effects of prolonged injections of bovine anterior pituitary extract on bone and cartilage of guinea-pigs. M. Silberberg and R. Silberberg (Arch. Path., 1940, **29**, 355—367; cf. A., 1940, III, 302).—Prolonged administration of an acid extract of the anterior lobe of the bovine pituitary exerts a stimulating action on the proliferation and the ossification of cartilage. The balance between proliferation and ossification may be disturbed in favour of one or the other of these 2 processes and this effect may last for some time. (5 photomicrographs.) C. J. C. B.

Effect of heat on gonadotrophic pituitary antagonist. H. Jensen, S. Tolksdorf, and J. F. Grattan (Amer. J. Physiol., 1940, **128**, 532—536).—Gonadotrophic preps. from sheep pituitary were subjected to heat-treatment and their gonadotrophic response was studied in normal and hypophysectomised immature female rats. The follicle-stimulating hormone is less stable against heating than luteinising hormone fraction. Heating destroys the multiple physiological properties of the pituitary luteinising hormone principle at approx. the same rate. M. W. G.

Relation of diet to restitution of gonadotrophic hormone content of discharged rabbit pituitary. M. H. Friedman and G. S. Friedman (Amer. J. Physiol., 1940, **128**, 493—499).—The reproductive system of the rabbit is more resistant to protein deprivation than that of the rat. The protein requirements for the formation of gonadotrophic hormone can be fully met by the nitrogenous products derived from the rabbit's own tissues even during serious N deficit. The rabbit pituitary is more responsive to seasonal influences than to changes in dietary protein (cf. A., 1939, III, 677). M. W. G.

Malignant adenomas of chromophobe cells of pituitary body. O. T. Bailey and E. C. Cutler (Arch. Path., 1940, **29**, 368—399).—A discussion of 3 cases. (8 photomicrographs.) C. J. C. B.

Simmonds' disease (pituitary cachexia) in aged man with dementia præcox. M. M. Canavan (Arch. Path., 1940, **29**, 310—313).—The patient was a 72-year-old man with dementia præcox. Marked emaciation occurred after fracture of a femur. The duration of Simmonds' disease was 11 weeks. The pituitary was small and œdematous; microscopically, collapse of the sinusoids was seen and varying degrees of degeneration of the cells in the anterior lobe, particularly of the acidophils. C. J. C. B.

Anterior pituitary changes following adrenalectomy in rat. J. D. Reese, A. A. Koneff, and M. B. Akimoto (Anat. Rec., 1939, **75**, 373—403).—Diminution in no. and size of acidophils following double adrenal ablation is correlated with progressive loss of granular material. Regressive changes in the Golgi apparatus and in the mitochondria indicate diminished activity in this group of cells. Cytological changes in the basophil group are correlated with the degree of severity of symptoms and the length of the post-operative period. Increase in no. of chromophobes is primarily due to reversion of acidophils to the chromophobe state. The presence of hyperactive basophils suggests compensation for degenerative changes seen in other basophils. W. F. H.

Cushing's syndrome. L. R. Broster (Brit. Med. J., 1940, I, 425—428).—The differentiation between cases of pituitary or adrenal origin is discussed. C. A. K.

Action of various substances on insulin hypoglycæmia in hypophysectomised dogs. E. G. Fongi (Rev. Soc. argent. Biol., 1939, **15**, 393).—Hypophysectomised dogs, 24 hr. after the last meal, were injected with insulin (0·25—2 units per kg.) intravenously. When convulsions appeared a 5—10% solution in saline of the substance studied was injected intravenously (1 g. per kg.). Blood-sugar was determined before giving the insulin and every 15—30 min. following. Glucose produced a rapid recovery. Maltose, fructose, mannose, and galactose also produced recovery, but in some cases fructose was not efficacious and galactose and mannose produced incomplete and transitory recoveries. Lactic and pyruvic acids had no effect on the hypoglycæmia and symptoms. Pyruvic acid was toxic. J. T. L.

Houssay phenomenon in man. J. H. Kotte and A. R. Vonderake (J. Amer. Med. Assoc., 1940, **114**, 950—953).—A patient with diabetes mellitus of 5 years' duration had severe terminal hypoglycæmia. Autopsy showed an infarct of the pituitary with destruction of the anterior lobe. C. A. K.

Hypophysis and pancreatic insulin. H. P. Marks and F. G. Young (Lancet, 1940, **238**, 493—497).—Daily administration of crude anterior lobe extract to normal rats for 2 weeks nearly doubles the insulin content of the pancreas. The "insulin-increasing" (pancreotrophic) substance is not identical with the diabetogenic and growth-promoting substances, as shown by their separation. In the dog, pituitary extract lowers the insulin content of the pancreas, owing perhaps to the diabetogenic action of the extract. C. A. K.

Pituitary involvement in control of water diuresis. H. O. Haterius (Amer. J. Physiol., 1940, **128**, 506—513).—Water ingestion in rabbits, under chloralose–urethane, provoked a marked diuresis which was curtailed by painful stimulation in the lumbar region. In rabbits with pituitary stalks destroyed no antidiuretic response occurred on similar stimulation. In intact rabbits, anæsthetised and hydrated, electrical stimulation of the pituitary stalk resulted in marked diminution in urine flow which persisted after withdrawal of stimulation. Animals in which the pituitary stalks were destroyed prior to stimulation showed no diminution in rate of urine flow. M. W. G.

Amino-acid and peptide esters of choline as possible analogues of the oxytocic hormone of the posterior lobe of the pituitary gland.—See A., 1940, II, 245.

Treatment of tetany of newborn infant with dihydrotachysterol. A. Bloxsom (J. Pediat., 1940, **16**, 344—346).—A successful case is reported. C. J. C. B.

Reduction of dehydroascorbic acid in experimental hyperthyroidism. M. A. Chvoinitzkaja (Ukrain. Biochem. J., 1939, **14**, 261—275).—Injection of thyroxine or thyroid gland extract into rats did not lower the ascorbic acid content of the tissues, but raised their dehydroascorbic acid reducing power. No relationship between the reduced glutathione content and the dehydroascorbic acid reducing power was found. R. T.

Radioactive iodine as indicator in thyroid physiology. S. Hertz, A. Roberts, J. H. Means, and R. D. Evans (Amer. J. Physiol., 1940, **128**, 565—576).—With radioactive I as an indicator, the quantity of I taken up by rabbit thyroid was determined. After intravenous injection the % collection from any given dose reached a max. within 10 min. For normal thyroids, the % collection increases as the dosage is decreased; the normal thyroid collected up to 80 times the quantity to be expected from uniform diffusion into the general body tissues; the hyperplastic thyroid collects up to several hundred times the quantity expected from uniform diffusion. Variation of this concn. with the injected dosage and the functional state of the gland was determined. From the data obtained the strength of samples of radioactive I was calc. with which it is possible to effect internal irradiation of the thyroid for therapeutic purposes. M. W. G.

Iodism [in hyperthyroid cases]. W. H. Barker and W. B. Wood (J. Amer. Med. Assoc., 1940, **114**, 1029—1038).—7 out of 400 cases of hyperthyroidism treated showed severe febrile iodism, one case being fatal. Symptoms were fever, skin eruptions, coryza, pharyngitis, enlargement of lymph glands, eosinophilia, and jaundice (in one case). C. A. K.

Thymus–adrenal relationship. A. Segaloff and W. O. Nelson (Amer. J. Physiol., 1940, **128**, 475—480).—Thymectomy did not alter the course of adrenal insufficiency in bilaterally adrenalectomised rats. M. W. G.

Does hyperplasia of thymus gland indicate excessive functional activity? J. A. Hammar (Klin. Woch., 1939, **18**, 1452—1453).—There is no evidence for this view. M. K.

Treatment of acute alcoholism with insulin. H. M. Taylor and A. R. Cross (J. Pediat., 1940, **16**, 341—343).—A case of acute alcoholism in a child, which from all indications would have been fatal, was successfully treated with insulin and glucose. C. J. C. B.

Hypoglycæmic reactions from protamine–zinc–insulin. W. L. Lowrie, jun., and D. P. Foster (Amer. J. digest. Dis. Nutr., 1940, **7**, 101—106).—A study was made of hypoglycæmic reactions in 89 patients who had taken both regular and protamine–Zn–insulin for at least 6 months. Fewer reactions occurred with protamine–Zn–insulin than with regular insulin. Patients who had reactions with protamine–Zn–insulin reported them in general to be less severe and less frequent than with regular insulin. Patients who were over-wt. were relatively free from reactions with protamine–Zn–insulin. C. J. C. B.

Cells of islets of Langerhans in *Bufo arenarum*. E. de Robertis and L. Primavesi (Rev. Soc. argent. Biol., 1939, **15**, 474—481).—In animals killed during the winter months the islets are formed by round or oval masses of cells of 50—150 μ. diameter. Two cell types were observed. The β or *B* cells had a clear cytoplasm with granules only slightly coloured by azocarmine. Their shape is that of a truncated pyramid with the base towards the blood capillary, and a round or oval nucleus, with a marked nucleolus. Lipoid inclusions and small vacuoles situated near the capillaries were seen in the cytoplasm. The α or *A* cells are cubical, smaller than the *B* cells, and have numerous granules stained red by azocarmine. α cells constitute 20—30% and β cells 76—80% of the cells. A third type is seen, having a dark cytoplasm and nucleus; they are atrophying β cells. J. T. L.

Effect of subcutaneous injections of crystalline insulin on blood-sugar of fasting rabbits. M. Sahyun (J. Lab. clin. Med., 1940, **25**, 619—623).—Intradermal injections of a solution of cryst. insulin produce a more prolonged hypoglycæmia and a greater incidence of convulsions in rabbits than subepidermal or subdermal injections. The lowering of blood-sugar in fasting rabbits following the subdermal administration of insulin is more prompt when the solution is at p_H 7·0 than at p_H 2·9. C. J. C. B.

Glucose and insulin tolerance: relation to insulin shock treatment. M. Kaplan and A. A. Low (Amer. J. Psychiat., 1939, **96**, 689—697).—Blood-sugar curves were determined after giving (1) 100 g. of glucose orally and (2) 10 units of insulin subcutaneously to 23 schizophrenic and 3 manic-depressive patients. Only 6 of the oral glucose tolerance curves were normal. The insulin depression curves showed an abnormally slow return to the fasting level. The glucose and insulin curves in the same patients were not correlated in any way, nor were they correlated with the coma dose of insulin. G. D. G.

Insulin-sensitive and insulin-insensitive types of diabetes mellitus. H. P. Himsworth and R. B. Kerr (Clin. Sci., 1939, **4**, 119—151).—A great difference exists in the rapidity with which insulin comes into action in insulin-sensitive and in insulin-insensitive patients suffering from diabetes mellitus. In insulin-sensitive diabetics lack of insulin causes the disease, whereas in insulin-insensitive patients the primary cause is retardation of insulin activation. Hypersecretion of the anterior pituitary may be responsible for the relative insensitivity to insulin. B. I.

Age and insulin-sensitivity. H. P. Himsworth and R. B. Kerr (Clin. Sci., 1939, **4**, 153—157).—Investigations on 13 healthy subjects showed high insulin-sensitivity in young people, whereas among the old people a proportion showed low sensitivity. B. I.

Percutaneous insulin absorption. G. Kingisepp and L. Talli (Klin. Woch., 1939, **18**, 1323—

1324).—Application of a saponin-like compound to depilated skin of rabbits promotes absorption of an insulin ointment containing 4 i.u. The blood-sugar decrease equalled that resulting from 1 i.u. subcutaneously. M. K.

Relationship between adrenal and parathyroid glands. C. Blumenfeld and F. Clausen (Amer. J. Physiol., 1940, **128**, 577—582).—Adrenalectomy in male rats was followed by a drop in serum-Ca level without a significant decrease in parathyroid size. Treatment with adrenal cortex extract (eschatin) prevented these changes and the parathyroids were significantly larger than those of untreated adrenalectomised rats. Treatment with NaCl solution has the same effect on parathyroid size but did not prevent the drop in serum-Ca level, but its effect may have been masked by hydræmia. M. W. G.

Salt craving in case of cortico-adrenal insufficiency. L. Wilkins and C. P. Richter (J. Amer. Med. Assoc., 1940, **114**, 866—868).—A boy aged 3½ years had hyperplasia of the androgenic zones of the adrenals (with virilism) with marked diminution of the normal cortical cells, low blood-Na, and high non-protein-N. He showed marked selective craving for NaCl which probably helped to keep him alive for 2½ years. C. A. K.

Absorption of progesterone and deoxycorticosterone. M. H. Warwick and A. S. Parkes (Lancet, 1940, **238**, 406—408).—Progesterone is absorbed from large tablets implanted subcutaneously at a rate of about 20% per month. Free deoxycorticosterone is absorbed from implanted tablets more than twice as rapidly as deoxycorticosterone acetate. C. A. K.

Function and therapeutic use of adrenal cortex. K. Tsuji (Acta Sch. med. Univ. Kyoto, 1939, **33**, 181—199).—A review. H. L.

Muscle imbibition in adrenalectomised frogs. F. Cavalli and E. Occhialini (Biochim. Terap. sperim., 1940, **27**, 82—85).—Imbibition of the gastrocnemius (on immersion in 20 c.c. of 0·6% NaCl for 6 hr.) was studied in animals with cauterised adrenals at various times after the operation. It was increased in the first 20 hr., decreased between 20 and 70 hr., and again increased later (up to 90 hr.). Muscles from control animals (with partial cauterisation of kidneys) showed little change. S. O.

Adrenal cortex and sodium chloride in infection and intestinal obstruction. T. Wense and O. Granzner (Klin. Woch., 1939, **18**, 1336—1338).—Adrenal cortex hormones and, to a smaller extent, aq. NaCl prolong life in guinea-pigs previously treated with diphtheria toxin. M. K.

Adrenaline and neurotic symptoms. S. H. Kraines and I. C. Sherman (J. Amer. Med. Assoc., 1940, **114**, 843—845).—Adrenaline (0·01 mg. intravenously) produced the same effects on heart rate and blood pressure in psychoneurotic subjects as in normal persons. The former frequently showed activation of their symptoms following the injection. C. A. K.

Reaction of intestine to adrenaline as function of conditions of administration. G. Morin (Arch. int. Pharmacodyn., 1940, **64**, 190—202).—After inhibition of the intestine by adrenaline the contractions recover and become more active than before, the hormone being still in inhibitory concn. With periodic applications the intestine is desensitised. The mechanism of these changes is uncertain. D. T. B.

(xii) REPRODUCTION.

Reproduction in mare. F. T. Day (J. Agric. Sci., 1940, **30**, 244—261).—Œstrus in the mare usually lasts 7—8 days (range 4—54), ovulation occurring during the last 2—3 days. Insemination during the 72 hr. before, but not during 2 or 4 hr. after, ovulation was effective. In the breeding season œstrus can be induced by pregnant mare serum extract or horse anterior pituitary extract, and ovulation by pregnancy urine extract if a fairly mature follicle is present. There were no deleterious after-effects from successive injections. R. L. E.

Maximal range of error in gross reproduction rates. E. Charles (Proc. Roy. Soc. Edin., 1939—40, **60**, 18—32).—When age-sp. fertility rates are used for estimations giving birth totals within 10% of those recorded, the mean error in estimated gross reproduction rates is between 2% and 3% and certainly not in excess of 7%. W. F. F.

Effects of formalin on hormones of human pregnancy urine. L. Loeb and S. Hayward (Amer. J. Physiol., 1940, **128**, 425—432).—Formalin inhibits the luteinising effects of human pregnancy urine and if used in higher concn. destroys the follicular maturation effects. Different pregnancy urines differ in the concn. of formalin needed to produce these effects. It is possible to preserve pregnancy urine for a long time by formalin in such a way that it produces mainly maturation and œstrogenic effects in the ovary of the guinea-pig. Formalin acts in an identical manner on the hormones of cattle pituitary glands and on the hormones of human pregnancy urine. M. W. G.

Urinary prolan excretion during menstrual cycle. B. B. Bagby, jun. (J. Lab. clin. Med., 1940, **25**, 687—689).—The urinary prolan excretion of a normal woman was determined daily for one month, on the first morning specimen, using ovarian and uterine wts. of immature rats as indicators. Prolan was found on the 15th and 16th days prior to the next menses. C. J. C. B.

Effects of prolonged administration of prolan on ovaries of immature rats. W. Reiss (Endokrinol., 1939, **22**, 112—136).—3—4-week-old rats were treated with daily injections of 25—50 rat units of prolan for periods up to 12 weeks. The wt. of the ovaries increases up to 10-fold after 4 weeks' treatment; many corpora lutea and cysts were present; the wt. of the ovaries decreases in the following period and the corpora lutea degenerate (24th—72nd day of treatment). Subsequently, large Graafian follicles and numerous corpora lutea are formed. A. S.

Gonad-hypophyseal relationship and cyclic osseous changes in the English sparrow, *Passer domesticus*, L. A. Kirschbaum, C. A. Pfeiffer,

J. V. Heuverswyn, and W. U. Gardner (Anat. Rec., 1939, **75**, 249—263).—Seasonal hyperossification in the female can be correlated with seasonal ovarian activity. Complete activation of the ovary during the non-breeding season was accompanied by deposition of osseous spicules in the marrow cavities. Testes grafted into females were stimulated to produce spermatozoa. Gonadotrophic secretion of the female hypophysis stimulated grafted testes but not the hosts' own ovaries. The ovary secretes male hormone as indicated by darkening of the bill during the breeding season and also experimentally when stimulated out of season. W. F. H.

Electric correlates of menstrual cycle in women. D. S. Barton (Yale J. Biol. Med., 1940, **12**, 335—344).—Significant peaks in electric potential between index fingers are most frequent in the middle of the cycle. Menopause, sterility, and male records show no significant peaks. Peaks probably indicate time of ovulation. F. S.

Œstrous cycle and associated phenomena in strain of rats characterised by a high incidence of mammary tumours. J. M. Wolfe, E. Burack, and A. W. Wright (Amer. J. Cancer, 1940, **38**, 383—398).—Ovarian dysfunction is present in female rats of a strain with 50% incidence of mammary tumours and a low fertility. Partial or complete failure of ovulation occurs followed by atresia or direct luteinisation of the unruptured follicles. Œstrous histories show smears of epithelial or cornified cells for long periods. The time occupied in pregnancy or lactation is reduced. The dysfunction is greater in tumour-bearing than in non-tumour-bearing animals. The ovarian dysfunction is probably secondary to a decreased anterior pituitary function. F. L. W.

Inadequacy of vaginal smear in rat as index of ovarian dysfunction caused by diet. S. C. Freed, O. Hechter, and S. Soskin (J. Endocrinol., Lond., 1939, **1**, 268—274).—Adult female rats were fed on inadequate diets so that they lost wt.; vaginal smears were taken for 8 weeks. The diets were: a low-protein (7%) diet, and a complete diet containing 4% of NH_4Cl or 8% of $NaHCO_3$. Examination of the uterus in the 3rd—4th week, during the first day of vaginal œstrus, showed that uterine œstrus was absent in more than 50% of cases. The uteri still responded to 10 i.b.u. of œstradiol benzoate. Twice the dose of œstrone causing 50% vaginal œstrus caused 100% uterine œstrus so that rats having a 100% vaginal œstrus should have 100% uterine œstrus. Following ovariectomy there is a progressive decrease in the sensitivity of the uterus to œstrogen. P. C. W.

Œstrous cycle of guinea-pig. P. Bacsich and G. M. Wyburn (Proc. Roy. Soc. Edin., 1939—40, **60**, 33—39).—Vaginal smears were examined in 35 virgin guinea-pigs during 100 œstrous cycles. The mean length of the cycle was 16 days (13—20). The duration of œstrus (smears containing leucocytes) was 50 hr. (24—84) and of the non-leucocytic period 23 hr. (12—48). In 20% of cases normal œstrus was preceded by a pre-œstrous phase characterised by the presence of leucocytes and mucus in the smear. The longer duration of the œstrous and non-leucocytic phases compared with those obtained by American authors is attributed to climatic, domestic, and genetic influences. P. C. W.

Vaginal response to œstradiol and deoxycorticosterone. E. B. Del Castillo and G. Di Paola (Rev. Soc. argent. Biol., 1939, **15**, 434—437).—Young adult ovariectomised rats received 1 i.b.u. of œstradiol daily. After 36 days' treatment adrenalectomy was performed; œstrus became continuous. Another series received the same treatment but after adrenalectomy 0·5 mg. of deoxycorticosterone was also given daily; a cyclic vaginal response persisted. A dose of 2 mg. of deoxycorticosterone daily suppressed the œstrus response to œstradiol in adrenalectomised rats and in those with intact adrenals. J. T. L.

Swelling of sexual skin in rhesus monkeys. A. G. Ogston, J. St. L. Philpot, and S. Zuckerman (J. Endocrinol., Lond., 1939, **1**, 231—238).—Chemical and physical tests were applied to the sexual skin exudate and serum of rhesus monkeys, particularly to the material precipitable by acetic acid ("mucoprotein") present in the former. Similar tests were made on other mucin-containing animal fluids. While the physical properties of the "mucoprotein" fraction (ultracentrifuge sedimentation and ultrafiltration) were consistent with its being a true mucoprotein, its chemical properties were inconsistent with this view since it had a low glucose content. The most marked differences between serum and exudate were the presence of "mucoprotein," lower concn. of serum-like proteins, the higher non-protein-N, and the higher total Cl in the latter. Examination of the "mucoprotein" was difficult owing to its instability. *In vitro* experiments showed that sexual skin from which exudate could be obtained lost wt. when incubated in serum whilst normal skin and sexual skin in the early stages of swelling, when no exudate was obtainable, gained wt. P. C. W.

Assays of urine from rhesus monkeys for pregnanediol and other sterols. R. E. Marker and C. G. Hartman (J. Biol. Chem., 1940, **133**, 529—537).—Urine of pregnant monkeys contains none of the pregnanediols common to other pregnancy urines. When a pregnant monkey is injected with more than 1 g. of œstrone during 20 days, the urine contains only a small amount of the total œstrone injected. Injection of a similar amount of progesterone under similar conditions causes no formation of pregnanediols in the urine. J. N. A.

Physical conditions in uterus governing duration of pregnancy. S. R. M. Reynolds and F. I. Foster (Anat. Rec., 1939, **75**, 175—193).—Observations were made on the rabbit at the 16th, 22nd, 28th, and 31st days of pregnancy. Intrauterine pressure reached two max. peaks, the first about the 22nd day and the second at term. A temporary decrease about the 28th day is related to change in shape of the fœtus from a sphere to a cylinder. Associated with the first peak of pressure is a temporary fall in flow of maternal blood through the placenta. A rise in rate of blood flow occurs at the time of the transient decrease of pressure. Final increase in

pressure results from cessation of uterine growth at the time of most rapid fœtal growth. Pregnancy terminates when the pressure on the placental vascular bed becomes sufficiently high to affect adversely the flow of blood through the organ.
W. F. H.

Gonadotrophic hormone of pregnancy urine. II. Chemistry of preparations of high biological activity. III. Evidence of purity from electrophoresis and sedimentation. S. Gurin, C. Bachman, and D. W. Wilson (J. Biol. Chem., 1940, **133**, 467—476, 477—484; cf. A., 1939, III, 687).—II. Further purification of material containing 3000 units per mg. yields a product, apparently a glucoprotein (C 50·52, H 6·95, N 12·03, S 1·96% on ash-free bases; ash content 1·92%), containing 4000 units per mg. Since the carbohydrate component consists of galactose (isolated as phenylmethylhydrazone) 10·7 and hexosamine 5·2%, this component is possibly composed of hexosamine-digalactose units. The amino-group of the hexosamine is probably acetylated and another acetyl group is attached to another part of the mol. Serologically, the hormone seems to be unrelated to the sp. polysaccharide of blood group *A*.

III. Electrophoretic, chemical, and ultra-centrifugal examination of a prep. containing 4000 units per mg. and of less pure preps. indicates that the purest prep. (min. mol. wt. 6—8 × 10^4, isoelectric point p_H 3·2—3·3) is a single glucoprotein.
W. McC.

Specific action of an antiserum for placental proteins on placenta and normal progress of pregnancy. H. R. Cohen and A. J. Nedzel (Proc. Soc. Exp. Biol. Med., 1940, **43**, 249—250).—Antiserum for guinea-pig placenta was prepared from rabbits. It reacted also with liver and kidney autolysates, but after these precipitins had been removed by absorption the serum caused abortion with placental degeneration in guinea-pigs.
V. J. W.

24-hour test (Aschheim-Zondek modification) for diagnosis of pregnancy. R. E. Kelso (Amer. J. clin. Path., 1940, **10**, 293—299).—4 immature female rats are used, 2 of which are examined at the end of 24 hr. and 2 at the end of 72 hr. The last 2 are utilised for control purposes and act as a check on the 24-hr. rats. 0·5 c.c. of urine is injected subcutaneously 3 times a day. A positive reaction is indicated by enlarged hyperæmic ovaries. A total of 130 specimens was tested. Of this no. 5 showed disagreement between the 24- and 72-hr. results. In each case the 24-hr. test showed a positive reaction, while the 72-hr. test was negative. Clinically these patients were eventually shown not to be pregnant. The other 125 cases showed perfect correlation between the 24- and 72-hr. tests and represent an accuracy of 95—97%.
C. J. C. B.

Determination of œstrogenic and gonadotrophic hormones. E. von Haam (Amer. J. clin. Path., 1940, **10**, 205—221).—A lecture.
C. J. C. B.

Œstrogen for non-patent Fallopian tubes. M. M. White (Brit. Med. J., 1940, I, 342—344).—Injections of œstradiol benzoate into cases of non-patency of the Fallopian tubes restored patency as shown by measurement of insufflation pressure.
C. A. K.

Subcutaneous implantation of sex hormones. A. A. Loeser (Brit. Med. J., 1940, I, 479—482).—Case records of subcutaneous implantation of sex hormones in women are given.
C. A. K.

Local application of œstrogenic substances in chronic ulcerations. D. Wagner (Klin. Woch., 1939, **18**, 1500).—Œstrogenic compounds, locally applied as ointment or oily solution in *X*-ray and varicose ulcers, promoted granulation and epithelium formation.
M. K.

Activity of progesterone in spayed females not pretreated with œstrin. H. Selye (Proc. Soc. Exp. Biol. Med., 1940, **43**, 343—344).—Administration of 15 mg. per day to spayed rats causes the usual progestational changes in uterus and mammary glands.
V. J. W.

Inhibitory effect of implanted œstrogenic hormone crystals on post-menopause and castration hypophysis of women. U. J. Salmon, S. H. Geist, and R. I. Walter (Proc. Soc. Exp. Biol. Med., 1940, **43**, 424—426).—Implantation of crystals (25—50 mg.) of œstradiol or its benzoate caused disappearance of gonadotrophic hormone from the urine within 4—12 days.
V. J. W.

Reagent for determination of œstrone. C. M. Szego and L. T. Samuels (Proc. Soc. Exp. Biol. Med., 1940, **43**, 263—265).—By using guaiacolsulphonic acid in place of phenolsulphonic acid in the Kober reaction (A., 1938, III, 397) œstrone can be determined colorimetrically. A slower reaction is produced with œstriol but none with œstradiol or androsterone.
V. J. W.

Œstrogenic action of fluorene derivatives. A. Novelli and M. H. Giunti (Rev. Fac. Cienc. Quím. La Plata, 1939, **14**, 87—89).—The œstrogenic action of fluorene and its hydroxy-, benzylidene, methoxybenzylidene, and methoxy-derivatives, injected into castrated rats, is much less pronounced than that of 4:4′-dihydroxydiphenyl or triphenylethylene (cf. Dodds *et al.*, A., 1936, 1030; 1938, III, 908).
F. R. G.

Pharmacological properties of 4:4′-dihydroxy-αβ-diethylstilbene. O. Arnold and H. Hamperl (Arch. exp. Path. Pharm., 1939, **194**, 121—128).—After daily intramuscular injections of 4 mg. of the drug in dogs the leucocyte count rises; later there is a fall in leucocyte and red cell count; thrombocytes and reticulocytes almost disappear.
H. Bl.

Diethylstilbœstrol dipropionate and lactation in goats. S. J. Folley, H. M. S. Watson, and A. C. Bottomley (J. Physiol., 1940, **98**, 15—16p).—1 g. of 1% ointment was applied thrice weekly to the udder of a virgin female goat and daily milking begun. There was udder development and after a latent period copious secretion of normal milk without need for prolactin treatment.
J. A. C.

Effect of stilbœstrol on certain phases of carbohydrate metabolism. R. G. JANES and W. O. NELSON (Proc. Soc. Exp. Biol. Med., 1940, **43**, 340—342).—Rats which received 0·05 mg. of stilbœstrol twice daily showed an increase in blood-sugar and liver-glycogen after 5 days. V. J. W.

Difference between stilbœstrol and natural œstrogens. J. J. D. DE WIT and L. H. BRETSCHNEIDER (Klin. Woch., 1939, **18**, 1423—1424).—Œstrone, œstradiol, and œstriol had a marked effect on cold-blooded animals (Terebra test); stilbœstrol in a 100-fold concn. had no effect. M. K.

Tumorigenic action of stilbœstrol. A. LIPSCHUTZ and L. VARGAS (Lancet, 1940, **238**, 541—543).—The tumorigenic action (formation of uterine and extrauterine fibroids in guinea-pigs) of stilbœstrol is greater than that of œstradiol and œstrone, but, in small doses, is less than that of esterified œstradiol. The range between hysterotrophic and tumorigenic doses is greater with the natural hormones than with stilbœstrol. C. A. K.

Pituitary lactogenic hormone. I. Electrophoretic behaviour. C. H. LI, W. R. LYONS, and H. M. EVANS (J. Gen. Physiol., 1940, **23**, 433—438).—See A., 1940, III, 405. The lactogenic prep. used had $d\mu/dp_H$ 4·5 × 10^{-5}. The cause of the difference in mobility from White's cryst. prep. is discussed. D. M. N.

Action of camphor on active mammary gland of rabbit. A. MARANO and C. VOLLENWEIDER (Rev. Asoc. Med. Argent., 1939, **53**, 1198).—On the 1st day after parturition a biopsy of the mammary gland was made and compared with that made on the 7th day. The animals were divided into 3 series. The first had the litter removed so that no suction took place; glandular activity persisted. The second also had the litter removed and received 0·2 c.c. of 20% camphorated oil subcutaneously each day; the mammary gland showed involution, the glandular cells being replaced by connective tissue. The third series received the same dose of camphorated oil but was allowed the suckle the litters; activity persisted in the gland. J. T. L.

α-Dihydrotheelin from human placenta. M. N. HUFFMAN, S. A. THAYER, and E. A. DOISY (J. Biol. Chem., 1940, **133**, 567—571).—Human placenta contains approx. theelol 0·14, theelin 0·035, and dihydrotheelin 0·038 mg. per kg. α-Dihydrotheelin is present in the non-ketonic fraction. J. N. A.

Action of testis hormone ["erugon"] on prepubertal rat testis. J. DISCHREIT (Klin. Woch., 1939, **18**, 1493—1496).—No stimulating effect was observed. M. K.

Inactivation of methyltestosterone in castrate male rats. G. R. BISKIND (Proc. Soc. Exp. Biol. Med., 1940, **43**, 259—261).—The experiments previously described with testosterone propionate (A., 1940, III, 131) have been repeated, with the same results, with methyltestosterone. V. J. W.

Androgenic substance and sweat. T. CORNBLEET and B. BARNES (Arch. Dermat. Syphilol., 1940, **41**, 654—656).—No androgen has been found in 2 l. of sweat. Androgen was not detected in the sweat or on the cutaneous surface after intramuscular injection of large quantities of testosterone propionate. C. J. C. B.

Biological activity of methyldihydrotestosterone. VII. Effect on normal young female rats. S. UGAMI (Bull. Inst. Phys. Chem. Res. Japan, 1940, **19**, 37—42).—40-day-old rats were injected for 20 days with daily doses of 500, 250, and 50 μg. of the hormone. All doses suppressed œstrus and diminished the wt. of the ovaries, pituitary, and uterus, although a daily dose of 500 had less effect on the uterus than 250 μg. P. G. M.

Effect of œstrogen and androgen injections on reproductive organs in male rats and mice. R. HARSH, M. D. OVERHOLSER, and L. J. WELLS (J. Endocrinol., Lond., 1939, **1**, 261—267).—Œstrogen administration (40—500 i.u. daily for 30 days) in immature rats produced stratified squamous epithelium in the ducts of Cowper's glands, seminal vesicles, anterior prostate and its duct. Similar changes were produced in the seminal vesicle ducts of adult rats. In mice similar dosage produced penis extrusion with bladder dilatation, thickening of the submucosa of the intraprostatic part of the vasa deferentia, and metaplastic stratification of epithelium in seminal vesicles and anterior prostate and its duct. These changes were more conspicuous in castrate animals. Testosterone (83 μg. daily) given simultaneously or following the œstrogen treatment prevented metaplasia in anterior prostates but did not completely suppress the other changes. P. C. W.

Uterus masculinus of rabbit and its reactions to androgens and œstrogens. R. DEANESLY (J. Endocrinol., Lond., 1939, **1**, 300—306).—In the adult rabbit castration causes atrophy of the uterus masculinus with involution of the complex epithelium to form a single-layered epithelium. Œstrogens, androgens, and combinations of the two and also crude testicular extract were administered to castrate adults or immature intact rabbits to stimulate growth and development of the organ. Œstrogens in small or large doses (100 μg.—5 mg.) caused growth of the uterus masculinus to its normal size but no development of the epithelium. By subcutaneous implantation of tablets of testosterone or methyltestosterone (25—70 mg. absorbed) both growth and epithelial development were stimulated. P. C. W.

Effect of route of administration on multiple activities of testosterone and methyltestosterone in different species. C. W. EMMENS and A. S. PARKES (J. Endocrinol., Lond., 1939, **1**, 323—331).—The androgenic and gynæcogenic activities of testosterone and methyltestosterone were investigated in capons, rats, and rabbits by inunction and by oral and parenteral administration. Testosterone is much less active by mouth than by injection in tests for androgenic action in the capon and castrated male rat, in metrotrophic [uterine-growth] tests in spayed rats or immature rabbits, and in tests for progesterone-like activity in rabbits. Methyltestosterone is nearly as

active by mouth as by injection in causing progestational proliferation in rabbits and is relatively more active by mouth than testosterone in the other tests. When given orally instead of by injection in rats its androgenic activity decreases less than its power to cause uterine growth. Methyltestosterone is more potent than testosterone as an androgen in rats but less potent in capons. It is more potent than testosterone in tests for progesterone activity whichever route of administration is used. The 2 substances have approx. the same activity in causing uterine growth in spayed rats and immature rabbits. P. C. W.

Biological properties of anhydrohydroxyprogesterone (ethinyltestosterone). C. W. Emmens and A. S. Parkes (J. Endocrinol., Lond., 1939, **1**, 332—338).—Anhydrohydroxyprogesterone has slight androgenic activity (capon comb-growth test) equal to that of 1/600th of the dose of injected testosterone. It has equal activity by mouth or injection. It is equally active in propylene glycol solution by mouth or injection in causing progestational proliferation in rabbits. The activity is 0·1 of that of injected progesterone. It causes growth of the uterus in the spayed rat and has equal activity in this respect by mouth or by injection. The progesterone-like activity is more apparent when it is given orally. Vaginal opening and vaginal cornification are caused in the spayed rat, injections being more effective than oral administration. The substance is so far unique in possessing œstrogenic, androgenic, metrotrophic, and progesterone-like activities. P. C. W.

Seasonal variations in weight of testis and prostate of white rats. E. B. Del Castillo and A. Pinto (Rev. Soc. argent. Biol., 1939, **15**, 463—469).—The wts. of testes and prostate of rats were determined in different months during 4 years. In autumn the testis decreased in wt., a month later the same occurred in the seminal vesicles, and a month later in the prostate. During the winter the testis recovered its wt.; the seminal vesicles and the prostate increased gradually, and the highest wt. was reached in summer. Animals were submitted to raised (36°) and lowered (16°) temp. and to light (50 and 400 c.p.) and darkness at different temp., but no significant variations were observed between the different groups. J. T. L.

Action of œstrogens in inducing mitoses in prostate and seminal vesicle of mice as determined by colchicine technique. R. Tislowitz (Anat. Rec., 1939, **75**, 265—273).—The effect of œstrogens on the fibro-muscular stroma and epithelium of the seminal vesicle and prostate is readily observed by the aid of colchicine. A method for the qual. distinction between the effects of androgens and œstrogens is suggested. W. F. H.

Hormonal causation and therapy of enlarged prostate. E. Altenburger (Endokrinol., 1940, **22**, 344—347).—12 patients suffering from enlarged prostate were successfully treated with intramuscular injections of testosterone propionate (25 mg. per day for 3 days; subsequently 5—10 mg. were repeatedly injected). The size of the gland diminished in several cases. A. S.

Changes in rat testis following heat-treatment. W. L. Williams and B. Cunningham (Yale J. Biol. Med., 1940, **12**, 309—316).—Application of heat for 10 min., giving a scrotal temp. of 46°, produced disorganisation of nuclear chromatin, and sloughing of the germinal cells from the 2nd day progressing to the 20th day. Spermatogonia were unaffected. By the 30th day spermatids and spermatozoa were absent. On the 60th day the tubules were regenerated from division of spermatogonia. The Sertoli cells were not affected. (17 photomicrographs.) F. S.

Presence of sperm middle-piece in the fertilised egg of mouse, *Mus musculus*. R. A. R. Gresson (Nature, 1940, **145**, 425).—The distribution of the sperm-mitochondria through the ooplasm is reported. W. F. F.

Sex hormone therapy in experimental peripheral gangrene. R. M. Thomas (Yale J. Biol. Med., 1940, **12**, 415—418).—The administration of either male or female sex hormones to albino rats had no effect on the incidence or course of gangrene of the tail induced by ergotamine tartrate. F. S.

Relationship of vitamin-*E* to endocrine system. J. C. Drummond, R. L. Noble, and M. D. Wright (J. Endocrinol., Lond., 1939, **1**, 275—286).—Vitamin-*E* (total dose 25 mg.) had no effect on the ovaries, uterus, or vagina in immature female or adult hypophysectomised rats. The pituitary glands of male -*E*-deficient rats contained an increased amount of gonadotrophin, those from -*E*-deficient a decreased amount of luteinising hormone. The ovaries of female -*E*-deficient rats responded normally to injections of pregnant mare serum. Hypophysectomy of male -*E*-deficient rats produced a further fall in wt. of the testes. Pregnant mare serum stimulated the interstitial cells of the testes in intact or hypophysectomised -*E*-deficient rats; there was no stimulation of the degenerated tubules. P. C. W.

(xiii) DIGESTIVE SYSTEM.

Digestion in rumen of calves. V. I. Nikitin (Ukrain. Biochem. J., 1939, **14**, 203—222).—Fluid taken from the rumen has a low content of fermentable substances; this is only slightly raised by feeding concentrates. It is concluded that concentrates rapidly leave the rumen. Fermentation is greatly increased by feeding mono- and di-saccharides, proteins, or amino-acids, and to a smaller degree by starch and fats. Yeast depresses fermentation. R. T.

Gastric peristalsis after pylorotomy. H. K. Faber and J. H. Davis (J. Amer. Med. Assoc., 1940, **114**, 847—850).—*X*-Ray studies showed that after pylorotomy for hypertrophic pyloric stenosis there is a depression of gastric peristalsis which may last for 3 days. C. A. K.

Method for continuous recording of gastric p_H *in situ*. J. Flexner and M. Kniazuk (Amer. J. digest. Dis. Nutr., 1940, **7**, 138—140; cf. A., 1940, III, 34).—The method consists in the introduction into the dog's stomach of a glass electrode connected with a p_H meter and a recording potentiometer.

Adequate mixing of the gastric contents is accomplished by an automatic aspirating and injecting device. C. J. C. B.

Emptying time of normal human stomach as influenced by acid and alkali. E. J. VAN LIERE and C. K. SLEETH (Amer. J. digest. Dis. Nutr., 1940, **7**, 118—123).—Gastric emptying time was investigated in healthy young adults, known to have HCl in their fasting gastric juice. The standard test meal consisted essentially of 15 g. of Quaker farina, cooked to a const. vol. with water; 50 g. of $BaSO_4$ were added after the meal had cooled. The normal emptying time was ascertained by repeated fluoroscopic examinations. There was considerable individual variation, but the emptying time of any individual was const. from day to day. 100 c.c. of a solution containing 2 c.c. of dil. HCl produced a delay of 9% in the emptying time in 9 subjects. 5 g. of $NaHCO_3$ in 100 c.c. of water was followed by a decrease of 16·3% in emptying time in 10 subjects. 4 g. of Na_2HPO_4 dissolved in 100 c.c. of water produced a decrease of 17·1% in emptying time of 3 subjects. C. J. C. B.

Effect of antacids on hydrogen-ion concentration of gastric contents. J. B. KIRSNER and W. L. PALMER (Amer. J. digest. Dis. Nutr., 1940, **7**, 85—92).—Of the antacids studied $CaCO_3$ 2·0—4·0 g. hourly is the most effective neutraliser of gastric acidity. Tricalsate, Ca_3PO_4, and Mg trisilicate in the dosage used are progressively less effective, in the order named, in maintaining adequate neutralisation. $Al(OH)_3$ exerted relatively little influence on the gastric juice p_H although its neutralising capacity was appreciable. Atropine sulphate (four 1-mg. doses orally daily) had no influence on the p_H of the gastric contents, although the vol. of secretion was reduced. The gastric acidity was most completely controlled by the use of atropine combined with $CaCO_3$ or with $CaCO_3$ and $NaHCO_3$. The effectiveness of atropine is due to the resultant diminution in the vol. of gastric secretion and the prolongation of gastric emptying time. C. J. C. B.

Preparation of pyrogen-free urogastrone. J. S. GRAY, C. U. CULMER, E. WIECZOROWSKI, and J. L. ADKISON (Proc. Soc. Exp. Biol. Med., 1940, **43**, 225—228).—A fraction of urine extract, sol. in 70% acid acetone and insol. in 95% acetone, contains the gastric juice inhibitory substance (cf. Friedman *et al.*, A., 1940, III, 35) but causes no pyrexia. V. J. W.

Nitrogen and chloride metabolism in gastroduodenal hæmorrhage. D. BLACK and A. LEESE (Quart. J. Med., 1940, **9**, 129—149).—Blood, urine, and fæcal analyses were made in 3 cases of severe gastric and duodenal hæmorrhage. There was a positive N balance, with normal urinary output, and marked N absorption from the blood in the bowel, the blood loss being calc. from fæcal Fe. In one case the blood-urea had risen to 83 mg.-% within 2 hr. of the hæmorrhage, and evidence of tissue breakdown (loss of wt. in spite of maintained diuresis, creatinuria, increased urinary P or S output) was found in all cases, owing probably to sudden tissue dehydration or anæmia, leading to a rapid rise of blood-urea. The primary cause of azotæmia was probably tissue breakdown, and it was maintained later by absorption of blood, and possibly relatively impaired renal function from diminished blood flow. The blood vol. was diminished and the plasma vol. increased. There was a positive Cl′ balance, the urinary electrolytes being low, and the plasma electrolytes falling as bleeding continued. An adequate caloric diet, with free intake of water, salt, and protein, is important. R. K.

Effect of hyperpyrexia on tonus of human common bile duct and cardiac sphincters. H. DOUBILET and W. BIERMAN (Proc. Soc. Exp. Biol. Med., 1940, **43**, 277—279).—In a patient who had a tube in the common bile duct, water was passed into the duct and siphoned out by a duodenal tube, the water pressure needed to open the sphincter being recorded. Tone of the cardiac sphincter was recorded by a rubber balloon. When the patient's temp. was artificially raised to 103° F. in a cabinet both sphincters relaxed. V. J. W.

Inhibitory effect of hyperthermia on exocrine function of pancreas. J. LA BARRE and G. KETTENMEYER (Compt. rend. Soc. Biol., 1939, **132**, 299—300).—Generalised hyperthermia in the dog, produced by diathermy, causes a diminution in pancreatic secretion following secretin injection. If the blood from a hyperthermic dog is circulated through the head of a recipient dog, the latter has diminished pancreatic secretion. P. C. W.

Chemical changes in pancreatic tissue during secretion. N. B. NASELSKI (Ukrain. Biochem. J., 1939, **14**, 231—240).—The water, K, Ca, Cl, total and inorg. P, glycogen, and lactic acid content of the tail are greater, and the non-protein- and NH_2-N are smaller, than in the body of the pancreas (dogs). Following injection of secretin the K, Ca, Mg, Cl, total and inorg. P, lactic acid, and non-protein- and NH_2-N contents fall, and the glycogen content rises. During activity of the gland glycogen falls, and lactic acid rises, in the efferent blood. R. T.

Absorption of chloride against concentration gradients from small intestines of rats and rabbits. N. LIFSON (Amer. J. Physiol., 1940, **128**, 603—607).—Cl′ is absorbed against a concn. gradient from a solution containing approx. ½-isotonic NaCl and ⅓-isotonic Na_2SO_4 placed in the small intestine of white albino rats and of rabbits. The highest blood–gut-Cl′ concn. ratios were 10 : 1 for rats and 3 : 1 for rabbits, as contrasted with a 200 : 1 ratio for dogs under comparable conditions. M. W. G.

Rôle of abdominal innervation in acute experimental intestinal obstruction. J. V. GURRUCHAGA (Rev. Soc. argent. Biol., 1939, **15**, 496—498).—The splanchnic nerves and the abdominal sympathetic chain were removed aseptically on both sides in dogs. In another series the nervous plexus surrounding the cœliac trunk and the superior mesenteric artery was removed. 3—4 weeks later complete intestinal obstruction was produced by a ligature placed on the duodenum. Control animals with intact nerves developed acute collapse and died in 2—3 days. The denervated animals did not show this acute collapse and survived 5—6 days. J. T. L.

Influence of weight of duodenal tube tip on its entrance time. M. Lake (Amer. J. digest. Dis. Nutr., 1940, **7**, 136—138).—Increasing the wt. of the tip from 69 grains (Twiss tube) to 150 grains (Moses Einhorn tube, 1938) does not accelerate its passage or increase the % of successes. C. J. C. B.

Relationship of diet to self-regulatory defence mechanism. III. Organic acids and pectin. I. A. Manville and N. P. Sullivan (Amer. J. digest. Dis. Nutr., 1940, **7**, 111—114).—Of the org. acids present in the intestinal contents of animals fed fruit supplements, butyric acid has the greatest bacteriostatic effect; this is not entirely dependent on the p_H. Bactericidal action of the pectins varies with their composition and the p_H of the medium. Pectic acid was less inhibitory than pectin at the same p_H. C. J. C. B.

Experimental botryomycosis. P. Kimmelstiel and C. A. Easley (Amer. J. Path., 1940, **16**, 95—101).—Foreign body granulation tissue was experimentally produced in the intestinal wall of rabbits by implantation of fish bones. If accompanied by a perpetual infection with small nos. of staphylococci, granules are formed which are identified as botryomycotic granules. C. J. C. B.

Absorption of sulphanilamide as index of blood flow in intestine of man. E. A. Stead, jun., and P. Kunkel (Amer. J. med. Sci., 1940, **199**, 680—686).—The blood flow in the human intestine was investigated by determining the appearance time and the concn. curve in the blood of free sulphanilamide when a known amount of sulphanilamide in solution is introduced directly into the small intestine or colon. Under basal conditions a blood level of 6—8 mg.-% of free sulphanilamide was obtained in 10—13 min. when 300 c.c. of a 1% solution of the amide were placed in the duodenum. Heating the body or inducing collapse in a subject with postural hypotension did not alter the blood curve. This is interpreted as indicating that the basal blood flow to the small intestine was low and that the rapid appearance of the amide in the blood was the result of its rapid diffusion. Sulphanilamide was absorbed more slowly from the large bowel. When 300 c.c. of a 1% solution of the amide were given rectally the blood level rose to 2·4—4 mg.-% at the end of 1½ hr. Pitressin did not influence the rate of absorption of sulphanilamide given by duodenal tube, but delayed absorption when the sulphanilamide was placed in the large bowel. The rapid absorption of the sulphanilamide in the collapse induced by the upright position in a subject with postural hypotension suggests that even in shock sulphanilamide diffuses so rapidly that it is adequately absorbed once it is present in solution in the small intestine. C. J. C. B.

Potassium as a toxic factor in intestinal obstruction. M. N. Jorgensen, N. Dietz, and F. C. Hill (Proc. Soc. Exp. Biol. Med., 1940, **43**, 282—287).—Changes in blood-K following intestinal obstruction in the dog are not sufficient to account for the toxic symptoms. V. J. W.

Correlation of activity and transportation in colon of dog. H. F. Adler and R. D. Templeton (Amer. J. Physiol., 1940, **128**, 514—520).—A technique is described by which propulsion of a bolus through a segment can be correlated with the activity of that segment. The experimental data were obtained from cæcostomised dogs. The essential periodicity of colon activity is confirmed and extensive studies on the proximal colon and distal colon were made. M. W. G.

Intestinal excretion and athrocytosis in *Machilis maritima*, Leach. L. Lison (Compt. rend. Soc. Biol., 1939, **132**, 309—310).—By injecting various acid dyes into the hæmocœlom of *M. maritima* excretion and athrocytosis can be demonstrated in the intestinal diverticula. Only dialysable dyes are eliminated in this way, particularly those more diffusible than acid-green. P. C. W.

Utilisation of parenterally administered horse serum by rat. T. Addis, D. D. Lee, W. Lew, and L. J. Poo (Amer. J. Physiol., 1940, **128**, 544—546).—In one group of rats, horse serum was injected intraperitoneally in doses of 5 c.c. per 100 sq. cm. body surface; another group were given the same quantity of 0·9% NaCl intraperitoneally. After 22 days the serum-injected group contained 29·67 g. of total protein as compared with 24·51 g. in the NaCl group. The rat transforms the proteins of horse serum with the proteins of its own tissues and organs when this foreign serum is injected intraperitoneally. M. W. G.

(xiv) LIVER AND BILE.

Galactose tolerance as test of liver function. N. F. Maclagan (Quart. J. Med., 1940, **9**, 151—162).—Galactose utilisation depends chiefly on the liver, and it is preferred to fructose which is utilised by an animal without a liver. After 40 g. of galactose orally in 250 c.c. of water, the galactose in 0·2 c.c. of blood is determined at ½, 1, 1½, and 2 hr. by Cu-reduction after yeast fermentation of glucose. The sum of these 4 vals. in mg.-% is the galactose index (G.I.). The limits of G.I. in 20 students were 111—3, and in 30 control patients 163—18, the average of 50 being 68. 6 diabetics were normal 96—22; 10 cases of hyperthyroidism had impaired tolerance 448—199, and 2 were normal 112—76. The divergence between the galactose test of liver synthesis, and a liver test based on bile excretion, was shown by 6 cases of obstructive jaundice with G.I. 149—49 and mean serum-bilirubin 12·9 mg.-%, and 10 cases of toxic jaundice with G.I. 584—197 and mean serum-bilirubin 5·4 mg.-%. R. K.

Histogenesis of hepatic cirrhosis in chronic food selenosis. R. D. Lillie and M. I. Smith (Amer. J. Path., 1940, **16**, 223—228).—Wheat from seleniferous soil produces a well-marked nodular cirrhosis of the liver in rats when combined with a low-protein, high-carbohydrate diet. Associated with this are considerable cellular destruction and phagocytosis of nuclear debris in the follicles of the spleen, and moderate splenic myelosis. High-fat–low-protein and high-protein diets do not completely protect against these actions of org. Se but greatly delay and decrease their frequency. Organising

hæmorrhage is a frequent and possibly essential stage in the histogenesis of the cirrhosis of food-Se poisoning in rats. The destructive process is continuous, as shown by the presence of scattered, isolated necrotic liver cells, and of the hyaline oxyphilic globules derived from them at all the later stages in the process. (4 photomicrographs.) C. J. C. B.

Action of cysteine in acute disease of liver. K. Lušicky (Wien. klin. Wschr., 1940, **53**, 125—127).—Daily intravenous injection of 0·1 g. of cysteine in 5 c.c. of water was beneficial in patients suffering from acute disease of the liver; blood-bilirubin decreased and the urinary excretion of urobilinogen and bilirubin increased. The size of the liver diminished. A. S.

Acholuric catarrhal jaundice in infancy. S. Zimanyi (Arch. Pediat., 1940, **57**, 207—215).—An infant 14 months of age contracted jaundice; he had acholic stools. Despite the fact that the serum contained much bilirubin that gave a direct van den Bergh reaction, the urine contained neither bile pigments nor biliary acids, either during or after the whole period of the disease. C. J. C. B.

Biliary pigment curve during secretin test. Diagnostic significance in non-functioning gall bladder. J. S. Diamond, S. A. Siegel, and S. Myerson (Amer. J. digest. Dis. Nutr., 1940, **7**, 133—136).—An intravenous injection of secretin produces an increase in flow of liver bile of 60—80 c.c. during the 80-min. test period. Under normal conditions of the biliary apparatus this secretion enters the gall bladder and is stored there, with a resulting colourless duodenal juice. When gall bladder function is impaired, *e.g.*, by occlusion of the cystic duct, or when the gall bladder has been removed, the newly secreted liver bile enters the duodenum and causes a marked discoloration of the pancreatic juice. C. J. C. B.

Hepatic excretion in crustacea. L. Lison (Compt. rend. Soc. Biol., 1939, **132**, 307—308). P. C. W.

Histological demonstration of vitamin-*A* in human liver by fluorescence microscopy. H. Popper (Proc. Soc. Exp. Biol. Med., 1940, **43**, 234—236; cf. A., 1940, III, 512).—Human livers were examined by the methods used for the rat. Fluorescence is diminished in exhausting diseases or hepatitis and at birth, and is present in quantity in epithelial cells near proliferating Kupffer cells. V. J. W.

(xv) KIDNEY AND URINE.

Renal function in patients with gout. F. S. Coombs, L. F. Pecora, E. Thorogood, W. M. V. Consolazio, and J. H. Talbott (J. clin. Invest., 1940, **19**, 525—535).—Kidney function was investigated in 22 patients with gout. The tests included clearance of inulin, creatinine, urate, Na, and Cl′. 8 subjects with normal kidneys and one subject with terminal Bright's disease were used as controls. Most gouty patients showed evidence of renal damage. The earliest change was inability to concentrate solids. In the absence of severe renal impairment, all except 10% of the urates which were filtered through the glomeruli were reabsorbed by the tubules. With severe renal impairment, reabsorption of urates by the tubules was depressed and clearance tended to be maintained. No inferiority of the kidneys to excrete urate was demonstrated. Cinchophen and salyrgan diminished tubular reabsorption of urate and increased urate clearance. Colchicine did not influence the renal elimination of urates. Kidney changes in patients with gout are believed to be the result and not the cause of the metabolic dyscrasia. C. J. C. B.

Hypochlorotic calcium nephrosis. P. Gömöri and E. Sármai (Klin. Woch., 1939, **18**, 1465—1468).—Ca deposits (resembling those found in cases of clinical extrarenal azotæmia) can be artificially produced in cats by ligature of the pylorus. 2—3 days after removal of the ligature an infusion of 0·9% NaCl was administered. The diuresis and the excretion of N were normal in all animals. After 4—6 weeks 2 animals were killed, but only traces of Ca were found in the kidneys, indicating that the process is reversible. M. K.

Pathological anatomy of Cellophane perinephritis. I. Grace and I. H. Page (Amer. J. Path., 1940, **16**, 211—221).—Sterile Cellophane, when gently applied to the kidneys of dogs, rabbits, and cats, produces an intense inflammatory reaction and strong chemotactic stimulation of polymorphonuclear leucocytes, followed by a continuous fibroblastic and collagenous deposit. The collagenous deposit may be 3—5 mm. thick, and after 1½ months the renal parenchyma or hilar structures, or both, may be compressed. The systolic blood pressure begins to rise 3—4 weeks after the application of Cellophane, and may reach a level of 240 mm. Hg after 1—2 months. It may persist for 14 months. The pathogenesis of this type of hypertension is related to the perinephritis; it is difficult to ascribe it to ischæmia, on morphological grounds, as no ischæmic changes are found in the kidneys in the early stages. In later stages ischæmic scarring is easily discernible, and compression of the kidneys probably interferes with capillary circulation. Likewise there may be marked compression of the hilar structures by the scar tissue. (6 photomicrographs.) C. J. C. B.

Renal athrocytosis of bile pigments following biliary stasis in dog. A. Lacoste, E. Aubertin, and R. de Lachaud (Compt. rend. Soc. Biol., 1939, **132**, 261—263).—Following ligature of the bile duct in the dog large masses of bile pigments are found in the cells of the renal cortex. The arrangement, variability, and appearance and disappearance of the pigments suggest that they are reabsorbed from the tubules following glomerular filtration. P. C. W.

Routes of absorption in total ureteral obstruction. D. M. Morison (Arch. Surg., Chicago, 1939, **38**, 1108—1128).—Hydronephrosis was produced in rabbits by ligature of the lower end of the left ureter. There was rapid absorption of uroselectan and phenolsulphonephthalein from the hydronephrotic sac into the blood stream. Rapid lymphatic absorption follows intertubular injection of dyes in the outer cortex. Tubular absorption of dyes from the

pelvis is usually evident at 30 min. but can occur more rapidly in total obstruction of 4—5 days and may take 1 hr. or more in longer periods of obstruction. Certain epithelial cells of the papillæ and main ducts are columnar. (4 photomicrographs.) F. S.

Renal nerves and water diuresis. L. E. Bayliss and A. Brown (J. Physiol., 1940, **98**, 190—206).—These nerves play no part in the production of water diuresis in the hypophysectomised and decerebrate dog. Spontaneous polyuria sometimes follows these operations; the renal nerves play no part in its onset. There appears to be no correlation between the position at which the brain stem is divided and (*a*) the occurrence of spontaneous polyuria or (*b*) the capability of yielding a water diuresis. Inhibition of spontaneous polyuria and water diuresis by ether is chiefly the result of a fall in creatinine clearance, produced by the action of the renal nerves. Inhibition by pituitary extracts occurs without change in creatinine clearance; the renal nerves play no part. Many of the preps. show a marked fall in Cl′ excretion after hypophysectomy and decerebration; this occurs only if the tuber cinereum is damaged or removed. The excretion of water is independent of that of Cl′. None of the existing theories of the control of water excretion explains all these observations. J. A. C.

Concentrated serum as diuretic [in nephrosis]. C. A. Aldrich and H. H. Boyle (J. Amer. Med. Assoc., 1940, **114**, 1062—1065).—Four times conc. pooled human serum was successfully used in 7 cases of pure nephrosis. Diuresis with complete removal of œdema occurred in most cases, and in 3 cases the nephrosis was apparently cured. Other types of renal œdema were not benefited. C. A. K.

Secretion of urine in chicken (*Gallus domesticus*). H. R. Hester, H. E. Essex, and F. C. Mann (Amer. J. Physiol., 1940, **128**, 592—602).—The concn. of urates and other excretory products is the function of the kidneys of birds and not of the avian cloacal mucosa. The normal daily vol. of urine secreted by chickens and the daily intake of water are small. Elimination of urine in birds is not fundamentally different from that of the mammal, except that the urine is collected by the bladder of mammals and the cloaca performs that function in birds. M. W. G.

Effect of single injection of caffeine on excretion of ions and urine volume. H. Vollmer (Arch. exp. Path. Pharm., 1940, **194**, 551—572).—Injection of one dose of caffeine into rats (2·5 mg. per 100 g. and more) leads to an increase of urine vol., Cl, Na, and K excretion in the winter. In summer, only the vol. and urine-K are increased; Na excretion is diminished and Cl balance not affected. H. Bl.

Urine in caffeine-tolerant rats. H. Vollmer and G. Richter (Arch. exp. Path. Pharm., 1940, **194**, 573—588).—A single dose of caffeine, given 4—5 days after the cessation of treatment with caffeine over a long period, causes a reduction of urine vol. and -Cl content; the increase in urine-K observed in the untreated rat does not take place. H. Bl.

Relation of specific gravity to composition and total solids in normal human urine. J. W. Price, M. Miller, and J. M. Hayman, jun. (J. clin. Invest., 1940, **19**, 537—553).—The sp. gr. of an artificial solution made up of the major substances commonly found in normal urine is the sum of the sp. gr. effects of the individual substances. 48 24-hr. urines from 6 subjects with normal renal function have been analysed for Cl′, SO_4'', PO_4''', HCO_3', urea, creatinine, p_H, and total solids, and the sp. gr. contributions of the inorg. salts, urea, and creatinine were calc. The various coeffs. proposed for estimation of total solids in urine from sp. gr. are valid only for urines of the same relative composition since the coeffs. of org. and inorg. solutes differ by 200—300%. In normal subjects on fixed diets, the solid content can be estimated quite accurately from sp. gr. by means of coeffs. In random urines, on the other hand, the variation in composition makes the use of coeffs. too inaccurate for exact analytical use. C. J. C. B.

Comparison of tests for bilirubin in urine. A. G. Foord and C. F. Baisinger (Amer. J. clin. Path., 1940, **10**, 238—244).—In testing for bilirubin in the urine, some method of concn. of the pigment should be used, either pptn. and adsorption by $BaCl_2$ or adsorption by talc. The diazo-spot method of Godfried is satisfactory, as are also the Harrison spot and the Naumann methods. C. J. C. B.

Determination of urinary ammonia using Lang's distillation apparatus. H. D. Cremer and E. Opitz (Klin. Woch., 1939, **18**, 1453).—The NH_3 content of urine was determined in the distillation apparatus after adsorption with Permutit. M. K.

Determination of morphine in urine. M. Schirm (Apoth.-Ztg., 1940, **55**, 106—107).—A simple nephelometer is described in which, by Deckert's method (A., 1938, II, 252), the sample is compared directly with a series of standards. E. H. S.

Determination and significance of urinary amylase. D. L. Dozzi (Amer. J. digest. Dis. Nutr., 1940, **7**, 123—133).—A survey of current views concerning the origin, nature, and action of urinary amylase. A reliable method for determining urinary amylase is described. The normal range varied considerably. While a more conc. specimen of urine exhibited greater hydrolysing qualities, the 24-hr. collections showed the same variation whether dil. or conc. The urinary amylase also was determined in patients with different pathological conditions. C. J. C. B.

Adapter for urine specimen tubes. M. Shinn and H. L. Wunderly (J. Pediat., 1940, **16**, 356).—The substitution of a sterilised rubber adapter for adhesive tape on the mouths of test tubes used for the collection of urine specimens from infants and small children is described. C. J. C. B.

(xvi) OTHER ORGANS, TISSUES, AND BODY-FLUIDS.

Effect of organ extracts, particularly the pituitary, on growth. B. Lustig and H. Wachtel (Compt. rend. Soc. Biol., 1939, **132**, 243—246).—Effects of acetone extracts of animal organs on the

growth of young rats are described. These differ from their effects on plant growth; an extract of the pituitary anterior lobe promotes growth, whereas an extract of the posterior lobe has an inhibiting effect. H. G. R.

Glutathione content of tissues following splenectomy in dog and rabbit. F. Santavy (Compt. rend. Soc. Biol., 1939, **132**, 285—286).—1 month after splenectomy in the dog the glutathione (reduced and total) content of the tissues is diminished. In the rabbit the content in the blood and heart is raised but only to the same degree as the increase in erythrocytes. The content of the liver, lungs, and kidneys remains normal. P. C. W.

Liberation of histamine by trypsin. M. Ramirez de Arellano, A. H. Lawton, and C. A. Dragstedt (Proc. Soc. Exp. Biol. Med., 1940, **43**, 360—361).—Intravenous injection of trypsin in the dog increases histamine in the blood and decreases that in the liver. V. J. W.

Hyaluronic acid in pleural fluid associated with malignant tumour involving pleura and peritoneum. K. Meyer and E. Chaffee (J. Biol. Chem., 1940, **133**, 83—91; cf. A., 1940, III, 424).—The viscous component of the fluid is hyaluronic acid (content approx. 0·17%), which is similar in composition and rotation to that obtained from other sources. During electrophoresis of the fluid, the free polysaccharide migrates with a high mobility. η of the fluid is approx. 95 times that of the polysaccharide in equiv. concn.; its rapid decrease on dilution indicates that the fluid is a gel. J. N. A.

Active and resting states of catfish melanophores. G. H. Parker (J. Cell. Comp. Physiol., 1940, **15**, 137—146).—Blind catfish keep in darkness the same colour as when darkness began, whether this was light or dark. It is suggested that the melanophores can be at rest whether expanded or contracted. V. J. W.

Lipins of earthworm. J. A. Lovern (Biochem. J., 1940, **34**, 709—711).—The acetone-sol. and -insol. fractions of earthworm lipins contain unknown acids in addition to C_{10}—C_{22} and higher fatty acids. They have a very low hexadecenoic acid content and a high ratio of stearic to palmitic acid. 56·4—67% of the ether-sol. matter is insol. in acetone. The acetone-sol. fraction contains a high proportion of sterol esters but little triglyceride. P. G. M.

(xvii) TUMOURS.

Effect of petroleum ether extract of mouse carcases on skin tumour production in *C* 57 black mice. J. J. Morton and G. B. Mider (U.S. Publ. Health Repts., 1940, **55**, 670—676).—The application of a light petroleum extract of mouse carcases to the skin of mice 20—30 min. before painting with 3 : 4-benzpyrene increased the production of skin tumours. Painting with benzpyrene in light petroleum extract of mouse carcases produced fewer tumours than benzpyrene in benzene. E. B.

Failure of intraperitoneal injection of 3 : 4-benzpyrene solution to increase the general susceptibility to cancer. S. Beck (Brit. J. exp. Path., 1940, **21**, 133—135).—Injections of 1 mg. in 0·5 c.c. of olive oil were given to 110 mice; 10 served as controls, 20 were cauterised, 20 had a leg irradiated with *X*-rays, 40 received an erythema dose of ultraviolet rays weekly on the nape, and 20 were painted twice weekly with 0·3% 3 : 4-benzpyrene. In the first 4 groups tumours occurred only in the peritoneal cavity and in the last group tumours also developed in the painted area, but the local carcinogenic effect was not accelerated. F. S.

Effect of experimentally formed tumours on musculo-skeletal system of rat. C. J. Sutro and L. Pomerantz (Arch. Surg., Chicago, 1939, **38**, 1132—1149).—35 rats were given 1—6 injections of 1·5 mg. of 1 : 2 : 5 : 6-dibenzanthracene in periosteal tissues in various parts of the skeleton. 16 sarcomata were produced. When invasion of the skeleton occurred it was by way of the capsule of a joint, by a cranial suture, or less commonly by direct resorption of the cortex. There was very little periosteal reaction. Dibenzanthracene could be detected by fluorescence in the tumours but not in any of the organs. F. S.

Endocrine glands in experimental cancer induced by benzpyrene. Rôle of endocrine glands in pathogenesis of tumours. L. T. Larionow (Amer. J. Cancer, 1940, **38**, 492—505).—In mice painted with benzpyrene no morphological alterations are apparent in the endocrine glands either in the precancerous period or during the early cancer stage. F. L. W.

Host constitution and incidence of chemically induced tumours. W. F. Dunning and M. R. Curtis (Amer. J. Cancer, 1940, **38**, 516—532).—Rats of different genetic constitutions, of both sexes and different ages, were injected with benzpyrene in paraffin wax at various discrete foci. There were no differences in % tumours induced, average time of occurrence, or proportion of deaths from tumours after 60 days. Increase of 45 and 60% of the area of tissue exposed to 2 or 4 mg. of benzpyrene revealed no differences. F. L. W.

Effect of single intraperitoneal injections of carcinogenic and non-carcinogenic hydrocarbons on growth of rat. A. White and J. White (Yale J. Biol. Med., 1940, **12**, 427—431).—After such injections of varying amounts of methylcholanthrene, benzpyrene, pyrene, or phenanthrene the rats show retardation of growth for 7 days. No differences were observed between the effects of carcinogenic and non-carcinogenic hydrocarbons. F. S.

Cancerogenic azo- and related compounds. R. Kinosita (Yale J. Biol. Med., 1940, **12**, 287—300).—Of more than 50 azo- and related compounds, butter-yellow is by far the most potent in producing hepatic cancer in the rat by feeding. The next in order of potency is *o*-aminoazotoluene, isomeric with butter-yellow. A few others have a slight effect. The hepatic cancer of butter-yellow is highly malignant. Applied directly to the liver, butter-

yellow is not carcinogenic. The carcinogenic process is related to chemical reactions during decomp. in the liver after feeding or injection. F. S.

Biological organisation and cancer problem. H. S. Burr (Yale J. Biol. Med., 1940, **12**, 277—282).—Potential gradients between head and tail of the embryo of the salamander could be detected 1·0—1·5 mm. from the surface and slow oscillations of a galvanometer parallel rotation. Living mechanisms therefore possess electrodynamic fields and disturbance thereof may lead to cancer. F. S.

Prevention of cancer induced by *o*-amino-azotoluene and dimethylaminoazobenzene by rye meal. J. Maisin, Y. Pourbaix, and E. Cuvelier (Compt. rend. Soc. Biol., 1939, **132**, 315—318).—A basal diet of rye meal prevents the appearance of hepatic cancer in mice given butter-yellow. Polished rice is ineffective, so that the activity is presumably present in the cortex of the grain. P. C. W.

Incidence of induced pulmonary tumours in susceptible mice raised in dust-free air. E. Lorenz and H. B. Andervont (Arch. Path., 1940, **29**, 484—493).—An experimental apparatus in which it is possible to raise mice for any period of time in closed jars and control the amount of dust in these jars to not more than 1/30 of that of outside air is described. Mice born and kept in the experimental apparatus were as susceptible to the induction of pulmonary tumours by subcutaneous injection of 1 : 2 : 5 : 6-dibenzanthracene as were mice of the same genetic constitution which were kept in the outside air. (2 photomicrographs.) C. J. C. B.

Infectious myxoma and experimental cholesterol-atheromatosis of rabbit. H. Thiersch (Austral. J. Exp. Biol., 1940, **18**, 57—61).—When rabbits suffering from experimental cholesterol-atheromatosis are infected with the virus of infectious myxoma, the resulting lesions do not localise in the atheromatous areas. The course of the infectious myxoma is not influenced by the existence of atheroma. D. M. N.

Physiologically active oxidation product of ergosterol.—See A., 1940, II, 254.

Latent virus infections and their possible relevance to the cancer problem. C. H. Andrewes (Proc. Roy. Soc. Med., 1939, **33**, 75—86).—Animals and plants may harbour viruses, and bacteria bacteriophage, with no harm to themselves. Latent virus infections may be classed as (1) transient, when the infection runs its course and the parasite disappears without overt symptoms; (2) persisting, the virus continuing to be harboured by the host after symptoms have disappeared; (3) indigenous, combining the properties of (1) and (2); (4) complicated, when the virus passes through an intermediate host. The possible rôle of latent viruses in the ætiology of cancer is discussed. W. J. G.

Preponderant rôle of female in hereditary transmission of mammary carcinoma. Œstrone experiments. A. Lacassagne (Compt. rend. Soc. Biol., 1939, **132**, 222—224).—Males and females of a cancer-susceptible strain of mice (*R* III) were crossed with mice of a non-susceptible strain and the offspring injected with œstrone (50 μg. of the benzoate weekly). The F_1 and F_2 descendants of the male susceptible mice did not develop tumours, but many of those from the female susceptible mice did. P. C. W.

Mammary tumours produced in rats by action of œstrone tablets. R. L. Noble, C. S. McEuen, and J. B. Collip (Canad. Med. Assoc. J., 1940, **42**, 413—417).—Female rats 5—7 days old received tablets of 1—7 mg. of œstrone implanted into their subcutaneous tissue. Tumours were found in the mammary glands of 28 of 49 rats. The first tumour to appear was palpable after 226 days of treatment. The tumours were frequently multiple, slowly growing, and were not near the site of the œstrone tablet. Histologically the tumours showed extreme cellular hyperplasia but no evidence of invasion of the stroma or rupture of the basement membrane by tumour cells. Other effects included enlargement of the pituitary gland with adenoma formation, ovarian atrophy, uterine fibrosis with squamous cell metaplasia, and alteration in body growth. C. J. C. B.

Hormonal ætiology of breast cancer. W. Cramer (Amer. J. Cancer, 1940, **38**, 463—472).—A review. F. L. W.

Susceptibility to follicular hormone and disposition to mammary cancer in female mice. P. J. van Gulik and R. Korteweg (Amer. J. Cancer, 1940, **38**, 506—515).—The susceptibility of 437 spayed female mice of different strains to follicular hormone was determined. 2 high-cancer strains were less susceptible to the hormone than 3 low-cancer strains. It is suggested that the least susceptible females normally produce the greatest amount of follicular hormone. There may be a causal relationship between susceptibility to follicular hormone and disposition to mammary cancer. F. L. W.

Production of endometrial moles with steroid hormones. H. Selye and S. Friedman (Amer. J. Cancer, 1940, **38**, 558—563).—The uteri of post-pubertal ovariectomised rats treated with daily doses of 0·1 mg. of œstradiol, 3 mg. of testosterone propionate, or 3 mg. of ethinyltestosterone are sensitised to local trauma in such a manner that gelatinous tumours of the endometrial mole type develop at the site of injury. F. L. W.

Effect of œstrogens and androgens on growth of mammary fibroma in rats. F. E. Mohs (Proc. Soc. Exp. Biol. Med., 1940, **43**, 270—272).—Transplantability and rate of growth were increased by injections of 6 r.u. of "amniotin" every 2 days, but very little affected by 250 μg. of testosterone propionate biweekly. Malignant tumours were unaffected. V. J. W.

Prolonged maintenance of mammary carcinoma in vitamin-*E*-deficient rats. W. L. Bryan and K. F. Mason (Proc. Soc. Exp. Biol. Med., 1940, **43**, 375—379).—No differences in tumour growth were observed between vitamin-*E*-deficient and control rats, and feeding normal rats with wheat-

germ oil (1 c.c. per day) caused no abnormal growths. V. J. W.

Radioactive phosphorus as an indicator of phospholipin metabolism. X. Phospholipin turnover of fraternal tumours. H. B. Jones, I. L. Chaikoff, and J. H. Lawrence (J. Biol. Chem., 1940, **133**, 319—327).—Carcinoma, lymphoma, and lymphosarcoma, in spite of their exposure to the same host, exhibit distinct typical rates of phospholipin turnover. Nevertheless the host may exert a modifying influence in each case. P. G. M.

Glutamic acid of malignant tumours. S. Graff, D. Rittenberg, and G. L. Foster (J. Biol. Chem., 1940, **133**, 745—752).—*dl*-Glutamic acid containing a known amount of ^{15}N was added to hydrolysates of malignant tissue-proteins. Glutamic acid was then isolated by the Foreman method and its α and ^{15}N content were determined. 6·7—8·7% of the total N of tumour-protein hydrolysates is present as *l*(+)-glutamic acid. Less than 1% of the total glutamic acid is in the *d*(−)-form. Ca and Ba salts of *dl*-glutamic acid and of *l*-glutamic acid have the same solubility in dil. alcohol. E. B.

Digestibility of tumours by enzymes. H. Bayerle (Biochem. Z., 1939, **303**, 251—259; cf. Kögl *et al.*, A., 1939, III, 489).—The proteins of malignant tumours from human liver are extensively attacked when treated successively with cathepsin, pepsin, trypsin, and peptidases, the effects being much greater than would be expected in view of the racemic amino-acid content of the tumours. Possibly healthy and tumour tissues do not contain enzyme systems capable of degrading tumour-proteins. W. McC.

Tryptophan content of albumin-II fraction of serum of normal and carcinoma rats. A. Rosenbohm (Z. Krebsforsch., 1940, **49**, 665—666).—The tryptophan content is higher in rats carrying malignant growths. E. M. J.

Metabolism of human endometrium with special reference to adenomyosis and hyperplasia of endometrium. M. L. Dreyfuss (Amer. J. Cancer, 1940, **38**, 551—557).—Measurements of respiratory metabolism of human endometrium (normal, adenomyosis, hyperplasia, decidua, and carcinoma) are recorded. F. L. W.

Enzyme and co-enzyme of carbohydrate decomposition in Jensen sarcoma. H. von Euler, F. Schlenk, G. Günther, N. Forsman, and B. Högberg (Arkiv Kemi, Min., Geol., 1939, **13**, **B**, No. 6, 6 pp.).—The various enzymes and co-enzymes of Jensen sarcoma are determined and their relation to the initiation of sarcoma is discussed. A new method for determining codehydrogenase is described using *iso*citric acid as substrate and a spectrophotometric technique. E. M. W.

Effect of extracts of benign and malignant tumours on germination and growth of plants. B. Lustig and H. Wachtel (Compt. rend. Soc. Biol., 1939, **132**, 246—249).—Growth-retarding substances are considerably augmented in malignant tumours compared with normal tissue. H. G. R.

Carcinoma metabolism. E. Maier and A. von Christiani (Z. Krebsforsch., 1940, **49**, 679—710).—A review. E. M. J.

Comparison of fungistatic properties of œnanthaldehyde and œnanthic acid as related to their possible anticarcinogenic effect. C. Hoffman, T. R. Schweitzer, and G. Dalby (Amer. J. Cancer, 1940, **38**, 569—570).—Heptaldehyde has marked fungistatic properties over the range p_H 2—8, but is not so powerful a fungistat as heptoic acid. It is possible that the anticarcinogenic effect of heptaldehyde is due to heptoic acid produced from it in the tissues. F. L. W.

Action of short radio waves on tissues. III. Comparison of thermal sensitivities of transplantable tumours *in vivo* and *in vitro*. H. J. Johnson (Amer. J. Cancer, 1940, **38**, 533—550).—The thermal sensitivities of the Jensen rat sarcoma and the Walker rat carcinoma 256 are compared at 43·5—47°. The exposures required for 50% regression for the Walker carcinoma at 47°, 45°, and 43·5° are 45, 90, and 360 min. respectively and for the Jensen sarcoma 25, 60, and 180 min. at the same temp. The Walker carcinoma is more resistant to heat *in vivo* than the Jensen sarcoma. No difference in sensitivity between the two tumours is shown *in vitro*. The thermal death times are: at 47°, less than 20 min.; 45°, 1 hr.; 43·5°, 3 hr. 3 hr. exposure at 42·5° produces 50% destruction and at 41·5° no destruction. Both tumours are more resistant to heat *in vivo* than *in vitro*. F. L. W.

Influence of Roentgen radiation on heterologous and homologous transplantation immunity. J. Clemmesen (Amer. J. Cancer, 1940, **38**, 483—491).—The immunity to mouse sarcoma 180 in rats grafted with this tumour was tested by a 2nd graft at different intervals. The same experiment in heavily irradiated rats showed that the cells of the 2nd graft survived one week longer. In pre-irradiated mice, injections of fœtal skin or minced young embryos failed to induce immunity to mouse carcinoma *M*63 even after 40—60 days. F. L. W.

Tumour response and stroma reaction following *X*-ray of transplantable tumour in inbred strains of mice. A. W. Oughterson, R. Tennant, and E. A. Lawrence (Yale J. Biol. Med., 1940, **12**, 419—425).—*X*-Ray irradiation of a transplantable mouse tumour which originated in *A*-strain mice and was transplanted in *A*-strain mice showed a 1% cure with 2500 r. and a 48% cure with 5000 r. Similar irradiation of the same tumour in hybrid mice showed 82% and 97% cures respectively. The tumours responding most to *X*-ray developed a characteristic stroma similar to that formed in animals with naturally regressing tumour. The host is an important factor in determining the response to the irradiation. (5 photomicrographs.) F. S.

Destructive effects on carcinoma of colchicine followed by distilled water. M. F. Guyer and P. E. Claus (Proc. Soc. Exp. Biol. Med., 1940, **43**, 272—274).—Subcutaneous injection of 0·1 mg. per 100 g. of colchicine was followed after 15 hr. by injection into the growth of a max. quantity of water.

Recovery took place in 59 out of 103 cases; 18 were not affected; 26 died from embolism by tumour fragments. V. J. W.

Hemangioendothelioma of lung. A. Plaut (Arch. Path., 1940, **29**, 517—529).—A case is reported of multiple intravascular hemangioendothelioma of the lung connected with widespread structural abnormalities of the pulmonary arteries. There was also a capillary angioma of the involved lung, and a large defect of the interventricular septum. (12 photomicrographs.) C. J. C. B.

Carcinoma of lip. E. T. Newell (Arch. Surg., Chicago, 1939, **38**, 1014—1029).—Clinical and pathological study of 390 cases with report of 5-year cures. (6 photomicrographs.) F. S.

Chemistry and biochemistry of tumours. M. Oesterlin (Chem.-Ztg., 1940, **64**, 5—7).—Review on carcinogenic agents, tumour metabolism, and the amino-acids of tumour-proteins. E. B.

(xviii) NUTRITION AND VITAMINS.

Diet of middle-class Chinese and Moslems in Sungpan. L. T. Cheng and H. C. Ku (Contr. Biol. Lab. Sci. Soc. China, 1939, **13**, 91—99).—Data for the daily intakes of protein, fat, carbohydrate, Ca, P, and Fe are tabulated. The diets are deficient in vitamin-*C* but are otherwise adequate. W. McC.

Peking diets. III. During dysentery. R. A. Guy and K. S. Yeh (Chinese Med. J., 1939, **56**, 225—231). W. J. G.

Nutritive value of egg. S. K. Kon (Chem. and Ind., 1940, 360—363).—The nutritive val. of one egg is compared with that of 0·5 pint of milk, 1 oz. of cheese, and 2 oz. of ox liver. Comparison with milk shows there is little difference in the amounts of protein, fat, vitamin-*A*, -B_1, and riboflavin, and in the caloric val. Milk contains much more Ca, and also more -*C*, P, and carbohydrate, than the egg, but the latter is much richer in Fe (8—16% of total Fe requirement) and in -*D*. Ox liver surpasses the egg in almost every respect except in the amount of -*D*. J. N. A.

Replacement of protein [in feeding-stuffs] by "amides." V. "Glucose-ureide" for pigs. K. Nehring and W. Schramm (Bied. Zentr., 1938, **B**, **10**, 525—552).—The digestibility and resorption of the N of "glucose-ureide" (prepared from glucose + urea) averaged 92%. N balances with the ureide diet were similar to, but live-wt. increases were less than, those with a protein diet. A. G. P.

Influence of diets of varying fat content on experimentally produced cutaneous infections in white rats. J. L. Callaway and R. O. Noojin (J. invest. Dermat., 1940, **3**, 71—75).—There were no differences in the local cutaneous response to infection on the part of groups of white rats fed diets containing different amounts of fat. The amount of fat in the diet had a definite influence on the leucocytosis produced by the infection, animals on a low-fat diet having a lesser degree of leucocytosis than did the normal- or high-fat group; the differences in leucocytosis were principally due to the differences in no. of polymorphonuclear cells. C. J. C. B.

Effect of alimentary fatty unbalance on the composition of pigeon muscle and blood. R. Lecoq (Compt. rend., 1940, **210**, 457—460; cf. A., 1939, III, 164).—Pigeons fed a diet containing 50% of castor oil and an adjunct of dried yeast (4 g. daily) die in 15—25 days showing polyneuritic symptoms. Similar amounts of olive or arachis oil permit indefinite survival. The first group showed an increase in PO_4''' and acid-sol. P and a decrease in adenylpyrophosphoric acid of striped muscle, and a decrease in alkali reserve. The lactic acid, reducing substances, and creatinephosphoric acid of striped muscle are unchanged. J. L. D.

Water content of organs of albino rat on high-carbohydrate and high-fat diet. J. Haldi and G. Giddings (Amer. J. Physiol., 1940, **128**, 537—543).—Neither a high-carbohydrate nor a high-fat diet had any effect on the hydration of heart, lungs, gonads, and pituitary in the albino rat. Both diets had a dehydrating effect on the brain, spleen, and adrenals. The carbohydrate diet produced a slight increase in the water content of the muscle; the fat diet had a dehydrating effect on the liver, kidneys, thymus, and thyroid. M. W. G.

Water economy of working horses on a ration of green fodder with soaked beet slices. H. Wittig (Bied. Zentr., 1938, **B**, **10**, 481—495).—Heat production during digestion of a ration of lucerne–cocksfoot–soaked beet slices by horses was insufficient to provide for evaporation of much of the water taken in with the food. Food energy otherwise utilisable for productive purposes is consumed in evaporation of surplus water. A. G. P.

Feeding young and old lucerne to working horses. H. Wittig (Bied. Zentr., 1938, **B**, **10**, 496—524).—The water content of fæces of horses receiving a lucerne–grass ration averaged 80%, vals. being higher in day than in night samples. Digestibility coeffs. for young were greater than those for older samples of lucerne. Green fodder stays longer in the intestine than does dry fodder. A. G. P.

Blood-sugar in rats receiving cataractogenic sugars. W. J. Darby and P. L. Day (J. Biol. Chem., 1940, **133**, 503—509; cf. A., 1940, III, 115).—In rats 20—28 days old, 35% of *d*-glucose, -mannose, -fructose, or -arabinose in the diet produces no cataract but *d*-arabinose causes severe diarrhœa and abdominal distension and greatly reduces survival. *d*-Galactose or -xylose, at the 35% level, produce cataract, the incidence of mature cataracts with xylose being approx. 50% of that with galactose. Xylose also produces temporary diarrhœa and abdominal distension. Blood-sugar determinations (0·025 c.c. of blood required) by a micro-modification of the Folin–Malmros method (A., 1929, 1096) show that *d*-xylose and -galactose produce hyperglycæmia the degree of which is not simply related to the rapidity of cataract production. W. McC.

Calcium utilisation from green leafy vegetables. Y. V. S. Rau and V. V. S. Murty

(Current Sci., 1940, **9**, 122—124).—Ca, oxalic acid, and solubilised Ca are determined in *Amaranthus gangeticus*, *A. inamœnus*, *A. mangostanus*, *Atriplex hortensis*, *Sesbania grandiflora*, *Trigonella fœnum græcum*, *Hibiscus sabdariffa* (ordinary and sour varieties), lucerne, and spinach. Part of the Ca present is not available in presence of considerable oxalic acid. The Ca in skim milk is rendered unavailable to rats by the acid present in these vegetables; this is prevented by addition of raw rice. F. R. G.

Physiologically-active stimulants in foods and their chemical detection. W. Diemair (Atti X Congr. Internaz. Chim., 1938, IV, 494—517).—The presence of physiologically active substances, *e.g.*, histidine and histamine, in foods and their chemical detection are discussed and the relevant literature is reviewed. Data indicating the effect of cooking or roasting temp. on the histidine content of foods are tabulated; a max. content is given at temp. between approx. 150° and 225°. Results of fractionation of the active constituents of raw and cooked foods by water, methyl alcohol, and phosphotungstic acid are described. Biological assays on surviving guinea-pig uterus give results in agreement with chemical tests. (For new compounds prepared, see A., 1940, II, 260.) F. O. H.

Calculation of the vitamin requirements of animals. P. Meunier and Y. Raoul (Compt. rend. Soc. Biol., 1939, **132**, 259—260).—Application of the authors' formula (A., 1938, III, 399) to calculation of the vitamin requirements of various animals is described. H. G. R.

Vitamin content of indigenous [Roumanian] oils. M. Maxim and G. Bors (Klin. Woch., 1939, **18**, 1555—1556). M. K.

Vitamin-*A* status of families in widely different economic levels. P. B. Mack and A. P. Sanders (Amer. J. med. Sci., 1940, **199**, 686—697).—The relationship between the vitamin-*A* intake per person and the response to photometer tests of members of 100 Pennsylvania families was studied; a few of the families in the poorer groups (classified on the basis of response to the darkness adaptation tests) were receiving 12,000 i.u. units of -*A* or more per person daily, but the majority were receiving less than this amount and half were receiving less than 8000 i.u. No families receiving less than 800 i.u. were in the highest class with respect to the bright light test and few who were in the best class on the basis of the darkness regeneration test were receiving less than this amount. Poor darkness adaptation is thus possible with high -*A* intake (as calc. from dietary records), but good response is not possible with a low intake. C. J. C. B.

Carotene and vitamin-*A* metabolism of hibernating hedgehogs. P. Suomalainen (Skand. Arch. Physiol., 1939, **83**, 94—103).—In hedgehogs liver-vitamin-*A* is lowest in late summer and highest before onset of hibernation; serum-*A* is lowest at the beginning of hibernation and highest at its end. Serum-carotene is higher in summer than during hibernation. A. S.

Relations between the reaction of the ash of pig foods and vitamin-*A*. W. Liebscher (Bied. Zentr., 1938, **B**, **10**, 390—401).—Slight excess of acids in the ration (10—12 g.-equiv. per 100 kg. of food) did not affect the rate of increase in live-wt. or the general condition of pigs nor the % utilisation of food. With such rations containing adequate vitamin-*D* but insufficient -*A*, no avitaminosis resulted. Excess basicity (15 g.-equiv. per 100 kg.) in the ration had no ill effect if sufficient -*A* and -*D* was provided. With an excess of 19 g.-equiv. of base and adequate supply of -*D* lack of -*A* produced definite symptoms of avitaminosis and lowered the food intake and rate of increase in body-wt. A. G. P.

Inhibition of utilisation of vitamin-*A* and carotene by liquid paraffin. T. K. With (Z. Vitaminforsch., 1940, **10**, 1—6).—In man and the rat, fæcal excretion of carotene and vitamin-*A* is not increased when the peanut oil used as solvent is replaced by liquid paraffin. In rats, the storage of -*A* in the liver is decreased by about 50% when the replacement is made. W. McC.

Rôle of vitamin-*A* deficiency in ætiology of renal calculus. H. Long and L. N. Pyrah (Brit. J. Urol., 1939, **11**, 216—232).—A photometric method of estimating hemeralopia was used to demonstrate vitamin-*A* deficiency. Of 25 cases of renal calculus tested, 40% gave markedly reduced readings. In 65 normal controls no similar decrease was noted. Prolonged administration of -*A* to patients with renal calculus and hemeralopia failed to improve the hemeralopia. It is suggested that the -*A* lack present in the patients might be due to deranged -*A* metabolism or failure of -*A* absorption. B. I.

Abnormalities in the gingival and sub-gingival tissues due to dietary vitamin-*A* and carotene deficiency. J. D. King (Brit. Dental J., 1940, **68**, 349—360).—In rats, deficiency of vitamin-*A* and carotene causes lesions of the soft tissues and nervous, epithelial, and bony abnormalities of the mouth. The severity of the lesions is much more pronounced and they appear more rapidly when the deficiency begins before than when it begins after development of the jaws and teeth is complete. W. McC.

Relationship between biophotometer tests and vitamin-*A* content of blood of children. W. S. Baum and A. B. McCoord (J. Pediat., 1940, **16**, 409—418).—No correlation was found between biophotometer readings and vitamin-*A* content of the blood of 98 untrained subjects. The decrease in no. of subnormal readings found in a series of trained subjects indicates that the training factor is important. C. J. C. B.

Vitamin-*A*, carotene, and xanthophyll content of yolk of hens' eggs. B. Sjollema and W. F. Donath (Biochem. J., 1940, **34**, 736—748).—Diet is the controlling factor in the amount of these substances in the yolk. Yellow maize and green fodder are the most important sources of vitamin-*A* and carotene, the content of which can be increased 2—4 times by the appropriate diet. With a diet containing 25% of yellow maize, the yolk contains approx.

150 i.u. of -*A*. Xanthophyll is chiefly responsible for the yellow colour, but deeply coloured yolks also contain comparatively large amounts of -*A* and carotene. P. G. M.

Vitamin-*B* complex. H. Willstaedt (Schweiz. med. Wschr., 1940, **70**, 159—162, 181—183).—A review of the chemistry and actions of the vitamin-*B* complex. A. S.

Absorption of vitamin-B_1 from the placenta. W. Neuweiler (Z. Vitaminforsch., 1940, **10**, 40—45).—In newborn infants, the vitamin-B_1 contents of the venous and arterial blood of the umbilical cord are 7·5 and 5 μg.-% respectively. The corresponding val. for the venous blood of the mothers is 2—12 μg.-% and there is a degree of parallelism between the contents in this blood and in the venous blood of the cord. The -B_1 content of the placenta is 2·7—10 μg.-%. When 50 mg. of -B_1 are administered intravenously before parturition, the -B_1 contents of the venous and arterial blood of the cord, the difference between these contents, the -B_1 content of the mothers' venous blood, and that of the placenta increase although, except in the placenta, the injected -B_1 rapidly disappears. The results indicate that the placenta stores -B_1 and regulates the supply of -B_1 to the fœtus. W. McC.

Rat bradycardia [from vitamin-*B* deficiency treated with thiamin]. D. G. H. MacDonald and E. W. McHenry (Amer. J. Physiol., 1940, **128**, 608—614).—Thiamin alone of the vitamin-*B* complex is effective in reducing -*B* deficiency rat bradycardia. Bradycardia is not relieved by thiamin unless food is also given. Dietary fat has a sparing action on thiamin requirement for the prevention of bradycardia. M. W. G.

Vitamin-B_1 for relief of pain in varicose ulcers. A. Ochsner and M. C. Smith (J. Amer. Med. Assoc., 1940, **114**, 947—948).—Vitamin-B_1 was successfully used in the treatment of pain in 10 cases of varicose ulcer. C. A. K.

Vitamin-B_1 in urine and serum in disease and deficiency. I. Magyar (Z. Vitaminforsch., 1940, **10**, 32—40).—When 2—10-mg. doses of vitamin-B_1 are intravenously administered to diseased persons 18—56% (average 25%) of the amount injected is excreted in the urine within 24 hr. Urinary excretion of less than 18% is regarded as a symptom of -B_1 deficiency. In deficiency, continued administration results in increase of the excretion until the organism is saturated and the irregular values of health are found. The -B_1 content of blood-serum, 1—15 μg.-% (average 7·6 μg.-%), appears to depend more on the quantity and quality of the diet than on the state of health. Intravenously injected -B_1 disappears very rapidly from the serum (approx. 10—20% remains after 10 min.). After 1 hr., injected -B_1 cannot be found in gastric juice and after 0·5 or 1 hr. none is found in c.s.f. W. McC.

Correlation between concentration of bisulphite-binding substances [B.B.S.] in blood and urinary thiamin excretion. W. D. Robinson, D. Melnick, and H. Field, jun. (J. clin. Invest., 1940, **19**, 483—488).—The blood-B.B.S. val. was elevated in 7 of 26 patients with normal urinary thiamin excretion; it was normal in 7 of 16 patients with urinary thiamin vals. suggesting thiamin subnutrition. There was no elevation of the blood-B.B.S. val. during a 22-day period of inadequate thiamin intake, despite a fall in urinary thiamin excretion to very low levels which persisted after adding thiamin, and despite the development of early manifestations of a clinical thiamin deficiency. The blood-B.B.S. val. is not a sp. or sensitive index of latent or mild chronic forms of thiamin deficiency. C. J. C. B.

Bisulphite-binding substances in blood and cerebrospinal fluid. H. Wortis, E. Bueding, and W. E. Wilson (Proc. Soc. Exp. Biol. Med., 1940, **43**, 279—282).—No correlation was found between concn. of bisulphite-binding substances in body fluids and presence of various psychiatric disorders or of vitamin-B_1 deficiency. V. J. W.

Determination of small quantities of aneurin. L. Emerique-Blum and A. Lvov (Bull. Soc. Chim. biol., 1940, **22**, 179—184).—Aneurin at concns. between 1×10^{-10} and 8×10^{-10}% is determined by observing the growth of *Glaucoma piriformis* at p_H 6·3 on a peptone medium to which the aneurin has been added. The growth of the micro-organism requires the vitamin itself and not merely a mixture of the constituent pyrimidine and thiazole. A. L.

Relation of skin lesions in the rat to dietary deficiency of vitamin-B_2 complex. H. Chick, T. F. Macrae, and A. N. Worden (Biochem. J., 1940, **34**, 580—594).—Rats receiving a diet containing adequate amounts of vitamin-B_1 but deficient in riboflavin not only show no increase in body-wt. but also develop a typical eczematous condition. Prolonged deprivation of -B_6 causes dermatitis and a tendency to epileptiform fits. Lack of filtrate factor gives rise to a poor coat and pigmentation, and subnormal growth. Cereal starches appear to contain traces of -B_6 since they exert a protective action on animals deprived of the vitamin. P. G. M.

Effect of lactoflavin on the biology of the vagina. F. Stähler (Z. Vitaminforsch., 1940, **10**, 26—31).—In women suffering from leucorrhœa, daily vaginal administration of 1 mg. of lactoflavin with or without lactose changes the vaginal p_H from 5—6 to 3—4 within 4—5 days, causes 2- to 3-fold increase in the vaginal content of acid-producing bacteria, decreases the content of pathogenic organisms, and frequently cures the disease. W. McC.

Lactoflavin in organs of the guinea-pig on activation of cellular metabolism. S. Comhaire and M. Chevremont (Bull. Soc. Chim. biol., 1940, **22**, 153—169).—After injection into guinea-pigs of *cyclo*pentyldinitrophenol, the free (dialysable) lactoflavin of muscle, heart, lungs, kidney, and, in particular, liver increased to a max., whilst the combined lactoflavin correspondingly decreased, the initial vals. being reached as the temp. and metabolic rate became normal again. Analogous but less marked changes occurred when thyroxine was injected. A. L.

Effect of exercise on the flavin content of the liver. H. Minibeck and F. Verzár (Z. Vitamin-

forsch., 1940, **10**, 79—88).—In adult rats, on a lactoflavin-free but otherwise adequate diet, the liver loses its lactoflavin very slowly. Death occurs in the 10—19th week when the lactoflavin content has decreased from approx. 1120 to 400 μg.-%. The rate of decrease is greatly accelerated and the period of survival is diminished to not over 7 weeks when the rats run for 5 hr. daily. W. McC.

Determination of free flavin by dialysis and ultrafiltration. R. PULVER (Z. Vitaminforsch., 1940, **10**, 88—93).—The procedure of Kuhn *et al.* (A., 1934, 1041) yields untrustworthy results in the determination of free flavin in liver suspensions because the amount of flavin which dialyses increases as the dilution of the suspension increases and because dialysis is not complete in less than 6 days. Apparently increase in dilution results in hydrolysis of flavin–protein complex until equilibrium is reached. Trustworthy results are obtained by a method involving filtration through a membrane which retains and avoids cleavage of the complex. In the liver of the cat, pig, and ox, 1—3·5% of the total flavin is free. W. McC.

Relationship of dietary intake of nicotinic acid to co-enzyme I content of blood. A. E. AXELROD, E. S. GORDON, and C. A. ELVEHJEM (Amer. J. med. Sci., 1940, **199**, 697—705).—The co-enzyme I level of blood can be increased by the ingestion of large amounts of nicotinic acid. The observed increases in the co-enzyme I level of blood vary with the amount of nicotinic acid fed. The results indicate that there is no diagnostic val. to be obtained from determinations of co-enzyme I in borderline cases of deficiency disease. C. J. C. B.

Blacktongue curative effect of pyridine-β-carboxyldiethylamide (coramine). D. T. SMITH, G. MARGOLIS, and L. H. MARGOLIS (J. Pharm. Exp. Ther., 1940, **68**, 458—464; cf. A., 1939, III, 495).—Coramine, administered parenterally in doses of 72·5 mg., produced the same uniformly successful results as 5 mg. of nicotinic acid in the treatment of blacktongue in dogs. Oral treatment with coramine was twice as effective as parenteral. E. M. S.

Determination of vitamin-B_6 in foods by means of the diazo-reaction and the phenol reagent. M. SWAMINATHAN (Nature, 1940, **145**, 780).—The colorimetric method described utilises diazotised sulphanilic acid or the phenol reagent of Folin and Ciocalteu (A., 1927, 892). The vitamin-B_6 contents of 15 foodstuffs are recorded. L. S. T.

Vitamin-*C* requirement [of man]. L. ARMENTANO (Z. Vitaminforsch., 1940, **10**, 6—15).—The daily requirement is 45—56 mg. but this val. is increased by fever and muscular exercise. Daily doses of 300—500 mg. have no detrimental effect. The vitamin-*C* content of sterilised Hungarian paprika preps. remains unchanged for long periods. W. McC.

Distribution of ascorbic acid in blood and its nutritional significance. A. M. BUTLER and M. CUSHMAN (J. clin. Invest., 1940, **19**, 459—467).—Procedures for ascorbic acid determination in red blood cells, white blood cells plus platelets, and whole blood are described. The reducing power of white cells + platelets normally equals 34 mg. of ascorbic acid equiv. per 100 g. of white layer, but falls to zero in scorbutic subjects; the reducing substance is thus ascorbic acid or some related substance. Ascorbic acid passes from plasma to the red cells; the distribution ratio of plasma concn. to apparent red cell concn. varies with the state of vitamin-*C* nutrition. The apparent ascorbic acid concns. of white cells + platelets and of whole blood of individuals not suffering from infection or leukæmia provide indices of -*C* deficiency more sensitive than those furnished by fasting plasma concns. The apparent ascorbic acid concn. of white cells + platelets is the best index of deficiency and the apparent ascorbic acid content of red blood cells or whole blood is a better index of saturation than plasma or white cell platelet concns. The occurrence of very high concns. of an ascorbic acid-like reducing substance in the white layer of centrifuged blood from leukæmic patients is confirmed. C. J. C. B.

Variations in concentration of ascorbic acid in plasma of newborn infant. R. L. MINDLIN (J. Pediat., 1940, **16**, 275—284).—The concn. of ascorbic acid in the plasma of the newborn infant at birth is greater than in the plasma of the mother. The concn. during the first 2 weeks of life varies directly and promptly with changes in the ascorbic acid content of the diet. C. J. C. B.

Vitamin-*C* content of human milk before and after boiling. R. ALBRECHT (Klin. Woch., 1939, **18**, 1550—1551).—Raw milk, if protected against oxidation, contained a higher proportion of vitamin-*C* than after boiling. M. K.

Amount of ascorbic acid excreted at each urination during 24-hour periods. J. E. RICHARDSON and H. L. MAYFIELD (Amer. J. Physiol., 1940, **128**, 583—587).—The vol. of urine and the amount of ascorbic acid excreted at each urination (2 women subjects) varied widely throughout the 24-hr. period. There is no correlation between the vol. of each urination and its ascorbic acid content. The wide variations noted in the vals. obtained during a 6-hr. collection period are sufficient to question the use of a 6-hr. period for determining "resting level." M. W. G.

Rôle of vitamin-*C* in cutaneous diseases. W. F. LEVER and J. H. TALBOTT (Arch. Dermat. Syphilol., 1940, **41**, 657—663).—The level of vitamin-*C* in the blood bears a direct relation to intake. There is no correlation between the level of -*C* in the blood and the development of various skin diseases. Most patients with pemphigus, purpura, or generalised exfoliative dermatitis had low levels of blood-*C*. 18 patients with various skin diseases showed no improvement with large amounts of -*C*. C. J. C. B.

Respiratory changes in normal adult guinea-pigs and in animals deprived of vitamin-*C*. S. GALLOT-QUEUILLE (Bull. Soc. Chim. biol., 1940, **22**, 19—24).—Data for O_2 consumption, R.Q., and heat production are tabulated. During the first 14—16 days no difference was observed, but in the next 10—12-day period, at the end of which the scorbutic animals died, the vals. decreased corresponding with

the decrease in wt., temp., and food intake of the animals. A. L.

Osteophytes due to chronic *C*-avitaminosis. G. Mouriquand, M. Dauvergne, H. Tête, and V. Edel (Compt. rend., 1940, **210**, 515—516).—Prolonged administration of a scorbutic diet to which synthetic ascorbic acid (0·5 mg. daily) is added produces bony and periosteal thickening. If lemon juice (1—1·5 c.c.) is also given, occasional osteophytes develop. J. L. D.

Effect of vitamin-*P* (citrin) on vitamin-*C*-deficient guinea-pig. L. E. Detrick, M. S. Dunn, W. L. McNamara, and M. E. Hubbard (J. Lab. clin. Med., 1940, **25**, 684—687).—Citrin preps. did not decrease the hæmorrhagic lesions of the scurvy syndrome or prolong the life of scorbutic guinea-pigs. C. J. C. B.

Detection of hypovitaminosis-*C*. A. Góth (Z. Vitaminforsch., 1940, **10**, 15—26; cf. A., 1939, III, 705).—In human hypovitaminosis-*C*, injection of 300 mg. of ascorbic acid increases the -*C* content of the blood only slightly or not at all, but causes an increase of at least 0·5 mg.-% if the organism is saturated. The determinations are made 2 hr. after the injection. W. McC.

Vitamin-*C* content of dried, sugared, and salted Chinese vegetables and fruits. L. T. Cheng and H. Tao (Contr. Biol. Lab. Sci. Soc. China, 1939, **13**, 87—90).—Determinations of vitamin-*C* in Chinese vegetables which had been canned, pickled, salted, or soaked in brine and of fruits which had been pickled, canned, or sugared and pressed show that these forms of preserving destroy all or almost all of the vitamin. W. McC.

Variations in ascorbic acid content of orange and lemon juice. M. Montalti and R. Maffione (Atti X Congr. Internaz. Chim., 1938, IV, 600).—The vitamin-*C* content of the expressed juices decreases on keeping, especially in the light; the content of -*C* in juices retained in the fruit is more const. On storage of the juices, sugar decreases and acidity increases. F. O. H.

Effect of animal charcoal on ascorbic acid. R. Indovina (Atti X Congr. Internaz. Chim., 1938, IV, 586—594).—The rate of decomp. of aq. ascorbic acid in air is much greater than that in N_2. In presence of C and N_2, ascorbic acid is adsorbed according to the Freundlich isotherm but in presence of air, adsorption is accompanied by decomp. F. O. H.

Treatment of rickets and tetany by parenteral administration of one massive dose of vitamin-*D*. H. Vollmer (J. Pediat., 1940, **16**, 421—432).—One single dose of 600,000 units of vitamin-*D* was given to 158 children without harmful results. The absorption of parenteral -*D* depots is accelerated by using a mixture of oil and ether instead of oil alone as solvent. Rickets and tetany respond to this form of parenteral -*D* shock therapy as promptly as to the oral administration of equal doses of -*D*. Serum-Ca and -P become normal in 3—7 days. Roentgenographical evidence of calcification appears within one week and recalcification is complete 30 days after beginning treatment. Tetanic convulsions cease within 24 hr. C. J. C. B.

Treatment of psoriasis with concentrated Viosterol. G. E. Clarke (Arch. Dermat. Syphilol., 1940, **41**, 664—666).—Natural fish oil in massive doses, yielding 300,000—400,000 U.S.P. units of vitamin-*D*, was given to 37 patients with psoriasis daily for a period of 3—4 months. Viosterol in oil (irradiated ergosterol in oil), in similar massive doses, was given to 107 patients with psoriasis daily for periods of 3—4 months. Only 12% of the patients receiving Viosterol in oil showed complete involution of psoriatic lesions. 7% of both groups showed no improvement under this type of therapy. C. J. C. B.

Determination of tocopherol in animal organs. P. Karrer, W. Jaeger, and H. Keller (Helv. Chim. Acta, 1940, **23**, 464—465).—α-Tocopherol was determined in horse muscle, heart, liver, and kidney, ox muscle and liver, and pig fat by potentiometric titration with $AuCl_3$ and by the colorimetric method of Emmerie and Engel (A., 1939, II, 123, 236). The concordance is generally satisfactory, but with deeply coloured solutions the latter method gives higher results. H. W.

Action of vitamin-*K* in dietary and mechanically produced *K*-avitaminosis in fowls. H. Dam and J. Glavind (Z. Vitaminforsch., 1940, **10**, 71—79).—Intravenously injected vitamin-*K* is as effective in increasing the prothrombin content of the blood of chicks on a -*K*-free diet as in increasing that of others on an adequate diet but having the bile ducts ligated for 25—28 days. W. McC.

Substitute for bile salts for administration with substances possessing vitamin-*K* activity. E. Lozinski and R. Gottlieb (J. Biol. Chem., 1940, **133**, 635).—Dioctyl Na sulphosuccinate administered with 2-methyl-1 : 4-naphthaquinone facilitates the absorption as is shown by the decrease obtained in prothrombin time. A. L.

Oxidation-reduction potential of vitamin-K_1. —See A., 1940, I, 258.

Effect of yeast extract and other supplements on the growth of chicks fed on simplified diets. T. H. Jukes (J. Biol. Chem., 1940, **133**, 631—632).—Experiments on the feeding of chicks confirm the findings of Stokstad *et al.* (A., 1940, III, 323) that there is a growth factor in yeast distinct from the 5 known members of the *B*-complex. The factor is not choline (which has a slight effect), it is destroyed by HNO_2, and is somewhat labile to autoclaving. A. L.

Effect of diet on pantothenic acid content of chick tissues. E. E. Snell, D. Pennington, and R. J. Williams (J. Biol. Chem., 1940, **133**, 559—565).—Determination of pantothenic acid by the yeast and bacterial methods shows that liver, kidney, leg muscle, blood, brain, and spinal cord of chicks grown on a diet deficient in the acid contain only 10—40% of that present in normal tissues. J. N. A.

Multiple nature of "rat filtrate factor." D. W. Woolley (Proc. Soc. Exp. Biol. Med., 1940, **43**,

352—354).—Liver extracts contain a substance, which is present in fuller's earth filtrates but is not pantothenic acid, which is essential for growth in young rats. V. J. W.

Fractionation of the factor preventing nutritional achromotrichia. E. Nielson, J. J. Oleson, and C. A. Elvehjem (J. Biol. Chem., 1940, **133**, 637—638).—Liver extract is treated with norit and eluted with boiling butyl alcohol. The residue from the eluate is extracted with ether and the sol. portion extracted with $CHCl_3$. 15 μg. daily of a cryst. fraction from the $CHCl_3$ is effective in preventing achromotrichia in rats. A. L.

(xix) METABOLISM, GENERAL AND SPECIAL.

Effect of temperature on oxygen consumption by wood mouse (*Apodemus silvaticus*, L.) and yellow-necked mouse (*A. flavicollis*, Melch.). N. I. Kalabuchov (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 89—90).—At 30° and 35°, O_2 consumption per unit of body-wt. is greater in yellow-necked mice than in wood mice, but at 0—25° the reverse is true. In both species O_2 consumption decreases with temp. increase from 10° to 35°, the decrease being much more pronounced in wood mice than in yellow-necked mice. W. McC.

Effect of insulin on muscle respiration. F. J. Stare and C. A. Baumann (J. Biol. Chem., 1940, **133**, 453—466; cf. Krebs and Eggleston, A., 1938, III, 561).—Experiments with minced pigeon breast muscle in Ringer–PO_4''' buffer solution containing 0·2% of glucose but no Ca show that insulin, alone or supplemented with boiled muscle juice or this juice + di- or tri-carboxylic acid (fumaric, malic, succinic, α-ketoglutaric, citric, glutamic), increases and prolongs respiration, max. prolongation being achieved after 2 hr. The magnitude of the increase is 20% whether or not the other supplements are added but the presence of these (in the original muscle) is essential for the effect. When the muscle of depancreatised pigeons is used, the increase is 60%, optimum response being attained 1—2½ weeks after pancreatectomy. Added malonate counteracts the effect of insulin and, in rabbits, the effect of injected insulin on blood-sugar level is counteracted by injection of malonate. Insulin inactivated by heat or alkali does not increase respiration. The R.Q. of the muscle is maintained at normal levels for 4 hr. by addition of insulin alone or together with the other supplements. Less pronounced, but qualitatively similar, results are obtained when rabbit's heart or skeletal muscle or chicken breast muscle is substituted for pigeon breast muscle. W. McC.

Biological formation of creatine. K. Bloch and R. Schoenheimer (J. Biol. Chem., 1940, **133**, 633—634).—After administration of isotopic NH_3 to rats most of the ^{15}N of the creatine was present in the amidine group. Isotopic glycine on the other hand provided ^{15}N for the sarcosine isolated from the creatine. Isotopic sarcosine and guanidoacetic acid both gave isotopic creatine, the latter being as effective as an equiv. amount of administered isotopic creatine. Hydantoic acid and methylhydantoic acid were ineffective. A. L.

Indole intoxication and creatine metabolism in chronic enteritis. H. Bohn and R. Basler (Wien. Klin. Wschr., 1940, **53**, 207—216).—Blood- and urinary indican is often increased in patients suffering from chronic enteritis. There was no quant. relationship between indican content and the severity of the disease. There is marked creatinuria and, in severe cases, orally administered creatine is quantitatively excreted in the urine. A. S.

Detoxication of diphenyl through a sulphur mechanism. H. D. West (Proc. Soc. Exp. Biol. Med., 1940, **43**, 373—375).—Rats fed on a diet containing 1% of diphenyl grew normally when also given *l*-cystine or *dl*-methionine. Growth failed with taurine or Na_2SO_4. V. J. W.

Fat metabolism in fish. XIV. Utilisation of ethyl esters of fatty acids by the eel and effect on depot fat. J. A. Lovern (Biochem. J., 1940, **34**, 704—708).—Feeding of ethyl palmitate to eels causes a considerable increase in the palmitic and hexadecenoic acid content of the depot fat, whilst ethyl myristate and the mixed unsaturated esters of eel fat give rise to smaller increases in tetradecenoic and hydrogenated hexadecenoic acids, respectively. P. G. M.

Rate of formation of stearic and palmitic acids in normal mice. K. Bernhard and R. Schoenheimer (J. Biol. Chem., 1940, **133**, 713—720).—From the rate of appearance of D in the fatty acids, fat formation is most rapid in the liver, followed by the intestinal wall, kidney, and depot fat. Palmitic and stearic acids are formed at the same rate. R. L. E.

Inertia of highly unsaturated fatty acids in the animal, investigated with deuterium. K. Bernhard and R. Schoenheimer (J. Biol. Chem., 1940, **133**, 707—712).—D from the body fluid is found in the saturated and total unsaturated fatty acids of the body, but not in di- or tri-unsaturated acids, which must be derived directly from the diet. H of $\cdot CH_3$, $\cdot CH_2\cdot$, and $\cdot CH\!:$ groups in fatty acids is not exchangeable with H of the body fluid. R. L. E.

Failure of intravenously injected fat to produce cholic acid in dogs. R. W. Virtue and M. E. Doster-Virtue (J. Biol. Chem., 1940, **133**, 573—577).—When dogs with biliary fistulæ are maintained for consecutive 3-day periods on a carbohydrate diet, an intravenously injected fat emulsion, and a protein diet, the excretion of cholic acid steadily decreases on the fat and carbohydrate diets whilst it rises to high vals. on the protein diet. J. N. A.

Influence of ingestion of pancreatic juice on liver fat in depancreatised dog maintained with insulin. M. L. Montgomery, C. Entenman, G. E. Gibbs, and I. L. Chaikoff (Proc. Soc. Exp., Biol. Med., 1940, **43**, 349—351).—Pancreatic juice added to the diet of such dogs prevents the development of fatty livers as efficiently as does pancreas feeding. V. J. W.

Effect of oral administration of fatty acids on blood-sugar. S. Markees and I. Reich (Schweiz.

med. Wschr., 1940, **70**, 185—189).—Oral administration of butyric, hexoic, octoic, and decoic acid (Na salt) increases the blood-sugar in the fasting rabbit. This effect is more marked if the fatty acids are given when the blood-sugar returns to normal following oral administration of 5 g. per kg. body-wt. of glucose. A. S.

Tolerance of diabetics for glucose during various times of day. M. Wishnofsky, A. P. Kane, W. C. Spitz, and C. S. Byron (J. Lab. clin. Med., 1940, **25**, 754—762).—In mild and moderately severe diabetes, the tolerance in the morning is equal to, if not greater than, that in the afternoon. In persons with severe diabetes, however, the tolerance is better in the afternoon. The capacity of the liver to store glycogen in the morning, after a fast of 14 hr., is no worse than in the afternoon, 7 hr. after a breakfast containing starch. C. J. C. B.

Influence of creatinine on metabolism of carbohydrate. O. Murakami (Jap. J. Gastroenterol., 1939, **11**, 69—74).—The intravenous injectin of creatinine in normal rabbits has no effect on the blood-sugar but after administration of glucose causes a fall of very high blood-sugar levels. In rabbits or guinea-pigs it does not promote the formation of glycogen from glucose. F. S.

Metabolism of *d*-mannoheptulose. Excretion after eating avocado. N. R. Blatherwick, H. W. Larson, and S. D. Sawyer (J. Biol. Chem., 1940, **133**, 643—650).—Approx. 5% of mannoheptulose appears in the urine within 6 hr. of the ingestion of 5—10 g.; the rate of excretion then declines. The remainder of the sugar does not appear to be stored in the tissues. After eating avocado, the concn. of the sugar appearing in the urine is sufficient to cause reduction of alkaline Cu reagents and at room temp. may lead to a wrong diagnosis of diabetes. Mannoheptulose is liable to be confused with xylulose in its reactions. P. G. M.

Metabolic rate of alcohol. M. G. Eggleton (J. Physiol., 1940, **98**, 228—238).—A method is described for the determination of alcohol in 1 c.c. of plasma or trichloroacetic acid filtrate of tissue, yielding full recovery, with an error of ± 1 mg. per 100 c.c. Following an intravenous injection of alcohol into cats (nembutal), direct determinations on muscle and plasma indicate that equilibrium between them is established only after 30 min. From the shape of the blood-alcohol–time curve, it appears that complete equilibrium throughout the body is established only after 1—1½ hr. When equilibrium is established most tissues contain 70—80% of the concn. of alcohol present in the plasma; fat contains only 10—20%. The alcohol concn. in the whole body, expressed as a fraction of that in the plasma (which is a modification of Widmark's factor R), remains const. in any one animal; variations from animal to animal are due to variations in fat of the body. Assessment of the metabolic rate of alcohol from the modified factor R and the observed decrease in the concn. of alcohol in the plasma agrees, within the limits of experimental error, with direct measurement of metabolic rate (const. infusion method). J. A. C.

Factors affecting alcohol metabolism. M. G. Eggleton (J. Physiol., 1940, **98**, 239—254).—The metabolic rate of alcohol in cats is directly dependent on the concn. of alcohol in the body, increasing about 30% for every 100 mg. per 100 c.c. increase in plasma-alcohol concn. The metabolic rate of alcohol per unit liver-wt. in animals previously fed with alcohol is significantly smaller than in normal animals. Light nembutal anæsthesia has little, if any, inhibitory action on the metabolic rate of alcohol. The metabolic rate of alcohol is increased by addition of alanine to the body; amino-acids increase the metabolic rate of alcohol and Widmark's "ester-formation" hypothesis is untenable in its present form, although the possibility that such formation occurs normally in the body cannot be ignored. J. A. C.

Radioactive phosphorus as an indicator of phospholipin metabolism. XI. Effect of methionine, cystine, and cysteine on phospholipin exchange in the liver. I. Perlman, N. Stillman, and I. L. Chaikoff (J. Biol. Chem., 1940, **133**, 651—659).—These S-containing amino-acids stimulate phospholipin exchange in the liver by more than 40% by a single feeding of 200 mg. This action does not conform with the negative lipotropic activity of cystine and cysteine, which, however, was not determined after a single feeding. P. G. M.

Elimination of 3 : 4-benzpyrene from the rat. J. G. Chalmers (Biochem. J., 1940, **34**, 678—684; cf. A., 1938, III, 313).—After intravenous injection 3 : 4-benzpyrene appears to be eliminated as fluorescent derivatives in the urine and fæces. The product from the latter is photolabile and sol. in NaOH with green-yellow fluorescence. An alcoholic solution shows two diffuse fluorescence bands in the blue-violet region of the spectrum. H. W.

(xx) PHARMACOLOGY AND TOXICOLOGY.

Mechanism of action of sulphanilamide. J. S. Lockwood and H. M. Lynch (J. Amer. Med. Assoc., 1940, **114**, 935—940).—The *in-vitro* bacteriostatic action of sulphanilamide on hæmolytic streptococci, staphylococci, pneumococci, and colon bacilli depends principally on the concn. of the drug and on the concn. of peptone in the culture medium. Peptone inhibits the action of sulphanilamide by providing an excess of easily assimilable N; the drug probably acts by interfering with the nutritional requirements of susceptible bacteria. C. A. K.

Inhibition of the action of sulphanilamide in mice by *p*-aminobenzoic acid. F. R. Selbie (Brit. J. exp. Path., 1940, **21**, 90—93).—Mice were inoculated intraperitoneally with the Richards strain *Streptococcus hæmolyticus* in doses sufficient to kill all untreated mice within 24 hr. The survival rate of the mice treated with sulphamilamide in 25-mg. doses per os was greatly reduced by the simultaneous administration per os of *p*-aminobenzoic acid in doses of 2·5, 5·0, and 25 mg. It is suggested that the mechanism of the action of sulphanilamide *in vivo* is the same as its action *in vitro*. (Cf. Woods, A., 1940, III, 611.) F. S.

Chemotherapy of bacterial infections. G. DOMAGK (Z. klin. Med., 1939, **136**, 167—199).—A review of some sulphanilamide derivatives. A. S.

Experimental chemotherapy. S. M. ROSENTHAL (J. Amer. Med. Assoc., 1939, **113**, 1710—1715).—A review of the action of sulphanilamide and related compounds. C. A. K.

Effect of administration of acetate on detoxication and therapeutic activity of sulphanilamide. II. G. V. JAMES (Biochem. J., 1940, **34**, 633—635; cf. A., 1940, III, 60).—Experiments on mice show that sulphanilamide and sulphapyridine are toxic owing to withdrawal of acetate precursors and lowering of CO_2 capacity of blood. Acetate given at the same time rectifies this defect. Acetylsulphanilamide exerts a sp. toxic effect although it must also have some effect on the respiratory centre on account of the fall of CO_2. H. W.

Oxidation of sulphanilamide and sulphapyridine by hydrogen peroxide. G. V. JAMES (Biochem. J., 1940, **34**, 636—639).—Pigments are obtained by oxidation of sulphanilamide or sulphapyridine by H_2O_2 or $Ca(OCl)_2$ in physiological saline buffered at p_H 7·4. The presence of Fe accelerates the change without altering the end-point. The pigments can be absorbed on to red blood corpuscles and produce an effect resembling that of blood from some cyanosed patients. The chemical nature of the pigments is obscure but they arise from oxidation of the drugs, sulphapyridine producing more pigment and less intermediate products than sulphanilamide. Fluctuations of NH_2OH and *p*-aminophenol are probably due to further oxidation of these compounds to pigment which appears at the same time as, or a little later than, they do; in the case of sulphanilamide this is an indophenol pigment. Light is necessary for the *in-vitro* oxidation of the NH_2OH compound but *in vivo* this is achieved by other agencies. H. W.

Isolation of some oxidation products of sulphanilamide from the urine. G. V. JAMES (Biochem. J., 1940, **34**, 640—647).—p-N-*Acetylhydroxylaminobenzenesulphonamide*, p-*hydroxylaminobenzenesulphonic acid*, both m.p. above 300° (decomp.), and *p*-aminophenol have been isolated from the urine of patients treated with sulphanilamide. They appear to be excreted in conjunction with sulphates and glycuronates. The *p*-aminophenol is further changed to a pigment which is excreted. These compounds may be the cause of some of the toxic effects observed during therapy with sulphanilamide. H. W.

Absorption, conversion, and therapeutic action of benzylsulphanilamide. G. V. JAMES and A. T. FULLER (Biochem. J., 1940, **34**, 648—656).—Benzylsulphanilamide is converted into sulphanilamide with difficulty by hydrolysis, readily by reduction. Benzylsulphanilamide gives rise to only low blood concns. of sulphanilamide, insufficient to counteract severe infections but capable of curing mild ones. Increasing the dose does not correspondingly increase the amount absorbed. The more finely divided is the benzylsulphanilamide, the greater is the quantity of sulphanilamide produced. Benzylsulphanilamide is less toxic than sulphanilamide because so little is absorbed and that part which is absorbed is almost entirely changed to free sulphanilamide which is used economically by the body. H. W.

Sulphanilamide derivatives.—See A., 1940, II, 249.

Detoxication of sulphapyridine. G. V. JAMES (Lancet, 1940, **238**, 455).—Examination of urine of patients receiving sulphapyridine showed that this drug is not detoxicated by methylation, nor is it decomposed into sulphanilamide or other substances. C. A. K.

Elimination of sulphanilamide by saliva, pancreatic juice, and prostatic secretion. E. HUG (Rev. Soc. argent. Biol., 1939, **15**, 483—486).—In saliva obtained from chloralosed dogs by stimulation of the chorda tympani or injection of pilocarpine, sulphanilamide concn. was 53—83% of that in blood. Sympathetic saliva had concns. equal to or above those in the blood. In pancreatic juice obtained by secretin or pilocarpine and in prostatic secretion obtained by stimulation of the hypogastric nerve or by pilocarpine, the concn. was 67—83% of that in the blood. J. T. L.

Influence of specific serum therapy on plasmalipins in pneumonia. A. V. STOESSER (Proc. Soc. Exp. Biol. Med., 1940, **43**, 168—170).—In 3 children treated with 40,000 units of serum the blood-cholesterol and -cholesteryl esters rose to normal within 12—24 hr. V. J. W.

Influence of sulphapyridine therapy on plasmalipins in pneumonia. A. V. STOESSER (Proc. Soc. Exp. Biol. Med., 1940, **43**, 201—203).—In 5 children treated with sulphapyridine the temp. fell to normal in 36—48 hr. but the plasma-cholesterol showed no increase until the 4th day and did not reach normal until the 7th day. V. J. W.

Use of sulphapyridine in medicine. F. SCICLOUNOFF and R. JUNET (Schweiz. med. Wschr., 1939, **69**, 781—785).—45 patients suffering from lobar pneumonia or bronchopneumonia were treated with M. & B. 693. 15 out of 20 patients with bronchopneumonia were cured; the result was doubtful in 3 cases and 2 patients died. A. S.

Clinical experiments with sulphapyridine. W. LÖFFLER and C. MAIER (Schweiz. med. Wschr., 1939, **69**, 1268—1271).—Satisfactory results, obtained with M. & B. 693, are reported in cases of pneumococcal, meningococcal, and streptococcal diseases. One patient suffering from *Staphylococcus aureus* septicæmia was cured. A. S.

Sulphapyridine and pneumococcal infections. H. L. MARRIOTT (Brit. Med. J., 1939, II, 944—947).—A review. C. A. K.

Sulphapyridine in treatment of pneumonia. S. KARELITZ and R. A. WEINSTEIN (Arch. Pediat., 1940, **57**, 139—158).—The treatment of pneumonia with sulphapyridine was beneficial to 67 out of 75 cases. The duration of fever was shortened. Results seemed independent of whether the condition was lobar or bronchopneumonia, of the stage of the disease in which treatment was started, and of type. Except for the first 12 months the effect was indepen-

dent of age. 3 cases of empyema were only slightly influenced by the drug. The pus was not sterilised and thoracotomy had to be done in all. C. J. C. B.

Serotherapy of the pneumonias. J. G. M. Bullowa (J. Amer. Med. Assoc., 1939, **113**, 1402—1404).—A lecture. C. A. K.

Chemotherapy of pneumococcal pneumonia. C. M. Macleod (J. Amer. Med. Assoc., 1939, **113**, 1405—1410).—A lecture. C. A. K.

Treatment of pneumonia. M. Finland (Canad. Med. Assoc. J., 1939, **41**, 554—560).—A lecture. C. J. C. B.

Sulphanilamide in wound infections. A. T. Fuller and G. V. James (Lancet, 1940, **238**, 487—490).—A scheme of dosage in prophylaxis is suggested. C. A. K.

Sulphanilamide in sore throat due to hæmolytic streptococci. P. S. Rhoads and M. L. Afremow (J. Amer. Med. Assoc., 1940, **114**, 942—943).—The course of sore throat due to hæmolytic streptococci in 31 cases who were given sulphanilamide was the same as in 36 untreated controls. C. A. K.

Drug treatment of male gonorrhœa. A. Glingar (Wien. klin. Wschr., 1939, **52**, 1084—1085).—The treatment of male gonorrhœa with albucid and uleron is reviewed. A. S.

Sulphanilamide and chancroid. W. F. Schwartz and H. E. Freeman (J. Amer. Med. Assoc., 1940, **114**, 946—947).—Sulphanilamide reduced the healing rate of chancroid from 32 days (in 60 controls) to 15·7 days in 37 cases. C. A. K.

Pyoderma gangrænosum treated with sulphanilamide. A. L. Weiner (Arch. Dermat. Syphilol., 1940, **41**, 711—717).—A patient with pyoderma gangrænosum of 6 years' duration was successfully treated with sulphanilamide. C. J. C. B.

Ulceroglandular tularæmia [treatment]. L. L. Terry and H. S. Reichle (Arch. Path., 1940, **29**, 473—483).—Clinical, pathological, and bacteriological report of 3 cases of ulceroglandular tularæmia, fatal within the first 10 days of illness. Treatment, including the use of sulphanilamide, sp. immune serum, and convalescent serum, was not effective. C. J. C. B.

Intravenous and rectal administration of sulphapyridine. W. L. Whittemore, C. L. Royster, and P. A. Riedel (J. Amer. Med. Assoc., 1940, **114**, 940—941).—Case reports. C. A. K.

Prophylaxis and treatment of poliomyelitis with neoprontosil. W. M. Rhett (J. Pediat., 1940, **16**, 326—336).—Neoprontosil was given to 440 acutely ill children during an epidemic of poliomyelitis in dosage of 1 grain per lb. of body-wt. per day. Of these children only one developed paralysis, and 2 other children developed meningeal symptoms on the 5th day of illness. 14 cases of poliomyelitis are reported in which neoprontosil was given in the preparalytic stage. Of these only one developed paralysis. 11 patients with paralytic involvement were treated during this time by administration of neoprontosil. Toxic symptoms subsided in this group within 24—48 hr. and there was no apparent advance in paralytic involvement after the adequate dosage of the drug was reached and held for 24—48 hr. C. J. C. B.

Thiazole derivatives of sulphanilamide. P. H. Long (J. Amer. Med. Assoc., 1940, **114**, 870—871).—A review of experimental and clinical work on sulphathiazole and sulphamethylthiazole. C. A. K.

Toxic effects of sulphanilamide and related compounds. E. H. Bensley (Canad. Med. Assoc. J., 1940, **42**, 30—33).—A review based on 420 cases treated with the drug. C. J. C. B.

Sulphanilamide cyanosis relieved by nicotinic acid. J. F. Doughty (J. Amer. Med. Assoc., 1940, **114**, 756).—Nicotinic acid relieved cyanosis and other toxic signs in cases receiving sulphanilamide. C. A. K.

Pneumococcal meningitis : sulphapyridine reaction involving mucous membranes. M. L. Moore and R. P. Forbes (J. Pediat., 1940, **16**, 347—349).—A heavy bluish membrane appeared on the mucous membrane of the mouth and gums coincident with a generalised rash. C. J. C. B.

Sulphapyridine renal calculi in man. N. Plummer and F. McLellan (J. Amer. Med. Assoc., 1940, **114**, 943—946).—2 cases of renal calculi (proved by pyelography and post-mortem examination respectively) after sulphapyridine are described. The total dosage of drug was 11 g. in one case and 555 g. in the other. C. A. K.

Renal lesion from sulphapyridine. W. A. Stryker (J. Amer. Med. Assoc., 1940, **114**, 953—954).—Pptn. of acetylsulphapyridine in the kidney was found at autopsy of a patient treated with sulphapyridine. Marked dilatation of cortical tubules and glomerular spaces is probably due to intra-tubular deposition of the drug. Previous difficulties in demonstrating the ppt. were avoided by using a rapid celloidin technique. C. A. K.

Crystalline concretions in renal tubules following sulphathiazole therapy : widely patent foramen ovale in a patient aged 77. D. S. Pepper and H. M. Horack (Amer. J. med. Sci., 1940, **199**, 674—679).—Concretions obstructing the renal tubules and in the pelves and bladder were discovered at autopsy in a patient following treatment with sulphathiazole. The material was a derivative of sulphathiazole. C. J. C. B.

Gonorrhœal myelitis with associated porphyrinuria following sulphanilamide. F. G. Norbury (J. Lab. clin. Med., 1939, **25**, 270—274).—500 grains of sulphanilamide were given over 11 days. C. J. C. B.

Recent work on chemotherapy of protozoal infections. W. Yorke (Trans. R. Soc. trop. Med. Hyg., 1940, **33**, 463—482).—A review. C. J. C. B.

Bacillary dysentery : treatment and prophylaxis. R. A. O'Brien (Trans. R. Soc. trop. Med. Hyg., 1940, **33**, 573—584).—A review. C. J. C. B.

Therapeutic effect of streptococcus toxoid on erysipelas. H. Taoi and S. Fujimoto (Jap. J. exp. Med., 1940, **18**, 1—10).—Streptococcus toxoid was therapeutically effective for erysipelas cases. C. J. C. B.

Antisepticity tests for ointments. L. Gershenfeld and J. E. Zepeda (Amer. J. Pharm., 1940, **112**, 93—101).—The Agar Plate and Agar Cup–Plate techniques of the Food and Drugs Administration give comparative results, although the former simulates better the mode of application of ointments. The amount of ointment (best measured from a collapsible tube) and the area of spread do not affect the size of the zone of inhibition. H. G. R.

Bactericidal action and other properties of azorhodan (a thiocyanodiaminoazobenzene derivative). H. Riedel (Arch. exp. Path. Pharm., 1940, **194**, 613—619).—Azorhodan (1 : 1000 in 25% alcohol) kills *Staph. pyogenes aureus* in 125 min. The urine after ingestion of the drug has no bactericidal effect on *B. coli*. Rats tolerate subcutaneous injection of 100 mg. per kg. A bacterial suspension obtained from the contents of a rat's large intestine destroyed the drug. H. Bl.

Resistance of larvæ of latrine fly, *Chrysomyia megacephala*, against chemicals. H. M. Jettmar (Chinese Med. J., 1940, **57**, 74—85).—Pyrethrum powder, lysol, KOH, acetic acid, and bleaching powder were ineffective against the larvæ. Large quantities of boiling water were found to be the best destructive agent. The fly spreads severe alimentary infectious diseases, especially dysenteries. W. J. G.

Rotenone in treatment of scabies. C. C. Thomas and E. E. Miller (Amer. J. med. Sci., 1940, **199**, 670—674).—1% or 2% rotenone lotions produced prompt cure of scabies in 24 unselected cases. The prep. is free from unpleasant odour, is non-irritating to sensitive skins, and does not stain fabrics. C. J. C. B.

Assay of adrenaline by the blood pressure method. E. Beccari (Arch. Farm. sperim., 1940, **69**, 111—120).—More uniform results are obtained with the cat than with the dog; in both cases the curve relating effects to doses, calc. by Clark's formula (J. Physiol., 1926, **61**, 530), is close to those obtained experimentally by various workers. S. O.

Action of aneurin esters on leech, rat's gut, and blood pressure of cat. W. Riechert and H. Hübschmann (Arch. exp. Path. Pharm., 1940, **194**, 539—545).—Acetyl-, benzoyl-, and phospho-aneurin have no stimulating effect on leech muscle; acetylaneurin depresses slightly the sensitivity to acetylcholine. Cocarboxylase and acetylaneurin contract the rat's gut. Aneurin has no effect on cat's blood pressure; acetylaneurin (threshold dose 0·1 mg. per animal injected intravenously) lowers blood pressure. Benzoylaneurin has a similar effect (threshold 0·5 mg.). These substances have no effect on the depressor action of acetylcholine. H. Bl.

Action of acetyl- and benzoyl-aneurin on cat's blood pressure. W. Riechert (Arch. exp. Path. Pharm., 1940, **194**, 546—550).—The blood pressure fall caused by acetyl- and benzoyl-aneurin is not abolished by atropine but is diminished by eserine and ergotamine. Acetyl- and benzoyl-aneurin are hydrolysed by choline-esterase. H. Bl.

Action of sympathomimetic substances on heart and blood-vessels in man. F. Meyer and W. Spiegelhoff (Arch. exp. Path. Pharm., 1938, **190**, 256—272).—Oral or intravenous administration of tyramine, ephedrine, adrenaline, sympatol, suprifen, and veritol increases cardiac output in man. This is due to their action on the sympathetic and to emptying of the blood reservoirs. The last three increase the peripheral resistance to a smaller degree than the other substances. H. H. K.

Action of ephedrine on blood vessels. T. Gotsev (Arch. exp. Path. Pharm., 1940, **194**, 596—612).—Intravenous injection of *dl*-ephedrine in dogs (luminal anæsthesia) leads to a blood pressure rise accompanied by contraction of the spleen, and increased vol. of kidneys, small intestine, and limbs. Injected into the artery of a hind limb ephedrine produces a decrease in vol. It accelerates the heart and increases its output; the rise in blood pressure is due to the cardiac action. H. Bl.

Effect of *Rauwolfia heterophylla*, Roem and Sch., extracts on cardiac vagus. Raymond-Hamet (Compt. rend. Soc. Biol., 1939, **132**, 213—216).—Large intravenous doses of an aq. extract of this Central American plant abolish the inhibitory effects of the vagus on the heart. The inhibitory effect of acetylcholine on the auricles is unaffected. P. C. W.

Effect of morphine and derivatives on the sensitivity of leech muscle to acetylcholine. P. Dodel, G. Dastugue, and A. Bresson (Compt. rend. Soc. Biol., 1939, **132**, 267—268).—The denervated non-eserinised muscle of the leech is activated by the addition of acetylcholine (1/400,000). This action is sensitised by the following substances in ascending order of activity: heroin (1/1000), dionine, thebaine, papaverine (1/5000), *apo*morphine (1/10,000), morphine, codeine (1/400,000), and dihydro-oxycodeinone (1,50,000,000). In the eserinised prep. acetylcholine (1/40,000,000) is antagonised by papaverine (1/5000), dihydro-oxycodeinone (1/10,000), thebaine, dionine, codeine, morphine (1/50,000), and heroin (1/200,000). P. C. W.

Nicotine and effects of smoking. W. Straub and A. Amann (Arch. exp. Path. Pharm., 1940, **194**, 429—439).—Intravenous infusion of nicotine into cats leads to an initial blood pressure fall, followed by a rise which subsides slowly. The lethal dose is greater the slower is the rate of infusion. Removal of the adrenals or ergotamine is without effect on the blood pressure rise. The rise is due to a reversal of the initial depressor action. The high blood pressure in tobacco smokers is attributed not to a release of adrenaline but to a disturbance of the depressor reflex. H. Bl.

Effect of various substances on the conjunctival absorption of atropine in the rabbit. A. La Floresta (Arch. Farm. sperim., 1940, **69**, 136—158).—Atropine mydriasis was prolonged by isotonic solutions of Na_2SO_4, LiCl, alcohol, Na_2CO_3, Na citrate, KCl, $MgSO_4$, Na oxalate, $BaCl_2$, Na acetate, NaF, and $NaHCO_3$, in order of decreasing activity, and reduced by NH_4Cl. Max. mydriasis

was obtained with Na citrate. No solution produced harmful effects on the eye. S. O.

Antagonism tannic acid–quinine dihydrochloride in isolated toad's heart. S. Gajatto (Arch. Farm. sperim., 1940, **69**, 121—130).—Hearts stopped by quinine dihydrochloride recovered by perfusing with Ringer's solution containing tannic acid. S. O.

Pharmacological control of vegetative centres. H. T. A. Haas (Klin. Woch., 1939, **18**, 1357—1362).—A lecture. M. K.

Cardiac and neuromuscular effect of 883 F. E. Moisset de Espanés (Rev. Soc. argent. Biol., 1939, **15**, 511—522).—Diethylaminomethylbenzdioxan (883 F.) was injected intravenously into dogs anæsthetised with chloralose or morphia–chloral. Small doses (less than 5 mg. per kg.) produced tachycardia; larger doses produced bradycardia, but did not suppress adrenaline tachycardia. Vagotomy and atropine did not modify these results. Large doses (more than 20 mg. per kg.) produced changes in the e.c.g., *i.e.*, prolonged *PR* interval, changes in form, direction, and voltage of *T*. In *Bufo arenarum* there was a decrease in the frequency and amplitude of the heart beat and suppression but not inversion of the effect of adrenaline on the frequency. The excitability of the myocardium and striated muscles decreased. Chronaxie decreased and rheobase increased in motor nerves. J. T. L.

Behaviour of Belgian frogs in relation to Trevan's dose–mortality curve in assay of digitalis. P. Deltour (Quart. J. Pharm., 1939, **12**, 677—679).—The relative dose–mortality curve obtained by injection of tincture of digitalis into frogs from Diksmuide and Louvain districts shows complete accordance with Trevan's curve, although such curves have previously been found to vary with the place of origin of the frogs. F. H.

Influence of the anæsthetic on results of digitalis assay by the cat method of Hatcher and Brody. C. C. Haskell (J. Amer. Pharm. Assoc., 1940, **29**, 56—59; cf. A., 1936, 1552).—The cat unit for digitalis preps. is increased if chlorobutanol or dial–urethane is substituted for ether as anæsthetic. F. O. H.

Assay of digitalis. P. Blickensdorfer and H. A. McGuigan (J. Amer. Pharm. Assoc., 1940, **29**, 101—104).—The use of dogs in the assay of digitalis gives more consistent results than when cats are used. In agreement with results from other methods, the dog method indicates that U.S.P. reference powder is 20% stronger than is claimed. F. O. H.

Cat and dog units of digitalis. J. A. Bone, J. W. Elam, and P. Blickensdorfer (J. Amer. Pharm. Assoc., 1940, **29**, 105—106).—A described cat method of assay gives results in agreement with those from the dog method, indicating that for the U.S.P. digitalis reference powder, the factor of 0·745 should be replaced by 0·62 (cf. preceding abstract). F. O. H.

Experiences with *Digitalis lanata*. G. Schumacher (Med. Welt, 1939, **13**, 1231—1233).—The action of *D. lanata* glucosides resembles that of *Strophanthus*. The diuretic action is very marked; toxicity is comparatively low. A. S.

Cumulative action of digitalis. L. Lendle (Arch. exp. Path. Pharm., 1940, **194**, 493—505).—Tonephin (vasopressin) has no effect on the toxicity of digitoxin when given separately; when given with digitoxin, it enhances the cumulative effect of this drug in the cat. The following substances, given together with digitoxin, do not modify the cumulative effect of the latter: atropine, caffeine, ephedrine, quinine, papaverine, and veritol. H. Bl.

Pharmacodynamic action of folinerin on heart of *Bufo arenarum*. E. C. Baldassarre (Rev. Fac. Cienc. Quím. La Plata, 1939, **14**, 71—86).—The action of folinerin (cf. Flury and Neumann, A., 1936, 1294) on toad's heart has a general resemblance to that of digitalis glucosides, but is more rapid. F. R. G.

Therapy of dropsy. H. M. Marvin (J. Amer. Med. Assoc., 1940, **114**, 757—763).—A review. C. A. K.

Treatment of patients with heart disease with fruit juice. G. Moschinski (Dtsch. med. Wschr., 1939, **65**, 1565—1568).—Satisfactory results in patients suffering from heart diseases were obtained by prolonged administration of fruit juice and salt-free and meatless diet in addition to treatment with digitalis and strophanthin. A. S.

Urinary excretion of iodine in rabbits after administration of monoiodohistidine. L. Untersteiner-Occhialini (Biochim. Terap. sperim., 1940, **27**, 77—81).—Following oral or parenteral administration of 0·1 g. per kg. of monoiodohistidine, 60—90% of the I was excreted in the urine within 10—20 days. The I excretion was highest on the first day; then it decreased abruptly at first and gradually later. S. O.

Bioassay of senna leaves and fluid-extract of senna, U.S.P. XI. E. Geiger (J. Amer. Pharm. Assoc., 1940, **29**, 148—152).—A method of assay, based on the cathartic action in mice, is described. The cathartic activity of U.S.P. XI fluid-extract of senna is reduced at low p_H and by the alcohol content. F. O. H.

Purgative properties and chemical constitution. B. Hoï (Compt. rend., 1940, **210**, 418—420).—*o*-Di-(4-hydroxybenzoyl)benzene, an isomeride of phenolphthalein, has little, and diphenylphthalide no, purgative action. 3-*p*-Hydroxyphenyl*iso*coumarin is markedly purgative whilst 3-phenyl*iso*coumarin and 4'-hydroxydeoxybenzoin-*o*-carboxylic acid are inactive. The lactone ring is responsible for the purgative action, but not the OH-groups. J. L. D.

Emetic substances in coffee. B. Behrens and G. Malorny (Arch. exp. Path. Pharm., 1940, **194**, 369—388).—The emetic effect of coffee extracts in dogs and pigeons is unaffected by removal of the caffeine. The emetic effect is less in coffee treated in the autoclave with water vapour (Lendrich treatment). In this treatment chlorogenic acid is removed or destroyed. The emetic substances can be extracted with acid ether. H. Bl.

Gentian-violet in oxyuriasis. W. H. Wright and F. J. Brady (J. Amer. Med. Assoc., 1940, **114**,

861—866).—Oral administration of gentian-violet (0·18 g. daily to adults) was superior to all other methods of therapy in infestation with *Enterobius vermicularis* (pinworm, threadworm). C. A. K.

Distribution of veronal in the brain in acute veronal poisoning. J. J. L. Zwikker and A. J. Steenhauer (Pharm. Weekblad, 1940, **77**, 2—5).—The following amounts of veronal were found in the organs: liver 20·4, kidney 31·2, blood 19·0, brain 18·5—20·8 mg.-%. S. C.

Pharmacology of ethyl thioncarbamate. J. M. Dille and P. A. Squier (J. Amer. Pharm. Assoc., 1940, **29**, 145—147).—Ethyl thioncarbamate, m.p. 38° (uncorr.) (cf. Wheeler and Barnes, A., 1899, i, 797), has an intraperitoneal, 50%-lethal dose of approx. 0·4 g. per kg. in rats. Depression of reflex movement and respiration is more rapid and of shorter duration than with ethyl urethane. It appears to break down in the body but neither ethyl mercaptan in the breath nor CNS′ in the urine could be detected. F. O. H.

Synergism of *Cannabis* and bromoallylbutylbarbituric acid. S. Loewe (J. Amer. Pharm. Assoc., 1940, **29**, 162—163).—Hypnosis in mice by the barbiturate was of greater duration and more rapid onset when a purified prep. of *C. americana* oil was simultaneously administered. F. O. H.

Opium addiction in India and its treatment. R. N. Chopra (Current Sci., 1939, **8**, 503—506).—Opium eating is localised in relatively small areas which are increasing in no., but opium smoking and the drinking of infusions of poppy heads are diminishing. Addiction to morphine is increasing amongst young people, children in certain areas being doped with opium. The signs and symptoms of opium eating and smoking are described. Under the effect of the drug or after treatment, which is described, the blood of addicts is conc. J. L. D.

Pain threshold after administration of various drugs. D. I. Macht and M. B. Macht (J. Amer. Pharm. Assoc., 1940, **29**, 193—199).—Further details of work already reported (A., 1940, III, 298). F. O. H.

Pharmacological activity of morphine and its derivatives. H. A. Oelkers (Arch. exp. Path. Pharm., 1940, **194**, 296—307).—Respiration is arrested in rabbits (urethane anæsthesia) when the following amounts (mg.) are injected intravenously: morphine hydrochloride 10—12, dicodid hydrochloride 7—8, dilaudid 2·5—3, eukodal 1·5—2, and codeine phosphate about 60 mg. Full analgesia in 10—20% of a series of mice is obtained by 0·03—0·04, 0·02—0·03, 0·003—0·004, 0·005—0·006, and 0·08—0·1 mg. per g. mouse respectively. H. Bl.

Dilantin sodium in epilepsy. S. I. Frankel (J. Amer. Med. Assoc., 1940, **114**, 1320—1321).—Dilantin Na was used in 48 patients with epilepsy. It is an effective anti-convulsant but has little sedative action. Hyperplasia of the gums, seen in 30 cases, was associated with low blood-ascorbic acid vals. C. A. K.

Phenobarbital and dilantin sodium in epilepsy. L. J. Robinson and R. Osgood (J. Amer. Med. Assoc., 1940, **114**, 1334—1335).—In 100 cases of epilepsy the effects of phenobarbital and dilantin Na alone, and their combined action, showed that the latter drug may be successful where the former fails, and that together they may be effective where either alone is ineffective. Dilantin Na produces no sedative effect except in toxic doses. C. A. K.

Psychological and medical aspects of excessive use of alcohol. G. H. Stevenson (Canad. Med. Assoc. J., 1940, **42**, 57—61).—A lecture. C. J. C. B.

Glutathione. XII. Effect on alcoholism. M. Ogawa (J. Agric. Chem. Soc. Japan, 1940, **16**, 238—244; cf. A., 1940, III, 334).—When 0·1 to 0·5 c.c. of alcohol with 0·5 to 30 mg. of reduced glutathione per 100 g. of body-wt. is injected subcutaneously into rats they become more deeply intoxicated than those which receive the alcohol alone. Injection of 0·6 to 0·7 c.c. of alcohol and 5, 10, or 20 mg. of reduced glutathione per 100 g. produces 100% death rate. With 0·6—0·7 c.c. of alcohol only, the death rate is 80%. J. N. A.

Blood-glutathione in experimental infection of guinea-pigs with *Streptococcus viridans*. V. Rao (Arch. Farm. sperim., 1940, **69**, 131—135).—Both reduced and oxidised glutathione were decreased. S. O.

Constituent of earthworm as antipyretic. A. Ogata, K. Morimoto, and F. Mori (J. Pharm. Soc. Japan, 1939, **59**, 171—173; cf. A., 1939, III, 845).—The raw material is digested, conc., and dialysed. The solution from outside the membrane is pptd. by alcohol; the ppt. is removed and the filtrate evaporated to dryness. The dried material is extracted with amyl alcohol, giving a dark brown oil, sparingly water-sol., which contains the active principle. This when boiled with KOH gives the odour of amyl alcohol. The enzyme of the earthworm retains its activity after 2 months in water at 0° and is not harmed when heated in water (p_H 8·0) for 30 min. at 95° or longer at 65—75°. It is adsorbed by animal C but its elution by dil. alcohol is difficult. H. W.

***cyclo*Propane—unmixed.** B. C. Leech and H. R. Griffith (Canad. Med. Assoc. J., 1940, **42**, 434—438).—A lecture. C. J. C. B.

Alkaline reserve in dogs anæsthetised with *cyclo*propane. A. Sartori (Rev. Soc. argent. Biol., 1939, **15**, 507—510).—Dogs were anæsthetised for 1 hr. with *cyclo*propane–O_2 mixture (17—50%). The alkaline reserve of jugular blood, determined by the Van Slyke–Stadie technique, did not vary significantly during and 4 hr. after anæsthesia. J. T. L.

Anæsthesia in gynæcology and obstetrics. F. Siegert (Med. Welt, 1939, **13**, 1460—1462).—A review. A. S.

Efficacy of local anæsthetics. C. A. Tinn (Brit. Dental J., 1940, **68**, 190—191).—The rapidity and depth of anæsthesia of the teeth produced by 0·75% cocaine hydrochloride with 1 : 50,000 adrenaline are much superior to those produced by 2% procaine

with 1 : 25,000 adrenaline and buffered (p_H 5) 2% procaine with 1 : 50,000 adrenaline. The buffered solution does not give sufficient depth of anæsthesia when used for local infiltration. Acidity of the anæsthetic solution is not a cause of after-pain. Cocaine (0·95%) with 1 : 80,000 adrenaline and quinine derivatives in Ringer's solution is unsatisfactory because of the low adrenaline content, antagonism by the quinine, or very rapid diffusion. Possibly hypotonic solutions are more efficacious than iso- or hyper-tonic solutions. W. McC.

Procaine hydrochloride in fractures and sprains. T. Outland and C. R. Hanlon (J. Amer. Med. Assoc., 1940, **114**, 1330—1333).—Case reports. C. A. K.

Pharmacological modification of metrazol [cardiazol] convulsions. S. R. Rosen, J. B. Ziegler, and B. Cominole (J. Amer. Pharm. Assoc., 1940, **29**, 164—166).—The severity and, to some extent, the duration of convulsions due to administration of convulsant doses of cardiazol to dogs are reduced by prior administration of β-erythroidin (which has a curare-like action). F. O. H.

Addiction to benzedrine. S. Friedenberg (J. Amer. Med. Assoc., 1940, **114**, 956).—Case report. C. A. K.

Effects of tea drinking. G. W. Halpenny and H. E. MacDermot (Canad. Med. Assoc. J., 1939, **41**, 449—453).—The effects of tea on gastric acidity and peptic activity are slight and variable. It does not alter the basal metabolic rate. C. J. C. B.

Nitritoid reaction to tryparsamide. H. A. Levy (Arch. Dermat. Syphilol., 1940, **41**, 690—691). —Report of a case. C. J. C. B.

Rat mortality following sodium tungstate injection. F. W. Kinard and J. van de Erve (Amer. J. med. Sci., 1940, **199**, 668—670).—The subcutaneous lethal dose of Na tungstate for 50% of 66-day-old rats, after a 24-hr. starvation period, is 223—255 mg. C. J. C. B.

Mode of action of rare earths. H. A. Oelkers (Arch. exp. Path. Pharm., 1940, **194**, 477—492).—The anticoagulant effect of Nd and Pr chlorides is more marked when the substance is not added *in vitro*, but intravenously injected. Intravenous injections (in rabbits) of 60—100 mg. of $NdCl_3$ per kg. have instantaneous anticoagulant action; with smaller doses there is a definite latent period. The chlorides of La, Ce, Pr, Dy, Nd, or Th in a concn. of 6—10 mg.-% cause a cessation of the movements of the rabbit's isolated gut. The substances are also toxic to the frog's heart. H. Bl.

Poisoning with bread containing lead arsenate. W. Silberschmidt (Schweiz. med. Wschr., 1939, **69**, 975—976).—30 cases are reported. A. S.

Effect of sodium thiosulphate on coproporphyrinuria in experimental lead poisoning in rabbit. L. Binet, L. Pérel, and G. Glotz (Compt. rend. Soc. Biol., 1939, **132**, 195—196).—Injection of 0·5 ml. of 40% basic Pb acetate intraperitoneally in the rabbit produces coproporphyrinuria 48 hr. later (3·27 mg. per l.). The val. rises to a max. 2 months after the injection (6·54 mg. per l.). Injection of $Na_2S_2O_3$ (20% solution, 2 ml. intravenously and 3 ml. intraperitoneally) abolishes or prevents the appearance of coproporphyrin in the urine. P. C. W.

Bioassay of aconite. B. V. Christensen and J. W. Nelson (J. Amer. Pharm. Assoc., 1940, **29**, 97—101).—A pigeon-emesis method of assay is described and results obtained by its use are tabulated and discussed. F. O. H.

Poisoning with the mushroom *Amanita pantherina*, D.C. F. Lanyar (Wien. klin. Wschr., 1939, **52**, 953—954).—2 cases of poisoning after eating *A. pantherina* are reported. A. S.

Importance of metals in detoxication processes in body. H. O. Hettche (Klin. Woch., 1939, **18**, 1437—1439).—A review. M. K.

Absorption and toxicity of sodium and potassium thiocyanates. R. C. Anderson and K. K. Chen (J. Amer. Pharm. Assoc., 1940, **29**, 152—161).—CNS′ in blood (0·1 c.c.) is determined by hæmolysis with water, deproteinisation with trichloroacetic acid, and examination in a photo-electric colorimeter after treatment with $Fe(NO_3)_3$. With intravenous injection in mice, KCNS is more toxic than NaCNS; orally in rats and mice, the toxicities by wt. are approx. equal. Daily feeding of 0·1—0·2 g. per kg. of NaCNS or KCNS to rats for 8—12 weeks does not impair growth; with dogs, similar administration produces loss in wt., toxic symptoms, and finally death, the max. daily oral dose tolerated being approx. 25 mg. per kg. Data for concn. of CNS′ in blood of dogs and rabbits at varying periods after administration of various doses of Na or K salt are given and discussed with reference to the toxicity of the salts. The pharmacology and therapeutic use of CNS′ are reviewed. F. O. H.

Bone changes in endemic fluorosis. H. A. Mascheroni, J. M. Muñoz, and C. Reussi (Rev. Soc. argent. Biol., 1939, **15**, 417—419).—Osteopetrosis was observed in a young woman who had lived all her life in a district in which F occurs in drinking waters in high concns. The post-mortem examination confirmed the radiographic diagnosis. F content of the bone ash was 0·975%. J. T. L.

Acute toxic nephritis due to inhalation of carbon tetrachloride fumes. M. A. Simon (Canad. Med. Assoc. J., 1939, **41**, 580—583).—The patient recovered from uræmia; no pathological changes remained in the liver or kidneys 10 months after the acute illness. C. J. C. B.

China berry poisoning in pigs. J. H. Brown (J. Amer. Vet. Med. Assoc., 1939, **95**, 107).—5 of 50 pigs became ill after eating a large quantity of China berries (*Melia azedarach*); all the animals recovered. E. G. W.

Cantharides. II. Assay of cantharides. B. P. Hecht and L. M. Parks (J. Amer. Pharm. Assoc., 1940, **29**, 111—115; cf. A., 1940, II, 242).—The U.S.P. XI method gives low vals. owing to volatilisation of cantharidin and losses during fat removal. Benzene–light petroleum or $CHCl_3$ is a suitable solvent for cantharidin. A modified method, depending on determination of the cantharidin content of the extracted residues by titration, is described. F. O. H.

Supposed active principle of curare. L. Lapicque (Bull. Soc. Chim. biol., 1939, **21**, 1400—1404; cf. A., 1939, II, 233; III, 568, 900).—Because its action on muscle differs very greatly from that of curare, strychnoethaline is not the active principle of curare. W. McC.

Liberation of adenyl compounds from perfused organs by cobra venom. C. H. Kellaway and E. H. Trethewie (Austral. J. Exp. Biol., 1940, **18**, 63—88).—Changes in e.c.g. observed in rabbits and cats after intravenous injection of cobra venom are described. It causes the appearance of adenyl compounds in the perfusate from the liver of the rabbit; more adenyl compounds from the liver are destroyed in the organ itself and in the perfusate by enzymes which are set free by the venom. Concn. in the perfusate increases at 95°, or when Tyrode's solution containing 0·025M-NaCN is used. Normal liver perfusate contains neither adenylic compounds nor inactivating enzymes. Adenylic compounds are liberated from perfused kidney of rabbit and from perfused heart of rabbit or cat by injection of cobra venom. Lysocithin also liberates adenylic compounds from the perfused liver and heart of cat; the outflow reaches a max. at once, whilst that after cobra venom is delayed. Lysocithin is probably partly responsible for liberation of adenyl compounds by venom. The relation of adenyl compounds to the cardiac effects of cobra venom is discussed. D. M. N.

Pharmacodynamic study of iodine derivatives. O. F. F. Nicola (Rev. Fac. Cienc. Quím. La Plata, 1939, **14**, 91—104).—The org. I eliminated after subcutaneous injection into dogs of an aq. solution containing α-iodo-γ-diethylaminopropan-β-ol ethiodide (312·4), tetramethylammonium iodide (100), and NaI (60 mg. per 2 c.c.) is greater than for the first compound alone, whilst the metabolism is more regular with the mixture. Ethyl behenolate di-iodide administered to rabbits is scarcely absorbed in the stomach and the tolerance is 3·5 g. per kg.; administration of 1 g. daily for 15 days has a negligible effect on blood pressure and respiration, whilst elimination of I is slow. The organs of rabbits to which KI was given contained no I after 24 hr., although I could be detected at 2—3 hr.; with ethyl behenolate di-iodide, I was present in the blood and organs after 24 hr. F. R. G.

Variations in concentration of serum-proteins produced by 2 : 4-dinitrophenol. R. Nico (Rev. Fac. Cienc. Quím. La Plata, 1939, **14**, 119—135).—Daily administration of 5—40 mg. per kg. of dinitrophenol to 8 young rabbits fed on green vegetables and cereals for approx. 15 days diminishes total proteins by 0·681—3·414% of their initial concn. Albumins diminished by 0·884—3·730% except for one rabbit which showed an increase; globulins diminished by 0·321—6·474%, whilst the albumin : globulin ratio was unchanged. Non-protein-N increased by 2·094—23·49%. These variations are approx. proportional to the dose of dinitrophenol administered. Loss of wt. was up to 124 g. per kg., whilst some of the animals died after the 2nd or 3rd dose owing to a special idiosyncrasy. The function of dinitrophenol is therefore regarded as one of increasing metabolic rate. F. R. G.

Sensitisation of hyperthermic effects of dinitrocresol by metabolites. H. Handovsky, H. Casier, and A. L. Delaunois (Compt. rend. Soc. Biol., 1939, **132**, 300—303).—Mortality in pigeons given 6—7 mg. of dinitrocresol per kg. is 0—10%. If the following substances are given immediately after the dinitrocresol the mortality from hyperthermia is increased to 25—100%: acetic acid (50—200 mg. per kg. intramuscularly or orally), acetaldehyde (50—100 mg. per kg. intramuscularly), glycine (200 mg. per kg. intramuscularly), creatine (100—200 mg. per kg. intramuscularly), and methylguanidine (50—100 mg. intraperitoneally). Control experiments with water, HCl, and ethyl alcohol gave normal mortality rates. P. C. W.

Production of reducing substances, especially ascorbic acid, in pigeon and guinea-pig muscle following administration of dinitrocresol and metabolites. H. Handovsky, H. Casier, and A. L. Delaunois (Compt. rend. Soc. Biol., 1939, **132**, 303—307).—Substances which sensitise the animal to the hyperthermic action of dinitrocresol (acetaldehyde, acetic acid, glycine, methylguanidine, and creatine) also increase the content of strongly reducing substances present in pigeon and guinea-pig muscle; the substances may be given orally, intraperitoneally, intravenously, or intramuscularly in doses of 50—400 mg. per kg. The glutathione is unaffected. Acetic acid and creatine increase the muscle content of ascorbic acid, which also sensitises the animal to dinitrocresol. P. C. W.

Benzene poisoning. I. Gray, I. Greenfield, and M. Lederer (J. Amer. Med. Assoc., 1940, **114**, 1325—1330).—A case of fatal benzene poisoning is reported in detail with sternal marrow and post mortem findings. Autohæmagglutination was seen. C. A. K.

Chronic gas poisoning. R. B. C. Thomson (Canad. Med. Assoc. J., 1940, **42**, 464).—A case report. C. J. C. B.

Multiple symmetric gangrene occurring during prolonged administration of amidopyrine. J. A. Buchanan (Arch. Dermat. Syphilol., 1940, **41**, 678—680).—A case of bilateral symmetrical gangrene in a patient with chronic non-sp. arthritis is reported. The gangrene occurred during administration of amidopyrine, 20 grains a day for 2½ months. C. J. C. B.

Comparative chemistry and pharmacology of menthols. A. R. Bliss, jun., and H. B. Glass (J. Amer. Pharm. Assoc., 1940, **29**, 171—175).—Six menthol preps. consisting of mixtures of various optical isomerides of menthol, *d*-neomenthol, and *d-iso*menthol showed no significant differences in toxicity (rat, rabbit) or effect on skin (man). F. O. H.

Cutaneous hypersensitivity to triethanolamine. G. H. Curtis and E. W. Netherton (Arch. Dermat. Syphilol., 1940, **41**, 729—731).—Report of 2 cases. C. J. C. B.

Histaminase in cold allergy. T. W. Baker (J. Amer. Med. Assoc., 1940, **114**, 1059—1061).—Two patients with cold allergy were successfully treated with histaminase. C. A. K.

Detoxified antigen in treatment of pertussis. M. Weichsel and J. H. Lapin (Arch. Pediat., 1940, **57**, 159—167).—176 children with active whooping cough were treated by the administration of "detoxified pertussis antigen." Injections were given every 2—3 days in doses of 0·3—2 c.c. The average total dosage was 4—5 c.c., 56% of the cases were benefited. 57 children were injected with 3—6 doses of "detoxified pertussis antigen" after intimate contact with whooping cough. Most of these cases remained in families where one or more siblings were suffering from the disease. 37 children did not develop any symptoms, 11 had a mild form of the disease, and 9 had pertussis of average severity. C. J. C. B.

Allergic diseases in childhood. W. C. Deamer (J. Allergy, 1939, **10**, 605—616).—A general review. C. J. C. B.

Vollmer patch test as routine procedure. J. D. Craig and L. A. Scheuer (Arch. Pediat., 1940, **57**, 177—180).—Of 212 children who had previously reacted positively to a 1 : 1000 dilution of old tuberculin, 95·1% showed a conformity in positive reactions between the old tuberculin and the Vollmer patch test and 84% between the old tuberculin and the first strength purified protein derivative. C. J. C. B.

Ionic transmission method for testing with allergens. L. O. Dutton (J. Allergy, 1940, **11**, 130—137).—By electrophoresis with c.d. of 0·5 ma. at 15 v. applied for 10 min. 8 or 10 allergens were tested at each sitting. Positive pollen tests were readily obtained. Tests for animal epidermals and house dust were less successful, and positive tests for foods were successful only on individuals who showed marked skin reactions by other methods. C. J. C. B.

Action of tobacco on teeth. L. H. Strauss and J. Föckeler (Z. klin. Med., 1939, **136**, 468—473).—Combustion products of tobacco penetrate into the dentine and cement. Smoking of 2—3 cigarettes increases the Ca, inorg. P, and K content of saliva. A. S.

Variability in response to drugs. E. E. Nelson (J. Amer. Med. Assoc., 1939, **113**, 1373—1375).—A lecture. C. A. K.

Treatment of hæmangiomas of skin in children by carbon dioxide snow. N. W. Wrong (Canad. Med. Assoc. J., 1939, **41**, 571—572).—A review. C. J. C. B.

Use of urea in treatment of warts. E. M. MacKay (Arch. Dermat. Syphilol., 1940, **41**, 736—737).—A sterile 50% solution of urea has been found useful for removing warts, when injected at their base in amounts of 0·1 to 0·2 c.c. C. J. C. B.

Use of intravenous sodium chloride in pyrotherapy. E. E. Rosenberg and N. N. Epstein (Amer. J. med. Sci., 1940, **199**, 650—656).—The intravenous use of 500 c.c. of hypertonic saline solution (5%) immediately preceding artificial fever therapy reduced the incidence, frequency, and severity of nausea and vomiting as well as of reactions of intolerance to heat and post-therapeutic debility. C. J. C. B.

For other abstracts on allergy, see p. 614.

(xxi) PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Assessment of tropical climates in relation to human habitations. D. H. K. Lee and R. Courtice (Trans. R. Soc. trop. Med. Hyg., 1940, **33**, 601—614).—A method of classifying hot climates in their relationship to European settlements on the basis of effective temp. studies is suggested for wider use. A comparative analysis of the climates of 12 Queensland towns is made in detail. C. J. C. B.

Potassium exchanges in man in brief exercise. A. Keys (Proc. Soc. Exp. Biol. Med., 1940, **43**, 395—397).—After 20—70 sec. violent running, plasma-K was increased by 0·52 mol. equiv. at the expense of the red cells. V. J. W.

Observations on the Donaggio reaction. G. Rendel (Arbeitsphysiol., 1939, **10**, 521—529).—A positive reaction (persistence of colour in a mixture of thionin plus NH_4 molybdate when urine is added) occurs after severe exercise. No deductions can be made from a few analyses but in a given person the degree of the reaction is proportional to the severity of the work. The substance responsible is ether-sol., probably colloidal, and a product of protein metabolism; it could not be completely identified. A series of diluted thionin dyes are useful in qual. tests. E. J. W.

Lupoid–sarcoid reaction induced by foreign body (silica). W. M. German (Amer. J. clin. Path., 1940, **10**, 245—250).—A case presented shows a subcutaneous tissue tuberculoid reaction in which the ætiological agent was presumably SiO_2. Every effort was made to rule out a co-existent tuberculosis. (3 photomicrographs.) C. J. C. B.

Prevention of the harmful effect of silica dust on the conjunctival tissue by metallic aluminium. A. Policard and J. Rollet (Compt. rend. Soc. Biol., 1939, **132**, 190—192).—The effect of SiO_2 dust on the rabbit's eye is practically abolished by the addition of 10% of powdered Al to the dust. H. G. R.

Effect of cobalt mineral dusts (smaltine and cobaltine) on conjunctival tissue. A. Policard and J. Rollet (Compt. rend. Soc. Biol., 1939, **132**, 192—193).—Whereas smaltine has a marked action on the conjunctiva, characterised by œdema and a greyish cellular infiltration, cobaltine and pitchblende exhibit little effect. H. G. R.

Constant dust-feeding device for laboratory use. C. E. Williams and W. P. Battista (J. Ind. Hyg., 1940, **22**, 152—153).—The apparatus described has a capacity sufficient to load an air stream of 1000 cu. ft. per min. with dust to a concn. of 15—20 grains per cu. ft.; it can be calibrated for the various dusts used and adjusted to deliver the desired amount of dust. E. M. K.

Animal tissue reaction to particulate copper stearate. P. T. Knies (J. Lab. clin. Med., 1940, **25**,

726—734).—A patient is described who presented marked diffuse pulmonary fibrosis of an unusual reticulated nature, under circumstances suggestive of pneumonoconiotic origin, following the inhalation of Cu stearate dust. Experiments on guinea-pigs to show the tissue responses to Cu stearate particles introduced subcutaneously, intraperitoneally, and by inhalation demonstrated an acute reaction to Cu stearate and its ultimate absorption and removal without residual or progressive chronic changes. (5 photomicrographs.) C. J. C. B.

Chronic arsine poisoning amongst workers employed in cyanide extraction of gold : report of fourteen cases. F. M. R. Bulmer, H. E. Rothwell, S. S. Polack, and D. W. Stewart (J. Ind. Hyg., 1940, **22**, 111—124).—The workers, who were exposed to very low concns. of AsH_3, had reduced red cell counts and hæmoglobin levels. Common symptoms were headache, shortness of breath, weakness, and nausea; disability did not correspond with the degree of blood destruction, which was in some cases very great. Blood transfusion and Fe therapy were effective, and all the men recovered quickly. Abnormal amounts of As were present in the urine and pubic hair, but there was no relationship between As content and severity of the case. E. M. K.

Skin injuries by incendiary bombs and poison gases. H. Fuhs (Wien. klin. Wschr., 1940, **53**, 40—44).—A lecture. A. S.

Health hazards of electric and gas welding. J. A. Britton and E. L. Walsh (J. Ind. Hyg., 1940, **22**, 125—151).—Different methods of welding, the materials used, and the resultant hazards are described; the literature on the effects on health of exposure to the various by-products is reviewed. Examination of 286 welders showed 65% with normal chest *X*-ray picture, and only 8% with mottling or stippling of the lung fields; the latter group had no disability and their sickness record was no worse than that of other groups. Amongst the whole group, the sickness record compared favourably with that of a control group, and the disability frequency rate of welders was not in excess of that in the general group. E. M. K.

(xxii) RADIATIONS.

Effect of the temperature on the sensitivity of tissues to α-rays. M. Klusakova (Compt. rend. Soc. Biol., 1939, **132**, 280—282).—The effect of α-rays on epidermal tissues of *Allium cepa* is greater at 28° than at 8°. H. G. R.

Formation of " radio-toxins " after irradiation by α-rays. F. Hercik and J. Zacek (Compt. rend. Soc. Biol., 1939, **132**, 283—284).—The lethal action of α-rays on *Allium cepa* is due to the formation of a toxin which can be removed from the cells by washing with water. H. G. R.

Pathology of irradiation sickness : a new method of inducing shock. V. H. Moon, K. Kornblum, and D. R. Morgan (Proc. Soc. Exp. Biol. Med., 1940, **43**, 305—306).—*X*-Ray irradiation of the abdomen in dogs caused after 60 hr. symptoms of shock with hæmoconcentration of 15—50%. Symptoms appear to be due to absorption of breakdown products of necrosed intestinal mucosa. V. J. W.

Treatment of nasal sinus infection by ultra-short-wave diathermy. W. P. E. Patterson (Canad. Med. Assoc. J., 1940, **42**, 454—456).—Ultra-short-wave diathermy produces an increased circulation and dilatation of the capillaries which probably gives the therapeutic effect. No changes in intranasal temp. were noted. Blood pressure is lowered. C. J. C. B.

Whealing response of human skin to ultra-violet light, and histamine theory of allergic reactions. H. A. Abramson (Proc. Soc. Exp. Biol. Med., 1940, **43**, 410—412).—In a sensitive subject wheals were caused by exposure to light of 3700 A. or less. No histamine could be recovered from extensive wheals, nor did they cause any signs of histamine absorption. No spreading from the edges took place. V. J. W.

Changes in absorption spectrum of *Cypridina* luciferin solutions during oxidation. A. M. Chase (J. Cell. Comp. Physiol., 1940, **15**, 159—172).—When the luciferin solution is exposed to air, max. absorption is at 4800 A. and this decreases on prolonged exposure. The ultra-violet spectrum shows no change. V. J. W.

Kinetics of bioluminescent flashes. B. Chance, E. N. Harvey, F. Johnson, and G. Millikan (J. Cell. Comp. Physiol., 1940, **15**, 195—215).—Changes in luminosity after mixing luciferin and luciferase under various conditions were recorded by a modified Hartridge–Roughton flow method. Light emission results from four consecutive reactions which may vary in speed independently of each other and which differ in relative time-relations in the case of different organisms. V. J. W.

Phototropism of honey bee (*Apis mellifica*). W. J. Goosen (Arch. néerland. Physiol., 1939, **24**, 414—425).—Bees visit illuminated areas more frequently than dark ones; this is particularly marked if the bees were kept in darkness for 72 hr. A. S.

(xxiii) PHYSICAL AND COLLOIDAL CHEMISTRY.

Physico-chemical properties of solutions of bile. A. Boutaric, P. Berthier, and M. Roy (Bull. Soc. Chim. biol., 1940, **22**, 170—178).—Following dilution of aq. solutions of bile kept at 0°, the optical density and surface tension increased and η decreased with time. A. L.

Physico-chemical properties of hæmocyanins. V. Solubility in presence of neutral salts, state of dispersion, and specificity of various hæmocyanins. J. Roche and Y. Derrien (Bull. Soc. Chim. biol., 1940, **22**, 7—18; cf. A., 1939, III, 937).—Changes in solubility of hæmocyanins from *Cancer pagurus*, *Eledone moschata*, *Octopus vulgaris*, and *Sepia officinalis* at p_H 6·15 and 22° in aq. $(NH_4)_2SO_4$ with increasing concn. of $(NH_4)_2SO_4$ were determined. Preps. of the individual hæmocyanins made by the same method gave solubility curves corresponding with homogeneous proteins in some cases and with

protein mixtures in others. Vals. of Cohn's const. of pptn. for the hæmocyanins are given and discussed. A. L.

Osmotic pressure, mol. wt., and dissociation of *Limulus* hæmocyanin. N. F. Burk (J. Biol. Chem., 1940, **133**, 511—520).—Measurements of the osmotic pressure of the hæmocyanin in isoelectric urea solution show that the mol. wt. is approx. 142,000. The val. obtained when buffered isoelectric aq. solution (p_H 6·2—6·4) is used is approx. 565,000. When Cu is removed from the hæmocyanin by treatment with HCl at p_H approx. 3, the mol. wt. of the Cu-free protein in urea solution is approx. 69,000, whilst the min. val. for the hæmocyanin itself, calc. from the contents of Cu, S, and amino-acids, is approx. 38,000. The fundamental hæmocyanin unit (A., 1937, III, 416) of mol. wt. 142,000 appears to contain one prosthetic group having 4 Cu atoms. W. McC.

Osmotic relations between egg-white and egg-yolk and the effects of injection of potassium cyanide and sodium fluoride thereon. N. M. Basu and M. C. Mitra (J. Indian Chem. Soc., 1940, **17**, 111—116).—The f.p. of egg-yolk (θ_y) is about 0·07° above the f.p. of egg-white (θ_w), and this difference is maintained even after four days. Injection into the egg of NaF (enzyme oxidation inhibitor) gradually reduces $\theta_y - \theta_w$, whilst injection of KCN increases it. The results are discussed. C. R. H.

Local anæsthesia and physicochemical properties. I. J. Régnier and A. Quevauviller **II, III.** J. Régnier, A. Quevauviller, and A. Fieyre (Bull. Sci. Pharmacol., 1939, **46**, 498—501, 1940, **47**, 15—19, 20—25; cf. A., 1938, III, 835).—I. The rates of diffusion of novocain salts up a column of water decrease in the order: hydrochloride, phenylpropionate, gluconate; hydrochloride, benzoate, citrate. This differs from the order of pharmacodynamic activity (cf. Régnier *et al.*, A., 1940, III, 272, 366).

II. Dialysis of 1% aq. novocain hydrochloride against distilled water across a collodion membrane shows that the base and acid moieties diffuse at equal rates and that there is no adsorption of ions by the membrane. The rate of ionic transfer increases with the concn. of novocain, and decreases as dialysis proceeds.

III. Increasing concns. of NaCl (0—1%) and HCl (p_H 5·3—2) diminish the rate of dialysis of 1% aq. novocain across a collodion membrane against distilled water, whilst NaOH (p_H 6—8) has no effect. Increase in temp. (2—40°) increases and thicker membranes decrease the rate of dialysis. J. L. D.

Adjustment curves as an indication of the vitality of plant tissue. V. Rypacek (Compt. rend. Soc. Biol., 1939, **132**, 277—279).—Death of the plant cells is shown in a break in the curves correlating the adjustment of the p_H on immersion of the tissues in non-buffered solutions of varying p_H. H. G. R.

Modifications of electric potential of frog skin produced by mechanical factors. T. C. Barnes and R. J. Coe (J. Cell. Comp. Physiol., 1940, **15**, 125—135).—The p.d. of outer and inner surfaces is doubled by contact of a glass ring with the outer surface but not if the glass is separated from the skin by filter-paper. The e.m.f. of two skins are not summated in contact but are summated when joined by a 5-cm. tube of Ringer's solution. The e.m.f. varies at different spots and is reduced by tension and pressure but not greatly affected by injury. V. J. W.

Circuit diagrams used to represent conductive properties of animal tissue. J. W. Duyff (Arch. néerland. Physiol., 1939, **24**, 398—408).—In a Kohlrausch bridge a single resistor with a single condenser is always sufficient to give a balance with a biological tissue as the unknown. Identification of parts of the tissue with electrical elements used for balance is not regarded as a legitimate biological procedure. W. F. F.

Electric mobilities of quartz and collodion particles in mixtures of horse serum and serum-proteins in relation to mechanism of film formation.—See A., 1940, I, 292.

Precipitation of serum-albumins and accompanying lipins by ammonium sulphate as a function of the p_H. M. Macheboeuf and J. Duboy (Compt. rend. Soc. Biol., 1939, **132**, 272—274).—Pptn. at p_H 5·0 yields albumin practically free from lipins. As the p_H is decreased the quantity of lipin present increases and the isoelectric point of the albumin becomes higher than that of purified albumin. H. G. R.

Physiological rôle of bile salts. Effect of bile salts on passage of fatty acids across dialysing membranes. M. Macheboeuf and R. Perrimond-Trouchet (Compt. rend. Soc. Biol., 1939, **132**, 274—276).—The water-sol. complexes of bile salts with fatty acids dialyse with extreme slowness. H. G. R.

Imbibition of methæmoglobin solutions by cellulose. P. Berthier (Compt. rend., 1940, **210**, 452—454).—When strips of filter-paper are dipped in aq. methæmoglobin of p_H 6·58 at 10°, the rate of imbibition of methæmoglobin is much less than that of water. The ratio of the rates of imbibition decreases linearly as the time increases for concns. below 0·2%. By plotting the logarithm of the ratio of rates of imbibition extrapolated to zero time against concn., p (Freundlich's formula) is found to be 0·20 (cf. Boutaric, A., 1937, I, 361). With 0·05% methæmoglobin the ratio of the rates of imbibition extrapolated to zero time decreases as the p_H increases and reaches a min. at p_H about 7·3; adsorption of the protein is thus max. at p_H 7·3. J. L. D.

(xxiv) ENZYMES.

Effect of copper and phenylhydrazine on dehydrogenases. F. Bernheim (J. Biol. Chem., 1940, **133**, 485—489; cf. A., 1940, III, 448).—Experiments with material from rat's liver show that the inactivation of succinic acid oxidase by $Cu^{··}$ is increased by shaking the enzyme for 1 hr. with $CuSO_4$ before addition of the substrate. With choline-, *d*-amino-acid-, and amine-oxidase no increase occurs, the degree of inhibition being a function of $Cu^{··}$ concn. and not of time. Comparison of the effects of $Cu^{··}$ and phenyl-

hydrazine on the enzymes (and, with phenylhydrazine, on cytochrome oxidase) shows that the concn. of enzyme present does not determine the relative sensitivity to the two inhibitors. When the enzymes (not cytochrome oxidase) are shaken in air for 1 hr. at 37° without $Cu^{\cdot\cdot}$, the activity of *d*-amino-acid oxidase is decreased by 50—70% but that of the other enzymes is little affected. This decrease is diminished if N_2 containing 2% of O_2 is substituted for air. The inhibition by $Cu^{\cdot\cdot}$ of the activities of choline-, amine-, and *d*-amino-acid-oxidase, unlike that of succinic acid oxidase, is not readily reversible and is not affected by changing the substrate concn. or the p_H (from 7·8 to 6·7). *d*-Amino-acid- and cytochrome-oxidase are relatively insensitive to phenylhydrazine, whilst succinic acid oxidase is not affected until the phenylhydrazine concn. exceeds $2·3 \times 10^{-4}$M., the degree of inhibition increasing rapidly thereafter with increase in concn. of the inhibitor. Of all the enzymes, amine- and choline-oxidase are the most sensitive to phenylhydrazine. All the phenylhydrazine inhibitions are reversed by adding aldehyde and are prevented if aldehyde is initially present. The degree of inhibition is not changed by incubating the enzymes with phenylhydrazine before addition of substrate. W. McC.

Determination of H-donors and of dehydrogenases in bacterial or tissue substrates. M. Calcinai (Biochem. Z., 1939, **303**, 164—173).—Experimental technique is described. The method is based on the reduction of methylene-blue under two different sets of conditions. F. L. U.

Succinate oxidation by frog muscle poisoned with iodoacetate. T. H. Chang and T. T. Yu (Contr. Biol. Lab. Sci. Soc. China, 1939, **13**, 79—85).—The O_2 consumption of sartorius muscle of *Rana nigromaculata* poisoned with iodoacetate is increased by addition of succinate. During the first hr., the increase is approx. the same as that caused by addition of lactate but during the succeeding 3 hr. it is greater. The addition of succinate does not increase the amount of energy available for contraction. W. McC.

Liver aldehyde-oxidase. A. H. Gordon, D. E. Green, and V. Subrahmanyan (Biochem. J., 1940, **34**, 764—774).—Minced pig liver is treated with aq. alcohol, warmed at 48° for 5 min., and rapidly cooled to 20°. Denatured protein is then removed by centrifuging, the supernatant fluid is treated with 25% basic Pb acetate, and the ppt. is collected and treated with Na_2HPO_4. Pb phosphate is removed and the filtrate is 40%-saturated with $(NH_4)_2SO_4$. $Fe(OH)_3$–protein and catalase are then removed by repeated aq. NH_3–$(NH_4)_2SO_4$ fractionations. The prep. is now approx. 50% pure and shows absorption max. at 450, 380, and 280 mμ. The prosthetic group is flavin adenine dinucleotide which is liberated from coagulated protein by boiling, acidification to p_H 4, prolonged dialysis, etc. The enzyme is partly decolorised under anaërobic conditions by acetaldehyde, and the colour is restored by O_2. S_2O_4'' effects approx. 10% more bleaching than does acetaldehyde. The optimum p_H is approx. 7. A comparison with milk flavoprotein preps. suggests that the latter are mixtures which contain this aldehyde oxidase as one of the constituents. P. G. M.

Pigment metabolism. Regulation of tyrosinase melanin-formation by oxidation–reduction systems. F. H. J. Figge (J. Cell. Comp. Physiol., 1940, **15**, 233—247; cf. A., 1939, III, 1095).—Max. melanin production occurred at the substrate potential established by thionine or ascorbic acid in presence of O_2. Potato juice enzyme was inhibited by normal potentials reaching ±0·3 v. Phenol-indophenol shifts redox potential towards a higher positive level and inhibits tyrosinase in melanophores of amphibian larvæ but stimulates melanogenesis in connective tissue cells. V. J. W.

Peroxidase reaction as an index of viability of plant pollen. V. S. Schardakov (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 267—270).—The peroxidase of pollen is ascertained by adding 1 drop of solution containing benzidine, α-naphthol, and Na_2CO_3 and 1 drop of H_2O_2 to the pollen and observing the extent of the colour change from yellow to red. Viability thus measured is higher than when determined by growing the pollen in sugar solution. The presence of peroxidase is demonstrated in many varieties of plants. E. M. W.

Chlorophyllase. C. A. Weast and G. Mackinney (J. Biol. Chem., 1940, **133**, 551—558).—The activity of the enzyme from sunflower, spinach, figwort, cow-parsnip, and wild oat in alcohol, acetone, and water is determined. The optimum temp. for hydrolysis of chlorophyll by the enzyme in 80% alcohol, 40—70% acetone, and water are 25°, 25°, and 75°, respectively. The enzyme is difficult to extract from tissues and extraction of powdered leaves with 80% acetone generally results in at least 50% loss of activity, whilst extracts with water, buffer mixtures, dil. alcohol, and acetone are inactive. Practically no enzyme activity is exhibited by wild oats. Chlorophyllase from figwort is highly active in 80% alcohol but inactive in hot water, whilst at certain seasons the enzyme from spinach shows very little activity in alcohol but causes complete hydrolysis in hot water in 20 min. Formaldehyde, KCN, and NaF have little effect on the activity of the figwort enzyme in alcohol, but approx. 0·1% of $Hg(NO_3)_2$ causes complete inactivation. J. N. A.

Aconitases. K. P. Jacobsohn, M. Soares, and J. Tapadinhas (Bull. Soc. Chim. biol., 1940, **22**, 48—59).—α- and β-Aconitases, sp. for the conversion of *cis*-aconitic acid into *iso*citric and citric acid, respectively, at p_H 6·7, are present in extracts of pig liver and kidney bean, the liver extract being richer in β- and having less α-aconitase than the bean. A substrate concn. sufficiently high to inhibit α-aconitase in wheat preps. had no inhibiting action on the liver prep. The rôle of the aconitases in cellular respiration is discussed. A. L.

Presence of 5-nucleotidase in animal tissues. J. Reis (Bull. Soc. Chim. biol., 1940, **22**, 36—42).—Extracts of animal tissue contain a nucleotidase (optimum p_H approx. 7·5) sp. for 5 nucleotides (adenylic and inosic acids). This phosphatase is present in large amount in nerves, brain, retina,

lungs, testes, fœtal membranes, ocular choroid, and skeletal muscle. In the pigeon, it is present only in the lungs, and in human serum the content is 4 times that of the general phosphatase. In human sperm and prostate extract, there is present a general nucleotidase (optimum p_H 6) having little action on phosphate esters other than nucleotides. A. L.

Heparinase. L. B. Jacques (J. Biol. Chem., 1940, **133**, 445—451; cf. A., 1939, III, 450).—When finely minced rabbit's liver is mixed with glycerol and the mixture is dialysed for several hr. against running water, an extract is obtained which yields heparinase on half-saturation with $(NH_4)_2SO_4$. Heparinase is not inactivated by heat and its inhibitory action on heparin is also distinguished from those of coagulants and proteins by plotting p_H–activity and activity–time curves. The activity, which is greatest at p_H 5·3—6·8, decreases on both sides of this optimum, no activity remaining at p_H 7·3. Heparinase probably attacks the carbohydrate part of the heparin mol.
W. McC.

Activation of dipeptidases. J. Berger and M. J. Johnson (J. Biol. Chem., 1940, **133**, 639—640).—The hydrolysis of diglycine and prolylglycine by dipeptidase preps. from yeast, hog intestinal mucosa, and other sources is activated by metals, *e.g.*, $Mn^{\cdot\cdot}$, and reducing agents, *e.g.*, cysteine, the combination of both being particularly effective. Frequently with alanylglycine and occasionally with leucylglycine there is inhibition. In presence of the activators *d*-leucylglycine is appreciably hydrolysed.
A. L.

Biochemical catalysts. VI. Stereoisomerism as affecting substances modifying pepsin proteolysis *in vitro*. G. B. Crippa and S. Maffei (Gazzetta, 1940, **70**, 212—216; cf. A., 1940, III, 261).—*cis*- and *trans*-Isomerides differ in their effect on proteolysis. In a system in which ovalbumin is digested with pepsin and HCl at const. p_H at 40°, addition of fumaric, mesaconic, or itaconic acid has no action. Citraconic acid has a moderate, and maleic acid a strong, inhibiting action on the proteolysis. The action is on the substrate, not on the enzyme.
E. W. W.

β-Amylase of wheat and barley. S. S. Elizarova (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 698—701).—Wheats can be divided into two groups according to their total (free + bound) β-amylase content. Spring wheats in general have a high and winter forms have a low content, but in barley this difference is not observed. As a rule there is little difference between the amounts of free and bound β-amylase in wheat, but in barley the ratio free : bound β-amylase varies from 1 : 1·9 to 1 : 12·7. J. N. A.

Regulation of one enzymic degradation by another. C. Wunderly (Helv. Chim. Acta, 1940, **23**, 414—428).—The influence of concn. of trypsin and p_H on the saccharification of starch by amylase is established. The action of amylase on mixtures of sol. starch with rice, wheat, maize, and potato starch has been followed by determining the total degradation with OI′ and the residual, non-pretreated starch nephelometrically. Saccharification of maize starch is somewhat more rapid than that of sol. starch whether singly or mixed. Affinity to the enzyme is very marked with maize starch possibly owing to the great dispersion of the solution. Potato starch is more rapidly liquefied than is sol. starch but the proportion of the latter is greater in the product from the mixture. H. W.

Invertase activity of barley. H. K. Archbold (Biochem. J., 1940, **34**, 749—763).—Invertase activity is measured by the time taken to produce 75·93% hydrolysis (*i.e.*, to zero rotation). The optimum p_H is 4·8. Total activity rises until emergence of the ear, and then declines; it is therefore associated with growth. Some factor other than unfavourable p_H probably accounts for the presence of free sucrose, since the max. inhibition over the range p_H 3·4—6·8 (compared with the optimum) is only 25%, and a large excess of enzyme is always present.
P. G. M.

(A) Synthetic and hydrolytic action of invertase at various hours of the day in *Bromus inermis*, Leyss. (B) Influence of temperature in various phenophases on reversible action of invertase in the fodder grasses as related to their resistance to heat. A. S. Morozov (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 175—176, 177—179).—(A) The synthetic and hydrolytic activities of invertase are correlated with the sucrose and invert sugar content of the leaves.

(B) The synthetic action of invertase predominates at low temp. (10°) and in the early stages of development, hydrolysis at higher temp. (up to 50°) and in the later stages. R. L. E.

Phosphorylating glycolysis in embryo extracts. O. Meyerhof and E. Perdigon (Compt. rend. Soc. Biol., 1939, **132**, 186—190).—An extract of rat embryo will convert hexose diphosphate and pyruvic acid into phosphoglyceric and lactic acids in presence of F′ at a rate equiv. to that of normal tissue glycolysis (cf. Needham and Lehmann, A., 1937, III, 306).
H. G. R.

Glucose oxidation and phosphorylation. S. P. Colowick, M. S. Welch, and C. F. Cori (J. Biol. Chem., 1940, **133**, 641—642).—In the absence of F′ the addition of fumaric acid catalysed the oxidation of both glucose and pyruvate by dialysed kidney extract. In the presence of F′ only the oxidation of pyruvate was catalysed. Fumaric acid catalysis is therefore an essential link between phosphorylation and oxidation of glucose, the former preceding the latter. A. L.

Citric acid cycle and Szent-Györgyi cycle in pigeon breast muscle. H. A. Krebs (Biochem. J., 1940, **34**, 775—779; cf. A., 1940, III, 435).—The oxidation of one triose equiv. involves a complete citric acid cycle and three repetitions of the Szent-Györgyi cycle [oxalacetate $\rightleftharpoons$ fumarate + *l*(−)-malate]. P. G. M.

(xxv) MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Substrate specificity of yeast zymase. J. Leibowitz and S. Hestrin (Nature, 1940, **145**, 671; cf. A., 1939, III, 724).—Results indicating that the

mechanism of maltose fermentation *in vivo* differs from, and does not include, the glucose fermentation mechanism are described. L. S. T.

Growth-promoting action of amino-acids. VI. Action of citric acid. Mode of action of β-alanine. N. Nielsen and J. Dagys (Compt. rend. Trav. Lab. Carlsberg, 1940, **22**, Sér. physiol., 447—479; cf. A., 1939, III, 872).—In the systems in which β-alanine promotes the growth of yeast, citric, succinic, tartaric, and malic acid replace asparagine + glutamic acid. When citric acid is used, the min. effective dose of β-alanine and the dose which produces max. effect are diminished by 90%. Succinic, tartaric, and malic acid also increase the sensitivity of yeast to the action of β-alanine. The effect of the di- and tri-carboxylic acids does not depend on their buffering power. The action of β-alanine first becomes evident approx. 14—16 hr. after it is added, probably because the yeast acquires sensitivity only at a certain stage of development or when it has produced certain substances. During the growth of the yeast, the β-alanine is quantitatively consumed. Before it begins to promote growth, β-alanine increases the N content of yeast. When aq. glucose and NH_4 or K Na tartrate are heated together to 130°, a growth-promoting substance similar to, or identical with, β-alanine is produced together with other growth-promoting substances. W. McC.

Chlorine metabolism by moulds. Caldariomycin, $C_5H_8O_2Cl_2$, a metabolic product of *Caldariomyces fumago*.—See A., 1940, II, 251.

Intercellular enzymes of rusts and other parasitic fungi. V. F. Kuprevitsch (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 702—705).—As obligate parasitic fungi cannot be cultivated on artificial media, the enzymic activity of their germinated spores is determined. The no. of enzymes and their activity excreted by germinated aecidiospores of *Puccinia dispersa*, uredospores of *P. coronifera*, chlamydospores of *Tilletia tritici*, and conidia of *Septoria populi* are less than in the case of saprophytes, except for catalase and urease where the activity is approx. the same. Oxygenase, tyrosinase, and proteolytic enzymes are absent, whilst invertase and asparaginase have only slight activity in a few cases. It is concluded that the absence of those enzymes which might have a destructive action on the tissue of the host is an adaptation which protects the enzymic mechanism of the host from the activity of the obligate parasite. J. N. A.

Fungistatic and fungicidal action of certain organic sulphur compounds. E. L. Everitt and M. X. Sullivan (J. Washington Acad. Sci., 1940, **30**, 125—131).—The growth of *Fusarium oxysporum*, *F. lycopersicum*, *Aspergillus fumigatus*, *A. niger*, and the *Penicillium* of Fleming is completely inhibited by mercaptobenzthiazole (50—100 p.p.m.) and phenylbenzthiazole, and partially by phenyl thioarsenite, sulphanilamide, Na 1 : 2-naphthaquinone-4-sulphonate, and 4-chloro-2-nitrophenylthiolamine. Mercaptobenzthiazole is not toxic to guinea-pigs. E. M. W.

Effect of chlorine substitution on the fungistatic properties of acetic and propionic acids. C. Hoffman, T. R. Schweitzer, and G. Dalby (J. Amer. Chem. Soc., 1940, **62**, 988—989).—Relative fungistatic powers increase in the order: α-chloropropionic, chloroacetic, acetic, β-chloropropionic, propionic, β-iodopropionic acid. R. S. C.

Chemical constituents of the lichen *Parmelia latissima*, Fée. T. J. Nolan, J. Keane, and V. E. Davidson (Sci. Proc. Roy. Dublin Soc., 1940, **22**, 237—239).—Lecanoric acid (*tetramethyl* derivative, m.p. 145—146°), atranorin, chloratranorin, salazic acid, and *d*-arabitol are isolated from *Parmelia latissima* by extraction with ether, acetone, and alcohol. A. Li.

Effects of multiple inoculations with *Plasmodium ovale* on degree and nature of immunity developed. J. A. Sinton (Trans. R. Soc. trop. Med. Hyg., 1940, **33**, 585—595).—As in infections with other plasmodia in man, successive inoculations with the same species of *Plasmodium* give rise to a higher degree of resistance to subsequent reinoculation than does a single infection. The degree of resistance increases with each successive inoculation. The antitoxic element of the immunity is developed more rapidly than the anti-parasitic one; the former element reaches an effective degree more rapidly in *P. ovale* infections than in infections with the other 3 human malaria parasites. The duration of the efficacy of the anti-parasitic element persists for a longer time than does the anti-toxic one, in the absence of renewed antigenic stimulation by fresh parasites. C. J. C. B.

Calcium–potassium factor in ciliary reversal of paramecium. T. Kamada and H. Kinosita (Proc. Imp. Acad. Tokyo, 1940, **16**, 125—130).—The duration of the ciliary reversal of paramecium is affected more by the Ca/K ratio of the adaptation medium than by its concn., and is greatest when this ratio is high. The reversal does not take place when the test solution is $CaCl_2$ or the KCl concn. is high. Ciliary reversal of enucleated fragments of paramecium has been observed. E. M. W.

Obtaining bacteria-free cultures of protozoa (amœbæ). E. V. Dianova and A. A. Voroschilova (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 81—82).—Bacteria-free cultures of protozoa are obtained by cultivating them first on species of protozoa-free bacteria (*e.g.*, those which oxidise methane) and transferring the subsidiary cultures so obtained to a medium in which the protozoa but not the bacteria can grow. The bacteria are themselves cultivated in a medium in which no other bacterial species can grow. W. McC.

Skin and lymph glands in kala-azar. R. Kirk and M. H. Sati (Trans. R. Soc. trop. Med. Hyg., 1940, **33**, 501—506).—Leishmania parasites have been found in the skin, in the "juice" obtained by puncture of the inguinal lymph glands in 30 consecutive cases of kala-azar. The technique used in gland puncture is described, and its possible val. in the diagnosis of kala-azar is discussed. C. J. C. B.

Bactericidal action of metallic ions in broth containing dehydrated apple. I. A. Manville

and N. P. Sullivan (Amer. J. digest. Dis. Nutr., 1940, **7**, 106—110).—The addition of Cu, Co, and Ni sulphates to nutrient broth in concns. as low as 0·01% of the metallic ion was definitely destructive of bacterial growth (*Staph. aureus* and *Esch. coli*). The efficacy of the metallic ions decreases in the order named. p_H 5 was more effective than p_H 6. The presence in the culture media of dehydrated apple neither enhanced nor detracted from the effect but is advisable for the following reasons: it provides: Cu, org. acids for proper p_H adjustment, materials from which other org. acids may be derived in the intestine which aid further in p_H adjustment and act bactericidally themselves, and carbohydrate calories which are nutritive and combat acidosis.

C. J. C. B.

Mechanism of anti-bacterial action of mercury. P. Fildes (Brit. J. exp. Path., 1940, **21**, 67—73).—The anti-bacterial action of Hg on cultures of *B. coli* is specifically neutralised by ·SH compounds such as glutathione, in which case neutralisation occurs at approx. 1 mol. Hg per 2 mols. of SH. Glutathione combines with Hg in these proportions to form a compound devoid of ·SH. Hg combines with ·SH in the bacterial cell to form a similar compound and thus deprives the cell of SH groups which are essential to metabolism. Anti-bacterial substances may therefore operate by interfering with essential metabolites.

F. S.

Relation of *p*-aminobenzoic acid to the mechanism of action of sulphanilamide. D. D. Woods (Brit. J. exp. Path., 1940, **21**, 74—90; cf. preceding abstract, also Selbie, A., 1940, III, 597).—Yeast extracts contain a substance which reverses the inhibitory action of sulphanilamide on the growth of hæmolytic streptococci in cultures. Its chemical properties and behaviour suggested that this substance is chemically related to sulphanilamide. *p*-Aminobenzoic acid is also highly active in antagonising sulphanilamide inhibition; it may be the active substance in yeast. It is suggested that *p*-aminobenzoic acid or some similar substance is essential for the growth of bacteria and that its utilisation can be blocked by sulphanilamide.

F. S.

Pyridine-3-sulphonic acid and its amide as inhibitors of bacterial growth. H. McIlwain (Brit. J. exp. Path., 1940, **21**, 136—147; cf. preceding abstract).—*In vitro* experiments with staphylococcus, *B. coli*, and *B. proteus* indicate that pyridine-3-sulphonic acid is inhibitory to bacterial growth in a manner specifically related to the action of nicotinic acid.

F. S.

Carbohydrate fermentation by *Ramibacterium ramosoides* (Runeberg), P. 1938. A. Prévot and R. Veillon (Compt. rend. Soc. Biol., 1939, **132**, 239—241).—Sugar fermentation produces a mixture of propionic and acetic acids, distinguishing this organism from *R. ramosum* which produces formic and acetic acids.

H. G. R.

Biochemistry of *Aërobacter aërogenes* and *B. cereus*. H. Chaudhuri, N. N. Chopra, M. Ram, and J. N. Ray (J. Indian Chem. Soc., 1940, **17**, 117—124).—Potatoes suffering from black-centre disease yield 13 bacilli, including new strains, *A. aërogenes* I (dulcitol-negative) and II (dulcitol-positive). I and II yield ethyl alcohol, acetylmethylcarbinol, and acids from glucose, the amounts varying with the nature of the medium. The optimum p_H is 7·5—8·5 in glucose–peptone, 6·2 in presence of NH_4, K, and Mg phosphate. The optimum temp. is 33° for formation of alcohol, but 40° for that of acetylmethylcarbinol. Formation of the latter is favoured by aëration. Only traces of acetone are formed. Rotting "chiku" (*Achras sapota*, L.) yields *B. cereus*.

R. S. C.

Grouping of slow lactose-fermenting coliform organisms. C. A. Stuart, F. L. Mickle, and E. K. Borman (Amer. J. Publ. Health, 1940, **30**, 499—508).—Examination of over 10,000 coliform organisms isolated from water, milk, soil, cereals, and fæces suggests that aberrant strains, *i.e.*, those which produce less than 20% of gas from lactose in 48 hr. at 37°, fall into 4 groups, viz., the micro-aërogenic, which produce gas from lactose slowly or in small amounts at 37° or 20°, the pseudomicro-aërogenic, which have the characteristics of the true micro-aërogenic forms at 37° but ferment lactose normally at 20°, the papillæ-formers, which show the characteristics of *B. coli mutabile* but are not confined to the genus *Escherichia*, and the anaërogenic which produce acid but no gas from lactose. Coliform organisms that do not ferment lactose are not included in the classification. In water examination, no aberrant coliform organisms giving a completed positive response to the tests enumerated in "Standard Methods of Water Analysis" should be disregarded without further study of its characteristics.

W. McC.

***Coli*–tryptophan–indole reaction.**—See A., 1940, II, 260.

Quantitative bacteriological investigation of tyndallisation process. H. Davis (Quart. J. Pharm., 1940, **13**, 14—31).—The death rate of *B. subtilis* and *Clostridium welchii* suspended in various hypodermic solutions is determined by the surface-viable count method. The results indicate that such solutions cannot be tyndallised in the original sense of the word and the apparent effects are due to the germicidal action of the substances in solution. These medicaments are classified according to their action on *B. subtilis* spores at 80°. At 15·5—24°, the germicidal action of such solutions is not detectable after 7 days. Alternatives to tyndallisation as a means of sterilising thermolabile substances are filtration or steaming the solutions for 30 min. with 0·25% of *p*-chloro-*m*-cresol or 0·005% of Hg phenyl nitrate.

J. N. A.

Fractional ultrafiltration of toxin of *Cl. perfringens*, types *A* and *C*. P. Grabar, S. Levenson, and S. S. Schneierson (Ann. Inst. Pasteur, 1940, **64**, 275—292).—By ultrafiltration, the toxin of type *C* of *Cl. perfringens* was separated into hæmolytic and toxic fractions. Toxin of type *A* could not be fractionated.

G. P. G.

Simple medium for distinguishing the three types of *Corynebacterium diphtheriæ* (gelose extract from blood clot–potassium tellurite). M. Welsch and J. Thibaut (Compt. rend. Soc. Biol.,

1939, **132**, 319—322).—The prep. of the medium is described. The general distribution of the types is *mitis* 23%, *intermedius* 2%, *gravis* 75%. H. G. R.

Use of the gelose extract of blood clot–potassium tellurite medium for bacteriological diagnosis of diphtheria. M. Welsch, G. Demelenne-Jaminon, and J. Thibaut (Compt. rend. Soc. Biol., 1939, **132**, 326—329).—The use of the GTC medium (cf. preceding abstract) for diagnosis of diphtheria is recommended. H. G. R.

Morphological and biochemical characters of human corynebacteria. M. Welsch and J. Thibaut (Compt. rend. Soc. Biol., 1939, **132**, 322—326). H. G. R.

Purification of antitoxins by [proteolytic] digestion. G. Sandor (Bull. Soc. Chim. biol., 1940, **22**, 129—148; cf. A., 1940, III, 263).—The process for purifying diphtheria antitoxin by peptic digestion followed by selective heat-coagulation at 58° and p_H 4·0 in the presence of 6% NaCl or $Al(OH)_3$ adsorption is also applied to antitetanus serum, when a concn. of 2·5—3 times with a loss of 20—25% of the total antibody content is obtained. For the peptic digestion, fresh antitetanus serum must be used. A. L.

Pyridine derivatives and other compounds as growth-promoting substances for dysentery bacilli. S. A. Koser, A. Dorfman, and F. Saunders (Proc. Soc. Exp. Biol. Med., 1940, **43**, 391—394).—Out of a no. of compounds tested, quinolinic acid alone promoted growth. Its power was increased by heating and may be due to partial formation of nicotinic acid. V. J. W.

Laboratory diagnosis of bacillary dysentery. J. S. K. Boyd (Trans. R. Soc. trop. Med. Hyg., 1940, **33**, 553—571).—A lecture with a new classification of the mannitol-fermenting dysentery bacilli. C. J. C. B.

Pure culture free from bacteria and autotrophic nutrition of *Eudorina elegans*. Importance of iron in colony formation. H. Dusi (Ann. Inst. Pasteur, 1940, **64**, 340—343).—By repeated washing of colonies of *E. elegans*, bacteria-free cultures were obtained in peptone media. Maintenance of cultures on this medium for 1½ years caused irregular colony formation. Transference to a mineral medium containing Fe resulted in normal colony formation. Removal of Fe from this medium caused loss of colony formation and later prevented multiplication. G. P. G.

Ultrafiltration of the toxin of *B. perfringens* type *C*. S. Levenson and P. Grabar (Compt. rend. Soc. Biol., 1939, **132**, 210—213).—The hæmolysin is retained by membranes with pores of a diameter less than 23·5 mμ. and the toxin contains a non-hæmolytic toxic substance which passes pores of 5·9 mμ. H. G. R.

Immunology of mucoid bacilli (*Pneumobacillus*). M. Levy-Bruhl and J. Courtois (Ann. Inst. Pasteur, 1940, **64**, 316—339).—By agglutination and pptn. tests, 51 out of 70 strains of *Pneumobacilli* were classified into 3 types. Five strains were agglutinated by sera of all 3 types; 14 strains were inagglutinable. All strains fixed complement with antisera from any type. Antigenic lipin–carbohydrate complexes, sp. for each type by pptn. tests and sp. for the species by complement fixation tests, were extracted from each type. G. P. G.

Determination of pneumococcal capsular polysaccharide by photron-reflectometric titration of precipitation with excess antibody. S. C. Bukantz and J. G. M. Bullowa (Proc. Soc. Exp. Biol. Med., 1940, **43**, 418—422).—Solutions are incubated for 20 min. with a standard solution of antipneumococcal rabbit serum. Readings are compared with a standard curve. V. J. W.

Fractionation of proteins by electrodialysis. III. Electrodialysis of antipneumococcus serum. A. V. Markovitsch, A. I. Novoselova, and M. M. Chaustova (J. Appl. Chem. Russ., 1939, **12**, 1755—1758).—The activity of the antiserum (horse) is a function of the fraction of isolabile globulins separating at p_H 6·4—7·2. R. T.

Effect on bacteria of substances in use for preparation of solutions for parenteral administration. H. Davis (Quart. J. Pharm., 1940, **13**, 32—48).—The usual solutions for parenteral injection can be classified according to their effect on *Staph. aureus* and *Strep. pyogenes* at room temp. The germicidal action of the solutions is not entirely due to p_H. *S. aureus* shows a longer survival rate in solutions of S_2O_3'' than in Ringer's or physiological saline solutions. Chlorbutol (0·5), *p*-chloro-*m*-cresol (0·05), and Hg phenyl nitrate (0·001%) have approx. the same efficiency in sterilising aq. suspensions of *S. aureus*, and in these concns. are more effective than 0·5% of phenol. 0·2% of methyl *p*-hydroxybenzoate is not an efficient preservative for hypodermic injections; it is less germicidal than $CuSO_4$ ($1 : 5 \times 10^6$). The use of 0·1% of *p*-chloro-*m*-cresol is recommended. J. N. A.

Histopathological changes in rabbits by experimental inoculation with hæmolytic streptococci, certain of their component factors, and saponin. L. W. Smith, I. M. Morgan, and S. Mudd (Amer. J. Path., 1940, **16**, 87—94).—Experiments on animals inoculated with whole streptococci and their various component parts, as well as with saponin as a hæmolytic agent for control, showed (1) that the lytic fractions of the streptococci are toxic and are responsible for the generalised extensive vascular lesions which occur throughout the viscera of such inoculated animals; and (2) that the nucleoprotein agglutinogen or labile antigen fraction is non-toxic, producing no toxic or vascular changes. (4 photomicrographs.) C. J. C. B.

Specific aggregation of streptococcal toxins adsorbed on oil droplets. D. A. Boroff (Proc. Soc. Exp. Biol. Med., 1940, **43**, 294—296).—Olive oil emulsion, mixed with a solution of streptococcal protein, separates out when incubated with antistreptococcal rabbit serum. V. J. W.

Agglutination of syphilis spirochæte. T. Tani (Jap. J. exp. Med., 1940, **18**, 11—37).—Although ordinary emulsions of tissue spirochætes are not good antigens, when the spirochætes are treated with antiformin agglutination tests can be carried out. C. J. C. B.

Tetanus toxin production on a simplified medium. J. H. Mueller and P. A. Miller (Proc. Soc. Exp. Biol. Med., 1940, **43**, 389—390).—Tetanus bacilli produce toxin on a medium of casein acid hydrolysate, tryptophan, glucose, and liver extract. V. J. W.

Electrophoretic study of tetanus antitoxin sera. J. van der Scheer and R. W. G. Wyckoff (Proc. Soc. Exp. Biol. Med., 1940, **43**, 427—428).—Electrophoretic analysis of serum of horses used for antitoxin production indicated the appearance, after 3 months' tetanus toxin administration, of a new component midway between the pre-existing β and γ components. V. J. W.

Content of Koch's bacillus in tuberculous material. A. Boquet and E. Lenci (Ann. Inst. Pasteur, 1940, **64**, 293—300).—The no. of tubercle bacilli per mg. of tuberculous material was ascertained by a simple dilution method. An idea of the course and prognosis of the disease can be thus acquired. G. P. G.

Separation of lipin, polysaccharide, and protein antibodies from tuberculous serum by means of specific inhibitory reactions. W. Schaefer (Ann. Inst. Pasteur, 1940, **64**, 301—315).—Complement fixation reactions between lipin, polysaccharide, and protein antigenic fractions from tubercle bacilli and an anti-serum against the whole organism are specifically inhibited by each antigen. The serum thus contains a separate antibody against each antigen. G. P. G.

Can tuberculous lesions be produced by a substance contained in the bacillus? N. Choucroun (Compt. rend., 1940, **210**, 511—513; cf. A., 1939, III, 796).—A paraffin oil extract of killed human or bovine tubercle bacilli when injected intraperitoneally into guinea-pigs produces lesions indistinguishable from those caused by injection of an oily suspension of the dead bacteria. $CHCl_3$ extracts the active dextrorotatory, colourless, birefringent substance from the oily solution. The pulmonary lesions produced are progressive but contain no bacilli. J. L. D.

Cellular reactions to lipoid fractions of tubercle bacillus. R. M. Thomas (Yale J. Biol. Med., 1940, **12**, 283—286).—Phthiocerol, a higher alcohol obtained from analysis of the waxy fraction of the tubercle bacillus, when introduced into the peritoneal cavity of the rabbit, induces the formation of a non-sp. granulation tissue with multinucleated giant cells. The reaction does not resemble the granulations in an active tuberculous process. (8 photomicrographs.) F. S.

Chemistry of lipins of tubercle bacilli. LX. Firmly bound lipins of the avian tubercle bacillus. R. J. Anderson, M. M. Creighton, and R. L. Peck (J. Biol. Chem., 1940, **133**, 675—693; cf. A., 1940, III, 170).—After prolonged extraction of avian tubercle bacilli with alcohol, ether, and $CHCl_3$, followed by treatment with dil. HCl, the firmly bound lipins are extracted with $CHCl_3$ and separated into two fractions by filtration under pressure through a Chamberland filter. Both fractions consist of hydroxy-acids, fatty acids, *d*-eicosan-β-ol, and a polysaccharide. The polysaccharide of the non-filterable fraction gives on hydrolysis mannose, *d*-arabinose, galactose, and traces of glucosamine and inositol. E. M. W.

Diminution of activity of BCG bacillus after subculturing on a bile medium. K. O. Streng (Compt. rend. Soc. Biol., 1939, **132**, 201—202).—A slight loss of ability to produce epiploic nodules after intraperitoneal inoculation into guinea-pigs, but no variation in the antigenic power or production of tuberculin, occurs after a large no. of subcultures on a bile medium. H. G. R.

Carbohydrates in filtrates of *B. tuberculosis* cultures. K. O. Streng (Compt. rend. Soc. Biol., 1939, **132**, 202—205).—Small quantities of fermentable substances containing traces of reducing sugars have been detected. H. G. R.

Xanthoproteic reaction and the presence of tuberculin in cultures of avian *B. tuberculosis* on Sauton's medium. F. van Deinse (Compt. rend. Soc. Biol., 1939, **132**, 206—207).—The xanthoproteic reaction occurs several days before production of tuberculin in culture of avian strains. H. G. R.

Removal of the impurities, nucleic acid and polysaccharide, from tuberculin protein. F. B. Seibert (J. Biol. Chem., 1940, **133**, 593—604).—Tuberculin activity is independent of the amount of nucleic acid and polysaccharide present in preps. The removal of these impurities without loss in activity is achieved by repeated electrophoresis at p_H 7·4 when the protein mobility is intermediate between that of the nucleic acid and the immobile polysaccharide. The impurities are also removed by repeated pptn. with 2% trichloroacetic acid or repeated half-saturation with $(NH_4)_2SO_4$ at p_H 7·0. A. L.

Use of purified protein derivative in tuberculin patch test. G. Ouyang (Chinese Med. J., 1940, **57**, 51—56).—Comparison of the patch test described with the Mantoux test in 290 school children showed agreement in 98%. W. J. G.

Attempts at liberation of the bacteriophage bound to the organism. A. Gratia and M. Welsch (Compt. rend. Soc. Biol., 1939, **132**, 330—333).—The bacteriophage is not liberated by the lytic action of *Actinomyces* or lysozyme. H. G. R.

Inactivation of intracellular phase precursor by iodoacetic acid. A. P. Krueger and E. J. Scribner (Proc. Soc. Exp. Biol. Med., 1940, **43**, 416—418).—Phage precursor is destroyed by 0·0001M-iodoacetic acid as well as by heat (cf. A., 1939, III, 334). V. J. W.

Effect of lysozyme on union between a phage and the susceptible *Bacillus megatherium*. A. Pirie (Brit. J. exp. Path., 1940, **21**, 125—132).—Phage can be released from its union with heat-killed *B. megatherium* M by egg-white lysozyme but not by pangestin or takadiastase. Heat-killed *B. megatherium* M incubated with lysozyme can no longer absorb phage. The release of phage coincides with hydrolysis of the bacterial polysaccharide and it is suggested that the release is due to break-up of the

union between the phage and a bacterial polysaccharide. F. S.

Application of the Sharples centrifuge to the study of viruses. J. McIntosh and F. R. Selbie (Brit. J. exp. Path., 1940, **21**, 153—160).—This centrifuge has been modified so that large quantities of virus-containing suspensions can be efficiently centrifuged at the rate of 1 l. or more per hr. Virus concentrates of high purity can be obtained by this method without loss of activity. F. S.

Factors determining frequency distribution of lesions induced by papilloma protein and vaccinia virus. W. R. Bryan and J. W. Beard (Proc. Soc. Exp. Biol. Med., 1940, **43**, 380—382).—Analysis of results already published by R. F. Parker (J. Exp. Med., 1938, **67**, 725) indicates that variations in frequency of lesions are due to variations in host-resistance rather than to variable distribution of virus particles in the inoculum. V. J. W.

Protection against rabies. Effect of frequency of dosage of vaccine on immunity. J. M. Moss (J. Lab. clin. Med., 1940, **25**, 702—706).—Administration of multiple daily doses of rabies vaccine seems to retard immune response. An earlier response with a longer duration of immunity was obtained by single daily doses. C. J. C. B.

Transmission of lymphogranuloma venereum to guinea-pig. A. W. Grace and F. H. Suskind (Amer. J. Path., 1940, **16**, 169—187).—It is possible to infect 100% of guinea-pigs inoculated by a variety of routes with the virus of lymphogranuloma venereum. (9 photomicrographs.) C. J. C. B.

Direct technique for demonstrating percutaneous absorption of antigens. A. Walzer (Arch. Dermat. Syphilol., 1940, **41**, 692—698).—A simple, direct, and harmless technique, based on immunological principles for demonstrating the absorption of protein antigens through the skin is described. The technique is applicable to human beings and *Macacus rhesus* monkeys. C. J. C. B.

Superiority of Kolmer antigen reinforced with acetone-insoluble lipins. T. K. Rathmell, J. Heacock, and M. J. Fry (Amer. J. clin. Path., 1940, **10**, 275—281).—Kolmer antigen, prepared by addition of the acetone-insol. lipins secured in the prep. of Kahn antigen, possesses an added sensitivity without a loss of specificity, and was adopted as the standard antigen for serological complement fixation tests. Using a dose of 0·2 ml. of serum, 28% more positives were obtained in studies on patients with positive serology, and in known cases of syphilis under treatment; with 0·1 ml. of serum, 4·7% more positives were found with the new Kolmer antigen as compared with the antigen prepared without the acetone-insol. lipins. C. J. C. B.

Flocculation of tissue extracts by normal and immune sera of fowls and other animals. F. Duran-Reynals (Yale J. Biol. Med., 1940, **12**, 361—398).—The sera of fowls flocculate at low temp. saline extracts of normal and malignant tissues of every animal species tested. The flocculating property is increased by immunisation with sp. antigens of good antigenic power, and its titre rises in a manner parallel to the rise of sp. antibody. The flocculating factor is probably a globulin. F. S.

Changes in antigenic properties in course of iodination of horse-serum globulin. A. Kleczkowski (Brit. J. exp. Path., 1940, **21**, 98—103).—In the course of iodination of horse-serum globulin the ability to react with and the ability to produce antibodies in rabbits to native globulin disappear almost simultaneously when the Folin colour val. falls to 30% of the original val., *i.e.*, when all the tyrosine is substituted. When the Folin colour val. falls only to 40% or less the iodised globulin reacts strongly with antisera to native globulin, and in the excess antigen zone forms even more ppt. than the native globulin. This is presumably due to changes in some physical properties of the globulin mols. induced by the treatment. F. S.

Effect of dehydrated acetaldehyde or diformaldehyde peroxide on anaphylactic shock in guinea-pig. J. Maisin and Yu Han Tang (Compt. rend. Soc. Biol., 1939, **132**, 313—315).—Injections of acetaldehyde dehydrated by treatment with conc. H_2SO_4 or of diformaldehyde peroxide (2 ml. of a 10^{-18} solution) in guinea-pigs diminish the allergic symptoms of anaphylactic shock. The resistance lasts for some months with the former compound, a few days with the latter. A second injection produces a temporary hypersensitivity. P. C. W.

Allergic reactions to an antigen from the Chigger (*Trombiculum irritans*). A. S. Morrow (Proc. Soc. Exp. Biol. Med., 1940, **43**, 303—305).—Aq. extract of ground-up insects gave a skin reaction in certain individuals. Passive transfer gave positive results. V. J. W.

(xxvi) PLANT PHYSIOLOGY.

Structure and development of the hydathodes of *Spartina Townsendii*, Groves. A. D. Skelding and J. Winterbotham (New Phytol., 1939, **38**, 69—79).—The hydathode (structure described) secretes salt solution, the secreted liquid having an osmotic pressure equiv. to nearly 0·5M. L. G. G. W.

Cortical air spaces in the roots of *Zea mays*. D. C. McPherson (New Phytol., 1939, **38**, 190—202).—Cortical air spaces develop in the roots of maize grown under natural conditions. Production of the spaces is preceded by the death of the protoplasm in groups of cells, and takes place only when the cell walls are devoid of Ca pectate. Death of the cells is due to O_2 deficiency, which may cause too rapid a loss of C in anaërobic respiration, the building back of C compounds into the system through oxidative metabolism being prevented. L. G. G. W.

Ripening process in separate parts of fruit [apples]. S. O. Grebinski (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 264—266).—As apples ripen the zone of max. sugar content shifts from the middle flesh layer to the skin, the flesh of the core remaining lowest in sugar. Respiration decreases from the core outwards but this difference becomes less and respiration decreases in all parts with ripening. Catalase

activity and vitamin-*C* content are high in core and skin as compared with the middle layer. E. M. W.

Effect of soil and air humidity and of the temperature of the air on the formation of spikelets in the ear of wheat. E. G. Minina, E. B. Igritzkaja, and P. P. Mazkevitsch (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 271—274).—The no. of spikelets per ear of wheat is greater when grown in soil of 80% than in that of 40% moisture. The no. of spikelets is also increased by growing in a moist atm., the increase being more marked after the beginning of elongation of the cone, and greater when soil contains 40% than when 80% of moisture. E. M. W.

Uptake of nutrient elements by plants suffering water deficiency. T. T. Demidenko and R. A. Barinova (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 297—299).—With decrease in water supply below optimum sunflower plants take up less N, P, and K. A sudden increase in water supply causes a more complete return to normal absorption of nutrient elements than does a gradual increase. E. M. W.

Influence of soil temperature on uptake of nutrient elements by spring wheat. T. T. Demidenko and R. A. Barinova (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 403—405).—Spring wheat plants develop more rapidly and absorb more nutrient elements from the soil at 25—30° than at 12—15·5°. The coeff. of transpiration is affected more by fertilisers than by temp. E. M. W.

Influence of air humidity on uptake of nutrient elements by spring wheat. T. T. Demidenko and R. A. Barinova (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 183—186).—Mineral (N, P, K) uptake from soil or culture solution is lower but nutrients are more efficiently used and growth and yield of grain are better in a moist than in a dry atm. R. L. E.

Time factor in phosphate nutrition of spring wheats S. Ovetschkin (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 170—174).—Wheat grown in water culture and supplied with PO_4''' between the 10th and 31st day of vegetation gives growth and grain yield equal to those from plants continuously supplied with PO_4'''. R. L. E.

Sulphur metabolism of plants. I. Effects of different external concentrations of sulphate, ammonia, and cystine on the amounts of sulphur-containing compounds in leaves. J. G. Wood and B. S. Barrien. **II. Effect of nitrogen supply on amounts of protein- and sulphate-sulphur and on the ratio of protein-nitrogen to -sulphur in leaves at different stages of the life cycle of the plant.** B. S. Barrien and J. G. Wood. **III. Changes in amounts of protein- and sulphate-sulphur during starvation.** J. G. Wood and B. S. Barrien (New Phytol., 1939, **38**, 125—149, 257—264, 265—272).—I. *Phalaris tuberosa*, L., and *Lolium multiflorum*, Lam., were grown in sand with sufficient SO_4'' to prevent the development of S-deficiency symptoms. Addition of K_2SO_4 to the nutrient did not increase the cystine or protein-S content of the leaves. Addition of cystine gave an initial increase in the amount of SO_4'' in the leaves, but not in those of cystine or protein-S. Addition of NH_4Cl with or without cystine increased the content of protein-N and -S, the ratio protein-N/-S remaining const.

II. Increased N supply (as $NaNO_3$) to *Andropogon sudanensis* caused an increase in the amount of protein-S in the leaves. Excessive N supply gave a temporary decrease in protein-N and -S due to its effect on the growth rate. The ratio protein-N to -S decreased through the life cycle of the plant, the val. at harvest being directly related to the N supply. Proteins of low S content are formed to a relatively greater extent if the N supply is high, and are utilised by the plant more rapidly than are S-rich proteins.

III. *L. multiflorum* and *L. subulatum* starved for 15 days in the dark at 16° showed a decrease in protein-S, an increase in SO_4'', and no change in sol. org. S content in the leaves; protein-N, but not sol. N decreased. In stem and roots only the sol. N changed, increasing in amount because of translocation from leaves. The ratio protein-N to -S was unchanged in both leaves and stems, and roots. In protein catabolism, protein-S is oxidised to SO_4''. L. G. G. W.

Formation of "fructose" units during starch hydrolysis in the later stages of growth of apples. F. Kidd and C. West (New Phytol., 1939, **38**, 123—124).—Assuming that carbohydrate is transported to the apple fruit as sucrose, there is no evidence for interconversion of "glucose" into "fructose" units during the phase of cell division or in the early stages of cell enlargement when starch is accumulating in the fruit. In the later stages of cell enlargement, when starch hydrolysis is taking place, conversion of "glucose" into "fructose" occurs. L. G. G. W.

Changes in carotene and ascorbic acid content of mangoes during ripening. G. B. Ramasarma and B. N. Banerjee (J. Indian Inst. Sci., 1940, **23**, A, 1—10).—The vitamin-*C* content of mangoes from the same tree shows considerable variation, that of the skin always exceeding that of the pulp. During ripening at room temp. (30—44°) -*C* in the pulp diminishes from the green to the half-ripe stage and rises to a steady val. during storage at room temp. or 0°. Half-ripe mangoes kept at 0° for 17 days do not ripen when brought to room temp. The carotene content increases throughout ripening. E. M. W.

Catalase ratio as a rapid method of seed-testing. B. N. Singh, P. B. Mathur, and M. L. Mehta (Trop. Agric. [Trinidad], 1938, **15**, 260—261).—The "catalase ratio," *i.e.*, catalase activity of seed soaked in water at 55°/activity of dry seeds, is directly correlated with % germination. A. G. P.

Aldehydes in essential oils and their anti-oxygen properties. L. Lutz (Compt. rend., 1940, **210**, 513—515).—*Stereum hirsutum*, *S. purpureum*, and *Coriolus versicolor* when grown in culture media decolorise methylene-blue more rapidly in presence of salicylaldehyde, vanillin, or piperonal. The effect of formaldehyde, acetaldehyde, and furfuraldehyde is less marked; *iso*valeraldehyde, benzaldehyde, cinnamaldehyde, citral, and citronellal are without effect in sunlight or in the dark, as is the p_H of the medium or the presence of H_2O_2. The activity of the markedly

active aldehydes is slightly increased by primary but not by *sec.*- or *tert.*-alcohols in sunlight. J. L. D.

Mechanism of plant respiration. H. Hibbert (J. Amer. Chem. Soc., 1940, **62**, 984—985).—Plant respiration depends on the system R·CO·CHMe·OH ⟷ OH·CR:CMe·OH ⟷ RCO·COMe (R = vanillyl). In the early stages of plant growth R = 3 : 4-$C_6H_3(OH)_2$ and the *o*-quinone–quinol system functions in addition to the above. R. S. C.

Mechanical stimulation and respiration in the green leaf. II. Angiospermic species. L. J. Audus (New Phytol., 1939, **38**, 284—288).—Rubbing and bending of the leaf lamina results in a considerable increase in the respiration rate during the protoplasmic respiration phase. All 15 species tested showed respiratory response to the treatment, the increase ranging from 18·8% for *Bambusa nana* to 182·8% for *Yucca gloriosa*. The low val. for *Bambusa* was probably due to destruction of the capacity for response to stimulation through yellowing and senescence of the leaf. L. G. G. W.

Phosphorylation and respiration in barley. W. O. James and S. E. Arney (New Phytol., 1939, **38**, 340—351).—Inorg. PO_4''' occurs in large amounts in barley embryos and in the roots and shoots of seedlings, but increase of PO_4''' content resulting from feeding with PO_4''' does not increase the respiration rate of seedlings in the dark. Respiration rate as measured by the CO_2 output is closely correlated with the concn. of phosphate esters in the tissue of the seedlings. With embryos alone, PO_4''' addition sometimes caused an increase in respiration rate, whilst if sugar and PO_4''' were supplied, the respiration rate increased by 60%. L. G. G. W.

Effect of ethylene on respiration and carbohydrate metabolism of potatoes. F. E. Huelin and J. Barker (New Phytol., 1939, **38**, 85—104).—Treatment of newly harvested potato tubers with ethylene at 15° causes a slight increase in the respiration rate, but no change in the sugar content, the "respiratory efficiency" (*i.e.*, ratio of respiration/total sugar) being increased. With stored potatoes, the treatment increases the respiration rate, the sugar content, and the respiratory efficiency. After approx. 2 days the respiration rate and respiratory efficiency fall to an adjustment level, vals. showing a drift parallel with that in untreated tubers, but at higher levels. Concns. of ethylene from 1 to 100 p.p.m. are effective. If the sugar concn. of the potato is already high (due to exposure to low temp.), ethylene is without effect on the respiration rate. The effect of ethylene on respiration is probably concerned with the supply of sugar to the respiratory centres. L. G. G. W.

Photochemical investigation of reaction mechanism of carbon dioxide assimilation. H. J. Eichhoff [with W. Noddack] (Atti X Congr. Internaz. Chim., 1938, IV, 427—439).—The observation of Warburg *et al.* that CO_2 assimilation is comparatively only slightly dependent on λ was confirmed by measurements of assimilation by *Chlorella pyrenoidosa*; this phenomenon is related to the spectral absorption by chlorophyll in the living cell. With progressively increasing light intensity, the rate of assimilation at first increases rapidly, then increases more slowly, and finally assumes a const. val. which is independent of the light intensity; the initial part of the light intensity–assimilation curve is linear. Under defined conditions, 4·1 quanta were required for the formation of 1 mol. of free O_2. F. O. H.

Light-efficiency in carbon dioxide assimilation. H. J. Eichhoff (Biochem. Z., 1939, **303**, 112—131).—Quantum yields of O_2 by suspensions of *Chlorella* in $KHCO_3$–K_2CO_3 buffers have been measured for 20 nearly monochromatic sections of the spectrum between λλ 8350 and 5150 A. Experimental procedure is described in detail. There is a close parallelism between absorption and assimilation over the entire range of λλ. For red light (λ 6500 A.) assimilation is strictly proportional to light intensity (*I*) up to 70% of the max., whilst for white light the curve is everywhere concave to the *I*-axis. Assimilation occurs, though with smaller efficiency, in the near infra-red. For small vals. of *I* the mean yield over the range studied is 0·25±15% mol. of O_2 per quantum absorbed. F. L. U.

Haloid derivatives of aromatic hydrocarbons and their polyploidogenic activity. A. Schmuk and A. Guseva (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 674—677; cf. A., 1940, III, 272).—The activity of the 1-halogenonaphthalenes increases in the order Cl-, Br-, and I-. Introduction of a second halogen strongly reduces activity, and the effect depends on the position of the second atom, for 1 : 4-dibromo- is only slightly active, whilst 1 : 2-dibromo-naphthalene is inactive. Although acenaphthene and its 5-chloro- and 5-bromo-derivatives are very active, 5-iodoacenaphthene is quite inactive. The position of the halogen in the acenaphthene mol. is very important, for 1- and 3-bromo-compounds are inactive, and only the monohalogeno-compounds are active. Introduction of Br into α- and β-naphthoic acids, 1 : 8-naphthalic acid, and α- and β-naphthylamines does not produce activity. 9 : 10-Dibromoanthracene, 9-bromophenanthrene, 4-bromo- and 4 : 4′-dibromo-diphenyl are also inactive. J. N. A.

Interspecific hybridisation and use of colchicine in cotton. K. C. Amin (Current Sci., 1940, **9**, 74—75).—F_1 hybrids of New World and Asiatic cottons are self-sterile whilst back crosses of these hybrids with New World are variable in fertility. Colchicine treatment of sterile hybrids results in fertility in some cases. E. M. W.

Colchicine-like action of the vapour of the essential oil of small mandarin oranges on plant mitosis. M. Simonet and G. Igolen (Compt. rend., 1940, **210**, 510—511).—The germination of flax (*Linum usitatissimum*) in an atm. containing the vapour of the essential oil of leaves of *Citrus nobilis* is at first normal but within 48 hr. subterminal tumefactions appear on the rootlets which then cease to grow. The shoots are stunted. Mitosis is arrested in pseudo-metaphase without anaphase or telophase so that polyploidy (8*n* or 16*n* chromosomes) results. The nuclei are enlarged and lobed and the cells, some-

times multinucleate, enlarge. Similar results are obtained with methyl methylanthranilate, which forms 56—67% of the oil. J. L. D.

Effect of heteroauxin (β-indolylacetic acid) on catalase of wheat stems during growth. N. T. Deleano, M. A. P. Ullmann, and L. V. Ullmann (Bull. Soc. Chim. biol., 1940, **22**, 67—74).—Heteroauxin in concn. above 10 mg.-% has an inhibiting action on the catalase of growing wheat stems. At concn. below 10 μg.-%, the acid increases rate of growth of the plant. A. L.

Effect of indolylacetic acid on rooting in *Gootes* (Marcotte) of mango. A. G. Thakurta and B. K. Dutt (Current Sci., 1940, **9**, 77).—Roots are induced in mango shoots by ring barking and application of a lanoline paste containing 1% of indolylacetic acid. E. M. W.

Control of bud growth and initiation of roots at cut surface of potato tubers with growth-regulating substances. J. D. Guthrie (Contr. Boyce Thompson Inst., 1939, **11**, 29—53; cf. A., 1940, III, 82).—α-Naphthylacetic acid is more active than 3-indolylacetic acid in inhibiting sprouting and stimulating root growth. Ethylene chlorohydrin, but not KCNS, stimulates sprouting of treated tubers. R. L. E.

Second factor involved in inhibition by auxin in shoots. R. Snow (New Phytol., 1939, **38**, 210—223).—Auxin paste applied to the base of a pea seedling inhibits development of the stem above the treated region, but when applied to the basal end of a downward-pointing strip cut out from a young zone of stem inhibits development only to a very slight extent. With intact plants, inhibition due to auxin is marked only if a mature leaf or pair of cotyledons is present below the treated region. Inhibition is probably due to reaction or co-operation of auxin with a second substance supplied to the stem by foliar organs. Upward inhibition of the main shoot by auxin paste is the same process as inhibition of lateral buds by auxin applied to stems or the natural correlative inhibition. L. G. G. W.

Effect of iodoacetamide on growth of *Avena* coleoptiles. F. H. Howard and L. McClintock (J. Cell. Comp. Physiol., 1940, **15**, 249—251).—Coleoptiles of *Avena* seedlings in 2×10^{-3}M-iodoacetamide showed no increased O_2 consumption resulting from treatment with auxin. Hence iodoacetamide appears to be a respiratory inhibitor. V. J. W.

Effects of extracts of animal organs on (A) germination of plants and (B) growth of germinated plants. B. Lustig and H. Wachtel (Compt. rend. Soc. Biol., 1939, **129**, 224—227, 227—230).—(A) Acetone and, to a smaller extent, aq. Na_2CO_3 extracts of most organs inhibit germination, whereas ethereal and physiological saline extracts have little effect. Extracts of a few organs, particularly the anterior pituitary lobe, stimulate germination.

(B) Acetone, ethereal, physiological saline, and, to a smaller extent, aq. Na_2CO_3 extracts of most organs, except the pituitary and thyroid glands, inhibit the growth of germinated plants. H. G. R.

Interrelations between mosaic virus and ascorbic acid in tobacco plant. M. I. Goldin (Compt. rend. Acad. Sci. U.R.S.S., 1940, **26**, 300—303).—Tobacco leaves infected with mosaic virus contain less ascorbic acid than do healthy leaves, and light portions of diseased leaves less than do dark portions. The ascorbic acid and chlorophyll contents are unrelated. E. M. W.

Defensive mechanism in orchid mycorrhiza. A. Burges (New Phytol., 1939, **38**, 273—283).—Mycorrhizal fungi are present only in the roots of orchids. Digestion of the endophyte occurs and large amounts of fungal protein pass into the host cells. The latter at the digestive period contain in the cell sap substances with fungicidal properties. L. G. G. W.

Beech mycorrhiza: re-isolation and effect of root extracts on *Mycelium radicis fagi* (Chan.). J. L. Harley (New Phytol., 1939, **38**, 352—363).—Growth of the mycorrhizal fungus *M. radicis fagi* isolated from beech roots is very slow in pure culture, but is greatly increased by a root extract prepared by grinding the roots with water and sand and filtering through a Buchner funnel, and finally through a bacterial filter. The stimulating effect of the extract on the fungus is not due to an improved supply of C or N. L. G. G. W.

(xxvii) PLANT CONSTITUENTS.

Nutritive value and chemical composition of certain fresh-water plants of Minnesota.—See B., 1940, 487.

Nitrogenous composition of barley. Effect of fineness of maceration on saline extraction. E. Urion and V. Golovtchenko (Bull. Soc. Chim. biol., 1940, **22**, 203—213).—In the determination of the N distribution in barley, vals. for salt-sol., hordein-, and glutelin-N become const. only when the cellular structure has been completely destroyed in the maceration process preceding extraction. A suitable mill is described. A. L.

Fractionation of nitrogenous constituents of barley. E. Urion and G. Lejeune (Bull. Soc. Chim. biol., 1940, **22**, 214—220).—An improved method for the fractionation of the salt-sol. N of barley is described. Albumin is determined by coagulation on heating to 82°. Albumin and globulin are pptd. by saturated aq. $MgSO_4$ containing 5% of trichloroacetic acid, and the proteoses and peptides by 6% aq. U acetate. The p_H is 4·6 throughout. A. L.

***Celastrus paniculatis*.** S. A. Warsi (Current Sci., 1940, **9**, 134—135).—The light petroleum extract of the orange-coloured husks of *C. paniculatis* contain palmitic, stearic, and other free fatty acids (10—15), a phytosterol, m.p. 184° (0·8—1·0), a bright orange-red colouring matter (2), and saponifiable fatty matter (70%). F. R. G.

Aseptic autolysis of two insoluble gums. L. Lutz (Bull. Sci. Pharmacol., 1940, **47**, 12—15).—An insol. gum from *Acacia decurrens*, var. *mollissima*, was incubated aseptically at 25° with $CHCl_3$-water for

6 months and then extracted with water. The amount of insol. material decreased whilst reducing substances (Fehling) and those pptd. from the extract by alcohol and Pb acetate increased. Wild cherry-tree gum similarly treated is completely autolysed in 8 days. The autolysate breaks down the cell membranes of *Gleditschia tricanthos* but does not attack the cytoplasm or nuclear material. J. L. D.

Cellulose membranes from various parts of the plant kingdom. F. L. Barrows (Contr. Boyce Thompson Inst., 1940, **11**, 61—82).—Ellipsoidal cryst. particles of cellulose, approx. 1×1 μ., have been identified in the cytoplasm and cell membranes of certain Thallophytes, Bryophytes, Pteridophytes, and Spermatophytes. In young, growing regions the particles occur in the cytoplasm and, in various stages of orientation, in outer regions of the protoplast. The individual particles are not visible in mature membranes until after treatment at room temp. with HCl (*d* 1·19). A non-cryst. cementing material is the continuous phase in all membranes. W. A. R.

Structure of ethanolysis products of spruce and maple wood.—See A., 1940, II, 254.

Acids of the latex of *Euphorbia biglandulosa*, Desf. III. N. P. Kirjalov (J. Gen. Chem. Russ., 1940, **10**, 65—70).—Biglandulic, *l*-ethylmalic, acetic, and formic acid have been identified as constituents of the latex. R. T.

Composition of cotton plant latex. I. K. Matzurevitsch (J. Appl. Chem. Russ., 1939, **12**, 1730—1737).—The acetone extract of the latex gives a mixture of isomeric alcohols, chiefly α- and β-amyrin, together with a third, unidentified *alcohol*, $C_{30}H_{49}$·OH, m.p. 110—112° (decomp.) (*dibromide*, m.p. 135—140°; *acetate*, m.p. 165—167°; *benzoate*, m.p. 205—206°). R. T.

Ionisation of calcium phytate. (A) E. F. Yang. (B) D. C. Harrison and (Sir) E. Mellanby (Nature, 1940, **145**, 745, 745—746).—(A) Na phytate forms an insol. ppt. only when an equiv. or an excess of $Ca^{\cdot\cdot}$ is added. With less than 0·5 equiv. of $Ca^{\cdot\cdot}$ no ppt. is formed, and the $Ca^{\cdot\cdot}$ in solution is not pptd. by PO_4''' or oxalate ions, indicating complex ion formation. $Mg^{\cdot\cdot}$ reacts with Na phytate in a similar way. (B) Attention is directed to former results (A., 1939, III, 1073). The mechanism of the rachitogenic action of cereal phytic acid is discussed. L. S. T.

α- and β-Amyrin from bark of *Viburnum opulus*. J. L. Powers and W. E. Powers (J. Amer. Pharm. Assoc., 1940, **29**, 175—178).—α- and β-Amyrin isolated from the bark are identical with α- and β-amyrin from Manila elemi gum. F. O. H.

Crystalline tannin from bark of *Acer spicatum*. J. L. Powers and E. L. Cataline (J. Amer. Pharm. Assoc., 1940, **29**, 209—211).—Alcoholic extracts of the bark yield a tannin, m.p. 165—166° (decomp.), $[\alpha]_D^{27}$ +17·5° in acetone (octa-acetyl derivative, m.p. 155—156°; *hexamethyl* derivative, m.p. 172—174°), apparently identical with the tannin from *A. ginnala* leaves (Perkin and Uyeda, J.C.S., 1922, **121**, 66). In the tannin mol., two separate galloyl nuclei appear to be attached to a mol. of aceritol. F. O. H.

Lupin. XVI. Isolation of nonalupine from *Lupinus andersonii*, Wats. J. F. Couch (J. Amer. Chem. Soc., 1940, **62**, 986—987; cf. A., 1940, II, 197).—The plant named contains nonalupine, but no spathulatine. R. S. C.

Sapogenin of fuller's herb.—See A., 1940, II, 257.

***Cannabis indica*.**—See A., 1940, II, 259.

(xxviii) APPARATUS AND ANALYTICAL METHODS.

Museum container made of lucite. H. Gordon (Amer. J. clin. Path., Tech. Sect., 1940, **4**, 51—53).—A method is described for making museum containers of lucite tubing, suitable for exhibiting small specimens. C. J. C. B.

Inexpensive electric bone saw. C. A. Payne (Arch. Path., 1940, **29**, 561—562). C. J. C. B.

Autopsy table. I. M. Wise (Amer. J. clin. Path., Tech. Sect., 1940, **4**, 56—57). C. J. C. B.

New method for continuous infusion. E. A. Müller (Arch. exp. Path. Pharm., 1940, **194**, 426—428).—Modification for very small amounts of fluids of the rotary pump of Bayliss and Müller (J. Sci. Instr., 1928, **5**, 278). H. Bl.

Modified Hemmingsen-Krarup mammalian activity recorder. O. Park and L. P. Woods (Proc. Soc. Exp. Biol. Med., 1940, **43**, 366—370).—Revolutions of a revolving cage and movements of a spring-suspended living cage are recorded on a drum. V. J. W.

Rapid extractor for urinary steroids. E. B. Hershberg and J. K. Wolfe (J. Biol. Chem., 1940, **133**, 667—673).—1-l. samples of urine are boiled under reflux for 10 min. with 150 c.c. of conc. HCl, cooled to 50—60°, and introduced into the apparatus. CCl_4 is allowed to pass through a porous glass disc and fall in fine drops through the column of hydrolysed urine. The bulk of androgens are extracted in ½ hr. P. G. M.

Extraction of urinary androgens. C. R. Neterval (J. Biol. Chem., 1940, **133**, 313—317).—A cheap and simple extraction apparatus is described, by the use of which androgens are completely removed from hydrolysed urines in 3 hr. by means of benzene. P. G. M.

Apparatus to determine sp. gr. of small amounts of fluid. H. Heller (J. Physiol., 1940, **98**, 3—4P).—The apparatus, which is filled with a mixture of a heavy and a light fluid, has the following advantages: (1) cheapness; (2) use of an ordinary clinical urinometer; (3) small amount of fluid needed (0·1 c.c.). J. A. C.

Notes on centrifuge. W. R. Ashby (Amer. J. clin. Path., Tech. Sect., 1940, **4**, 18—20).—The estimation of centrifugal force, methods of balancing, and the stirring effect of slowing down the centrifuge are discussed. C. J. C. B.

Sensitive drop recorder. H. A. Shoemaker (J. Lab. clin. Med., 1940, **25**, 628—629). C. J. C. B.

Graphical method for determining Warburg vessel constants at various fluid volumes. J. MacLeod and W. H. Summerson (Science, 1940, **91**, 201—202). L. S. T.

Preparation of colloidal gold for the Lange reaction. R. J. Bartholomew and N. L. Gent (Austral. J. Exp. Biol., 1940, **18**, 89—94).—The method depends on the reduction of dil. aq. $AuCl_3$ by Na citrate. D. M. N.

Preparation of colloidal gold solution. R. Klass (Amer. J. clin. Path., Tech. Sect., 1940, **4**, 42—44). C. J. C. B.

Double pipette for non-protein-nitrogen and sugar determinations. T. J. Domanski (Amer. J. clin. Path., Tech. Sect., 1940, **4**, 16—18).—The pipette was designed for use on Folin–Wu filtrate for withdrawing, in one operation, samples for blood-sugar and -non-protein-N determinations. C. J. C. B.

Determination of α-amino-acids and of polypeptides in biological systems. M. Polonovski (Atti X Congr. Internaz. Chim., 1938, III, 311—312).—The best precipitant for polypeptides is $Cd(OH)_2$ at p_H 7; this leaves in solution only amino-acids and simple di- or tri-peptides. Colorimetric methods (especially the ninhydrin reaction) for determining amino-acids are inaccurate. Oxidation by 0·01N-NaOH in alkaline solution at 100°, removal of NH_3 by a current of hot air, and titration of the NH_3 by H_2SO_4 is recommended; micro-Kjeldahl apparatus is used. E. W. W.

Determination of creatinine with *m*-dinitrobenzoic acid. E. Komm and H. Pinder (Z. Unters. Lebensm., 1939, **78**, 113—123).—Procedures for the determination in yeast, meat, meat extracts, and urine are detailed. 3 : 5-Dinitrobenzoic acid is a more sp. reagent for creatinine than is picric acid, but the colour produced is less stable and strict adherence to the prescribed technique is essential. E. C. B. S.

Determination of glutathione. L. Binet and G. Weller (Bull. Soc. Chim. biol., 1940, **22**, 192—202; cf. A., 1934, 574).—Alleged objections to the authors' method are shown to be unfounded. A. L.

Micro-determination of ammonia. M. F. Mason and J. D. Rozzell (Proc. Soc. Exp. Biol. Med., 1940, **43**, 274—276).—NH_3 in Ringer's solution is determined photometrically after adding Nessler's reagent. Pptn. due to traces of Mg is delayed by adding a small quantity of Rochelle salt. V. J. W.

Rapid determination of urea in blood and urine. L. D. Scott (Brit. J. exp. Path., 1940, **21**, 93—97).—This method is based on the removal of blood-protein by alcohol or acetone and the treatment of the alcoholic extract with a neutralised conc. suspension of Urease Dunning at 50° for 10—15 min. The $(NH_4)_2CO_3$ formed is titrated with 0·01N-H_2SO_4 in the presence of a special mixed indicator. A determination can be made in 20 min., with a range of 5—500 mg. per 100 c.c. and an error of about ±2 mg. F. S.

Analyses of urinary protein and various fractions of human and pig serum-protein. W. A. Murrill, W. D. Block, and L. H. Newburgh (J. Biol. Chem., 1940, **133**, 521—527).—Data are given for the ratio albumin : globulin and the amounts of total N, S, cystine, tyrosine, tryptophan, histidine, arginine, and lysine in normal and nephritic, human total serum, normal albumin and globulin, and urinary protein. Serum-albumin contains more cystine, arginine, and lysine, and less tyrosine and tryptophan, than does serum-globulin. Contrary to Block *et al.* (A., 1934, 427), the results indicate that urinary protein is either all serum-albumin or a mixture represented by the ratio albumin : globulin as found in the urine. The amino-acid contents of various fractions of pig serum indicate that the fractions do not differ widely in composition. J. N. A.

Rapid method for the separation of serum-albumin and -globulin G. R. Kingsley (J. Biol. Chem., 1940, **133**, 731—735).—Treatment with Na_2SO_4 and ether enables serum-globulin to be rapidly separated by centrifuging. Albumin is determined in the filtrate by the biuret method (cf. A., 1940, III, 96). R. L. E.

Deproteinisation of milk and blood and determination of chloride in trichloroacetate filtrates. G. D'Este (Boll. Chim. farm., 1940, **79**, 153—154, 157—160).—The application of corrections for change in vol. on deproteinisation with, *e.g.*, trichloroacetic acid is discussed. The use of trichloroacetic acid for deproteinising blood and milk prior to determination of Cl′ and Cl′ and lactose, respectively, is exemplified. F. O. H.

Determination of reducing groups with porphyrindin, with reference to ovalbumin. E. Brand and B. Kassell (J. Biol. Chem., 1940, **133**, 437—444).—Cysteine is oxidised by porphyrindin to cystine at 0° and p_H 7·2, and tyrosine is oxidised to a pink product, the reaction being unaffected by the presence of guanidine hydrochloride. Undenatured ovalbumin is unaffected by porphyrindin, whilst the SH groups of heat-denatured ovalbumin are oxidised to ·S·S· compounds, without reaction of tyrosine groups unless guanidine hydrochloride is also present. P. G. M.

Quantitative analysis by isotope dilution: determination of amino-acids and fatty acids.—See A., 1940, II, 264.

Determination of nicotinic acid in animal tissues, blood, and foodstuffs. I. Method. II. Application. E. Kodicek (Biochem. J., 1940, **34**, 712—723, 724—735).—I. The method is based on that of Harris and Raymond (A., 1940, III, 145). The optimal conditions of extraction and hydrolysis of the material have been investigated. The max. colour intensity is developed at p_H 5·5—7·5. The specificity of the method is discussed; trigonelline, quinolinic acid, etc. give no colour, and only nicotindiethylamide gives a colour comparable with that given by the free acid.

II. Results obtained by the above method agree well with those obtained by biological test. Liver (sheep) contains 200, adrenals 135, kidney 75, eye lens (human) 100 μg. per g. of fresh tissue. Salmon contains 84 μg. per g. Ovalbumin and human milk

have a very low content. Living animal tissues contain practically no free nicotinic acid. P. G. M.

Photo-electric study of Liebermann–Burchard reaction and its significance in determination of cholesterol. W. S. HOFFMAN (Proc. Soc. Exp. Biol. Med., 1940, **43**, 38—42).—Photo-electric determinations are made with an orange filter under const. conditions and vals. compared with those given by known concns. V. J. W.

Determination of coproporphyrin. G. GLOTZ (Compt. rend. Soc. Biol., 1939, **132**, 194—195).—The extracted coproporphyrin is determined spectrophotometrically in HCl solution utilising the adsorption band at 4010 A. H. G. R.

Simple accurate method for determination of bile salts in urine and bile. L. M. MORRISON and W. A. SWALM (J. Lab. clin. Med., 1940, **25**, 739—743).—The bile salt concn. is determined by a surface tension method (stalagmometric). C. J. C. B.

Nitrite ferrihæmochromogen as reagent for reducing sugars. R. D. BARNARD (J. Lab. clin. Med., 1940, **25**, 751—753).—160 mg. of cryst. ferrihæm chloride are dissolved in 1 l. of 5% Na_3PO_4 containing 1 g. of $NaNO_2$. The reagent keeps indefinitely. 8 drops of urine are added to the boiling reagent, boiling is continued for 1 min., and the mixture allowed to cool. The absence of reduction after a 5-min. interval constitutes a negative reaction. C. J. C. B.

Biochemical application of some oxidation–reduction reactions. A. GAUMÉ and A. ARTHUS (Bull. Soc. Chim. biol., 1940, **22**, 87—98). A. L.

Polarographic investigations: quantitative analysis of sodium and potassium. W. KEMULA and M. MICHALSKI (Atti X Congr. Internaz. Chim., 1938, III, 419—427).—For the determination of Na and K in urine and other biological materials, other metals are removed by a method which is described in detail and the Na and K are converted into NaCl and KCl, respectively. The mixture is dissolved in H_2O, tetramethylammonium hydroxide is added, and the solution diluted till the [Cl′] is 0·01N. The magnitude of the diffusion current due to $Na^{\cdot}$ and $K^{\cdot}$ ions is then measured polarographically, using a dropping Hg electrode, and the [$Na^{\cdot}$] and [$K^{\cdot}$] are deduced by means of a nomograph. J. W. S.

Photelometric determination of inorganic sulphate in biological fluids. G. MEDES and E. STAVERS (J. Lab. clin. Med., 1940, **25**, 624—627). C. J. C. B.

(xxix) NEW BOOKS.

Introduction to biochemistry. W. R. FEARON (W. Heinemann, Ltd., London, 1940, 475 pp., price 17*s.* 6*d.*).—This is the 2nd edition of a well-known text book dealing with animal biochemistry first published in 1934. It stresses the chemical as opposed to the physiological approach to the subject. The book has been largely rewritten and brought up to date by the inclusion of new matter. It now has special chapters on solutions and colloidal systems, steroids, pigments, tissue respiration, and internal environment. The analytical methods and reactions described have also been revised. J. H. B.

Delayed reward in discrimination learning in chimpanzees. A. H. RIESEN (Comp. Psychol. Monogr. No. 15, Johns Hopkins Press, Baltimore, 1940, 53 pp.).—Work on the study of learning of visual discrimination by five chimpanzees is summarised. An apparatus, described by the author, made possible the variation of the temporal relation between stimuli and reward or non-reward. Learning with delayed reward, and cases of failure of such, can best be explained by the assumption that such learning is dependent on intra-organic s–r–s sequences which serve as representations of the crit. stimuli until reward or non-reward occurs. Spatial stimuli appear to be the only variety to which animals ordinarily perform symbolic reactions. The learning of a problem having a remote after-effect can take place only when the relevant stimuli evoke a discriminatory reaction at the time of their occurrence. If neither an overt nor an implicit reaction occurs at the time of stimulation the cue is lost to the organism, and delayed differential consequences (reward or punishment) are of no avail in the modification of behaviour. J. D. B.

The bodily image. J. LHERMITTE (Nouvelle Revue Critique, Paris, 1939, 255 pp.).—A neurological and psychiatric study of the somæsthetic sense. The author summarises the contributions of Head, Schilder, and Bogaert to the conception of the "bodily image" and then analyses the present state of knowledge on phantom limbs following amputation and in lesions of the spinal cord and brain. Ocular hallucinations and the effects of intoxication on the spatial sense are also considered. There is a chapter on the æsthetic implications of the phenomena discussed. J. D. B.

Annual Review of Physiology, 1940, Vol. 2.—The contents are as follows. H. W. Mossman, Developmental physiology, 1—20; R. E. Johnson, W. H. Forbes, D. B. Dill, and L. J. Henderson, Respiration, 21—44; J. P. Quigley, Digestive system, 45—70; J. H. Ferguson, Blood: coagulation, biophysical characters, and formed elements, 71—108; M. F. Warren, Lymphatic system, 109—124; D. M. Pillsbury, Physiology of the skin, 151—168; W. M. Boothby and D. L. Paulson, Energy metabolism, 169—180; N. L. Katz, Heart, 181—212; H. Grundfest, Bioelectric potentials, 213—242; J. F. Fulton, Central nervous system, 243—262; A. Rosenblueth, Autonomic nervous system, 263—286; J. M. D. Olmsted, Special senses, 287—308; D. L. Thomson and J. B. Collip, Endocrine glands, 309—346; E. T. Engle, Mammalian reproductive organs, 347—358; A. L. Tatum, Pharmacology of barbiturates, 359—370; A. L. Tatum, Pharmacology of arsenicals, 371—386; P. R. Cannon, Defensive mechanisms in infectious and related diseases; F. A. Hellebrandt, Exercise, 411—432; D. G. Marquis, Physiological psychology, 433—461.