

BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

JULY, 1942.



I.—GENERAL ANATOMY AND MORPHOLOGY.

Incidence and size of moderator band in man and mammals. R. C. Truex and L. J. Warshaw (*Anat. Rec.*, 1941, **82**, 361—372).—A variable % (41.6—100) of bands was found in all animals examined except the dog. In the latter, three papillary muscles arise directly from the septum, in addition to the small const. papillary muscle of the conus. The size of the band is proportional to the size and development of the heart. In man a true band was present in 56.8%. The band lends support and leverage to the anterior ventricular wall and papillary muscle. W. F. H.

Mechanism of extension of fingers of human hand. A. Baumann, G. Patry, and P. L. Wettstein (*Arch. Sci. phys. nat.*, 1941, [v], **23**, Suppl., 216—219).—The extensor is the true tendon of the back of the finger, and the interossei are only accessories. In extension the former predominate although the modifying action of the interossei may be indispensable to give normal form and complete amplitude to the movement of unbending the finger. J. N. A.

Absence of superior gemellus muscle in American whites and negroes. R. J. Terry (*Amer. J. phys. Anthropol.*, 1942, **29**, 47—56).—The incidence of the absence of the muscle in the two groups, the age incidence of its absence, and data concerning the parts of the related skeleton are given. W. F. H.

Growth of human stapes. B. J. Anson and E. W. Cauldwell (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1941, **15**, 263—269).—The form of the stapes is foreshadowed in the cartilaginous ossicle of the 40-mm. foetus and is definitely established in that of the 78-mm. stage. At 150 mm. ossification is initiated on the obturator surface of the base, then spreads to the crura until, at the 183-mm. stage, it replaces all cartilage except that on the vestibular surface of the base and the tympanic surface of the head. In the middle of intra-uterine life, the stapes is about as large as it ever will be. Articular relations are well established between the 78- and 100-mm. stage. A. S.

Hind foot of *Youngina* and fifth metatarsal in Reptilia. E. S. Goodrich (*J. Anat.*, 1942, **76**, 308—312).—A fifth metatarsal is described in *Youngina*, an Upper Permian Eosuchian from South Africa. It is maintained that the fifth metatarsal in this reptile shows distinct signs of modification towards the sauropsidan hook-shaped type. W. J. H.

Tetrapod knee joint. R. W. Haines (*J. Anat.*, 1942, **76**, 270—301).—Knee joints were studied in every extant order of Reptilia and Amphibia with limbs, as well as examples from prototherian, metatherian, and eutherian mammals. The most primitive type of knee joint in living animals is found in *Crocodylus*. There is a single-joint cavity for femur, tibia, and fibula, and the cruciate and collateral ligaments, the menisci, and femoro-fibular disc are all well developed. A joint of similar construction is found in *Sphenodon* and lizards, but lunulae, which are ossifications developed in the semilunar cartilages, have appeared. In all modern amphibians and birds the knee joints have become highly specialised. In monotremes and marsupials modifications are found in the shape of the joint surfaces. In the monotremes the joint cavity is secondarily subdivided by septa of connective tissue. In typical reptiles the tibia and fibula are not attached to each other by joints and rotate independently on the femur. In eutherian mammals the fibula has lost contact with the femur and has become firmly bound to the tibia primarily to form a deep socket at the ankle joint. W. J. H.

Congenital defect of femur. H. F. van Epps and D. H. Downey (*Ohio Sta. Med. J.*, 1941, **37**, 326—327).—Case report. E. M. J.

Pituitary body in giant animals fossil and living. T. Edinger (*Quart. Rev. Biol.*, 1942, **17**, 31—45).—A review. J. D. B.

Supernumerary mammae, with special reference to rhesus monkey. H. Speert (*Quart. Rev. Biol.*, 1942, **17**, 59—68).—A review. J. D. B.

Variation of vertebral centra in Pacific herring (*Clupea pallasii*). J. L. McHugh (*J. Fish. Res. Bd. Canada*, 1942, **5**, 347—360). J. D. B.

Vertebral number of young herring in British Columbia. J. L. McHugh (*J. Fish. Res. Bd. Canada*, 1942, **5**, 474—484). J. D. B.

Congenital flatfoot. J. G. Kuhns (*Arch. Pediat.*, 1941, **58**, 755—763).—A general review. C. J. C. B.

Complete absence of posterior arch of atlas. C. E. Brown (*Anat. Rec.*, 1941, **81**, 499—503). W. F. H.

Spina bifida occulta of 12th dorsal and 1st lumbar vertebrae. M. P. Morel (*Brit. J. Radiol.*, 1942, **15**, 154).—Case report. J. D. B.

Transposition of aortic arch. J. V. Sparks and D. M. Scrimgeour (*Brit. J. Radiol.*, 1942, **15**, 150—153).—Radiological findings in three cases are reported. J. D. B.

Two cases of congenital cardiac disease: (a) cor biloculare with solitary aortic trunk, (b) atresia of aorta with hypoplasia of left ventricle. G. Popjak (*J. Path. Bact.*, 1942, **54**, 67—73). C. J. C. B.

Bilateral fusiform aneurysms of cervical portion of the internal carotid arteries. J. G. Riddler (*Amer. J. Path.*, 1942, **18**, 159—162).—A case report. C. J. C. B.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Origin of vagi and parasympathetic ganglion cells of viscera of chick. D. S. Jones (*Anat. Rec.*, 1942, **82**, 185—197).—In embryos from which the hind brain had been removed at about 42 hr. incubation, the cardiac, pulmonary, oesophageal, gastric, and upper intestinal plexuses failed to develop. When the caudal end of the neural tube was removed at 48 hr. incubation the ganglion coli failed to develop, indicating that neuroblasts from the lower end of the sacral cord supply the lower end of the digestive tube. Formation of the jugular ganglion of the vagus was prevented by removal of the cephalic neural crest but this did not interfere with the development of the ganglion nodosum. Removal of the 3rd branchial arch pouch eliminated the ganglion nodosum. The latter appears to arise from the dorsal side of the 3rd pharyngeal pouch and adjacent ectoderm, and the 1st and 2nd pouches similarly contribute to the geniculate ganglion of the facial nerve and the petrosal ganglion of the glossopharyngeal nerve. W. F. H.

Hepatogenesis of Atlantic salmon. H. I. Battle (*Canad. J. Res.*, 1942, **D**, 20, 79—97).—A detailed account of the development of the liver in *Salmo salar*. J. D. B.

Choroid plexus and brain development. W. Riese (*Natural. Canad.*, 1942, **69**, 72—77).—A comparison of the development of the choroid plexus with the differentiation of the central nervous system at different stages in man, cat, pig, and bear. J. D. B.

Morphogenesis of pigment in hair follicle of mouse. N. Kaliss (*J. Morph.*, 1942, **70**, 209—219). J. D. B.

Development and phylogeny of corpuscle of Stannius in ganoid and teleostean fishes. F. D. Garrett (*J. Morph.*, 1942, **70**, 41—67).—The corpuscle is shown to have no connexion to the adrenal system but to be developed in relation to the nephric tubules. It is suggested that it is homologous with the Mullerian duct of elasmobranchs and Chondrostei. J. D. B.

Intermedin in early development of *Rana pipiens*. L. H. Kleinholz (*Biol. Bull.*, 1940, **79**, 432—438).—Larvae of various stages were tested for the presence of intermedin in NaOH extracts made from dried and powdered head ends. Hypophysectomised lizards were used for assay and the first appearance of chromatophoretropic hormone is with the first appearance of the stomatodeal bud, before cytological differentiation of the hypophysis occurs. D. M. SA.

Steady state potential differences in early development of *Amblystoma*. H. S. Burr and T. H. Bullock (*Yale J. Biol. Med.*, 1941, **14**, 51—57).—The egg of *A. punctatum* maintains an e.m.f. of about 1—5 mv., negative to the aq. environment, continuously until, at least, the end of gastrulation. There is a steady level of p.d. between any two points on the surface of the egg which is modified with the onset of gastrulation by slow swings of potential, increasing during the process of invagination and ceasing with the formation of the medullary plate. The growing organism, therefore, maintains a steady electrical output providing the necessary definitive properties of an electrodynamic field which is const. during a crit. phase of development. F. S.

Heteroplastic transplantation and species specificity. C. J. Sandstrom (*Biol. Bull.*, 1940, **79**, 329—339).—Macerated duck metanephric tissue caused about 25% mortality when the donor was of 24 or less days of incubation, 60% at 27 days, and 100% at time of hatching (28 days). No reciprocal effects (chick on duck) were found. Intact tissue transplants are suggested as having effects on host due to metabolites only, while intracellular substances, possibly responsible for species specificity, are only released by crushing the cells first. D. M. SA.

Inhibition of gastrulation by cold in *Paracentrotus lividus*. C. Mettetal (*Compt. rend.*, 1941, **213**, 365—367). J. D. B.

Regeneration of head in annelids in absence of digestive tube. M. Avel (*Compt. rend.*, 1941, **213**, 409—411). J. D. B.

Intrinsic origin of bilateral symmetry in regeneration of annelid head. M. Avel (*Compt. rend.*, 1941, **213**, 460—462). J. D. B.

Nitrogen distribution in eggs of *Melanoplus differentialis*. C. Trowbridge and J. H. Bodine (*Biol. Bull.*, 1940, **79**, 452—458).—Total N was determined by a modified Kjeldahl method and later the shell, embryo, and yolk were separately estimated. The O₂ consumption rises to 20 cu.mm. per mg. N at 5 days postdiapause but in pre-diapause it is const. at 1.8 cu.mm. D. M. SA.

Experimental haploidy in salamander larvæ. C. T. Kaylor (*Biol. Bull.*, 1940, **79**, 397—408).—Fertilised eggs which were punctured to remove the female chromosomes began development in 87% of cases. Advanced haploid larvæ showed œdema as the most serious abnormality and this was unresponsive to hypertonic saline treatment. Two triploid larvæ were obtained. D. M. SA.

Diploid hybridisation in *Rana pipiens*. K. R. Porter (*Biol. Bull.*, 1941, **80**, 238—264).—Two varieties of *R. pipiens* were used and if the diploid hybrids contained the cytoplasm of one variety there were certain definite differences (e.g., larger head primordia) from embryos containing the other variety of cytoplasm. Heterospermic haploids show even more clearly this definite cytoplasmic influence on morphogenesis. D. M. SA.

III.—PHYSICAL ANTHROPOLOGY.

Axis of the forebrain in macaque and man. G. von Bonin (*Amer. J. phys. Anthropol.*, 1942, **29**, 41—46).—Numerical data concerning the position and length of the forebrain axis are given. The angle between the axis and the forebrain is independent both of length of skull and of sex. There is a significant difference in the angle in man and macaque. W. F. H.

Anthropometric nomenclature. II. Indices of head height. T. D. Stewart (*Amer. J. phys. Anthropol.*, 1942, **29**, 23—39).—Length—height and breadth—height indices are discussed and it is shown that these vary in extreme forms of the human skull. There is a tendency for the length—height index to increase as the cephalic index increases whereas the breadth—height index decreases. For purposes of general comparison the mean height index is a much more significant expression than length—height or breadth—height indices alone. W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Wave mechanics in striated muscle. Experimental variations in number and pattern of living muscle striæ produced by heat. E. J. Carey, W. Zeit, and W. Massopust (*Amer. J. Anat.*, 1942, **70**, 119—133).—Inconstancy in no. and pattern in the cross striations in the same living muscle of the shrimp indicate that the so-called sarcomere does not exist. Dark, coarsely cross-striated and non-contracted muscle fibres are more granular than the pale, finely cross-striated ones which represent the contracted phase. W. F. H.

Effects of advancing age on connective tissue of uterus, cervix, and vagina of rat. J. M. Wolfe, E. Burack, W. Lansing, and A. W. Wright (*Amer. J. Anat.*, 1942, **70**, 135—165; cf. A., 1940, III, 808).—In the uterus, cervix, and vagina of virgin rats the changes correlated with advancing age are mainly transformation of reticulum into collagen (largely completed in younger rats) and progressive deposition of new collagen throughout life. A uterine type of epithelium is present in the upper third of the cervix. W. F. H.

Mitotic activity in anterior hypophysis of female rats. T. E. Hunt (*Anat. Rec.*, 1942, **82**, 263—276).—In the immature female, mitotic activity falls from 85 mitoses per sq. mm. of section on the first day to 1—6 mitoses on the 50th. Mitotic activity begins and increases during the first 12- to 16-hr. period of œstrus. Mitotic figures are most abundant 18—20 hr. after the onset of œstrus, when they average 72 per sq. mm. in a section 3 μ . thick. During diœstrus and proœstrus they are less than 2 mitoses per sq. mm. Mitoses affect chromophobes mainly and 5—10% occur in acidophils. In sexually mature rats mitotic activity declines with age. W. F. H.

Thyroid gland of Virginia deer throughout the year. A. L. Grafflin (*J. Morph.*, 1942, **70**, 21—40; cf. A., 1940, III, 280, 836).—A histological survey in which cell height index determinations showed no seasonal variation in level of thyroid activity. The index, however, is shown to be characteristic for different mammalian species. J. D. B.

Histological observations on thyroid gland, parotid gland, and kidney of Indian elephant. A. L. Grafflin (*J. Morph.*, 1942, **70**, 189—208). J. D. B.

Pancreas of snakes. T. B. Thomas (*Anat. Rec.*, 1942, **82**, 327—345).—Islet cells are mainly confined to the terminal tubules and acini near the splenic end. Progressive transformation of tubular epithelium into islet cells occurs. A, B, and D types of islet cells are present and occasionally basophilic cells occur near the periphery of the islet. W. F. H.

Effect of nutrition and growth on mitochondria. M. B. D. McCurdy (*Biol. Bull.*, 1940, **79**, 252—254).—Liver tissue of starved, adult *Fundulus heteroclitus* was examined and mitochondrial change from elongated to granular form found. Normal larvæ showed granular mitochondria at first, and elongated mitochondrial form does not predominate until 20 days. Fat and glycogen (absent at hatching) are not abundant until about the 12th day. D. M. SA.

Golgi apparatus during development in stomach of *Gallus domesticus*. H. Hiblind (*J. Morph.*, 1942, **70**, 121—149). J. D. B.

Para-Golgi apparatus. A. L. Salazar (*Anat. Rec.*, 1942, **82**, 309—326).—The author considers that the para-Golgi apparatus corresponds exactly to the idiosome of Bowen, the apparatus of Hirschler, idioendosome of Stockard, and the Golgi interne of Sembrat. The Golgi complex is thus composed of two systems, Golgi and para-Golgi, representing, respectively, the lipid and protein components of the complex. W. F. H.

V.—BLOOD AND LYMPH.

Contributions to physiology and pathology of red blood corpuscles. C. Dreyfus (*Schweiz. med. Wschr.*, 1941, **71**, 682—685).—A review. A. S.

Blood sedimentation rate in intracranial tumours. W. O. Klingman, R. W. Laidlaw, and H. Spohnitz (*N.Y. Sta. J. Med.*, 1940, **40**, 117—120).—The blood sedimentation rate was increased above 10 mm. in the 1st hr. in more than half the 108 cases of malignant intracranial tumours. 82% of cases of subdural hæmatoma was shown an increased sedimentation rate, but only 35% of 26 cases of astrocytoma and 19% of 43 selected cases of psychoneurosis. E. M. J.

Erythrocyte sedimentation: experiments with constant volumes of cells. R. B. Whittington and A. K. Miller (*Brit. J. exp. Pathol.*, 1942, **23**, 56—60).—Max. erythrocyte sedimentation velocity is a rough indirect measure of the agglutinating properties of the plasma, the other variables involved (notably the red cell content and the plasma viscosity) being irrelevant and leading to further inaccuracies. When agglutinating suspensions are progressively diluted with saline citrate, the velocities ultimately agree with the theoretical washed-cell velocities. It appears improbable that any one simple physical property of the plasma can be used as an agglutinating index, on account of the plasma-protein complex. F. S.

Relationship between spleen and morphological picture of blood regeneration. W. O. Cruz and F. S. Robschheit-Robbins (*Amer. J. med. Sci.*, 1942, **203**, 28—34).—In 3 splenectomised dogs made anæmic by bleeding or by acetylphenylhydrazine injections, the no. of normoblasts in the peripheral blood during the first phase of the regenerative period was 4 times as great as in the 19 non-splenectomised animal. In some instances the no. may be even higher, attaining 70,000 normoblasts per cu.mm. Furthermore the no. of primitive erythroblasts (basophilic erythroblasts of Ferrata) was much higher in the splenectomised animal, in some cases reaching about 40% of the nucleated red cells in the circulation. These findings suggest a relationship between a function of the spleen and the maturation of the erythroblast in the bone marrow or a factor acting on the launching mechanism of new red cells into the general circulation. C. J. C. B.

[Red cell hæmolysis and age.] E. Wiczorowski and H. R. Fishback (*J. Lab. clin. Med.*, 1942, **27**, 542—546).—The fragility of human red blood cells to various lysins was unaltered by age from 5 to 84 years. C. J. C. B.

Blood dyscrasias in newborn. J. C. Moore (*Nebraska Sta. Med. J.*, 1941, **26**, 282—284).—A newborn with 50% hæmoglobin, 2×10^6 red cells, and 1800 nucleated red cells per cu.mm. did not respond to small blood transfusions and at first became worse with injections of 0.5 c.c. of liver extract. Improvement was only noted when these injections were restarted after an interval of 12 days. E. M. J.

Symptomatic hæmolytic anæmia. K. Singer and W. Dameshek (*Ann. int. Med.*, 1941, **15**, 544—563).—Symptomatic acute hæmolytic anæmia was observed in patients suffering from dermatoid

cyst, chronic lymphatic leukaemia, Hodgkin's disease, lymphosarcoma, severe liver disease, and pneumonia with a pan-agglutinin. Spherocytosis and increased red cell fragility are often present, in spite of a frequent "pseudomacrocytic" blood picture. Splenectomy in these symptomatic hæmolytic anæmias may be valueless, but removal of the primary disease may be curative. A. S.

Anæmia in nephritis. P. MacArthur (*Arch. Dis. Child.*, 1942, 17, 1—21).—During the stage of increasing œdema and oliguria in nephrosis and during the stage of diminishing œdema and active diuresis in acute nephritis there is blood concn. but never more than slight anæmia. When acute infection occurs in the course of nephrosis rapid severe anæmia results; after effective treatment of the infection the blood quickly returns to normal. Anæmia is not characteristic of nephrosclerosis in the absence of hæmorrhage; when this occurs there is evidence of active hæmopoiesis. In chronic hæmorrhagic nephritis there is often severe orthochromic normocytic anæmia with a normal or slightly increased no. of reticulocytes and mild leucocytosis. The blood picture is not that of aplastic anæmia. C. J. C. B.

Tapeworm anæmia. Influence of tapeworm fatty acid ingestion on host's blood picture. R. A. Wardle and N. K. Green (*Trans. Roy. Soc. Canada*, 1941, [iii], 35, V, 85—97).—Experimental infection in dogs and man with *Diphyllobothrium latum* produces increased blood destruction rather than macrocytic anæmia. The decrease in red cell count is very gradual and subject to remission. Mean cell vol. is above normal; mean cell hæmoglobin concn. remains const. The red cell diameter decreases; the lymphocyte count rises; there is early eosinophilia. Fatty acids isolated from *Moniezia expansa* and fed in quantities equiv. to the amount liberated by the disintegration of 100 g. of tapeworm per week produced similar blood changes in rabbits. Red and white cell counts markedly declined. Stearic, ricinoleic, and oleic acids only produced a decline in red cell diameter and, in the case of oleic acid, in red cell counts. The Faust-Tallqvist hypothesis is supported that blood destruction is correlated with the influx of unsaturated fatty acids into the blood stream, liberated by the tapeworm. A. S.

Blood count of normal white rats. E. W. Thewlis and O. O. Meyer (*Anat. Rec.*, 1942, 82, 115—125).—Average % vals. for the various blood elements in rats weighing 125—200 g. and 201—450 g. are given. The results are tabulated to show the mean and standard deviations. The principal leucocytes are neutrophils and lymphocytes, the latter predominating. There is a wide range for the normal count of neutrophils and lymphocytes, and a fairly wide spread for eosinophils and monocytes in each group of animals. Platelets were not counted but the smears indicate that they are more numerous than in man. Average hæmoglobin levels are similar to those previously recorded and there are no significant differences between the smaller and larger rats. W. F. H.

Average length of life of red corpuscle. D. G. Graam (*J. Lab. clin. Med.*, 1942, 27, 448—459).—Rabbits were bled $\frac{1}{2}$ of their blood vol. by heart puncture and the recovery and reticulocyte crises watched by daily counts. Reticulocyte cycles (crises) follow regularly at intervals of a few days, but before each successive cycle there is a fall of the red cell count indicating intravascular hæmolysis. The average length of life of the red corpuscle is equal to the period between the peak of a reticulocyte cycle and the end of the succeeding "intravascular hæmorrhage"; it varies from 6—7 days in a young rabbit to 5 days in an old rabbit. C. J. C. B.

Surnames and blood groups, with note on probable remarkable difference between North and South Wales. J. A. F. Roberts (*Nature*, 1942, 149, 138).—There was a higher proportion of group O in donors with Welsh surnames amongst 2500 donors in N. Wales than in the remainder. 800 donors with Highland or Irish names from Bristol had a higher proportion of group O than 41,000 other donors from Bristol, but 3200 donors with Welsh names (greater proportion of men) from Bristol had a similar proportion of groups O and A. N. Welsh donors resemble Highland Scots and Irish with a higher proportion of group O than S. Welsh, who are indistinguishable from S. English by proportion of groups O and A donors. E. R. S.

Elliptic erythrocytes in man. H. Wyandt, P. M. Bancroft, and T. O. Winship (*Arch. intern. Med.*, 1941, 68, 1043—1065).—86 new cases of elliptocytosis in 3 large families of German extraction are reported. The condition was commoner in males than in females but had no definite relation to disease. C. A. K.

Leucocytosis-promoting factor in inflammatory exudates of man. V. Menkin, M. A. Kadish, and S. C. Sommers (*Arch. Path.*, 1942, 33, 183—192).—The leucocytosis-promoting factor found in inflammatory exudates of dogs and rabbits (A., 1940, III, 7) is also present in the exudative material of man. It is readily recovered as an active globulin fraction from various samples of empyema fluids. Its injection into the blood stream of a dog induces, within several hr., a rise in the no. of circulating leucocytes. Differential counts indicate that the leucocytosis is caused by a discharge of immature granulocytes from the bone marrow. C. J. C. B.

Presence of leucocytosis-promoting factor in circulating blood. V. Menkin and M. A. Kadish (*Arch. Path.*, 1942, 33, 193—197).—The blood serum of a normal animal does not contain this factor but it is present in the serum of dogs with acute inflammatory reactions. C. J. C. B.

Chronic leukaemia in 3 sisters. J. H. Hornbaker (*Amer. J. med. Sci.*, 1942, 203, 322—325).—2 had chronic lymphatic and 1 chronic myeloid leukaemia. C. J. C. B.

Effects of hyperplastic endometritis on blood cytology of dog. M. L. Morris, J. B. Allison, and J. I. White (*Amer. J. Vet. Res.*, 1942, 3, 100—105).—There was a leucocytosis accompanied by a "shift to the left." E. G. W.

Dry films of cultures of lymphoid tissue. L. Berman (*Arch. Path.*, 1942, 33, 295—304).—Cultures of adult rabbit lymph nodes show a transformation of lymphocytes and reticular cells into polyblasts, and of polyblasts into macrophages, epithelioid cells, and giant cells. Typical localised vacuolation seen in the lymphocytes of the dry films is replaced by diffuse vacuolation at the time when both the directional polarity of the cell and the lymphocytic character of the nucleus are lost. This accompanies a change in the type and the location of pseudopodia and represents the point of transition from a lymphocyte to a polyblast of indifferent origin. The change from polyblast to epithelioid cell or fibroblast-like cell is associated with the appearance of a prominent nucleolus and a change in the nucleus, which assumes a more circular form and acquires a smooth membrane. Giant cell formation occurs both by fusion of cells and by multiple division of nuclei. (10 photomicrographs.) C. J. C. B.

Histoplasmosis in infancy. J. R. Hild (*Amer. J. Dis. Child.*, 1942, 63, 131—139).—The case of a girl $5\frac{1}{2}$ months of age is reported and the literature reviewed. A diagnosis was made from smears of marrow obtained by sternal puncture 11 days before death. C. J. C. B.

Crystalline guinea-pig hæmoglobin. S. Granick (*J. Gen. Physiol.*, 1942, 25, 571—578).—The crystals are readily permeable to $K_3Fe(CN)_6$ and $Na_2S_2O_4$; their structure is discussed. O in Fe^{2+} -oxyhæmoglobin is bound more strongly in the lattice than in solution. H_2 , activated by colloidal Pd, will not reduce Fe^{3+} -hæmoglobin except in presence of a redox dye. H_2O_2 is one of the intermediates formed during reduction of O_2 , either as such or in the form of Fe^{2+} -oxyhæmoglobin, by activated Pd- H_2 . J. N. A.

Hæmoglobin-saline perfusion solution. D. H. Smyth (*J. Physiol.*, 1942, 100, 18—19F).—With the aid of ethyl ether a hæmoglobin solution is prepared which will pass through a Seitz filter without the use of a Sharples centrifuge. Salts are added either before or after sterilisation. This solution maintains the beat of the isolated rat's heart and is successful also with the rat's heart-lung prep. The treatment with ether reduces the tendency to frothing. J. A. C.

Use of blood substitutes [in armed forces]. L. R. Newhouser and D. B. Kendrick (*Med. Ann. Columbia*, 1942, 11, 12—15).—A review. E. M. J.

New physiological solution. J. L. Tremblay and G. W. Corrivault (*Rev. Canad. Biol.*, 1942, 1, 88—100).—Sea-water made isotonic with blood and buffered at pH 7.3—7.4 with Na lactate is a useful physiological medium. To prevent pptn. of Ca and Mg salts, a buffer must be prepared in distilled water, and sea-water can be added to the right quantity. The solution can be kept at room temp. without change. It delays the acidification of heart fibroblast cultures of chick embryos. Massive quantities can be injected into laboratory animals without untoward effects. A. S.

Flask for separation of serum from blood. F. E. Holmes and B. Johnson (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 62). L. S. T.

Freezing of human serum and plasma in Medical Research Council transfusion bottles, before drying by sublimation from the frozen state. R. I. N. Greaves (*J. Hygiene*, 1941, 41, 489—495).—An apparatus for the rotation of bottles of serum in a vertical position at 890 r.p.m. is described. Conditions for supercooling and snap-freezing are specified. D. D.

Casein digest by vein utilised to form blood plasma-protein. S. C. Madden, L. J. Zeldis, A. D. Hengerer, L. L. Miller, and G. H. Whipple (*Science*, 1941, 93, 330—331).—A papain digest of casein, administered by vein or subcutaneously to dogs, promotes new plasma production as effectively as protein fed by mouth. E. R. S.

Production and treatment of blood plasma at Hamburg slaughterhouse. R. van der Leeden (*Angew. Chem.*, 1941, 54, 29). W. McC.

Methods of production and control of normal human plasma and serum. M. V. Veldee (*Amer. J. Publ. Health.*, 1942, 32, 289—294).—A lecture. C. J. C. B.

Comparison of serum reaction with Hayem's solution with Takata reaction. A. Vischer (*Schweiz. med. Wschr.*, 1941, 71, 659—663).—56 out of 470 sera were Takata-positive. These latter sera (1 c.c.) gave a fine reversible turbidity with 1—4 drops (0.03—0.12 c.c.) of

Hayem's solution; irreversible turbidity was obtained with 0.80—1.6 c.c. Normal sera show irreversible flocculation with 2.5 c.c. and more of Hayem's solution. A. S.

Flocculation maximum (p_H) of fibrinogen and other blood-clotting reagents. J. H. Ferguson (*J. Gen. Physiol.*, 1942, 25, 607—616).—Flocculation max., in acetate buffer of varying p_H and salt content, of very stable prothrombin-free fibrinogen and its solutions after incipient thermal denaturation and incomplete tryptic proteolysis, plasma (similarly treated), prothrombin, thrombin, and brain thromboplastin solutions are determined by an adaptation of the Evelyn photo-electric colorimeter to the measurement of relative turbidities. All the fibrinogens have flocculation max. at p_H 4.7±0.2 in salt-containing buffer solutions, and at p_H 5.3±0.2 in salt-poor buffer (0.01N-acetate). The latter is practically identical with the isoelectric point, p_H 5.4, as determined by cataphoresis. There is no evidence that denaturation or digestion produces a "second max." The results, which do not agree with the blood-clotting theory of Wöhlisch, support the view that fibrin formation, under the sp. influence of thrombin, is unrelated to denaturation and digestion, although all three processes can occur simultaneously in crude material. Possible uses of the photo-electric colorimeter in coagulation problems are discussed: by its use, 7.5 mg.-% of protein can be determined in the assay of fibrinogen. J. N. A.

Determination of fibrinogen with protamine. E. Mylon, M. C. Winternitz, and G. J. de Sütö-Nagy (*J. Biol. Chem.*, 1942, 143, 21—27).—The fibrinogen content of 1 c.c. of oxalated plasma is determined by pptg. at 3° with protamine and determining the N content of the ppt. by the Kjeldahl method. Concns. of heparin greater than those found in anaphylactic shock do not interfere. The results obtained are 20% higher than those obtained by the salting-out procedures of Cullen and Van Slyke (A., 1920, ii, 398) and others but the difference is diminished to ±5% by decreasing the dilution of the plasma. Protamine, added to plasma, increases enzymic fibrinogenolysis, 37% of the fibrinogen being degraded within 3 hr. W. McC.

Hypoprothrombinæmia in pernicious anæmia. E. D. Warner and C. A. Owen (*Amer. J. med. Sci.*, 1942, 203, 187—191).—In 17 out of 20 cases of pernicious anæmia in relapse the prothrombin level was 40—65% of the normal. The hypoprothrombinæmia was not rectified by large doses of vitamin-K. When sp. liver therapy is instituted, the plasma-prothrombin level promptly shows a marked rise. C. J. C. B.

Clinical and hæmatological observations in patients with purpura Majocchi. A. Schoch (*Schweiz. med. Wschr.*, 1941, 71, 653—657).—White and red cell and differential counts and sternal bone marrow smears were normal in several patients suffering from purpura annularis teleangiectodes Majocchi. Blood coagulation time was normal in all cases; there was thrombocytopenia and increased bleeding time in 1 patient. A. S.

Serum-inorganic phosphate and "alkaline" phosphatase activity in hypophysectomised rats. L. M. Jones and G. Y. Shinowara (*J. Biol. Chem.*, 1942, 142, 935—939; cf. A., 1942, III, 504).—Hypophysectomy causes a rise in serum-alkaline phosphatase activity and a fall in -inorg. P. Serum-Ca is probably increased. The bones of the treated rats were smaller, but the Ca : P ratio was normal, as was the total blood-protein. R. L. E.

Intravenous sodium bicarbonate in diabetic ketosis. L. B. Owens, J. Wright, and E. Brown (*Arch. intern. Med.*, 1941, 68, 1066—1073). NaHCO_3 was given intravenously in 12 cases of diabetic ketosis. It raised the CO_2 combining power of the blood and relieved Kussmaul respirations, but had no effect on blood-sugar or ketones in blood and urine. In 154 cases of diabetic ketosis, one third were given NaHCO_3 with no significant alteration in mortality rate as compared with untreated controls. C. A. K.

Attempt to demonstrate anti-insulin effect of blood plasma in certain diabetic types. E. S. Gais and E. A. Weinbaum (*J. clin. Endocrinol.*, 1941, 1, 607—611).—Injections of serum from 6 diabetic patients with evidence of hypothalamic-pituitary or adrenal involvement into rabbits had no demonstrable anti-insulin effect. P. C. W.

Species variation in normal plasma-lipins determined by oxidative micro-methods. E. M. Boyd (*J. Biol. Chem.*, 1942, 143, 131—132).—Data are given for the amounts of total lipin, neutral fat, total fatty acids, total, free, and esterified cholesterol, and phospholipin in fasting oxalated blood plasma of man, guinea-pig, rat, rabbit, cow, cat, and cockerel. Approx. 75% of all normal lipin vals. for plasma are within the range of 33% less to 33% greater than the mean for that species. J. N. A.

Influence of parotid extract on blood-sugar and structure of pancreas of the rat. W. B. Birnkrant and R. Shapiro (*J. Lab. clin. Med.*, 1942, 27, 510—518).—A potent blood-sugar-raising extract was prepared from the parotid gland by a modified Harrow method (A., 1937, III, 10). Degenerative changes in the islands of Langerhans followed repeated injections of this extract in experimental animals. C. J. C. B.

Measurement of intravenous blood-sugar curves. B. Hamilton and A. F. Stein (*J. Lab. clin. Med.*, 1942, 27, 491—497).—The results are plotted on semi-logarithmic paper. C. J. C. B.

Application of skatole colour reaction to determination of fructose in blood. R. M. Reinecke (*J. Biol. Chem.*, 1942, 142, 487—490).—The use of alcoholic HCl in the Jordan and Pryde reaction (A., 1938, III, 361) prevents the inhibiting effect of excess of water, and the addition of the skatole after the fructose had been heated with the acid and cooled eliminates development of interfering colour. The error due to 80 μg . of glucose is less than the equiv. of 1 μg . of fructose. H. G. R.

Effect of glucose administration on blood-pantothenic acid. L. D. Wright (*J. Biol. Chem.*, 1942, 142, 445—446).—The pantothenic acid content of the blood of rabbits decreases by 20—30% after administration of 5—10 g. of glucose. A. Li.

Values for acetylcholine-esterase in blood serum of normal persons and patients with various diseases. H. R. Butt, M. W. Comfort, T. J. Dry, and A. E. Osterberg (*J. Lab. clin. Med.*, 1942, 27, 649—655).—For 47 normal men the mean val. was 2.06 ± 0.07, the standard deviation 0.48. For 38 normal women, the mean was 1.72 ± 0.08, the standard deviation 0.50. Serum-choline-esterase was normal in patients with chronic nervous exhaustion, neurosis, diabetes mellitus, epilepsy, obesity, urticaria, angioneurotic oedema, duodenal ulcer, syphilis of the central nervous system, sprue, postural hypotension, arthritis, hypertension, heart disease, and disease of the biliary tract without severe disease of the liver. Esterase was low in pregnancy and in severe hepatic damage. The lowest vals. were obtained in patients in whom liver damage was most severe (decompensated portal cirrhosis). Acetylcholine-esterase in patients with pancreatic disease was, with 1 exception, normal. C. J. C. B.

VI.—VASCULAR SYSTEM.

Analysis of initiation of fibrillation by electrographic studies. G. K. Moe, A. S. Harris, and C. J. Wiggers (*Amer. J. Physiol.*, 1941, 134, 473—492).—The mechanism by which ventricular fibrillation develops as a result of a strong, brief d.c. shock delivered during the vulnerable period of the ventricular cycle was studied electrographically in anæsthetised dogs (Na barbital, morphine). 3 pairs of contiguous electrodes operating on the principle of Garten differential electrodes were variously oriented on the ventricular surface with respect to the site of stimulation in different tests on the same heart. The ventricles were repeatedly revived by the counter-shock method of Hooker. The re-entry of impulses with which fibrillation starts, following a d.c. shock, is due to progressive decrease in refractory period combined with a progressive increase in conduction time. This starts in regions near the site of stimulation and occurs as a result of the repetitive accelerating discharges. Repetitive discharges from a centre or centres are not required to sustain fibrillation, but are essential to its initiation after a strong electrical shock. M. W. G.

Heart in combined syphilitic aortic valvulitis and rheumatic heart disease. J. R. Lisa, C. Solomon, and D. Eckstein (*Arch. Path.*, 1942, 33, 37—45).—14 cases of combined syphilitic aortic valvulitis and rheumatic heart disease are described. C. J. C. B.

Cerebral embolism in mitral stenosis. A. W. Harris and S. A. Levine (*Ann. int. Med.*, 1941, 15, 637—643).—The average age of 72 patients with mitral stenosis and cerebral embolism was 42.7 years (range 18—65); 18 patients had hypertension with average blood pressure of 171/97 mm. Hg. Auricular fibrillation was found in 55 patients; in 26 cases persistent fibrillation was known to be present for varying times before the development of embolism. The embolism is apt to occur early after the onset of persistent fibrillation. In 5 cases embolism occurred within a few hr. or a day after regularisation of the beat, either spontaneously or following quinidine therapy. In 17 cases embolism occurred without previous auricular fibrillation. In the recovered cases a third of the group with motor palsies showed slight recovery of function within 1 year. Improvement of speech disturbances occurred in all patients who survived the embolism. There were 49 patients without and 23 with heart failure. 24 deaths occurred within a few days or weeks after the embolism (average 4.3 days). 15 patients died within 1 month to 7 years. 6 of the hypertensive cases died immediately; in the 54 non-hypertensives, there were 18 immediate fatalities and the average survival time of the 11 patients who died subsequently was 10.6 months, compared with 19.7 months in the hypertensive group. 16 out of 18 hypertensives showed auricular fibrillation. 55 out of the whole group of 72 patients had fibrillation. There was a greater immediate mortality rate among patients with congestive heart failure (12 out of 23) than in those without failure (12 out of 49). A. S.

Pulmonary infarction in heart disease. L. E. Hines and J. T. Hunt (*Ann. int. Med.*, 1941, 15, 644—647).—101 cases with gross pulmonary infarction were found in 1311 necropsies (7.7%). Heart disease the principal cause of death in 234 cases, was accompanied

by pulmonary infarction 81 times (35%); a correct clinical diagnosis was made only in 2 cases. A. S.

Vascularisation in brains of reptiles. III. Superficial arteries and vascular bed of the brain in Alligator Mississippiensis. E. H. Craigie (*Trans. Roy. Soc. Canada*, 1941, [iii], 35, V, 35—49).—The distribution of the principal arteries corresponds to that in other animals. The posterior cerebral artery, contrary to other crocodylians, originates from the posterior ramus of the cerebral carotid; it is very large, runs near the hippocampal—parahippocampal boundary, and supplies these areas and part of the olfactory peduncle and bulb, continuing into large ethmoidal arteries. Shellshear's conception of the constancy of neuro-arterial relations is supported by the observations in the alligator. The capillary bed of the central nervous system is of the continuous, spongy, reticular type; some capillaries form widely open loops. The capillary reticulum is supplied and drained partly by vessels running singly; most of the larger vessels penetrating the brain substance and many smaller ones run in arterio-venous pairs, as in reptiles without reticular arrangement. The opossum has only occasional arterio-venous anastomoses; *Varanus* has numerous small loops in the capillary meshes and a few associated pairs among the penetrating vessels; the alligator has more frequent associated pairs but only rare and questionable capillary loops in the network. The transformation must have taken place within the reptilian class and must have been independent of the derivation of a vascular network from the simple capillary loops in lower amphibians which has taken place partly in *Amblystoma* and completely in tailless amphibians. A. S.

Auscultatory blood pressure methods for dogs. F. M. Allen (*J. Lab. clin. Med.*, 1941, 27, 371—373).—Convenient auscultatory methods, using a dental gutta-percha adaptor moulded on the thigh and a cuff on top, are described for estimating femoral or brachial blood pressures in dogs. C. J. C. B.

Adrenaline dilatation and histamine. R. J. S. McDowall (*J. Physiol.*, 1942, 100, 17p).—In many animals a previous intravenous injection of histamine enhances the dilator effects of adrenaline on muscle vessels although all the other effects of the histamine have passed off. J. A. C.

Circulatory responses of normal and sympathectomised dogs to ether anaesthesia. F. F. McAllister and W. S. Root (*Amer. J. Physiol.*, 1941, 133, 70—78).—Induction of ether anaesthesia in dogs produced an immediate and considerable rise in blood pressure and cardiac slowing. As surgical anaesthesia developed, blood pressure returned towards preanaesthetic level and the heart rate increased markedly. Under full surgical anaesthesia mean arterial blood pressure was 10—15 mm. Hg lower than control level and the heart rate 160—205 per min. Administration of ether to completely sympathectomised dogs produces an immediate fall in blood pressure to 40—70 mm. and marked bradycardia. During surgical anaesthesia the heart rate increases to 132 beats per min. The bradycardia shown by normal and sympathectomised dogs during the excitement stage of ether anaesthesia was absent in vagotomised and atropinised dogs. M. W. G.

Capillary permeability and inflammation in skin of sensitised rabbits. R. H. Rigdon and A. Haynes (*J. Lab. clin. Med.*, 1942, 27, 598—601).—Following an intravenous injection trypan-blue localises and concentrates in areas of the rabbit's skin injected with horse serum if the serum is injected a short time before the dye is given. The time during which this dye localises and concentrates in the skin is longer in sensitised than in normal rabbits. The localisation and the concn. of trypan-blue in areas of inflammation produced by horse serum are not determined by the presence of oedema and hyperaemia. This dye may not concentrate in all areas of oedema and hyperaemia, as shown by the failure of the dye to concentrate in areas of skin injected with horse serum 24 hr. previously to the injection of the dye. The presence of trypan-blue in the tissues of a sensitised rabbit does not affect the subsequent reaction that occurs when the antigen is injected intradermally. C. J. C. B.

Renal circulation of domestic animals. T. C. Fitzgerald (*Amer. J. Vet. Res.*, 1940, 1, 89—95).—Casts of the renal vessels were prepared by injecting a 10—12.5% solution of vinyl resin ("Vinylet") in acetone saturated with an acid-resisting dye (Sudan 3, Scarlet R, etc.). A pressure of 50 mm. Hg is used for the renal pelvis and up to 600 mm. Hg for the glomerular capillaries. The results are described and illustrated. E. G. W.

Treatment of aortic aneurysm [by venesection and phenylhydrazine]. E. R. Marzullo (*N.Y. Sta. J. Med.*, 1940, 40, 292—295).—An aneurysm of the arch of the aorta eroding the manubrium sterni in a man, aged 57, with negative blood and c.s.f. Wassermann reaction was reduced from 9.2 to 8.4 cm. diameter in 3 weeks after 5 venesections of 500 c.c. each. 1 grain of phenylhydrazine was then given 3 times and later twice daily at monthly intervals, and the aneurysm apparently disappeared after 7 months. E. M. J.

Treatment of thrombophlebitis. J. R. Veal and H. H. Hussey (*Med. Ann. Columbia*, 1942, 11, 52—58).—A review. E. M. J.

Glomus tumour: its distribution and behaviour and identity of its "epithelioid" cell. M. R. Murray and A. P. Stout (*Amer. J. Path.*, 1942, 18, 183—194).—Glomus tumours have been found in joint capsules and striated muscle. The "epithelioid" cell of the glomus tumours is identified as the pericyte of Zimmermann. (16 photomicrographs.) C. J. C. B.

Crush syndrome. H. R. Robertson and W. H. Mathews (*Canad. Med. Assoc. J.*, 1942, 46, 116—120).—A case report. C. J. C. B.

Vascular and cellular dynamics of shock. V. H. Moon (*Amer. J. med. Sci.*, 1942, 203, 1—18).—A crit. review. C. J. C. B.

Present views on shock. H. S. Applebaum (*Ohio Sta. Med. J.*, 1941, 37, 1069—1072).—A review. E. M. J.

Retinal arteriovenous nicking in hypertension. S. Shelburne, J. L. Hawley, and A. S. McGee (*Arch. intern. Med.*, 1942, 69, 213—221).—Studies in 317 patients with hypertension showed that retinal arteriovenous nicking is closely related to cardiac enlargement. C. A. K.

Reduction in blood pressures of renal hypertensive dogs with hog renin. G. E. Wakerlin, C. A. Johnson, B. Gomberg, and M. L. Goldberg (*Science*, 1941, 93, 332).—4 dogs rendered hypertensive by the Goldblatt technique were treated with hog renin (1 g. kidney equiv. per kg. body-wt.) for 4 months. The blood pressure fell to normal, and rose again after treatment had finished. Dog renin and heat-inactivated hog renin were without effect on other hypertensive dogs. The anti-renin titres did not diminish following treatment. E. R. S.

Renin and pregnancy; renal pressor substance in pregnant animal. R. J. Keller and J. K. Sutherland (*J. Obstet. Gynaec.*, 1941, 48, 487—494).—The blood flow and heat output of the hand during raised body temp. was normal in 35 women with pregnancy toxæmia, indicating that the hypertension is not nervous in origin. Renin has no greater pressor effect in pregnant rabbits or rats than in non-pregnant ones. No renin was demonstrated in rabbit, rat, or human placental extracts. Injection of 50,000—100,000 i.b.u. of oestradiol benzoate did not increase the pressor response of non-pregnant does to renin. P. C. W.

Renal hypertension in children. S. T. Killian and J. K. Calvin (*Amer. J. Dis. Child.*, 1941, 62, 1242—1272).—6 cases of renal hypertension are reported in detail. The interference with the renal vascular supply which was shown anatomically could have been responsible for the hypertension in each case. C. J. C. B.

Rôle of nephrectomy in hypertension. B. Hughes (*Penn. Med. J.*, 1941, 44, 1594—1597).—In 43 cases of hypertension in young or middle-aged individuals 4 cases of unilateral atrophic pyelonephritis were found. Nephrectomy in these 4 cases resulted in a fall in blood pressure and freedom from symptoms in 3 cases; one died after 3 months. E. M. J.

VII.—RESPIRATION AND BLOOD GASES.

Composition of alveolar air of domestic animals. G. T. Edds (*Amer. J. Vet. Res.*, 1940, 1, 82—88).—Methods and results are given for 1 horse and cattle, sheep, goats, and dogs (3 each). E. G. W.

Concentration of oxygen in tissue. I. Bloch (*Bull. Math. Biophysics*, 1941, 3, 121—126).—An approx. expression for average $[O_2]$ in vascular tissue is derived on the basis of certain assumptions, the probable inadequacies of which are discussed. F. O. H.

Human physiology under high [atmospheric] pressure. I. Effects of nitrogen, carbon dioxide, and cold. E. M. Case and J. B. S. Haldane (*J. Hygiene*, 1941, 41, 225—249).—Experiments were made in a steel chamber on 15 subjects individually in addition to the authors. Compression to 10 atm. generally required less than 6 min. and subjects experienced little discomfort when they were taught to force air into their Eustachian tubes. Compression to 7 atm. in 90 sec. in one instance caused neither discomfort nor after-effects. Breathing through a canister of soda-lime to remove CO_2 was very difficult at 10 atm. owing to the increased resistance offered by the canister as a result of the turbulent flow of the inspired air. This also caused caustic dust to be dislodged and the respirator became unbearable. It is emphasised that breathing apparatus should be tested at the pressure for which it is designed. Adherence to Davis' tables for decompression was the rule and symptoms produced were usually slight. Individuals vary greatly in their susceptibility to bends. Use of a mixture of 85% He and 15% O_2 at 10 atm. in place of air would not prevent bends. In air, there was little change in consciousness in men at 6 atm., but a marked change at 8.6 atm. Manual ability was unaffected at this pressure, but mental ability, as measured by arithmetical exercises, showed marked deterioration. At 10 atm. the narcotic effect of N_2 was very pronounced. The effects increased with the proportion of N_2 . A harsh or metallic taste is attributed to N_2 . None of the subjects lost consciousness in N_2-O_2 mixtures. Narcosis was not produced by a mixture of 85% He—15% O_2 , nor by a mixture of H_2 and O_2 at 10 atm. Argon acts similarly to N_2 .

The lipid solubilities of the gases do not correlate with their effects, but adsorption on cell surfaces may be the immediate cause of narcosis. N_2 intoxication is characterised by the rapidity with which the symptoms appear on compression and disappear on decompression. The effect of CO_2 at 10 atm. varies with individuals, but consciousness is lost when the partial pressure rises to 6%. The combined effects of CO_2 and pressure were somewhat greater when the subject was immersed in a bath of ice-water.

D. D.

History and present status of oxygen therapy and resuscitation. R. M. Tovell and J. E. Remlinger (*J. Amer. Med. Assoc.*, 1941, 117, 1939—1944).—A review and discussion. C. A. K.

Allergic respiratory disease and pneumonia in childhood. S. Cohen (*New Orleans Med. J.*, 1942, 94, 440—442).—A review. E. M. J.

VIII.—MUSCLE.

Change in irritability of striated muscle, poisoned with monoiodoacetic acid, under influence of different weights. V. A. Mushevich (*Arch. sci. biol.*, U.S.S.R., 1935, 38, 591—595).—In striated muscle, irritability depends on the rate of phosphagen metabolism. Stretching of muscle poisoned with monoiodoacetic acid leads to a greater fall in irritability in comparison with non-poisoned muscle. This is attributed to increased breakdown of phosphagen and failure of resynthesis. CH. ABS. (el)

Myasthenia gravis. G. K. Kawaichi and P. K. Ito (*Amer. J. Dis. Child.*, 1942, 63, 354—365).—Report of its occurrence in a 21-months-old infant. C. J. C. B.

Goitre with myasthenia gravis. G. F. Kowallis, S. F. Haines, and J. de J. Pemberton (*Arch. intern. Med.*, 1942, 69, 41—50).—3 cases of exophthalmic goitre associated with myasthenia gravis of the bulbar type and 1 case of adenomatous goitre with hyperthyroidism and myasthenia gravis are reported. Subtotal thyroidectomy in 1 case relieved symptoms in both conditions. C. A. K.

Muscular dystrophy in mice on vitamin-E-deficient diet. A. M. Pappenheimer (*Amer. J. Path.*, 1942, 18, 169—175).—Female mice maintained on a vitamin-E-low diet were given a single dose of wheat-germ oil or of α -tocopherol at the beginning of pregnancy to insure the birth of living young. The skeletal muscles of the offspring showed necrosis of the fibres in 20% of 293 mice examined. Mice dying or killed on the first day had oedema of the subcutaneous and intramuscular tissues; $\frac{1}{3}$ of the cases had hyaline necrosis of the muscle fibres. The incidence of muscular lesions was highest (59%) in a group sacrificed or dying on the 16th—35th days. There was early calcification of necrotic fibres and active regeneration. Adult mice occasionally showed scattered hyaline or calcified fibres remaining from early lesions, but no progressive dystrophy of the muscles. No lesions were found in the central nervous system or in other organs or tissues. In mice, spermatogenesis was active on the -E-deficient diet up to 439 days. (8 photomicrographs.) C. J. C. B.

IX.—NERVOUS SYSTEM.

Fatigue and refractoriness in nerve. E. T. von Brücke, M. Early, and A. Forbes (*J. Neurophysiol.*, 1941, 4, 456—472).—Recovery of excitability of frog sciatic nerve was studied after one and two conditioning shocks, after prolonged tetanisation, and in experiments combining prolonged activity and refractoriness. After tetanisation excitability was reduced much more in resting than in refractory nerve; in both cases the rate of recovery of excitability depends directly on the duration of the fatiguing stimulation. Fatigability does not vary in different fibres of a given nerve. The appearance of sub- and super-normality was delayed by fatiguing stimulation, the degree of delay depending on the degree of previous activity. Recovery after a single impulse was compared with recovery after two impulses; the latter was always found to be slowed if the second impulse occurred in the refractory period and it got faster as the interval between the stimuli was increased. It is assumed that subnormality is a late continuation of the relative refractory state. S. CR.

Potassium and water changes in excised nerve on stimulation. V. Arnett and W. S. Wilde (*J. Neurophysiol.*, 1941, 4, 572—577).—Frog nerves immersed in Ringer's solution lose 11% of their K during stimulation with 60 shocks per sec. over a period of 60—210 min.; there is no shift of water. Soaking for 2—5 hr. without stimulation causes a leak of K which is not continued on further soaking. Soaking for 25—100 hr. increases the vol. of nerve-water by 9.5%. S. CR.

Apparatus for recording muscle and nerve action potentials. G. Weddell and R. E. Pattle (*Proc. Roy. Soc. Med.*, 1941, 35, 78—79).—Concentric needle electrodes (Brown) are coupled to the input of a differential amplifier by screened leads, and the output is fed into a cathode-ray oscilloscope. Action potentials in denervated muscles can be recorded. An electrode carrier capable of conducting stimuli

to, and picking up action potentials from, nerves exposed during operation is described. W. J. G.

Nervi nervorum in intracranial passage of the rat. K. Peter (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 181—183).—In the adult rat, the nervi nervorum of the facial, at the moment of traversing the base of the skull, are represented by fine sensitive fibres which end in the spiral in the form of rings or a fine network, and correspond always to a single neurone. The motor fibres cross the superficial layer of the nerve but do not end there, whilst some fibres of a parasympathetic nature terminate there. J. N. A.

Therapeutic nerve block. E. A. Rovenstine and H. M. Wertheim (*J. Amer. Med. Assoc.*, 1941, 117, 1599—1603).—A review. C. A. K.

Fibre dissociation in peripheral neuropathy. H. Wortis, M. H. Stein, and N. Jolliffe (*Arch. intern. Med.*, 1942, 69, 222—237).—The effects of asphyxia on the functions of peripheral nerves were studied in normal subjects and compared with the changes in patients with alcoholic peripheral neuropathy. The latter resemble the former in the early involvement of vibration sense and loss of reflexes, the rarity of complete loss of superficial pain sense, the presence of plantar dysaesthesia, and frequent delay in pain sensation. Thus avitaminosis-B and ischaemia act similarly on peripheral nerves, both affecting the large, rapidly-conducting A and B fibres before the small, slowly-conducting, non-medullated C fibres. C. A. K.

Spinal origin of preganglionic fibres to limbs in cat and monkey. W. A. Gehegan, G. A. Wolf, jun., O. J. Aidar, K. Hare, and J. C. Hinsey (*Amer. J. Physiol.*, 1942, 135, 324—329).—By recording changes in skin resistance on stimulating the ventral roots of the spinal cord it was shown in the monkey that the preganglionic fibres to the eye leave the cord in T_{1-4} , to the hands in T_{4-10} , to the foot in T_{10-L_2} . In the cat, preganglionic fibres to the eye are found in T_{1-4} or 5 , to the hind foot in T_{11-L_2} . M. W. G.

Motor cells of spinal cord. H. C. Elliot (*Amer. J. Anat.*, 1942, 70, 95—117).—Data are presented from a study of 15 lumbo-sacral and 9 cervical regions of normal human cords and special techniques to increase accuracy of interpretation are described. The nuclear pattern deduced differs in many respects from any hitherto described and several nuclear masses and subdivisions are identified for the first time. The variation in nuclear arrangement is slight. W. F. H.

Nerve supply to bovine mammary gland. L. E. St. Clair (*Amer. J. Vet. Res.*, 1942, 3, 10—16).—The udder is supplied by both sensory and sympathetic fibres; no secretory nerves were found. The sympathetic fibres are vasoconstrictor and also cause contraction of the smooth muscle of the udder. (2 diagrams and a dissection.) E. G. W.

Sympathetic nerve blocks with novocain in rehabilitation of painful extremities after injury. H. Mahorner (*New Orleans Med. J.*, 1942, 94, 426—432).—Success is reported in 75% of treated cases. E. M. J.

Termination of optic fibres in lateral geniculate body of rabbit. P. Gless (*J. Anat.*, 1942, 76, 313—318).—The optic tract fibres in the rabbit end in the lateral geniculate body in special fine end terminal rings which undergo characteristic degeneration after section of the nerve tract. The no. of synaptic contacts with the cell body is ten. Attention is drawn to the desirability of distinguishing between "traumatic" and "terminal" degeneration. W. J. H.

Olfactory reactions in brain of hedgehog. E. D. Adrian (*J. Physiol.*, 1942, 100, 459—473).—The olfactory bulb and area of the brain are easily exposed in the hedgehog and show a characteristic electrical activity in nembutal or chloralose anaesthesia. Normal breathing produces a regular series of large potential waves in the pyriform area at each inspiration, due to the passage of air through the nose on that side. Their frequency varies from 15 per sec. during quiet breathing to 45 per sec. if the air is blown or sucked forcibly through the nose. If an odour (clove oil or asafœtida) is added to the air the regular waves no longer appear at inspiration and their place is taken by small irregular waves. An intense odour may produce a continuous series of small waves at a high frequency (50 per sec.). If a wire electrode leads from the mitral cell layer of the olfactory bulb, a discharge of impulses can be heard at inspiration and the addition of a distinct odour increases the discharge; when air is blown through the nose the impulses become grouped into volleys at a high frequency. The olfactory organ is stimulated by an air current mechanically and chemically by odours in it. The air current produces a uniform excitation and synchronous waves; the chemical stimulation is not uniform and hinders the development of synchronous waves. A familiar odour is recognised by the sp. pattern which it arouses in the brain. J. A. C.

Acro-dynia [due to infected tonsils and adenoids]. U. J. Gareau (*Canad. Med. Assoc. J.*, 1942, 46, 51—54).—75 cases of acro-dynia are described, 57 of which were treated by removal of tonsils and adenoids, with total duration of illness of less than 3½ months (untreated cases 6 months). C. J. C. B.

Epidural injection of almond oil and procaine hydrochloride in sciatica. C. B. Odom and M. C. Kolczun (*Sth. Med. J.*, 1941, 34,

1149—1151).—20 c.c. of a 2% solution of procaine in almond oil was injected into the epidural space in 32 cases of idiopathic sciatica. In 10 cases iodised oil was substituted for the almond oil and serial X-rays taken which showed the diffusion of the oil to be much more rapid on the affected side. Permanent relief was obtained in 90.5% of cases.
E. M. J.

Review of neuropsychiatry for 1941. S. Cobb (*Arch. intern. Med.*, 1941, 68, 1232—1245).
C. A. K.

Use of amphetamine (benzedrine) sulphate in alcoholism with or without psychosis. E. C. Reifenstein and E. Davidoff (*N.Y. Sta. J. Med.*, 1940, 40, 247—252).—The average time until recovery was halved by the daily administration of 20—30 mg. of amphetamine sulphate orally or intravenously in cases of pathologic intoxication or delirium tremens, and shortened in acute hallucinosis. 5 of 7 cases of Korsakow's psychosis recovered with treatment, but only 2 of 7 without.
E. M. J.

Hyperactive child. J. A. Russell (*Amer. J. Dis. Child.*, 1942, 63, 94—101).—A lecture.
C. J. C. B.

Cerebral localisation of consciousness. J. Le Bau (*Rev. Canad. Biol.*, 1942, 1, 134—156).—Surgical and medical observations are quoted to support the conception that consciousness is localised in the anterior and inferior half portion of the lateral wall of the third ventricle.
A. S.

Cortical origin and distribution of corpus callosum and anterior commissure in (A) monkey (*Macaca mulatta*), (B) chimpanzee (*Pan satyrus*). (A) W. S. McCulloch and H. W. Garol. (B) P. Bailey, H. W. Garol, and W. S. McCulloch (*J. Neurophysiol.*, 1941, 4, 555—563, 564—571).—Based on local strychninisation of one hemisphere and electrical records of the other, new maps of the convexity of the cerebral hemispheres of *M. mulatta* and *P. satyrus* have been prepared to show the origins of the corpus callosum and anterior commissure and to indicate (i) those origins having interhemispherical projections dispersed to many areas of the convexity of the other hemisphere, and (ii) those having projections restricted to symmetrical foci.
S. Cr.

Hyperactivity in monkeys following lesions of frontal lobes. M. A. Kennard, S. Spencer, and G. Fountain (*J. Neurophysiol.*, 1941, 4, 512—524).—In monkeys and chimpanzees ablations from the frontal association areas (areas 8—12 of Brodmann) result in a permanent increased total activity characterised by purposelessness and repetition. This hyperactivity is markedly affected by visual but not by auditory stimuli. It is not related to increased hunger or metabolism or to changes in the autonomic system. Some increase in activity is caused by partial ablation; hypomotility is related to lesions of the rostral portions of areas 6 to 8.
S. Cr.

Localisation of cerebral centre activating heat-loss mechanism in monkeys. L. E. Beaton, W. A. McKinley, C. M. Berry, and S. W. Ranson (*J. Neurophysiol.*, 1941, 4, 478—485).—Local heating of the brain of the monkey by a low-voltage, high-frequency current has demonstrated a reactive field which responds by bringing into play the heat-loss mechanism of sweating and polydipsia. The area is in the preoptic region of the telencephalon between the anterior commissure and the optic chiasma.
S. Cr.

Human electro-corticogram. Report of spontaneous electrical potentials obtained from the exposed human brain. J. E. Scarff and W. E. Rahm, jun. (*J. Neurophysiol.*, 1941, 4, 418—426).—A compact, portable apparatus is described and a simple technique outlined which permit reliable records of electrical potentials to be taken directly from the exposed brain at operation. Changes associated with various abnormal conditions are reported. Tumours are shown to be electrically inactive.
S. Cr.

Cycloscopic study of human electroencephalogram. R. Cohn (*J. Gen. Physiol.*, 1942, 25, 517—522).—The construction and method of using the cycloscope, which is used in the study of short-sequence, quasi-periodic phenomena and operates on optico-mechanical principles, are described. Cycloscopic analyses of electroencephalograms obtained from a mixed group of individuals clinically classified as normal, schizophrenic, and "frank" epileptic show (a) a closely regulated, potential oscillation which remains predominant throughout the sample of record under study and (b) other definite, anharmonic cycles which are associated with this dominant cycle. These operate in intermittent sequences or simultaneously with the dominant cycle. Subjects with "atypical" epilepsy show characteristic spread of low-intensity cycles. A cycle is defined as significant sequences of waves which tend to fluctuate in length about a mean val. and which seldom vary from it by more than 10—20%.
J. N. A.

Structure and function of brain of new-born bear (*Ursus arctos*, L.). W. Riese (*Rev. Canad. Biol.*, 1942, 1, 157—170).—Immediately after birth the animal executes side-to-side movements of the head, alternating flexion and extension of the fore-limbs, and movements of the hind-legs which are not co-ordinated with those of the fore-legs. The histological structure of the central nervous system of the new-born bear (pregnancy of 208 days) corresponds with that of a cat foetus at the end of the third month of pregnancy (pregnancy of 63 days)
Q 2 (A., III.)

or with that of a 4-months-old human foetus. Fine myelin sheaths were found in the brain stem of the new-born Japanese bear; they were absent in a 5-days-old grizzly bear. In striking contrast to the embryonic character of the central nervous system, the development of the internal organs corresponds with that of other new-born mammals; in the pouch young opossum, central nervous system and internal organs are in an embryonic state.
A. S.

Spinal mechanism of pyramidal system in cats. D. P. C. Lloyd (*J. Neurophysiol.*, 1941, 4, 525—546).—A method is described whereby a controlled pyramidal volley may be delivered into the spinal cord and an attempt is made to outline the functional organisation of the spinal mechanism under the conditions of pyramidal stimulation. Records are taken from various regions of the cord and information is gained on direct pyramidal transmission and on the importance of the interneurons in the cord. (B.)
S. Cr.

Surgical interruption of pallidofugal fibres in treatment of paralysis agitans. R. Meyers (*N.Y. Sta. J. Med.*, 1942, 42, 317—325).—A review.
E. M. J.

Present status of surgery in treatment of extrapyramidal tract disease. R. Meyers (*N.Y. Sta. J. Med.*, 1942, 42, 535—543).—A review.
E. M. J.

Choline-esterase and monoamino-oxidase in human central nervous system. H. Birkhäuser (*Schweiz. med. Wschr.*, 1941, 71, 750—752).—The following mg. of acetylcholine were hydrolysed by 100 mg. of tissue in 60 min. in normal cerebra: thalamus 2.0 (± 0.1), caudate nucleus 28.5 (± 1.2), putamen 37.5 (± 1.05), globus pallidus 9.3 (± 0.4), cortex 1.0 (± 0.07). The same vals. were obtained in 11 cerebra of schizophrenics. The mono-oxidase concns. (c.c. of O₂ used by 100 mg. of tissue in 2 hr.) were as follows: thalamus 99 (± 17), caudate nucleus 91 (± 16) putamen 91 (± 4), pallidus 97 (± 10), cortex 51 (± 13); the corresponding vals. in patients below 60 were 87 (± 7), 92 (± 10), 82 (± 5), 67 (± 4), 41 (± 7). The average CO₂ production of 0.5 c.c. of c.s.f. in 120 min. (23 normal cases) was 14.0 c.c. (± 1.1); in 18 schizophrenics the figures were 19.4 c.c. (± 1.4). Choline-esterase activity *in vitro* is inhibited by methylene-blue, neutral- and Congo-red.
A. S.

Metabolism of brain suspensions. I. Oxygen uptake. K. A. C. Elliott and B. Libet (*J. Biol. Chem.*, 1942, 143, 227—246).—Respiration in brain tissue homogenised in media made isotonic with salts or glucose was 400% faster than when hypotonic media were used. Ca⁺⁺ and Mg⁺⁺, although initially inhibiting the respiration of the NaCl-isotonic suspensions containing glucose, improved the maintenance of the activity. NaCl, Na₂SO₄, and Na₂HPO₄ had a stimulating effect; K⁺ was inhibitory. Initially respiration was the same in air and O₂, but later O₂ had a progressively adverse effect. Homogenisation in hypotonic solution greatly decreased the glucose-oxidising power of the brain. Citrate improved the respiration of isotonic suspensions only when glucose was present, but hypotonic suspensions were slightly inhibited. Malate, fumarate, and heated liver extract were initially stimulatory, and their effect was greater with hypotonic suspensions. Insulin was without effect and metrazol in relatively large concns. was inhibitory.
A. L.

X.—SENSE ORGANS.

Quantitative relationship of riboflavin to cataract formation in rats. H. M. Baum, J. F. Michaelre, E. B. Brown (*Science*, 1942, 95, 24).—Results of a series of experiments undertaken to explain the inconsistency of cataract formation in rats fed riboflavin-deficient diets are reported. 20 rats on a riboflavin-free diet, supplemented with appropriate doses of thiamin, pyridoxine, nicotinic acid, pantothenic acid, and choline, did not develop cataract in 12 weeks. 90% of 60 rats on the Bourquin-Sherman diet (A., 1931, 1338) developed cataract in 9 weeks. Microbiological assay showed that this ration contained riboflavin in such amounts that the animals receive 0.57 μ g. per day on the basis of average food consumption. On a modified Bourquin-Sherman diet, in which the 80% alcoholic extract of wheat was replaced by sufficient amounts of thiamin, pyridoxine, nicotinic acid, pantothenic acid, and choline, only 14% of the animals developed cataracts, but when 1—3 μ g. of riboflavin daily were given in addition, 65% of the rats developed cataract in 10 weeks. Corneal opacity and vascularisation occurred in all animals except those receiving adequate amounts of riboflavin. The observed results were not due to the fact that small amounts of riboflavin prolonged the survival of the rats, since cataract had developed in the animals receiving small amounts of riboflavin at a time when the negative controls were still alive and exhibiting some growth but without the development of cataract. The results are interpreted as indicating that the absence of riboflavin from the diet does not cause cataract, but the presence of riboflavin in very small amounts induces cataract formation.
M. C. B.

Character and coincidence of retinal hæmorrhages occurring in diabetes. F. T. Tooke and J. V. V. Nicholls (*Canad. Med. Assoc. J.*, 1942, 46, 35—41).—Hæmorrhages occurred in 23 of 100 cases. The youngest patient was 15 years of age but only 12 patients were

under the fifth decade. 19 cases showed hemorrhages associated with cardiovascular hypertension; of these, 15 were petechial in character, whilst only 4 were large or flame-shaped. Of these 19 cases 12 were associated with lymph exudates to a smaller or greater degree.

Ocular lesions in Boeck's sarcoid. H. P. Wagener (*Amer. J. med. Sci.*, 1942, 203, 300—309).—A review of the literature.

C. J. C. B.

Ocular disturbances in case of acromegaly complicated by diabetes. J. Igersheimer (*Arch. Ophthalmol.*, N.Y., 1942, 27, 330—341).—The patient, a man aged 35, was almost blind when first seen. Treatment with insulin improved vision but revealed a residual bitemporal hemianopia.

W. T. A.

Exophthalmos. A. D. Ruedemann (*Ann. Otol., etc., St. Louis*, 1941, 50, 1064—1071).—A short review of exophthalmos due to local disease.

H. L.

Intermittent exophthalmos. W. A. Poole (*Trans. Amer. Acad. Ophth. Otolaryngol.*, 1942, Jan.—Feb., 112—118).—A case is reported caused by an orbital varicocele.

H. L.

Relation of thyroid activity to periodic ophthalmia. H. R. Seibold (*Amer. J. Vet. Res.*, 1940, 1, 52—53).—Histological examination of the thyroid of 21 normal horses and 7 horses with periodic ophthalmia failed to support the view that the disease is related to thyroid hypofunction.

E. G. W.

Contrasting effects of local application of adrenaline on denervated iris of cat and monkey. E. A. Weinstein and M. B. Bender (*Amer. J. Physiol.*, 1942, 135, 535—538).—Local application of adrenaline, 0.1%, does not affect the normal pupil of cat or monkey. After sympathetic denervation it dilates the pupil of the monkey but not that of the cat. After complete denervation of the iris it causes marked dilatation in both animals. These results may be due to differences in the vasoconstrictor effect of adrenaline on the eye vessels and in corneal permeability in the two species.

W. T. A.

Effect of suction on eye. H. F. W. Dubois and F. P. Fischer (*Ophthalmologica*, 1941, 102, 164—176).—Negative pressures were applied by means of Kukan's suction cup over a circular area of the bulbar wall in anaesthetised rabbits and on extirpated eyes. No change was observed in intraocular pressure as measured by Verhoeff's manometric method but a decrease was found in extra- and intra-ocular venous pressures and an increase in bulbar v.p. and in the rigidity of the bulbar wall. The only method for raising intra-ocular pressure by local application of negative pressure is that of Wessely in which suction is applied to the whole orbit and the neighbouring parts.

H. L.

Determination of volume of anterior chamber in man during life. H. Goldmann (*Ophthalmologica*, 1941, 102, 7—12).—Pictures of transverse sections of the anterior chamber were obtained by means of slit-lamp photography. Formulae are developed for computing the vol. of the chamber from such photographs.

H. L.

Photographic method for measuring depth and volume of anterior chamber in man. M. Heim (*Ophthalmologica*, 1941, 102, 193—220).—A method is described for computing the true optical transverse section of the human eye from pictures of transverse sections as obtained by Goldmann's method of slit-lamp photography. The mathematical principles and graphs are given for computing the vol. of the anterior chamber from the true transverse section. Figures are given for depth and vol. of the anterior chamber as found in 107 juvenile and adult individuals; vols. varied between 60 and 363 cu. mm. Average vals. for the different age groups showed a decrease after the 20th year which became more steep after the 50th year.

H. L.

Photosensitivity of visual purple solutions and scotopic sensitivity of eye in ultra-violet. C. F. Goodeve, R. J. Lythgoe, and E. E. Schneider (*Proc. Roy. Soc.*, 1942, B, 130, 380—395).—The spectral variation of the photosensitivity of visual purple solutions has been measured in the ultra-violet down to 254 μ . The products of photodecomp. are the same as in the visible spectrum. Photosensitivity and absorption curves are not identical in the ultra-violet, though both show max. at 360 μ . and min. at 400 μ . Below 300 μ . the extinction coeff. of visual purple rises sharply, probably due to the presence of proteins. Visual purple solutions probably contain a photostable component absorbing in the ultra-violet. Dark-adaptation curves at 365 μ . for 5 normal observers and one with an aphakic eye are of the same type as those made at 546 μ . The limiting scotopic sensitivity of normal eyes at 365 μ . is over 10,000 times smaller than would be expected from the photosensitivity of visual purple at this λ . This is attributed to light-absorbing substances in the ocular media, since the sensitivity of the aphakic eye was almost identical at 365 and 546 μ . The abs. limit of visual sensitivity in the ultra-violet for the same observers was about 309 μ . except for the aphakic eye, which was sensitive to 298 μ . Consequently 309 μ . is considered the limiting threshold λ of absorption of the lens, 298 μ . of the cornea.

D. M. S.

Effect of [variations in] colour vision on temperature measurement with the Biopix pyrometer.—See A., 1942, I, 249.

Visual disorientation with special reference to lesions of right cerebral hemisphere. W. R. Brain (*Brain*, 1941, 64, 244—272).—Three patients with lesions of the right or left parietal lobe showed visual disorientation in the homonymous half-fields of the opposite side. The disorientation was due to a defect in visual localisation of objects in the affected half-fields. Three other patients with massive lesions of the right parietal lobe showed inability to follow familiar routes owing to the selection of right instead of left turnings; this was due to an inattention to the left half of external space. Two of these patients, one from each group, were unable to dress themselves owing to inappreciation of the orientation of their clothing. The nature of visual disorientation is discussed.

W. T. A.

Melanosis of internal ear. F. L. Lederer (*Arch. Otolaryngol.*, 1942, 35, 267—280).—In a case of melanoma of the dura mater (in a negro child) hyperpigmentation was found in most parts of the inner ear except Corti's organ and the stria vascularis.

H. L.

Increased sensitivity to bone-conducted sound. A. G. Pohlman (*Arch. Otolaryngol.*, 1942, 35, 418—422).—In conduction deafness due to stapes fixation bone conduction was not prolonged when the masking effect of adventitious noises on the hearing of the control observer was excluded. True prolongation of bone conduction was observed only in individuals with functioning sound apparatus when the external meatus was occluded or the drum damped by secretions in the middle ear. von Bekesy's explanation for frequency-limited increased bone sensitivity due to occlusion is adversely criticised (cf. A., 1941, III, 182); no explanation for this phenomenon has so far been conclusively proved.

H. L.

Hearing and hearing aids. G. Berry (*Laryngoscope*, 1942, 52, 143—164).—A review of recent literature.

H. L.

Development of audiometer. C. C. Bunch (*Laryngoscope*, 1941, 51, 1100—1118).—Historical.

H. L.

New method of testing hearing in aviation candidates. D. B. Fry (*J. Laryngol. Otol.*, 1942, 57, 11—13).—Standardisation of acoustic conditions and the possibility of testing several candidates simultaneously were obtained by using gramophone records in which test words and sentences are spoken against a noise background; the candidates are protected against the high-level noise by the standard flying helmet with telephones attached. It is possible, if desired, to vary the relative levels of speech and noise.

H. L.

Conservation of hearing. C. C. Bunch (*J. Amer. Med. Assoc.*, 1942, 118, 588—593).—A lecture illustrating the wide range of industrial hazards to hearing (by noises above 90 db, especially at high frequencies) and urging the necessity of preventive measures (protection of ears, acoustical treatment of walls, regular audiometric tests).

H. L.

Non-surgical treatment of deafness. E. P. Fowler (*Laryngoscope*, 1942, 52, 204—217).—Treatment with Ra, Rn, or X-ray is recommended for Eustachian tube obstruction in children with hypertrophied lymphoid tissue in or about the tube. The effect is attributed to reduction of inflammation in the subepithelial tissue with consequent reduction of secretion rather than to direct destruction of lymphoid tissue. Administration of prostigmine for nerve deafness cannot be recommended.

H. L.

Effect of prostigmine on deafness. W. Racine (*Schweiz. med. Wschr.*, 1941, 71, 816—820).—Whatever the cause of inner ear deafness, changes produced by prostigmine do not exceed 5.6 decibels for the frequency C_2 , 4.7 for C_3 , 4.8 for C_4 . In none of 30 patients had prostigmine any significant effect.

A. S.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Growth changes in thyroid of dog. J. W. Gilmore, W. G. Venzke, and H. L. Foust (*Amer. J. Vet. Res.*, 1940, 1, 66—72).—Studies of the thyroid of 70 normal dogs varying from a 25-day foetus to an animal 15 years old showed variations in wt. of thyroid per kg. body wt. from 0.46 to 0.064 g. There was a decrease with age, the highest vals. being found during the first 6 weeks after birth (0.098—0.46 g. per kg. body wt.). The follicles increase in diameter from 31 μ . at birth to 75 μ . at 16 weeks; during this time the character of the epithelium is very varied.

E. G. W.

Iodine metabolism of thyroid gland. W. Mann, C. P. Leblond, and S. L. Warren (*J. Biol. Chem.*, 1942, 142, 905—912).—Subphysiological injections of ^{131}I were used to follow I uptake by the thyroid. Inorg. I exists in the thyroid, but most of the I of di-iodotyrosine is derived from extra-glandular I. Di-iodotyrosine is probably the precursor of thyroxine. In the dogs studied, 1.55% of the thyroxine in the gland was formed per hr.

R. L. E.

Thyroid activity after iodine ingestion. G. C. Ruig (*Amer. J. Physiol.*, 1941, 134, 631—635).—Rats kept in a refrigerator for 3 weeks given 20—25 mg. of NaI per day show a rise in basal metabolism equal to that in controls. The metabolism of these rats

when placed in a warm environment returns to control level more quickly if they are given NaI. NaI does not depress metabolism of normal rats. After giving large amounts of NaI (160 mg. per day) withdrawal depresses thyroid function; this does not occur after smaller doses (20–25 mg. per day). Thyrotropic principle followed by prolonged exposure to cold causes a greater metabolic response than that produced by either stimulus alone. M. W. G.

Use of dihydrotachysterol in parathyroprivic tetany. F. E. Harding (*J. Lab. Clin. Med.*, 1942, 27, 497–501).—The treatment of a case of parathyroprivic tetany with injury to the recurrent laryngeal nerve is described. The nerve regenerated in a few months, but the deficiency in parathyroid hormone continued after 1½ years. Max. improvement was brought about only after intensive treatment with a low-P diet, Ca gluconate, irradiated ergosterol, dihydrotachysterol, and thyroid extract. Dihydrotachysterol (1 c.c. daily) raised the blood-Ca, prevented the tetany, and partly decreased the laryngeal stridor. The thyroid extract raised the basal metabolism and further improved the laryngeal stridor. C. J. C. B.

Dihydrotachysterol. Modern treatment of parathyroid insufficiency. F. Holtz (*J. Clin. Endocrinol.*, 1941, 1, 453–458).—A review written in 1937. P. C. W.

Treatment of infantile tetany with dihydrotachysterol (A.T. 10). T. T. Woo, C. Fan, and F. T. Chu (*Chinese Med. J.*, 1941, 60, 99–108).—Serum-Ca was restored to a normal level and tetany relieved in 4 of 5 infants by A.T. 10 in daily doses of 1–1.5 c.c. for 1–4 days. The resistant case, which had a very low serum-Ca, responded to vitamin-D. W. J. G.

Renal hyperparathyroidism with calcification of arteries in infancy. D. H. Andersen and E. R. Schlesinger (*Amer. J. Dis. Child.*, 1942, 63, 102–125).—2 cases of renal hyperparathyroidism in infancy are described. The presenting clinical picture was that of tetany and acidosis, both resistant to therapy, associated with alterations in the serum-Ca and -P. In the first case intensive antirachitic therapy was given, which was followed by calcification of the small arteries throughout the body and death at the age of 6 months as the result of an infarct of the heart. The 2nd infant, treated more conservatively, showed less severe metastatic calcification. The renal insufficiency was at first inconspicuous and was characterised by urine of low sp. gr., chronic acidosis, and elevated serum-non-protein-N. The essential post-mortem observations were a severe renal anomaly, hypertrophy of the parathyroids, osteitis fibrosa, and metastatic calcification with medial calcification of the small arteries throughout the body. (6 photomicrographs.) C. J. C. B.

Effect of repeated implantation of ox pineal gland in rat. M. Monnier and T. Devriert (*Arch. Sci. Phys. Nat.*, 1941, [v], 23, Suppl., 159–163).—Repeated implantations have no definite and const. effect on somatic development, such as total wt. and size. They inhibit development of male and female genital organs and the sexual characteristics. J. N. A.

Epithelial hyperplasia of Hassall's bodies of thymus induced by methylcholanthrene. P. E. Steiner (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 62–67).—Implantation of pellets containing equal parts of methylcholanthrene and cholesterol into the thymus of young guinea-pigs caused hyperplasia of adjacent Hassall's corpuscles, degeneration of lymphocytes, and enclosure of the pellet by a layer of squamous epithelium derived from the Hassall's corpuscles. V. J. W.

Adrenal hormones. F. A. Hartman (*J. Amer. Med. Assoc.*, 1941, 117, 1405–1408).—A review. C. A. K.

Rôle of adrenals in health and disease. J. M. Rogoff (*Penn. Med. J.*, 1942, 45, 570–574).—A review. E. M. J.

Effect of adrenaline on blood-sugar in hypochloræmic conditions. K. Choremis, E. Papachristou, and J. Korkas (*Schweiz. med. Wschr.*, 1941, 71, 580–581).—Blood-sugar curves were obtained in 10 healthy children before and after experimental hypochloræmia, following subcutaneous injection of adrenaline (0.5–1.0 mg.). Adrenaline hyperglycæmia was more marked and lasted longer in the hypochloræmic condition. A. S.

Effect of adrenal cortex extracts on carbohydrate and potassium metabolism. F. Verzár (*Schweiz. med. Wschr.*, 1941, 71, 878–879).—A review. A. S.

Pathology of islet cell tumours of the pancreas. G. L. Duff (*Amer. J. Med. Sci.*, 1942, 203, 437–450).—A general review of the literature. C. J. C. B.

Adiposogenital dystrophy. R. H. Kunstadter (*J. Amer. Med. Assoc.*, 1941, 117, 1947–1948).—A review. C. A. K.

Experimental exophthalmos and associated myopathy induced by thyrotropic hormone. R. B. Aird (*Ann. Int. Med.*, 1941, 15, 564–581).—Various anterior pituitary extracts were intraperitoneally or subcutaneously injected daily for 3–7 months, in guinea-pigs. Thyrotropic extracts were prepared according to the method of Junkmann. The exophthalmos produced by anterior pituitary extracts was due to the thyrotropic factor. After several months of injection, the exophthalmos persisted in spite of discontinuing the

hormone, narcosis, or even after death. Definite myopathy of the extraocular muscles was found in all cases, sufficient to account for the degree of exophthalmos, and similar to the changes in patients suffering from malignant exophthalmos. Other satisfactory explanations for the exophthalmos were not found. A. S.

Production of decreased growth rate and of organ hypertrophy in young white rats by thyrotropic hormone of anterior pituitary. A. T. Cameron and J. Carmichael (*Trans. Roy. Soc. Canada*, 1941, [iii], 35, V, 25–29).—Thyroid feeding over 6 days produced hypertrophy of liver, kidneys, and heart and slight increase of spleen and adrenals. Growth rate is diminished by administration of thyrotropic hormone; the kidneys, heart, spleen, and liver hypertrophy; the thyroids were hyperplastic, with high cells, high colloid content, and increased mitosis and vascularity. A. S.

Effect of growth hormone of anterior lobe of pituitary gland on swine. D. D. Giles (*Amer. J. Vet. Res.*, 1942, 3, 77–85).—Intra-peritoneal injections of 3–6 c.c. of growth hormone per 100 lb. live wt. were given twice weekly to 10 pigs 20 weeks old (110–137 lb. body wt.) over a period of 4½ months. The only change observed was increased calcification and a higher ash content of bones and a wider zone of proliferating cartilage. E. G. W.

Growth and pituitary diabetogenesis. F. G. Young (*J. Physiol.*, 1942, 100, 19–20p; cf. A., 1942, III, 383).—The rise in body wt. in many adult diabetics is regarded as a protective reaction, whereby the C of the potential carbohydrate, of which the oxidation is depressed by pituitary over-action, is stored in a stable form. Diabetes develops when the islets of Langerhans are unable to maintain their necessarily increased activity, or any further increase in the storage capacity of the tissue is impossible. The growth-promoting action of pituitary extract is demonstrated in a cat or dog receiving a const. daily amount of food which, before treatment with diabetogenic pituitary extract began, just maintained a const. body wt. The body wt. may rise under treatment and N be retained, despite the appearance of glycosuria and absence of extra food; appetite is increased. Diabetes is associated not only with over-nutrition, but also with attempted excessive retention of a normal food intake. J. A. C.

Present-day insulins. L. J. Palmer and G. D. Capaccio (*Northw. Med.*, 1941, 40, 400–403). E. M. J.

Carbohydrates of gonadotropic hormones. S. Gurin (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 48–50).—Hormones from pituitary contain mannose and hexosamine in equimol. proportions. Those from pregnant mare serum and pregnancy urine contain galactose instead of mannose, and the mol. ratio of hexose to hexosamine is 2:1. V. J. W.

Shock from 1 c.c. of posterior pituitary extract in two consecutive confinements. W. Bickers (*Sth. Med. J.*, 1941, 34, 1112–1113).—Case report. E. M. J.

Use of anterior pituitary extracts in uncontrolled diabetes mellitus with growth and sexual retardation. J. A. Greene, L. E. January, and L. W. Swanson (*J. Clin. Endocrinol.*, 1941, 1, 538–540).—3 cases of uncontrolled diabetes mellitus were treated with anterior pituitary extracts containing growth hormone. The growth rate and sexual development were accelerated in all cases. The diabetes improved in 1 case and was not altered in the other 2. P. C. W.

Action of pituitary extracts on female lizards. J. Neeser (*Arch. Sci. Phys. Nat.*, 1941, [v], 23, Suppl., 176–179).—An alkaline extract of ox anterior pituitary lobe was injected into female lizards between Nov. and Feb. when the sexual life is dormant. The ovaries increase enormously in wt. and contain many mature oocytes. The oviducts hypertrophy, and the thyroid gland shows all histological signs of great activity. The extract has no masculinizing effect. J. N. A.

Gonadotropic hormone and testicular metabolism. W. Schuler (*Helv. Chim. Acta*, 1941, 24, 119–127E).—The *in vitro* respiration rate of normal adult rat testis tissue is increased by the addition of glucose. In hypophysectomised rats the respiration rate, without added glucose, is quantitatively normal, but is depressed by glucose addition. Treatment of hypophysectomised rats for 12 days with gonadotropin raises the "non-glucose" testis respiration rate above normal, but the depressive action of glucose persists. The "non-glucose" respiration rate of testis tissue from normal infantile rats is greater than that of adults but is depressed by the addition of glucose. H. W.

Influence of ascorbic acid on activity of gonadotropic hormone. A. V. di Ció and M. Scheingart (*Endocrinol.*, 1942, 30, 263–264).—Effect of hormone (Menstruina) on reproductive tract in male and female rats was increased by daily injections of 50 mg. of ascorbic acid. V. J. W.

Chemical and physiological properties of gonadotropic principles. F. Benz (*Helv. Chim. Acta*, 1941, 24, 197–209E).—When tested by ability to increase the wt. of the ovaries and uterus of immature rats the gonadotropic potency of various crude extracts diminishes in the order: pregnant mare serum, horse pituitary, sheep pituitary,

pregnancy urine. The active principles appear to be unstable sugar-containing proteins. Although the highest physiological activity is associated with the greatest sugar content, inactivation does not result in detectable change in the content or nature of the carbohydrate fraction. H. W.

Effect of incubation of different tissues with and without pitocin, pitressin, and thyroxine on creatine-creatinine equilibrium *in vitro*. H. H. Beard (*Endocrinol.*, 1942, 30, 208—216).—Most tissues contain enzymes which oxidise or hydrate creatinine or oxidise creatine, and the relative efficiency of various tissues is tabulated. Their actions are abolished by boiling or presence of 0.15M-KCN. Thyroxine, pitocin, and pitressin have little effect on the reactions, and the tissues examined did not change creatine into creatinine, so that creatine anhydrase does not occur in them. V. J. W.

XII.—REPRODUCTION.

Relation of egg content to total length and weight in the Sockeye salmon (*Oncorhynchus nerka*) and the pink salmon (*Oncorhynchus gorbuscha*). R. E. Foerster and A. L. Pritchard (*Trans. Roy. Soc. Canada*, 1941, [iii], 35, V, 51—60).—There is a direct relationship between no. of eggs in the ovaries and total length and wt. of the fish. For each cm. increase in length and each kg. increase in body wt. the no. of eggs increased in the Sockeye salmon by 137 and 1100 respectively and in the pink salmon by 57 and 472 respectively. A. S.

Method of inducing ovulation in anoestrous opossum (*Didelphys virginiana*). O. E. Nelson and E. L. White (*Anat. Rec.*, 1941, 81, 529—535).—As in other mammals a period of follicular stimulation followed by the ovulating treatment with luteinising hormone is necessary for inducing ovulation. The opossum is very responsive to the luteinising factor extracted from pregnancy urine so that a proper time relation between follicular stimulation and the ovulating dose is of great importance. W. F. H.

Attempts to stimulate proliferation of germinal epithelium of ovary. K. F. Stein and E. Allen (*Anat. Rec.*, 1942, 82, 1—9).—In mice 30—40 days old mitotic proliferation of the germinal epithelium was stimulated by local injections of oestrone into the ovarian capsule both in normal and in hypophysectomised animals. The same effect in smaller degree was produced by local injection of sesame oil. The results support the idea that cyclic proliferation of the germinal epithelium may be dependent on local stimulus from the follicular fluid. W. F. H.

Post-parturitional heat and time of ovulation in albino rat. Data on parturition. R. J. Blandau and A. L. Soderwall (*Anat. Rec.*, 1941, 81, 419—431).—In animals with the same size of litter the interval between the delivery of the first and last members varies considerably. As litter size increases there is a progressive decrease in the time interval between the delivery of the members. The average interval between the end of parturition and the onset of heat is 18.5 hr. Over 60% of the animals came into heat between 6 p.m. and midnight. The average length of heat is 10 hr. with a range of 3.5—13 hr. Ovulation was complete in most by the 11th hr. after the onset of heat and in none had ovulation begun within 7 hr. after the beginning of heat. Post-parturitional ovulation occurred without the appearance of heat in a small no. of cases. The onset of post-parturitional heat is regarded as a good basis for determining time of ovulation. W. F. H.

Method of determining reproductive efficiency of cattle. H. E. Kingman and H. E. Kingman, jun. (*Amer. J. Vet. Res.*, 1942, 3, 32—42).—Description of a method of recording the breeding history of a herd and statistical analysis of the results. E. G. W.

Molecular structure in relation to oestrogenic activity: polynuclear analogues of γ -di-*p*-hydroxyphenyl-*n*-hexane ("hexoestrol"). N. R. Campbell and F. W. Chattaway (*Proc. Roy. Soc.*, 1942, B, 130, 435—447).—The oestrogenic activities (quoted in parentheses; for definition see A., 1941, III, 100) of γ -di-*p*-diphenyl-*n*-hexane (nil), γ -di-*p*-phenoxyphenyl-*n*-hexane (nil), γ -di-(4'-hydroxy-4-diphenyl)-*n*-hexane (nil), γ -di-(4'-hydroxy-4-phenoxyphenyl)-*n*-hexane (70), γ -di-1- and -2-naphthyl-*n*-hexane (500 and 25, respectively), γ -di-4-hydroxy-1-naphthyl-*n*-hexane (<10), and γ -di-6-hydroxy-2-naphthyl-*n*-hexane (8000 r.u. per g.) show that the *p*-hydroxyphenyl group appears to be essential for max. activity in this type of compound, of which hexoestrol is almost certainly the most active. For new compounds see A., 1942, II, 223. Various acenaphthenediols and acenaphthenones showed no activity. H. B.

Oestrogens in gynaecology. E. C. Hamblen (*J. Amer. Med. Assoc.*, 1941, 117, 2205—2207).—A lecture. C. A. K.

Gynaecological problems of adolescence. E. Novak (*J. Amer. Med. Assoc.*, 1941, 117, 1950—1953).—A lecture. C. A. K.

Oestrogenic hormone in prostatic hypertrophy. W. E. Kittredge (*New Orleans Med. J.*, 1941, 93, 278—281).—17 cases of benign prostatic hypertrophy were given stilboestrol by intramuscular or oral route to a total of 400,000 to 1,600,000 units in 3 weeks to

6 months. Improvement was seen in 12 cases 5 of which had no other treatment. E. M. J.

Stilboestrol in mental manifestations of menopause. N. K. Rickles (*Northw. Med.*, 1941, 40, 339—341).—1 mg. of stilboestrol a day had no influence on 6 cases with psychotic (delusional) symptoms during the menopause. 50% of 14 cases of simple menopausal symptoms showed complete recovery with this treatment. E. M. J.

Stilboestrol in treatment of menopause. C. D. Kimball (*Northw. Med.*, 1941, 40, 464—467).—78 cases of menopausal symptoms were treated with daily doses of 1 mg. of stilboestrol. Improvement was seen in 34 of 38 with sp. and 8 of 27 cases with unsp. indications as well as in all 5 cases of atrophic vaginitis. Symptoms originating in a spontaneous menopause were improved in 32 of 54 patients, those caused by an artificial one in 15 of 16. E. M. J.

Vitamins and stilboestrol in treatment of hypo-ovarianism. W. H. Byrne, J. C. Weed, B. B. Weinstein, and C. G. Collins (*New Orleans Med. J.*, 1942, 94, 330—332).—Report of 57 cases with menopausal symptoms. The addition of a combined vitamin prep. did not lessen the incidence of nausea. E. M. J.

Stilboestrol therapy. E. E. Beard and P. L. Rossman (*Ohio Sta. Med. J.*, 1942, 38, 43—45).—Report of 100 cases. E. M. J.

Toxicity studies on stilboestrol. A. H. Aaron, F. Meyers, M. H. Lipsitz, and R. S. Hubbard (*Amer. J. digest. Dis.*, 1941, 8, 437—439).—30 patients with chronic arthritis received max. doses of stilboestrol (1—3 mg. daily for periods from 5—9 weeks) with clinical improvement. There was no change in bilirubin or hippuric acid excretion, icterus index, van den Bergh reaction, cholesterol esters, blood count, blood-urea, and blood-glucose during treatment. N. F. M.

[Stilboestrol for] menopausal arthralgia. W. K. Ishmael (*J. Lab. clin. Med.*, 1941, 27, 297—302).—48 of 60 patients with menopausal arthralgia had satisfactory remissions following the injection of 10,000 units of stilboestrol twice weekly. 49 patients out of 60 as controls responded satisfactorily to oestrin injections. In 30 patients stilboestrol was successfully substituted for oestrin with only 3% having return of original symptoms. C. J. C. B.

Clinical use of stilboestrol. E. H. Adler and B. G. Wiesstein (*Ohio Sta. Med. J.*, 1941, 37, 944—946).—0.1—1 mg. of stilboestrol was given in 5 puerperal cases causing the desired suppression of lactation and in 23 cases of menopausal symptoms giving relief in 70% and a fair result in a further 22% of cases. 5 cases complained of excessive nausea. E. M. J.

Treatment of menopause with stilboestrol. S. G. Taylor III and W. O. Thompson (*J. clin. Endocrinol.*, 1941, 1, 411—414).—Report of 25 cases. P. C. W.

Effect of stilboestrol on myometrial and endometrial activity of human castrate uterus. J. E. Lackner and A. S. Tulsky (*J. clin. Endocrinol.*, 1941, 1, 415—418).—2 castrate women were given 5 mg. of stilboestrol daily (1 by intramuscular injection, 1 by mouth). Their uteri were quiescent before treatment but showed rhythmic contractions during treatment. A uterine contraction in response to pituitrin injection was elicited in the woman receiving the injections; endometrial proliferation preceded uterine motility in this case but was concomitant in the other case. The uterine vol. was increased in both cases and the endometrial proliferation was more pronounced than myometrial proliferation. P. C. W.

Clinical reports on stilboestrol. J. A. Morrell (*J. clin. Endocrinol.*, 1941, 1, 419—423).—The literature on the clinical effects and side reactions of stilboestrol is analysed and summarised in tabular form. Total no. of cases collected is 4507. P. C. W.

Absorption of stilboestrol and theelin from cysts of sesame and peanut oils. F. E. Emery, C. S. Matthews, and E. L. Schwabe (*J. Lab. clin. Med.*, 1942, 27, 622—627).—The formation of cysts following injections of sesame oil and peanut oil was observed in all rats injected intramuscularly and was usually present in rats injected subcutaneously. Oil obtained from the cysts tested on castrated rats for stilboestrol and theelin showed that in some cases all the oestrogenic activity was gone by the 3rd day. In a few rats some stilboestrol remained in the cysts even after 20 days, but theelin disappeared in 9 days. Stilboestrol is also more slowly absorbed than theelin after a single oil injection. C. J. C. B.

Oestrogen therapy of tinea capitis. D. O. Poth and S. R. Kaliski (*Arch. Dermat. Syphilol.*, 1942, 45, 121—128).—Treatment with oestrogens was successful in 30 consecutive cases of tinea capitis. No significant difference in the effect of oestrone and diethylstilboestrol was noted, the time of healing and tolerance to the drug being practically the same for both. C. J. C. B.

Effects of administration of oestrogen on connective tissues of genital tract of rat. E. Burack, J. M. Wolfe, and A. W. Wright (*Endocrinol.*, 1942, 30, 335—343).—Administration of 200 r.u. daily of oestradiol benzoate to normal immature rats, or of total doses of 50—100 μ g. of stilboestrol to castrates, for 14 days hastened transformation of reticulum into collagen in the uterus and vagina.

More prolonged administration caused the normal, fibrous reticulum to be changed to a dense fibrous sheet, with a decrease of cellular elements.

V. J. W.

Occurrence of urinary calculi in inbred C_3H strain of mice treated with oestrogen. J. R. Schenken, E. L. Burns, and W. H. McCord (*Endocrinol.*, 1942, 30, 344—352).—Male mice which received total dosages of 0.066 mg. and upwards of α -oestradiol benzoate developed urinary calculi about 10 times as frequently as controls, incidence increasing with dose. No such change was produced in females. Calculi consisted of Ca and Mg phosphates, with some org. matter, and were found in all parts of the urinary tract. Inflammatory changes were present throughout.

V. J. W.

Steroid metabolism: oestrogens and phenolases. M. Graubard and G. Pincus (*Endocrinol.*, 1942, 30, 265—269).—Water-sol. esters of oestrilol, oestrone, and oestradiol are oxidised by potato tyrosinase, with uptake of 3—4 atoms of O, to form coloured products and with loss of oestrous activity. With laccase one O atom is taken up and 90% of activity is lost. Mushroom tyrosinase and cytochrome oxidase have no action.

V. J. W.

Effect of crystalline oestrin implants on proximal tibia and costochondral junction of young female rats. M. E. Simpson, E. A. Kibrick, H. Becks, and H. M. Evans (*Endocrinol.*, 1942, 30, 286—294).—Subcutaneous implantation of 10 mg. of α -oestradiol dipropionate causes at first a marked regression in the growing cartilage of the proximal epiphysis of the tibia. After 3 weeks the cartilage partly recovers, and the upper $\frac{1}{2}$ of the diaphyseal cavity becomes filled with thick trabeculae. Similar changes occur at the costochondral junctions but are less marked. Bony trabeculae are not seen but bony plates are laid down next to the growth discs of the ribs.

V. J. W.

Does oestrogen substitution inhibit gonadotropic potency? C. G. Heller, E. J. Heller, and E. L. Sevringhaus (*Endocrinol.*, 1942, 30, 309—316).—Daily injections of 5 μ g. of oestradiol had no effect on gonadotropic potency of pituitaries of castrate rats, and the urine of menopausal women who received sufficient oestrogen treatment to abolish menopausal symptoms was likewise unaffected in gonadotropin content. In rats from which one ovary was removed, oestradiol treatment caused no pituitary gonadotropin change until it had been carried on for 10 days, and then potency was increased, but returned to normal by 20 days.

V. J. W.

Percutaneous potency of esterified and non-esterified oestradiol. E. Oppenheimer, R. R. Greene, and M. W. Burrill (*Endocrinol.*, 1942, 30, 317—322).—Oestrogens were emulsified in sesame oil with a commercial emulsifier derived from cholesterol. Emulsions were rubbed into the dorsal skin of spayed rats. At a daily dose corresponding with 0.7 μ g. of oestradiol, this and its dipropionate were equally effective and more so than the benzoate. At twice this dose or with a dose of 2.1 μ g. every 3rd day, differences were not significant. Effects were determined either by vaginal smear or by uterine wt.

V. J. W.

Oestrogenic therapy. W. F. T. Haultain (*Edinb. Med. J.*, 1942, [iv], 49, 73—90).—An account of the discovery, administration, and uses of natural and synthetic oestrogens.

H. S.

Therapeutic effectiveness of orally administered ethinyl-oestradiol. U. J. Salmon, S. H. Geist, R. I. Walter, and N. Mintz (*J. clin. Endocrinol.*, 1941, 1, 556—558).—21 castrate or menopausal patients were treated with enteric-coated tablets, and 5 patients with alcoholic solutions, of ethinyl-oestradiol by mouth. Total doses necessary to relieve symptoms were 0.9—3.15 mg. Nausea and vomiting occurred in 4 of the patients treated with tablets and in all of the patients receiving the alcoholic solution.

P. C. W.

Comparison of clinical effectiveness of oestradiol dipropionate and oestradiol benzoate. R. R. Greene (*J. clin. Endocrinol.*, 1941, 1, 559—561).—11 menopausal patients who had been maintained free from symptoms for at least 6 months by const. doses of oestradiol dipropionate (1 mg. every 21 days to 2 mg. every 7 days) had the dipropionate of the benzoate substituted. The vaginal smear regressed in 3 cases and symptoms recurred in 9 cases.

P. C. W.

Therapeutic use of female sex hormones. R. Wenner (*Schweiz. med. Wschr.*, 1941, 71, 781—788).—A lecture.

A. S.

Synthesis of an isomeride of oestrone containing a phenolic ring B.—See A., 1942, II, 230.

Lower uterine segment; anatomical changes during pregnancy and labour. P. J. Kearns (*Canad. Med. Assoc. J.*, 1942, 46, 19—22).—A lecture.

C. J. C. B.

Circulation in placenta of sheep. J. Barcroft and D. H. Barron (*J. Physiol.*, 1942, 100, 20—21f).—The wt. of the placental cotyledons is greatest about the 12th of the 21 weeks of gestation. This growth is due to the formation of masses of foetal tissue, similar to Wharton's jelly. Often only one axial vessel is seen in a mass over the surface of which is spread a close reticulum of foetal capillaries. The vessels in the maternal tissue permeate the whole tissue and the contact between foetal and maternal blood is the closest which the morphological structure permits; at this time foetal blood is 90%

saturated with O_2 . From the 14th week the masses tend to disappear, leaving their vascular coverings. Towards term the foetal and maternal vascular elements sort themselves out into ropes and the arrangement is not so favourable to exchange of materials, including O_2 , as at the earlier stages.

J. A. C.

Use of zipper in Friedman test. E. E. Boehm (*Amer. J. clin. Path. Tech. Suppl.*, 1941, 5, 168—169).—A zipper is sewn into the abdominal wall and the progress of the ovarian change watched from time to time.

C. J. C. B.

Simplified method for biological diagnosis of pregnancy. S. Aschheim (*J. Lab. clin. Med.*, 1942, 27, 547—551).—2 female immature rats, 4—5 weeks old, receive 1 subcutaneous injection of 0.5 c.c. of the urine. Vaginal smears of both rats are made 72—84 and 96 hr. after. In pregnancy, only epithelial cells without free mucus or leucocytes are found in the vagina after 72 (often 66) hr. After 84—96 hr. keratinised cells (seldom mixed with a few epithelial cells) are found which are the criterion of a positive reaction.

C. J. C. B.

Prolan of urine of pregnancy: single or double hormone action. E. Guyénot and A. Ruffoni (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 171—173).—Injection of an extract of human pregnancy urine (corresponding to 0.1—1.0 c.c. of urine), free from folliculin, into immature female guinea-pigs causes growth and maturity of ovarian follicles, opening of the vagina, and complete oestrus. Injections of larger amounts of extract inhibit the stimulating action of the smaller dose and arrest growth of the follicles, which are transformed into meroxanthosomes; the vagina remains closed and a state of dioestrus prevails. The two effects, which are antagonistic, differ in their mechanisms. The inhibiting effect acts directly on the ovaries and is obtained with hypophysectomised females, which, however, are not subject to the stimulating action. The threshold actions of the substances responsible for the two effects are different, and when urine is heated to 70°, the inhibiting decreases 4 times as rapidly as the stimulating action.

J. N. A.

Sex hormone actions of some steroids related to deoxycorticosterone and progesterone. G. Masson, A. Borduas, and H. Selye (*Rev. Canad. Biol.*, 1942, 1, 57—63).—The substances were subcutaneously injected in doses of 1.5 mg. in 0.1 c.c. of peanut oil bidaily for 21 days in ovariectomised rats. Acetoxypregnenolone and pregnenolone cause vaginal cornification and prevent the appearance of castration changes in the pituitary; pregnandione had no such effects. The first 2 substances produced an increase in uterine wt. Acetoxypregnenolone caused atrophy of the adrenal cortex.

A. S.

Use of progesterone in nervous tension states. L. A. Gray (*Sth. Med. J.*, 1941, 34, 1004—1006).—38 women with nervous tension states were given intramuscular injections of 1—5 mg. of progesterone at increasing intervals for various lengths of time. All but 3 showed improvement.

E. M. J.

Use of stilboestrol in suppression of lactation. S. D. Soule and A. R. Bortnick (*J. clin. Endocrinol.*, 1941, 1, 409—410).—1, 2, or 3 intramuscular injections of 5 mg. of stilboestrol were given in 50 patients. Of 40 patients treated in the early puerperium breast engorgement was relieved in 30 within 16 hr. When treatment was started 2—3 weeks after parturition it was not so successful.

P. C. W.

Inhibition of lactation. Percutaneous use of testosterone. A. J. Fleischer and J. I. Kushner (*J. clin. Endocrinol.*, 1941, 1, 407—408).—Twice daily inunction of 4 mg. of testosterone propionate in ointment effectively inhibited lactation in 68 of a 100 cases. The treatment was partly effective in 29 cases and without effect in 3. In no case was lactation completely suppressed.

P. C. W.

Filarisis of breast: mammographic study. K. V. Earle (*Trans. R. Soc. trop. Med. Hyg.*, 1942, 35, 235—236).—X-Ray of the infected breast shows increase density without evidence of tumour.

C. J. C. B.

Investigation of breast feeding; a study of 1000 mothers. M. Robinson (*Arch. Dis. Childh.*, 1942, 17, 23—29).—Breast-feeding is not affected by the following: season of the year, parity or the age of the mother, size of the breasts, antenatal presence of secretion in the breasts, return of menstruation, rheumatic endocarditis, simple enlargement of the thyroid, pre-eclampsia, and antenatal symptoms relieved by Ca. Breast-feeding is affected by the size and character of the nipple, masculinity, obesity, morning sickness, pyelitis, severe varicose veins, breast abscesses, and cracked nipple. 52% of early weaning occurs in all types before the end of the first month.

C. J. C. B.

Changes in fat percentage and fat yield of dairy cows with injections of anterior pituitary preparation. J. F. Sykes, W. L. Meuleman, and C. F. Huffman (*Endocrinol.*, 1942, 30, 217—220).—An alkaline pituitary extract, known to increase liver-fat in guinea-pigs, was injected into 4 cows in declining lactation. In 3 of them total fat produced and fat % of milk were markedly increased.

V. J. W.

Method of counting spermatozoa. A. I. Weisman (*J. Lab. clin. Med.*, 1942, 27, 669—670).—The semen is diluted 1 in 20 in tap

water, which kills the sperms and makes the distribution more even. C. J. C. B.

Revival of mammalian sperm after immersion in liquid nitrogen. H. Hoagland and G. Pincus (*J. Gen. Physiol.*, 1942, 25, 337—344; cf. Shettles, A., 1940, III, 647).—Human sperm in seminal fluid survives immersion in liquid N₂ at -195° with subsequent rapid warming to 35° in isotonic media. Max. survival (67%) is attained by using fresh fluid made into foam with air. If the fluid is pretreated with plasmolysing solutions, the no. of surviving sperm is diminished. Sperm of rabbits and other mammals similarly treated survives to the extent of less than 1%. W. McC.

XIII.—DIGESTIVE SYSTEM.

Prompt-feeding programme for bleeding gastric and duodenal ulcer. Report of 32 cases and analysis of 1396 recorded cases. J. T. L. Nicholson and T. G. Miller (*Amer. J. digest. Dis.*, 1941, 8, 446—461).—1396 cases of gross bleeding from gastric or duodenal ulcer, collected from the literature, showed a gross mortality rate of 3.1%. These were all treated by the Meulengracht method, and indicate that prompt feeding is a desirable form of treatment. N. F. M.

Problems encountered in use of aluminium hydroxide gel by naso-gastric drip in treatment of peptic ulcer. G. H. Drumbheller (*Amer. J. digest. Dis.*, 1941, 8, 443—446).—A general clinical account including description of an automatic pumping device for delivering known amounts of gel. N. F. M.

Effect of antuitrin-S and posterior pituitary extract on cincophen ulcers in dogs. B. Slutzky, C. H. Wilhelmj, and M. Stoner (*Amer. J. digest. Dis.*, 1941, 8, No. 12, 469—470).—Dogs given cincophen (one 2-g. capsule daily) regularly develop peptic ulcers. Ulceration can be prevented by feeding milk, alkali powders, or mucin but not by injection of antuitrin-S or posterior pituitary extract. N. F. M.

Results from management of bleeding gastric and duodenal ulcer. T. G. Miller (*Ann. int. Med.*, 1941, 15, 390—394).—Prompt and adequate feeding was started in 32 patients with massive hæmorrhage from gastric or duodenal ulcers. One patient (with a duodenal perforation) died. The average hæmoglobin concn. was 44%. The patients were kept on 6 feeds per day. Na phenobarbital was given, but no alkalis or Fe. 11 patients received blood transfusions. A. S.

Recent advances in [peptic] ulcer treatment. A. J. Atkinson and G. B. Fauley (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1941, 15, 291—295).—ALPO, gel was much more successful in preventing formation of ulcers in the Mann-Williamson dog than alkalis, gastric mucin, Al(OH)₃ gel, or various diets. It has a mild astringent effect, is not laxative, and does not stimulate a secondary gastric acid secretion. It does not remove P from the body and is of val. in the treatment of gastric, duodenal, or gastro-jejunal ulcers in man. A. S.

Immediate feeding versus initial starvation in treatment of bleeding peptic ulcer. J. P. Eichhorn (*Amer. J. med. Sci.*, 1942, 203, 428—430).—Of 43 patients treated by initial starvation, 8 died. Of 38 patients treated by immediate feeding, there were no deaths. The patients who were fed at once regenerated blood more rapidly than the survivors among the starved ones. The average period of hospitalisation of the starved series was 29 days, compared with 25 days for the others. 3 patients had hæmatemeses during the starvation period and more than 24 hr. after admission. None of the patients who were fed on admission vomited blood more than 24 hr. after treatment was started. C. J. C. B.

Pathogenesis of peptic ulcer. I. W. Held (*Rev. Gastroent.*, 1941, 8, 350—357).—Peptic ulcer results from a trophic disturbance caused by interference with local circulation by disease of the vessels, or by vascular spasm of nervous origin. Hyperacidity is not a primary cause but does impair healing. W. J. G.

[Persimmon] phytobezoar [vegetable fibre hair ball in stomach] and its formation in vitro. L. K. Chont (*Radiology*, 1942, 38, 14—21).—Of 22 cases from the literature and 4 of 9 new cases where the data were available only 2 showed absence of free HCl in the gastric juice and 2 others hypoauidity. In 10 of these 26 and 7 of the 9 cases newly described gastric ulcers accompanied the phytobezoar which may be multiple. The bezoar is more common in the male (7:1). *In vitro* phytobezoars were obtained by placing incompletely ripe persimmons in 0.1—0.8% solutions of 0.1N-HCl with or without pepsin; no bezoars were formed when they were placed in water or alkaline solutions or when completely ripe persimmons (picked after the first autumnal frost), raisins, prunes, or celery were used. E. M. J.

Gastrin. I. Methods of isolation of specific gastric secretagogue from pyloric mucous membrane and its chemical properties. S. A. Komarov (*Rev. Canad. Biol.*, 1942, 1, 191—205).—Gastrin preps. were obtained from pig's or dog's pyloric mucosa which did not contain histamine, choline, or other org. crystalloids, or any fatty material sol. in acetone, benzene, or ether. The gastrin prep. is a protein-like substance resembling but not identical with secretin.

Both substances can be pptd. with trichloroacetic acid; gastrin can be purified without loss of activity; secretin loses some of its activity. Gastrin can be pptd. with 10—30% NaCl; it is sol. in 80% acidulated ethyl alcohol, in 95% acidulated methyl alcohol, and in 80% acetone; it is insol. in ether, light petroleum, and in abs. or 98% acetone. Crude preps. of gastrin from pyloric mucosa regularly show some secretin activity; purified preps. do not provoke pancreatic secretion. The preps. are non-toxic. A. S.

Evolution of experimental radiation ulcers of intestine. N. B. Friedman and S. Warren (*Arch. Path.*, 1942, 33, 326—333).—Intestinal ulcers in rabbits were caused by X-rays and followed for 6 months. (6 photomicrographs.) C. J. C. B.

Gastric digestion of connective tissue. C. L. Glaessner (*Rev. Gastroent.*, 1941, 8, 300—306).—Digestion of connective tissue is effected by a separate agent in the pepsin complex which is present in the mucosa as a pro-ferment; its activity is favoured by high acidity, and is destroyed by alkalis and by trypsin in alkaline solution. The proteolytic power of gastric juice is destroyed by incubation with HCl (1—4%) for 1 hr. at 40°, but the juice is still able to digest connective tissue (raw, fresh tendon). The connective tissue ferment is absent in true achylia, while high concns. are characteristic of peptic ulcer and may be of ætiological significance. W. J. G.

Benzidine reaction in patients with gastric and duodenal ulcers. B. Klein (*Schweiz. med. Wschr.*, 1941, 71, 667—669).—The benzidine test was positive in 68% out of 150 patients suffering from gastric or duodenal ulcers. There was no correlation between bleeding tendency and prognosis. A. S.

Effect of food on sphincter of Oddi in man. G. S. Bergh (*Amer. J. digest. Dis.*, 1942, 9, 40—43).—The tonus of the sphincter was investigated in human subjects recovering from operations on the biliary tract, by observations on the pressure of a saline perfusing system. A meal of egg yolks and cream relaxed the sphincter; olive oil, protein, or carbohydrate meals had little effect. N. F. M.

Neuro-insular apparatus of pancreas in adult mammals. L. C. Simard (*Rev. Canad. Biol.*, 1942, 1, 2—49).—The neuro-insular apparatus in adult mammals and in man consists of an intimate association between nervous and epithelial elements in inter- and intra-lobular septa. The endocrine elements are scattered throughout the organ, closely mingled with the exocrine gland and not limited only to the islands of Langerhans. A and B cells of the islets and of the neuro-insular complexes represent different histo-physiological stages of endocrine secretion. (Illustr.) A. S.

Effect of supplemental amylase on digestion. J. M. Beazell (*J. Lab. clin. Med.*, 1941, 27, 308—319).—Taka-diastase had no effect on digestion in man unless artificial salivary insufficiency was induced by the subject bolting his meal and not swallowing saliva. Under these latter circumstances taka-diastase (1—2 g.) augmented gastric starch digestion in 8 of 13 subjects. In the dog with duodenal fistula starch digestion without taka-diastase was 8% and with taka-diastase 39% (the dog does not secrete ptyalin). In starch without taka-diastase digestion was limited (max. 4%) but with taka-diastase 16—38% of the starch was reduced to sugar in 1 hr. The taka-diastase survived 1 hr. in the intestine. Gastrointestinal starch digestion was studied in 1 patient with a well-established ileostomy. Taka-diastase (2 g.) had no effect on the quantity of N or starch lost in the ileal discharge. The potency of the pancreatic amylase in the ileal fluid was 3 times as great as that of the taka-diastase. Thus the fraction of ingested starch that escapes digestion by amylopsin also escapes digestion by taka-diastase. C. J. C. B.

Calcification of pancreas. A. B. King and J. M. Waghelstein (*Arch. intern. Med.*, 1942, 69, 165—176).—4 cases of diffuse calcification of the pancreas are reported and 11 cases in the literature are reviewed. C. A. K.

Calcium and lipins in acute pancreatic necrosis. H. A. Edmondson and I. A. Fields (*Arch. intern. Med.*, 1942, 69, 177—190).—A case of acute pancreatic necrosis, tetany, and fat embolism is reported; more than 1700 mg. of combined Ca was found in the pancreas. The serum-Ca level was reduced in 7 of 12 cases diagnosed as acute pancreatic necrosis. C. A. K.

Digestion in mammalian alimentary tract. H. Wasteneys (*Trans. Roy. Soc. Canada*, 1941, [iii], 35, V, 1—15).—A historical survey of the development of conceptions on digestion in the mammalian alimentary tract is given. The technique of "re-entrant" fistula was used in dogs. Fat meals delay emptying of the stomach, but the extent of protein digestion is increased. Meat extracts increase meat protein digestion and accelerate gastric emptying. Fish muscle protein is more fully digested than beef or mutton proteins. Chyme collected after the passage of a meal through the stomach and duodenum was invariably acid. A. S.

Roentgenological observations on small intestines in patients suffering from sprue. H. W. Hotz and W. G. Deucher (*Schweiz. med. Wschr.*, 1941, 71, 748—750).—Severe disturbances of intestinal motility were roentgenologically observed in 8 patients suffering from sprue. The

characteristic finding is atonia of the small intestines with complete absence of details of the mucosa; hypertonic sections were observed in the lower jejunum and upper ileum. A. S.

Absorption of galactose from gastro-intestinal tract in deficiency disease. A. J. Beams, A. H. Free, and P. M. Glenn (*Amer. J. digest. Dis.*, 1941, 8, 415—421).—0.6 g. of galactose per kg. body wt. was administered by mouth and blood-galactose determined after 30 and 60 min. 5 patients with pellagra and 4 with non-tropical sprue showed deficient absorption, indicated by abnormally low curves. 2 of 4 cases of rosacea keratitis and 3 of 7 patients with pernicious anaemia also had low curves. In pellagra the curves rose during treatment but not in the other conditions. N. F. M.

Application of general fluid-circuit theory to [absorption from intestine of] chloride, bromide, and deuterium oxide. H. C. Peters (*Bull. Math. Biophys.*, 1941, 3, 149—152).—Application of the theory to data for the absorption of Cl⁻, Br⁻, and D₂O from the lower ileum (A., 1941, III, 1017) indicates that the const. for active absorption of D₂O is equal to the const. for active Cl⁻ absorption, in accordance with the assumption that the absorption of water carries Cl⁻ out of the intestinal lumen without changing its concn. F. O. H.

Relation of p_H of intestinal contents to calcium and phosphorus utilisation. J. H. Jones (*J. Biol. Chem.*, 1942, 142, 557—567).—The most alkaline portion of the rat intestinal tract is the distal one fourth of the small intestine. With a rachitogenic diet lard, oleic acid, and vitamin-D increase the acidity of the lower ileum and, to a smaller extent, the caecum and colon; dibasic PO₄''' protected against rickets without any change in the p_H of the tract. NH₄Cl, CaCl₂, and triacetin were without effect on either calcification or p_H . Al₂(SO₄)₃ produces severe rickets and an increase in p_H throughout the tract. Lactose produces as much acidity in the lower tract as lard but has no antirachitic action, and though the p_H of the upper portions of the small intestine is the same with oleic acid and Na oleate, the former produces a greater acidity in the lower ileum and exhibits antirachitic action. It is doubtful whether bone calcification is correlated with an increase in intestinal acidity. H. G. R.

XIV.—LIVER AND BILE.

Liver and medical progress. F. C. Mann (*J. Amer. Med. Assoc.*, 1941, 117, 1577—1582).—A review of various aspects of liver function. C. A. K.

Comparative evaluation of newer liver function tests. J. G. Mateer, J. I. Baltz, D. F. Marion, R. A. Hollands, and E. M. Yagle (*Amer. J. digest. Dis.*, 1942, 9, 13—25).—1013 tests were performed on 307 patients with known or suspected liver disease, and on 40 healthy persons. The intravenous hippuric acid, serial bromsulphalein, cephalin-cholesterol, and colloidal Au tests were equally sensitive, and all were more sensitive than the Rosenthal bromsulphalein and oral hippuric acid tests. The first three of these are recommended for routine purposes, omitting the bromsulphalein tests if the patient is jaundiced. The oral hippuric acid test is of val. in estimating operative risk. N. F. M.

Cytoplasmic inclusions in liver cells of rats injected with certain proteins. J. T. Weld, W. C. Von Glahn, and L. C. Mitchell (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 229—233).—Intravenous injections of 1% of body wt. of sheep serum, egg white, or rat or horse serum of solid bodies lying in vacuoles. They appear in 10 min.—2 hr. and disappear within 56 hr. Normal horse or rat serum does not produce them, but horse serum does so in sensitised rats. V. J. W.

Effect of caffeine on perfused rabbit's liver. A. Krupski, A. F. Kunz, and F. Almasi (*Schweiz. med. Wschr.*, 1941, 71, 585—587).—The isolated rabbit's liver was perfused with oxygenated defibrinated ox blood. Caffeine (a few mg. per 100 c.c.) does not influence the O₂ consumption (3—4 c.c. of O₂ per 100 g. of liver per min. or 1—2 c.c. of O₂ after 4—6 hr. perfusion). The O₂ uptake increases with the caffeine concn.; the increase is particularly marked with caffeine concn. of 100 mg.-%. There was no significant change in lactic acid production, alkali reserve, and glycolysis with small or large doses of caffeine. The caffeine concn. of the perfusing blood diminishes for 1 hr.; later it does not undergo further reduction. The final caffeine concn. is 87.5% of the initial concn. with initial concns. up to 200 mg. per 100 c.c. Above 200 mg. per 100 c.c. the liver progressively loses the ability to destroy caffeine. A. S.

Urea formation in isolated perfused liver of rat. O. A. Trowell (*J. Physiol.*, 1942, 100, 432—458).—With the special method of perfusion described the liver forms urea from NH₃ at a const. rate for 4 hr. The catalytic effect of ornithine on urea formation is confirmed. The rate of urea formation from arginine varies greatly from liver to liver; the variation is not due to differences in arginine content. When the rate of arginine breakdown is slow, NH₃ plus arginine gives a higher rate of urea formation than does arginine alone. The ornithine cycle cannot account for the whole of the urea formed from NH₃. Citrulline has no catalytic effect and is not

converted into arginine or ornithine. In high concns. citrulline yields a small quantity of urea which is increased in the presence of NH₃. Glutamic acid, glutamine, and alanine have no effect on the rate of urea formation from NH₃ in the concns. used. Neither the ornithine cycle theory of Krebs nor the amide-N cycle theory of Bach is supported and the normal mechanism of urea formation remains obscure. J. A. C.

Plasma-lipins in obstructive jaundice and several types of hepatic disease. C. A. Jones (*Amer. J. digest. Dis.*, 1942, 9, 1—13).—27 patients with generalised liver disease showed normal concn. of lipin fractions in the plasma (neutral fat, total fatty acids, phospholipin, free and ester cholesterol), but 25 of them had an increase in the % of free in total cholesterol, normally 30%. 18 out of 19 patients with obstructive jaundice showed a similar increase in free cholesterol %, and 14 of them also had increased total lipins. The complicating effects of fever, anaemia, and malnutrition are pointed out. All patients showing a marked lipopenia died. N. F. M.

Van den Bergh reaction with particular reference to obstructive and hepato-cellular jaundice. H. B. Stein (*S. Afr. J. Med. Sci.*, 1941, 6, 104—115).—Of 28 cases of obstructive jaundice only 71% gave a prompt direct reaction and in 27 cases of intra-hepatic jaundice only 74% gave biphasic or delayed direct reactions. In 182 specimens from 80 cases of jaundice those with high icteric indices or serum-bilirubin vals. gave predominantly direct reactions and those with low indices or vals. gave predominantly biphasic or delayed direct reactions. In 2 cases in which the icteric index fell on treatment a prompt direct reaction was converted into a biphasic or delayed biphasic reaction. Dilution of jaundiced plasma with normal plasma produced a change from a prompt direct reaction to biphasic, delayed direct, and finally to a "negative" direct and indirect reaction. The failure to produce a true indirect reaction in this way shows that reticulo-endothelial bilirubin differs from hepatic bilirubin. P. C. W.

Acute atrophy of liver in pregnancy [with recovery]. E. T. Ellison (*Sth. Med. J.*, 1941, 34, 938—941).—Report of 2 cases one of which recovered. The fatal case had been treated for syphilis by 3 injections each of arsphenamine and of Bi 5 months before delivery, and the liver contained 3 mg.-% of As; she died on the 5th post-partum day. She had received repeated transfusions of hypertonic glucose and blood. The other case was put on a continuous intravenous drip infusion of a 10% glucose solution at a rate of 2—4 c.c. per min. On the 5th day after delivery she seemed moribund with absent corneal reflexes and repeated injections of 2—4 ampoules of caffeine Na benzoate were given intravenously. The liver dullness had disappeared. There was some improvement on the next day which became quite marked after a blood transfusion and the patient finally recovered. The first case showed increasing N retention; blood-guanidine was 0.8—0.9 mg.-% in the first and 0.67—0.39 mg.-% in the second case who at first had no conjugated phenols (later 0.86—0.7 mg.-%) and 6.37 mg.-% of free phenols in the blood. Her clotting time was 7 min. at first, later 4 min., and she had some leucine and tyrosine crystals in the urine. Liver size (X-ray) was reduced at the beginning but returned to normal later. E. M. J.

Sphincter of Oddi in man and dog. H. Necheles and D. D. Kozoll (*Amer. J. digest. Dis.*, 1942, 9, 36—40).—Resistance of the sphincter was estimated by recording the pressure of saline used to perfuse a T tube inserted in the common bile duct in human subjects recovering from cholecystectomy, and in dogs anaesthetised with phenobarbital Na. Atropine, codeine phosphate, and prostigmine increased sphincter resistance, trasantin, nitroglycerin, and amyl nitrite depressed it. MgSO₄ contracted the sphincter in the dog but not in man. Meals or suggestion of food contracted the sphincter. N. F. M.

XV.—KIDNEY AND URINE.

Simple test of renal function. Blood-urine-urea quotient of Cottet. R. Junet and G. Meyrat (*Schweiz. med. Wschr.*, 1941, 71, 690—695).—The Cottet quotient (fasting blood-urea in cg./urea in preceding 24-hr. sample of urine in g.) should not exceed 2.2 in the normal subject provided the total 24-hr. urine secretion is near 1500 c.c. A quotient above 4.0 indicates severe impairment of renal function. The test is useful in clinical medicine. A. S.

Renal lesions with negative urine findings. E. R. Hall (*Canad. Med. Assoc. J.*, 1942, 46, 129—132).—A lecture. C. J. C. B.

Renal lesion in traumatic anuria. E. G. L. Bywaters and J. H. Dible (*J. Path. Bact.*, 1942, 54, 111—120).—A detailed description, based on material from 22 cases, is given of the changes in the kidneys after death from crushing injury. The lesion is a marked catarrh of the whole nephron, affecting mainly the ascending limb of Henle and second convoluted tubule which show various degrees of desquamation, regeneration, necrosis and fibrosis, and pigmented casts. Where the damage is most marked, characteristic foci of tubular destruction occur, with the appearance in the damaged tubules of hyaline casts which may be extruded into the surrounding

tissue, the affected area being the seat of marked histiocytic reaction. Many of these foci are adjacent to large venous channels. Later, commencing disappearance of these parts of the nephron is seen, together with replacement fibrosis. Myohæmoglobin pigmented casts are found in the second convoluted tubules and become more marked in the collecting tubules. At a late stage polymorphonuclear invasion of these casts occurs which, although most marked in the collecting tubules, may reach as high as the second convoluted tubule. It is concluded that tubular damage is the main feature of this lesion, and that this is capable of accounting both for the oliguria and for the low concn. of such urine as is passed. (14 photomicrographs.) C. J. C. B.

Plasma-creatinine determination as test of low-grade kidney damage. A. Arkin, H. Popper, and F. A. Goldberg (*Ann. int. Med.*, 1941, 15, 700—707).—4 c.c. of oxalated plasma are added drop by drop to 12 c.c. of saturated picric acid solution (purified according to Benedict). The mixture is heated in a water-bath for 15 sec. and filtered, and to 10 c.c. of the cooled filtrate 0.5 c.c. of 10% NaOH is added and a colorimetric determination is made 20 min. after further filtration. The result is checked against a series of standards of 0.5—3.0 mg. of creatinine per 100 c.c. Mild damage of glomerular filtration is shown by an increase in blood-creatinine in a no. of conditions. A. S.

Intercapillary glomerulosclerosis. R. C. Horn, jun., and H. Smetana (*Amer. J. Path.*, 1942, 18, 93—97).—In 550 patients with diabetes mellitus, arteriolar nephrosclerosis, generalised arteriolar sclerosis, and glomerulo-nephritis 87 cases of intercapillary glomerulosclerosis were found. In its advanced form, this condition was always associated with diabetes mellitus, and was present in 59% of the cases of diabetes with arteriolar nephrosclerosis. Less severe degrees were found in cases of arteriolar nephrosclerosis without diabetes and less often in cases of generalised arteriolar sclerosis and glomerulonephritis. Sclerosis of renal arterioles has been found to be invariably associated with intercapillary glomerulosclerosis. (4 photomicrographs.) C. J. C. B.

Glomerulonephritis. E. Matthews (*Amer. J. med. Sci.*, 1942, 203, 134—145).—A general review of the literature. C. J. C. B.

Glomerulonephritis in partially nephrectomised rats. P. Gross, F. B. Cooper, and W. A. Morningstar (*Amer. J. Path.*, 1942, 18, 101—106).—Glomerular lesions consisting of swelling and proliferation of capsular epithelium, thickening of basement membranes of glomerular capillaries, focal hyaline degeneration of the tufts, endothelial and epithelial proliferation in glomerular tufts, and focal adhesions of tufts of Bowman's capsule in foci of capsular epithelial proliferation were produced in rats by the resection of appropriate amounts of renal parenchyma with or without the administration of large doses of sulphapyridine. More kidney had to be resected to obtain comparable results in animals which did not receive sulphapyridine. The lesions were related to the excessive work-demand placed on the glomeruli remaining after surgical resection of renal tissue and after tubular obstruction by sulphapyridine uroliths. (4 photomicrographs.) C. J. C. B.

Histological kidney changes in common acute infectious diseases. M. Kannerstein (*Amer. J. med. Sci.*, 1942, 203, 65—73).—Acute diffuse glomerulonephritis is rare in cases of the common acute infectious diseases coming to autopsy. It was present only in 3.4% of 58 cases of scarlet fever and in no other disease. Tubular degeneration is the most frequent lesion. The more severe degenerative changes are most frequent in diphtheria; hyaline droplet degeneration was present in 25%, epithelial necrosis in 16%, of 70 cases of diphtheria. Interstitial nephritis occurs most often in scarlet fever (77%). Interstitial nephritis and streptococcal hæmolytic sepsis are parallel in scarlet fever and diphtheria but not in measles where streptococcal sepsis is 3 times as frequent as the nephritis. Pyelo-nephritis was not found and albuminuria was very frequent in all diseases. C. J. C. B.

Value of stereoscopic pneumopyelography. W. W. Scott and J. A. Benjamin, jun. (*N.Y. Sta. J. Med.*, 1940, 40, 276—283).—Report of 95 cases. E. M. J.

Fluid exchange. XXII. Effects of hypertonic salt solutions on urine formation. XXIII. Effect of hypotonic salt solutions on urine formation. K. Takeda (*Tohoku J. exp. Med.*, 1935, 27, 281—308, 309—324).—XXII. Renal artery perfusion of toads with 1.5 and 3% NaCl induced diuresis. Toads with poisoned kidneys showed oliguria with 1.5 and diuresis with 3%. Renal portal vein perfusion induced oliguria which was greater with 3% than with 1.5% NaCl and greater in normal than in poisoned toads.

XXIII. Normal and poisoned toad kidneys showed oliguria following perfusion, either by renal artery or by renal portal vein, with 0.45 or 0.3% NaCl solution. Oliguria was slight in renal artery perfusion of cantharidin-poisoned kidneys and was increased by HgCl₂ and usually by UO₂(NO₃)₂ poisoning. CH. ABS. (et)

Osmotic regulation of dolphins. E. S. Fletcher, jun., and G. W. Fletcher (*J. Cell. Comp. Physiol.*, 1942, 19, 123—130).—2 l. of 0.5-M NaCl were given by mouth to dolphins (*Tursiops truncatus*). Serum-

Cl⁻ rose by not more than 8% and faeces were isotonic with the blood. Urine-Cl⁻ increased up to 6 times and did not fall to normal by the end of the experiment, in 500 min. Total excretion of NaCl was 53%, and of water 84%. V. J. W.

Secretion of urine by premature infants. W. F. Young, J. L. Hallum, and R. A. McCance (*Arch. Dis. Childh.*, 1941, 16, 243—252).—In 19 premature infants using surface area as the basis of comparison, urea clearance was lower than in full-term infants; Na and Cl clearances are still more reduced, so that they have smaller Na/urea and Cl/urea clearance ratios. The osmotic pressure of the urine is very low. Infants with œdema consistently excrete small vols. of urine but their urea and mineral clearances are no lower than those of their "normal" fellows at comparable minute vols. C. J. C. B.

Intravenous use of sucrose-Ringer's solution to produce maximal diuresis. H. F. Helmholtz and J. L. Bollman (*J. Lab. clin. Med.*, 1942, 27, 606—615).—Rabbits can excrete 90—100% of a vol. of fluid, equal to 54—60% of the body wt., when given as 8% sucrose in half-strength Ringer's solution at a rate of 100 c.c. per kg. per hr. for a 6-hr. period. Such injections may be repeated as often as every other day, with equally effective diuretic effect and no impairment of renal function. A rabbit can excrete 89% (133 c.c. per kg. per hr.) of the injected fluid when given at a rate of 150 c.c. per kg. per hr. (total of 84% of the body wt.) in 6 hr., but most of these animals die within 48 hr. after injection. The kidneys show no permanent damage after multiple injections, and regain their normal histological structure in 10 days. (4 photomicrographs.) C. J. C. B.

Drugs in enuresis of adolescents. R. C. Browne and A. Ford-Smith (*Brit. Med. J.*, 1941, II, 803—805).—Many drugs, including belladonna and ephedrine, had no significant effects in controlled therapeutic studies on 12 boys with enuresis. C. A. K.

Cholera and anuria. J. W. Tomb (*Trans. R. Soc. trop. Med. Hyg.*, 1942, 35, 229—234).—A review of the literature. C. J. C. B.

Emotional glycosuria in medical and dental students. E. Green and F. E. Emery (*Endocrinol.*, 1942, 30, 353—354).—4 out of 244 students showed slight glycosuria by Benedict's test following a 3-hr. examination in physiology. Glycosuria was not present at a later date. V. J. W.

Melanuria. S. Rothman (*J. Lab. clin. Med.*, 1942, 27, 687—692).—Thormahlen's and Ehrlich's reactions in a urine suitably concn. render the test for melanuria 500 times as sensitive as it is with the FeCl₃ reaction in the original urine. By rough chemical fractionation with Pb acetate the melanogen becomes more stable. The red pigment formed in melanotic urine after acidification and the pigment of human red hair have similar properties. C. J. C. B.

Porphyria in aged. H. A. Rafsky and B. Newman (*Amer. J. digest Dis.*, 1942, 9, 43—45).—43 of 100 apparently normal persons aged 60—90 years had porphyria, probably due to nicotinic acid deficiency. N. F. M.

Case of xanthine calculi in urinary tract. A. Hyman and H. E. Leiter (*J. Mt. Sinai Hosp.*, 1941, 8, 84—88). E. M. J.

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

Cutaneous burns. R. M. Tenery (*Amer. J. med. Sci.*, 1942, 203, 293—299).—A review of the literature. C. J. C. B.

Acidity on skin surface. E. T. Bernstein and F. Herrmann (*N.Y. Sta. J. Med.*, 1942, 42, 436—442).—The *p*_H was measured by one drop of universal indicator (*p*_H range 1—11) dropped on the skin and recovered in a capillary. Vals. are slightly above those obtained with sweat collected from the same areas. Normal vals. varied from 3.5 to 5.8 except in the groins (5.5—6.3), between the toes (5.5—6.5), and in the axillæ (6.5—8.0). More acid vals. were obtained in the summer than in the winter and more alkaline vals. up to 3 hr. after applications of soap. Eczematous persons showed higher val. in affected and unaffected skin, hyperidrosis showed normal or more acid val., dysidrosis more alkaline val., and the same was seen in intertriginous mycoses where the presence of fungi was indicated by a more acid "inner" zone and in scaly affections of the skin. E. M. J.

Glycogen. VIII. Glycogen of *Ascaris lumbricoides* from pigs. E. Baldwin and H. K. King (*Biochem. J.*, 1942, 36, 37—42).—Glycogen prepared from *A. lumbricoides* parasitic in pigs has a probable chain length of 12—13 glucose units, and does not appear to differ from any other glycogen of the 12-unit type. The antigenic polysaccharide obtained by Campbell (A., 1937, III, 412) must thus be mainly glycogen, possibly associated with a prosthetic group which, while itself inert, confers antigenic properties on the complex. P. G. M.

Growth and development of *Dixippus (Carausius) morosus*, Br. et Redt. I. Loss of water in relation to ecdysis. B. N. Smallman (*Proc. Roy. Soc. Edin.*, 1941—42, B, 61, 167—185).

Mathematical study of growth of population of flour beetle. V. Relation between limiting value of egg population in absence of hatching and sex ratio of the group of adult beetles used in a culture. J. Stanley (*Ecology*, 1942, 23, 24—31).—Female beetles eat more eggs than males and this emphasises the importance of the sex ratio in a culture. An equation, which fits experimental data satisfactorily, is derived in which the limiting val. of the egg population in the absence of hatching is a function of the sex ratio.

Sex ratio in the Hymenoptera. Function of environment. S. E. Flanders (*Ecology*, 1942, 23, 120—121).

L. G. G. W.

S. E.

L. G. G. W.

XVII.—TUMOURS.

Multiple skin tumours in mice following single painting with 9:10-dimethyl-1:2-benzanthracene. L. W. Law (*Amer. J. Path.*, 1941, 17, 827—831).—30 C57 brown strain mice 4 weeks old were painted twice weekly mid-dorsally from the occiput to the near lumbar region with a 0.3% solution of 9:10-dimethyl-1:2-benzanthracene in thiophen-free benzene for 12 weeks. More than half of these mice developed multiple persisting papillomata or carcinomata (all but 2 within the painted area). Most mice surviving the toxic effect of the carcinogen developed a leukaemoid condition involving only the liver and spleen. 10 mice were given a single application of the carcinogen in the same region. Epilation occurred within 1 week, followed by a growth of white hair in the epilated region. There was no ulceration of the skin. There appeared, in all, 25 papillomata on the 10 mice given single paintings. 13 of the papillomata became transformed into carcinomata but 7 regressed completely.

C. J. C. B.

Comparison of methylcholanthrene hyperplastic epidermis with benign hyperplastic epidermis in healing wounds. F. X. Paletta, E. V. Cowdry, and C. E. Lischer (*Cancer Res.*, 1941, 1, 942—952).—Methylcholanthrene epidermal hyperplasia differs from regenerative benign hyperplasia in the following respects. Regional diversity in structure is localised, irregular, and seemingly of haphazard distribution in methylcholanthrene hyperplasia, whereas in benign hyperplasia it is definitely correlated with distance from the excised area. At the same distance in a given specimen, the structure is uniform in benign hyperplasia. Focal variations in nuclear and cell size are of greater amplitude in methylcholanthrene hyperplasia than in benign hyperplasia, and nuclear hyperchromatism, as well as nucleolar size, is sometimes greater. In methylcholanthrene hyperplasia the basement membrane appears to be more definite and exhibits a greater tendency to bulge into the dermis, there is more acanthosis and less affinity of the spinous cells for eosin, a more prominent granular layer, and slightly more hyperkeratosis than in benign hyperplasia. Leucocytic infiltration and dilatation of spaces between the epidermal cells are both less in methylcholanthrene hyperplasia than in the immediate vicinity of the excised area in benign hyperplasia. In both methylcholanthrene and benign hyperplasia the intranuclear viscosity, determined by displacement of basophilic chromatin and nucleoli under ultracentrifugal force, is less than in normal epidermis. The difference is that in the former the decrease continues to malignancy while in the latter it is only temporary. In both there is a demineralisation, particularly in the distal part of the spinous layer, but in methylcholanthrene hyperplasia there are local variations in mineral content not found in the benign hyperplasia.

F. L. W.

Comparison of methyl salicylate and benzene as solvents for methylcholanthrene. W. J. Burdette and L. C. Strong (*Cancer Res.*, 1941, 1, 939—941).—No difference was found in the incidence, type, and time of appearance of tumours in mice painted biweekly with methylcholanthrene in methyl salicylate or methylcholanthrene in benzene.

F. L. W.

Experimental brain tumours. I. Tumours produced with methylcholanthrene. H. M. Zimmerman and H. Arnold (*Cancer Res.*, 1941, 1, 919—938).—Pellets of 20-methylcholanthrene (1.5 mg.) were implanted in the cerebrum, cerebellum, or the cerebral meninges of 103 male C₃H mice. Tumours were induced in 48 mice (46.6%). 25 were gliomas, 13 sarcomas, 7 mixed gliomas and sarcomas, and 3 unclassified. Within limits the site of implantation determined the type of neoplasm. Sarcomas appeared at an average time of 195 days as compared with 279 days for gliomas. Many of these tumours were successfully transplanted subcutaneously.

F. L. W.

Carcinogenic agent without condensed ring structure. E. C. Dodds, W. Lawson, and P. C. Williams (*Nature*, 1941, 148, 142).—Two groups of 25 male mice (one coloured, the other albino) were painted twice weekly with 0.3% α -ethyl- β -sec-butylstilbene in benzene, twice weekly and 13 albino mice survived 12 months and 1 tumour was found in each group, both being spindle-celled and malignant, one transplantable. No tumours were found, in 9 months, in mice painted with diphenylhexane, diphenylhexadiene, diethylstilbene, stilbæstrol, hexæstrol, or 4:4'-dihydroxystilbene.

E. R. S.

Changes in field properties of mice with transplanted tumours. H. S. Burr (*Yale J. Biol. Med.*, 1941, 13, 783—788).—In cross-chest

readings on 16 mice the right chest was predominantly negative 120 μ v. After inoculation of a fast-growing tumour in the right axilla the right chest became positive 10 μ v. In sternum pubis readings the sternum was negative 90 μ v. before and positive 117.5 μ v. after the tumours appeared.

Effect of colchicine on mitotic activity of Brown-Pearce rabbit epithelioma. B. DuBilier and S. L. Warren (*Cancer Res.*, 1941, 1, 966—969).—Colchicine increases the mitotic figure (metaphase) count in the Brown-Pearce rabbit epithelioma. The optimum dose is 0.1 mg. per 100 g. body wt., and produces the max. effect in single doses in approx. 6 hr. after injection. With repetition of the dose at 6 hr. interval, the max. effect occurs at 12 hr. and then declines. The average no. of mitotic figures obtained with repetition of 0.1 mg. per 100 g. was approx. twice that with 0.05 mg. Although the average response in a group can be predicted for a given dosage, the response of the individual tumour varies so greatly that biopsy must be used.

F. L. W.

Thyroid function and calcium metabolism in rabbits with sarcoma. S. Seno, H. Asami, Y. Kuno, S. Kawai, O. Kawase, and T. Yosioka (*Gann*, 1941, 35, 341—343).—Large doses of thyroid hormone given to rabbits bearing the Kato sarcoma caused hypofunction of the thyroid glands and reduction in size of the tumour. Thyroidectomy had a similar effect on tumour growth.

E. B.

Effect of visible light on growth of transplanted tumour. S. Mizutani (*Japan. J. Obstet. Gynec.*, 1940, 23, 167).—Tumour growth in the rabbit is prevented by methylene-blue injection in the sarcoma, which is then irradiated with red light. If eosin is injected and the sarcoma irradiated with white light the growth is accelerated. Similar effects were obtained when the tumour was irradiated *in vitro* before transplantation. Red light retards growth and blue light accelerates it.

P. C. W.

Localisation of colloidal dyes in animal tumours. P. A. Zahl and L. L. Waters (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 304—310).—Mice implanted with sarcomas and carcinomas were injected intravenously with Evans blue or Li carmine. The dyes became localised in the tissue immediately surrounding the tumours, and in the tumours at the boundary of necrotic and living tissue. They are found later in macrophages at the tumour edge, and in the reticulo-endothelial system and kidney cells. Indian ink suspensions are not localised in tumours.

V. J. W.

Carcinoma studies. I. Resistance of spleen against carcinoma. P. Kallós and L. Kallós-Defner (*Schweiz. Z. allg. Path. Bakt.*, 1940, 3, 11—22).—None of the 76 rabbits in which the intratesticular inoculation of Brown-Pearce carcinoma had taken and caused widespread metastases showed a secondary in the spleen; the total no. of inoculations was 92. The spleen in all these animals was 120% heavier than in normal rabbits of the same type and showed increased macrophage activity. A smaller increase in splenic wt. was seen in 7 rabbits where the inoculation had failed. Hetero-transplantation into the anterior chamber of the eye in normal and splenectomised guinea-pigs showed a difference in the takes of 35.5±11.0% or 12.5 and 48%, respectively (32 and 29 animals).

E. M. J.

Influence of sex on resistance to intraperitoneal inoculation of sarcoma in mice. L. Gross (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 67—71).—After inoculation of small doses of S37 sarcoma 88% of males and 59% of females developed tumours. When large doses were used the sex difference was abolished.

V. J. W.

Effect of combining bacterial toxins and X-ray irradiation in treatment of transplantable mouse carcinoma. E. A. Lawrence and F. Duran-Reynals (*Yale J. Biol. Med.*, 1941, 14, 177—181).—Coli, para-typhoid B, and typhoid toxins given intraperitoneally in large doses did not prolong the life of tumour-bearing mice. The length of life of tumour-bearing mice irradiated with X-ray and treated with these toxins was comparable to the length of life of such mice treated with X-ray alone.

F. S.

Tumour immunity. R. R. Spencer (*J. Nat. Cancer Inst.*, 1942, 2, 317—332).—Review. (49 references.)

E. B.

Effect of radioactive phosphorus on the viability of mouse sarcoma 180. K. Sugiura (*Cancer Res.*, 1942, 2, 19—24).—The growth capacity of mouse sarcoma 180 was unaffected when tumour fragments were immersed for 24 hr. at 4—5° c. in ³²P having an activity of 50 μ c. per c.c. Immersion in a solution of 75 μ c. per c.c. induced 25% inhibition, while 50 and 75% inhibition respectively were induced by exposure to solutions of 100 or 125 μ c. per c.c. The viability of the sarcoma was completely destroyed by immersion in a solution of 150 μ c. per c.c. With X-rays at 200 kv. the viability of the tumour was completely destroyed by an exposure of 6500 r.

F. L. W.

Behaviour of tumour cells in tissue culture subjected to reduced temperatures. M. E. Sano and L. W. Smith (*Cancer Res.*, 1942, 2, 32—39).—The behaviour of tumour tissue from cases of reticulum cell sarcoma, colloid carcinoma, acute lymphoid leukaemia, Hodgkin's disease, and mammary carcinoma of the mouse (Lankenau C₅₇ strain) was investigated *in vitro* at temp. from 0° to 37° c. There is

a crit. level at 22—24° which, if maintained long enough, results in lethal interference with the metabolism of neoplastic cells.

F. L. W.

Comparative studies on radiosensitivity of normal and malignant cells in culture. I. Effect of X-rays on cell outgrowth in cultures of normal rat fibroblasts and rat benzpyrene-induced sarcoma. L. Halberstaedter, G. Goldhaber, and E. Doljanski (*Cancer Res.*, 1942, 2, 28—31).—The min. X-ray dose which totally suppresses cell outgrowth in tissue cultures of normal rat fibroblasts or cells of rat sarcoma is 200,000 r.

F. L. W.

Replantation of rabbit sarcoma after X-irradiation. S. Nakamura (*Japan. J. Obstet. Gynec.*, 1940, 23, 116).—Replantation was impossible in rabbits in which a growing sarcoma had been cured by X-ray irradiation, up to a year after the treatment. Replantation was successful in those cases where X-irradiation was only partially effective or in which metastases had already appeared.

P. C. W.

Effect of colloidal lead, ultra-violet light, and glucose on growth and radiosensitivity of malignant tumour. I. Effect on growth. II. Effects on growth affected by colloidal lead. III. Effects on reticulo-endothelial function. IV. Effects on tissue respiration and glycolysis of tumour. V. Spectro-chemical analysis of colloidal lead deposited in sarcoma. VI. Effect of colloidal lead on radiosensitivity. VII. Effects on radiosensitivity effected by colloidal lead. H. Kawaguti (*Japan. J. Obstet. Gynec.*, 1940, 23, 178—182, 182—190, 190—197, 197—202, 202—206, 206—213).—1. Colloidal Pb (7.7 mg. Pb per ml.) was injected intramuscularly (0.2 ml. per kg.) in rabbits with Kato's rabbit sarcoma. Injections were made daily or every two days for 20—26 days. The growth of the tumour was retarded and the no. of metastases decreased whether the injections were made directly into the tumour, into the muscles distant from the tumour, or into the muscles for 20 days before the transplantation of the tumour.

II. 5-min. ultra-violet irradiation applied daily for 20 days retarded the growth of the tumour whether the irradiation was applied before or after the transplantation. If colloidal Pb is injected at the same time there is no greater effect than if the Pb is injected alone. Daily intravenous injection of 10 ml. of 20% glucose + 1 unit of insulin prevented the inhibitory effect of simultaneously injected Pb.

III. Using the same methods of administration it is shown that Pb injections and ultra-violet irradiation accelerate the absorption of injected Congo-red in the normal rabbit; given together the greater effect of Pb is not increased. Glucose injection lessened the effect of the lead.

IV. Colloidal Pb injections increased tissue respiration of slices of Kato's rabbit sarcoma and markedly inhibited the aerobic and anaerobic glycolysis. Ultra-violet irradiation depresses anaerobic glycolysis but does not affect the other vals. Pb + irradiation had no effect on respiration and the effects of the Pb on glycolysis were lessened. Pb + glucose injections decreased anaerobic glycolysis but had no other effects.

V. Absorption lines of Pb were distinct in the tumour after injection of colloidal Pb into rabbits with Kato's rabbit sarcoma, whether the Pb was injected before or after transplantation. Pb was also demonstrated in lungs, liver, kidney, and spleen. When glucose was injected with the Pb no Pb was present in the tumour.

VI. Pb injections enhanced the radio-sensitivity of Kato's rabbit sarcoma to doses of 600—1200 r. particularly if the Pb was injected directly into the tumour.

VII. Pb injections or ultra-violet irradiation separately intensified the radio-sensitivity of the rabbit sarcoma; when applied together radio-sensitivity was decreased. Glucose injections had little effect on the increase produced by Pb injections.

P. C. W.

Effect of alcohol, chloroform, and ether on growth and radiosensitivity of malignant tumour. I. Effects on growth. II. Effects on carbohydrate metabolism. III. Effects on reticulo-endothelial system. IV. Effects on blood surface tension. V. Effects on blood-cholesterol. VI. Effects on radio-sensitivity. H. Yasunami (*Japan. J. Obstet. Gynec.*, 1940, 23, 214—217, 217—221, 221—222, 222—223, 223—224, 224—229).—I. Daily intravenous or oral administration of 20% alcohol (5 ml. per kg.) to rabbits with Kato's rabbit sarcoma accelerated the growth of the tumour and increased the no. of metastases. 1.5 ml. per kg. had no effect and 10 ml. per kg. retarded the growth and decreased the no. of metastases. Inhalation of CHCl₃ or ether for 3—4 min. daily accelerated the growth and increased the no. of metastases.

II. The effects on the blood-sugar were parallel to the effects on the growth of the tumour; treatment which accelerated the growth increased the blood-sugar and vice versa, in rabbits with sarcoma. The treatments which accelerated tumour growth also prolonged the period of increased blood-sugar in the glucose-tolerance test and decreased liver-glycogen, and glycogen could not be demonstrated in the tumour. Glycolysis of tumour tissue was accelerated.

III. The reticulo-endothelial activity (as measured by the capacity to absorb injected Congo-red) was diminished in rabbits with sarcoma by treatments which accelerated tumour growth. The action of CHCl₃ was most marked.

IV. In control rabbits the surface tension of serum was decreased as the tumour grew. The effect was enhanced by treatment with CHCl₃, ether, and medium doses of alcohol.

V. The increase in blood-cholesterol occurring in the first 20 days after the transplantation of Kato's rabbit sarcoma in the rabbit is increased by the treatment with alcohol, CHCl₃, and ether.

VI. The 3 treatments increased the radio-sensitivity of the rabbit sarcoma.

P. C. W.

Inhibition of a diphosphopyridine nucleotide system by split products of dimethylaminoazobenzene. C. J. Kensler, S. O. Dexter, and C. P. Rhoads (*Cancer Res.*, 1942, 2, 1—10).—One metabolite (*p*-phenylenediamine) and a probable intermediary (*NN*-dimethyl-*p*-phenylenediamine) of *NN*-dimethylaminoazobenzene, which induces hepatic cancer in rats and causes a decrease of the diphosphopyridine nucleotide content of the damaged livers, inhibit *in vitro* the apozymase-diphosphopyridine nucleotide system. The toxic effect is due to oxidation products of the diamines. The acetyl derivatives do not inhibit. Alloxan is highly inhibitory. The inhibition is a competitive one in which the substances compete with diphosphopyridine nucleotide for triose phosphate dehydrogenase. The apparent correlation between toxicity of the diamine products from methyl derivatives of aminoazobenzene and the carcinogenic potency for the rat liver of the parent mol. is discussed.

F. L. W.

Statistical study of tumours among Koreans. Y. Ri, O. Ri, and S. Tomoto (*Gann*, 1941, 35, 250—252).—The incidence of carcinoma of the liver and carcinoma of the penis is much higher in Korea than in Western countries.

E. B.

Pathology of primary carcinoma of liver in Bantu races of South Africa. C. Berman (*S. Afr. J. med. Sci.*, 1941, 6, 11—26).—The gross pathology is described in 54 cases; the average wt. of the livers was 3925 g. Both lobes of the liver were affected in 34 cases, the right lobe in 19, and the left lobe alone in only one. 34 were macroscopically described as nodular cancers and 20 as massive cancers. 25 cases showed 24 hepatocellular cancers and 1 cholangiocellular cancer; the histology is described in detail. Cirrhosis of the liver was always present. 57% showed secondaries outside the liver, chiefly in the lungs. Further evidence is adduced supporting the view that primary cancer of the liver is unidentric in origin. (6 plates.)

P. C. W.

Encapsulated and benign tumours of nerves. P. Masson (*Rev. Canad. Biol.*, 1942, 1, 209—343).—An exhaustive histogenetic study of benign encapsulated neural tumours (contrasted with diffuse neurofibromas and neurosarcomas). (50 figures.)

A. H.

Benign and malignant giant-cell tumours of bone. H. W. Meyerding (*J. Amer. Med. Assoc.*, 1941, 117, 1849—1855).—A review with case illustrations.

C. A. K.

Embryoma of kidney (Wilms' tumour). W. E. Ladd and R. R. White (*J. Amer. Med. Assoc.*, 1941, 117, 1858—1863).—A review.

C. A. K.

Benign and malignant stromal endometriosis. T. D. Robertson, W. C. Hunter, C. P. Larson, and G. A. C. Snyder (*Amer. J. clin. Path.*, 1942, 12, 1—15).—6 benign cases and one malignant case are described. After the menopause, stromal endometriosis continued to grow in 5 of the cases.

C. J. C. B.

Influence of syphilis in cancer of cervix uteri. W. G. Harding (*Cancer Res.*, 1942, 2, 59—61).—Syphilitic women develop carcinoma at an average age of 47 years, as compared with 51 years in non-syphilitic women. The influence of multiple pregnancies is negligible.

F. L. W.

Bronchiogenic carcinoma in association with pulmonary asbestosis. H. B. Holler and A. Angrist (*Amer. J. Path.*, 1942, 18, 123—131).—Report of 2 cases and review of the literature. (4 photomicrographs.)

C. J. C. B.

Primary new growths of lungs. K. Robertson (*Edinb. Med. J.*, 1942, [iv], 49, 110—118).—In a study of 22 cases the syndrome—cough, dyspnoea, pain—occurred early, the first symptom (pain in 10 and hæmoptysis in 5) appearing 11 weeks before hospitalisation. A strong plea is made for early recognition of the disease. H. S.

Primary carcinoma of liver in hæmochromatosis. J. E. Berk and M. M. Lieber (*Amer. J. med. Sci.*, 1941, 202, 708—714).—The literature is reviewed. Primary carcinoma of the liver occurs with surprising frequency in hæmochromatosis (7.3% of 436 cases), the incidence being greater than in uncomplicated hepatic cirrhosis (4.5% of 1989 cases).

C. J. C. S.

Apocrine sweat gland carcinoma of vulva. J. R. McDonald (*Amer. J. clin. Path.*, 1941, 11, 890—897).—A histological review of 30 cases.

C. J. C. B.

Case of sarcoma developed from right ovarian solid teratoma complicated by left ovarian dermoid. K. Menju (*Japan. J. Obstet. Gynec.*, 1940, 23, 88—93).

P. C. W.

Case of intravessel hydatiform mole and ectopic chorio-epithelioma growing together in cardinal ligament. S. Okazaki and H. Niijima (*Japan. J. Obstet. Gynaec.*, 1940, 23, 230—235).

P. C. W.

XVIII.—NUTRITION AND VITAMINS.

Evolution of dietary standards. I. Leitch (*Nutr. Abs. and Rev.*, 1942, 11, 509—521).—A review covering the period 1753—1941.

Self-selection of diets. C. P. Richter (*J. Pediat.*, 1942, 20, 230—236).—A lecture. C. J. C. B.

Dietetic problems of cancer patient. C. J. Drucek (*Rev. Gastroent.*, 1941, 8, 317—319).—In advanced malignant disease of the colon and rectum the diet should consist of easily digested, low-residue foods of high caloric val. totalling 3000 cal. per day. First-class protein should amount to 70—100 g., and minerals and vitamins should be given in the form of fresh vegetables, fruit, and milk, supplemented by vitamin preps. when necessary. W. J. G.

Calcium in the nutrition of the fattening calf. A. D. Weber, C. W. McCampbell, J. S. Hughes, and W. J. Peterson (*Kansas State Coll. Agric. Exp. Sta. Tech. Bull.*, 1940, No. 51, 91 pp.).—Addition of ground limestone to a basal calf-fattening ration caused increased gains in wt., more efficient utilisation of food, increased retention of Ca and P, heavier and stronger bones with a higher ash content, and a superior slaughter grade. No effect was noticed on appetite, thirst, or digestibility of nutrients, on blood-Ca, -P, or -hæmoglobin, on carcass grade, or wt. of internal organs. A. W. M.

Effect of magnesium deficiency on excitability of vago-insulin and sympathetico-adrenal systems. E. Gellhorn and J. Feldman (*Amer. J. Physiol.*, 1941, 134, 603—608).—The effect of a Mg-deficient diet on the centres regulating adrenaline and insulin secretion was studied in rats. Metrazol (55 mg. per kg.) and electrically produced convulsive shocks produced a greater hyperglycæmia in vagotomised Mg-deficient rats than in controls. Adreno-demedullated rats react to these tests with hypoglycæmia whereas Mg-deficient adreno-demedullated rats show no change in blood-sugar. In Mg deficiency the centres of the sympathetico-adrenal system become sensitised and those of the vago-insulin system fail to respond. The effects persist for weeks after return to the control diet. M. W. G.

Calcium requirement of man; balance studies of seven adults. J. Outhouse, H. Breiter, E. Rutherford, J. Dwight, R. Mills, and W. Armstrong (*J. Nutrition*, 1941, 21, 565—575).—The average daily Ca requirement of 4 women and 3 men (21—42 years) was 10.7 mg. per kg. body wt. or 391 mg. per sq. m. surface area. This exceeds by 67% Sherman's (1920) val. which is based on 100% utilisation of dietary Ca. A. G. P.

Calcium requirement of adult man and utilisation of the calcium of milk. F. R. Steggerda and H. H. Mitchell (*J. Nutrition*, 1941, 21, 577—588).—With diets in which approx. $\frac{2}{3}$ of the dietary Ca was supplied as milk or milk products the daily Ca requirement of 9 adult men was 9.55 ± 0.46 mg. per kg. body wt. or 357 mg. per sq. m. body surface. The average % utilisation of Ca in milk and milk products was 29 (range 18—49%). Commercial drying or homogenising of milk did not affect the availability of Ca. A. G. P.

Bone fractures due to low-calcium diets. R. F. Light and C. N. Frey (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 256—258).—8 out of 9 rabbits placed at 3—5 weeks on a diet containing 0.2% of Ca died in 3—8 weeks from spontaneous fracture of a vertebra. Controls received 1% CaCO₃ and remained healthy. V. J. W.

Production of cardiac and renal lesions in rats by diet extremely deficient in potassium. R. H. Follis, jun., E. Orent-Keiles, and E. V. McCollum (*Amer. J. Path.*, 1942, 18, 29—35).—By a diet adequate except for an extremely low content of K (0.01%) necrosis of the myocardial fibres followed by scarring, and necrosis of the renal tubular epithelium with regeneration and tubular dilatation, were caused. (7 photomicrographs.) C. J. C. B.

Effect of fortifying infant's diet with cereal enriched by iron, calcium, and vitamin-B₁. M. L. Blatt, E. Harris, H. Jacobs, and M. Zeldes (*Arch. Pediat.*, 1941, 58, 694—705).—Farina enriched with Fe, Ca, and P, and wheat germ was well tolerated by normal infants on the usual milk diet, and did not increase the no. of stools, or cause constipation. The increases in height, wt., and red blood count were superior to those of a similar group on ordinary farinas. C. J. C. B.

Dental caries and its control by mineral salts. R. G. Torrens (*Brit. Dental J.*, 1942, 71, 385—387).—Bad cases of caries in children have been successfully treated by daily administration, for several months, of a salt mixture. The bad effects on the permanent dentition of radical extraction are avoided. E. R. S.

Action of fluorine in limiting dental caries. J. F. Volker and B. G. Bibby (*Medicine*, 1941, 20, 211—227).—A review. E. M. J.

Arsenic in food. K. N. Bagchi and H. D. Ganguly (*Indian Med. Gaz.*, 1941, 76, 720).—A large variety of foods was analysed for As. The highest vals. were found in certain types of fish: lobster (edible portion) 1.70, sole 2.6, halua 3.58 mg. of As₂O₃ per kg. P. G. M.

Medical aspects of vitamin therapy. S. B. Nadler (*New Orleans Med. J.*, 1941, 93, 611—617).—A review. E. M. J.

Significance of vitamins in surgery. M. DeBakey and M. C. Smith (*New Orleans Med. J.*, 1941, 93, 617—627).—A review. E. M. J.

Chemistry of vitamins. A. O. Kastler (*New Orleans Med. J.*, 1941, 93, 606—611).—A review. E. M. J.

Diagnosis and treatment of mild vitamin deficiencies. J. M. Ruffin. **Treatment of neuropsychiatric disorders with vitamins.** N. Jolliffe (*J. Amer. Med. Assoc.*, 1941, 117, 1493—1502).—Reviews and discussion. C. A. K.

Insect nutrition: nature of the fat-soluble factor. P. S. Sarma and M. Sreenivasaya (*Current Sci.*, 1941, 10, 525—526).—The fat-sol., growth-promoting factor of "jowar oil" is a sterol, m.p. 75—76°, $[\alpha]_D^{25} = -17.76^\circ$ in CHCl₃. H. W.

Relation of *Brucella abortus* infection to vitamin-A content of foetal livers. G. H. Hart and H. R. Guilbert (*Amer. J. Vet. Res.*, 1941, 2, 390—394).—Liver samples from 13 bovine aborted fetuses from cows reacting to the agglutination test for *Br. abortus* were either negative for vitamin-A or gave very low vals. (trace—5.0 units per g.). Infection of the placenta may restrict transfer to the foetus of -A or -A deficiency may lower the resistance of the placenta to infection with *Br. abortus*. This may be of importance in cattle vaccinated with strain 19. E. G. W.

Influence of vitamin-A and -C on certain immunological reactions in man. A. E. Feller, L. B. Roberts, E. P. Ralli, and T. Francis, jun. (*J. clin. Invest.*, 1942, 21, 121—137).—5 patients were given a diet adequate in all factors but vitamin-A or -C. The amounts of -A, carotene, and -C in the plasma and of -C in the white blood cell-platelet layer were made at weekly or bi-weekly intervals. Parallel observations were made on: capacity of the patient's nasal secretions to inactivate influenza virus; titre in patient's blood serum of neutralising antibodies for influenza virus; activity of lysozyme in the nasal secretions; titre of complement in blood serum; phagocytic activity for pneumococci of polymorphonuclear neutrophils in heparinised blood. The results of these immunological tests were not influenced by marked and prolonged changes in the plasma levels or intake of -A and -C. C. J. C. B.

Vitamin-A in treatment of dermatoses. M. F. Pettler (*Penn. Med. J.*, 1942, 45, 604—605).—A case of pityriasis rubra pilaris was cured in 6 weeks by the daily application of carotene in oil (5000 units vitamin-A activity per dose). A case of keratosis follicularis did not respond to the combined use of -A and provitamin-A. E. M. J.

Experimental vitamin-A deficiency in man. K. H. Wagner (*Z. physiol. Chem.*, 1940, 264, 153—187).—Men maintained for 10 months on a high-fat diet yielding $3-5 \times 10^2$ kg.-cal. daily, almost free from vitamin-A and β -carotene but otherwise adequate, showed symptoms of -A deficiency: these symptoms are described in detail. The min. human daily -A requirement is 2000 i.u., 2500 i.u. (equiv. to 5000 i.u. of β -carotene since half of this is not utilised) constituting a liberal daily supply. W. McC.

Level of vitamin-A in blood as index of vitamin-A deficiency in infants and in children. J. M. Lewis, O. Bodansky, and C. Haig (*Amer. J. Dis. Child.*, 1941, 62, 1129—1148).—Low levels of vitamin-A in blood in rats were associated with low intakes of -A and little storage in the liver. The lowest level of blood-A in 144 normal infants was 45 U.S.P. units-%. Vals. below this level were obtained in infants receiving diets devoid of -A and those suffering from disorders which affected the absorption of fat. A low level of blood-A was associated with poor dark adaptation and low vitamin storage in the liver. 17,000 units of -A daily to infants during the first 6 months of life increased blood-A but there was no effect when infants aged 6—18 months were given -A daily for 1—5 months. 4 of 20 children examined during the course of a febrile illness had poor dark adaptation compared with 1 of 118 controls. Blood-A was low during febrile diseases, but with administration of -A the level rose in 6 to 8 patients in 24—48 hr. Of 118 febrile children, 22 had low blood-A associated with normal dark adaptation. This suggests that the level of blood-A may be a more sensitive indicator of -A deficiency than the dark adaptation test, but normal blood-A was found in the presence of abnormal dark adaptation. C. J. C. B.

Vitamin-A deficiencies in ruminants. H. Schmidt (*Amer. J. Vet. Res.*, 1941, 2, 373—389).—The symptoms and lesions of vitamin-A deficiency in cattle, sheep, and goats are described. The carotene requirement per 100 lb. body wt. of Jersey heifers for normal gestation and lactation exceeds 2500 μ g.; the amount needed for survival exceeds 450 μ g. Corresponding vals. for adult sheep were 650—750 μ g. for survival. Castrated male goats on -A-deficient diets developed urinary calculi and 5 of 14 died from rupture of the bladder. E. G. W.

Influence of chronic vitamin-A deficiency on bacterial flora of rats. C. G. Burn, A. U. Orten, and A. H. Smith (*Yale J. Biol. Med.*, 1941, 14, 89—99).—Rats in which mild chronic vitamin-A deficiency was maintained up to a year showed a progressive increase in the no. of bacteria on the mucous membranes and in the tissues. Bacterial invasion into the organs and tissue change compatible with a

toxæmia were consistently found in the older rats. At the end of a year, the bacteriological findings were indistinguishable from those of acute *A*-deficient rats. Suppurative lesions, chiefly in the sinuses and middle ear, were found in the majority of the older chronic *A*-deficient rats. F. S.

Effect of diet on internal parasites of horses. C. E. Howell and M. A. Stewart (*Amer. J. Vet. Res.*, 1940, 1, 58—62).—Feeding 16—17 lb. of prunes daily to 6 horses increased susceptibility to strongyle infestation. Horses on a diet deficient in vitamin *A* seemed more susceptible to *Parascaris equorum*. E. G. W.

Distribution of vitamin *A* in body. H. Popper (*J. Mt. Sinai Hosp.*, 1940, 7, 119—132).—A review. E. M. J.

Collapse after injection of thiamin. L. Schiff (*J. Amer. Med. Assoc.*, 1941, 117, 609).—Circulatory collapse with cardiac and respiratory arrest occurred in a woman aged 45 after intramuscular injection of thiamin hydrochloride. She had had many previous injections without reaction, but the last few before the one that produced collapse had been followed by bouts of sneezing. Subsequent intradermal and scratch tests showed cutaneous hypersensitivity to thiamin. C. A. K.

Symptoms of partial vitamin-*B*₁ deficiency in breast-fed infants. F. W. Clements (*Med. J. Austral.*, 1942, 1, 12—16).—Out of 150 infants breast-fed to the age of 6 months at least 12 showed evidence of partial vitamin-*B*₁ deficiency, characterised by subnormal gain in wt., constipation, and vomiting. These infants recovered within 14 days by daily administration of 500 i.u. of synthetic *B*₁ per day. Therapy was then continued through the mothers by administering 3.0 mg. of synthetic *B*₁ per day or assuring a diet sufficiently rich in this vitamin. F. S.

Deficiency of vitamin-*B*₁ and of riboflavin and reproduction of rat. K. H. Coward, B. G. E. Morgan, and L. Waller (*J. Physiol.*, 1942, 100, 423—431).—The condition of anestrus produced by withholding vitamin-*B*₁ from the diet may be corr. by administering *B*₁ but the disturbance in reproduction and lactation is not; when the stock diet is given, reproduction and lactation become normal provided the period of deficiency has not been longer than 120 days. A partial shortage of *B*₁ (and of an unidentified factor) does not result in irreparable damage to the reproductive function. Deficiency of riboflavin also produces anestrus and normal cycles are restored by giving riboflavin as is also a disturbance in reproduction and lactation. A total deficiency of riboflavin for the first quarter of the rat's reproductive period causes irreparable damage; damage caused by a partial deficiency may be rectified. J. A. C.

Pellagra in Kansas. D. V. Conwell and L. W. Hatton (*J. Kansas Med. Soc.*, 1939, 40, 6—10).—45 cases were seen during the last 10 years, 42 of which were in women. E. M. J.

Effect of yeast- and muscle-adenylic acid in malnourished persons with pellagra and peripheral neuritis. R. W. Vilter, W. B. Bean, and T. D. Spies (*J. Lab. Clin. Med.*, 1942, 27, 527—530).—After 2—5 daily intravenous injections of 50 mg. of adenylic acid from yeast or muscle, the mouth ulcers of 6 malnourished persons disappeared but those of 3 persons with no dietary deficiency did not improve. Persons with pellagrous glossitis or with subclinical symptoms of pellagra rapidly improved. Intravenous yeast-adenylic acid to 6 persons with peripheral neuritis who failed to respond to brewers' yeast or to massive doses of aneurin intravenously, caused striking clinical changes after 10 days—3 weeks. Spontaneous pain and demonstrable hyperesthesia disappeared, perception of light touch improved, and the patients were able to walk without pain. Because of reactions after injections and concomitant e.g. changes, adenylic acid is not recommended for general therapeutic use. C. J. C. B.

Does infantile beriberi occur in infants who have never been breast-fed? L. Fehily (*Trans. R. Soc. Trop. Med. Hyg.*, 1941, 35, 177—181).—From 450 cases of the disease it is considered that infantile beriberi does not occur in infants who have never been breast-fed. In the case of initial, subacute, and acute infantile beriberi the breast-feeding has taken place immediately before the occurrence of symptoms; in the case of chronic infantile beriberi the breast-feeding has taken place weeks or months previously. C. J. C. B.

Spontaneous beriberi of monkey as compared with experimental avitaminosis. C. P. Leblond and J. Chaulin-Serviniere (*Amer. J. med. Sci.*, 1942, 203, 100—109).—20 cases of a cardio-nervous disease observed in a *Macacus sylvanus* colony are described. Clinical signs of polyneuritis and cardiac failure, autopsy findings of peripheral nerve degeneration and hydropericardium, and a diet partly deficient in vitamin-*B*₁ indicate beriberi as the cause. The adolescent (3-year-old) monkeys were the most susceptible to the deficiency, as all were stricken early. In younger animals the disease occurred later, and was characterised by spastic phenomena and intense cardiac disturbances leading to early death. Some older animals showed chronic and moderate symptoms which did not result in death. Treatment with cryst. thiamin cured the animals, but only incompletely. Menstruation was resumed after treatment with either wheat germ or, in 1 case, pure thiamin.

In experimental complete *B*₁ deficiency, death occurred before outstanding clinical symptoms or marked histological degeneration of the nerves set in. When 2 sub-beriberic adolescents were given the *B*₁-free diet, acute symptoms of fulminating beriberi were observed. C. J. C. B.

Prevention of beriberi. L. Fehily (*Chinese Med. J.*, 1941, 60, 53—65).—Unhusked rice only should be imported for consumption in Hong-Kong, where beriberi is prevalent. The rice should be properly stored and milled, without the use of polishing powder so as not to lose more than 6% of the wt. of the husked rice, immediately before consumption. Undermilled rice should be stored for limited periods only. An alternative staple food of mixed maize and soya-bean flour is suggested, and the distribution of vitamin-*B* preps. to the poorer classes is recommended. W. J. G.

Effect of biotin on certain physiological functions. J. L. Schmidt and M. Landy (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 82—83).—Injections of 0.5 mg. caused no change in blood pressure, pulse rate, or respiration in cats, and concns. of 1:40,000 had no effect on isolated uterus or intestine of guinea-pig or rabbit. V. J. W.

Biotin as possible growth factor for insects. G. Fraenkel and M. Blewett (*Nature*, 1942, 149 301).—*Tribolium confusum* grows well on casein, glucose, yeast, cholesterol, salts, and water (15%). Growth was retarded when for yeast was substituted yeast extract (by water and CHCl_3), liver extract, or wheat-germ oil. Growth was partly restored by vitamin-*H* concentrates, marmite, and lecithin, fully by insol. yeast and biotin concentrates from egg yolk. With no yeast but starch instead of glucose growth was partly restored. Biotin is probably a dietary essential for insects, and starch contains traces of it. E. R. S.

Biotin and scaly dermatosis of chick. S. Ansbacher and M. Landy (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 3—5).—Low-biotin diet causes this condition in the chick which can be cured by administration of less than 10 μg . of cryst. biotin methyl ester. The reaction can be used for biological assay. V. J. W.

Biotin and prevention of dermatitis in turkey poults. H. Patrick, R. V. Boucher, R. A. Dutcher, and H. C. Knandel (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 456—458).—Addition to diet of 40 rat units of biotin per day protected young turkeys from dermatitis which affected 89% of controls. V. J. W.

Isolation of biotin from milk. D. B. Melville, K. Hofmann, E. Hague, and V. du Vigneaud (*J. Biol. Chem.*, 1942, 142, 615—618).—Crude biotin concentrate from milk is esterified with acid methyl alcohol and subjected to chromatographic adsorption on Decalco and then activated Al_2O_3 . After elution the crude cryst. ester is purified by washing with ethyl acetate, sublimation in vac., crystallisation from methyl alcohol-ether, and saponification. 500- to 1000-fold purification is obtained with a yield of 25—40%. H. G. R.

Specific vitamin-*C* determination. M. Ott (*Angew. Chem.*, 1941, 54, 170—175).—The influence of concn., p_{H} val., HPO_3 , temp., O_2 , and metallic salts (Fe^{II} , Fe^{III} , Cu^{II}) on the stability of ascorbic acid solutions is reviewed. Catalytic oxidation of ascorbic acid by Cu is inhibited by HPO_3 (cf. Lyman *et al.*, A., 1937, I, 368). The cold extract with H_2SO_4 or H_3PO_4 , at p_{H} below 4.5, is finally titrated (2:6-dichlorophenol-indophenol) before and after addition of CuSO_4 , and vitamin-*C* content is calc. by difference. A. T. P.

Vitamin-*D* therapy. B. Kramer (*J. Mt. Sinai Hosp.*, 1941, 8, 188—209).—A review. E. M. J.

Ossification and vitamin-*D* action. J. P. McGowan (*Edinb. Med. J.*, 1942, [iv], 49, 190—199).—Conception of ossification as due to pptn. of $\text{Ca}_3(\text{PO}_4)_2$ from its saturated solution in plasma as a result of release of $\text{PO}_4^{''}$ by phosphatase is unsatisfactory. It is suggested that phosphoric acid liberated from lipins by "lecithinases" is neutralised by Ca and deposited in bone. Vitamin-*D* acts by liberating phosphoric acid in ossifying cells. Attention is drawn to lability of diphosphoglycerate in blood and to lecithin as a ubiquitous labile P reserve. H. S.

Prevention of dental caries by massive doses of vitamin-*D*. R. H. Brodsky, B. Schick, and H. Vollmer (*Amer. J. Dis. Child.*, 1941, 62, 1183—1187).—200 tuberculous children were divided into 3 groups: a control group who received only the hospital diet, devoid of any additional source of vitamin-*D*; a second group who received, in addition, 305,000 U.S.P. units of *-D* and 2,455,000 U.S.P. units of *-A* in 30 c.c. of fish-liver oil concentrate, and a 3rd group who received 600,000 U.S.P. units of *-D* as cryst. *-D*₂ in 1 c.c. of oil in addition to the same hospital diet. In the control group there developed 39 cavities (1.18 new cavities per child) during the observation period. In the second group there developed 13 cavities or 0.39 cavity per child and in the 3rd group there developed 6 cavities of 0.17 cavity per child. None of the children showed any toxic manifestation after the dose of *-D*. C. J. C. B.

Vitamin-*D* in human serum during and after periods of ingestion of large doses of *-D*. J. Warkany, G. M. Guest, and F. J. Grabill (*J. Lab. Clin. Med.*, 1942, 27, 557—565).—A method of freezing and drying serum, which permits preservation and concn. of the serum

without alteration of its vitamin-D content, is described. After doses of 400,000—500,000 units daily serum-D rose to 9000—13,000 i.u. per 100 c.c.; few toxic symptoms were observed. When the daily high dose of -D was const. serum-D often decreased after attaining a max. concn. After abrupt withdrawal of the daily -D serum-D did not fall to normal level for 3—6 months.

C. J. C. B.
Fat-soluble vitamins. I. Vitamin-K. W. John (*Angew. Chem.*, 1941, 54, 209—213).—A review (1937—1940).
 W. McC.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Respiration of animal tissue after freezing in liquid air. F. Lynen (*Z. physiol. Chem.*, 1940, 264, 146—152; cf. A., 1939, III, 789).—The respiration of rat tissues is greatly diminished by freezing in liquid air because the cells are disrupted and the concn. of the sol. constituents of the respiratory system is greatly reduced. The initial rate of respiration of the previously frozen kidney, heart, and liver is rendered equal to that of the untreated organs by adding succinate, since the succinic dehydrogenase system has no sol. constituent. Since the respiration of lung, spleen, and Jensen sarcoma depends in part only on the succinic dehydrogenase system, addition of succinate to these organs after freezing does not restore the original initial rate of respiration. Such restoration occurs with previously frozen testicle, but the rate of respiration remains less than that of untreated testicle to which succinate is added. The results show that Szent-Györgyi's theory of respiration does not apply to the lung, spleen, testicle, and Jensen sarcoma of the rat.
 W. McC.

Respiratory metabolism in fructosuria. H. J. Rynbergen, W. H. Chambers, and N. R. Blatherwick (*J. Nutrition*, 1941, 21, 553—564).—In fructosuria subjects injection of fructose was not followed by the normal rapid increase in R.Q. and the increase in blood-lactate did not occur. 10—20% of the fructose ingested was excreted. Fructosuria probably results from defective oxidative metabolism.
 A. G. P.

Effect of Triturus toxin on respiration of rat tissues in vitro. F. A. Fuhrman and J. Field, 2nd (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 423—425).—Low concns. had no effect. Slight increase of O₂ consumption occurred in concns. of 85—850 fatal mouse doses per ml., but causation was uncertain.
 V. J. W.

Body size and metabolism of liver slices in vitro. M. Kleiber (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 419—423).—In liver slices from the rat, rabbit, and sheep, the metabolic rate per g. *in vitro* is inversely proportional to the 4th root of body wt.
 V. J. W.

Basal metabolic rate in low-grade chronic illness. M. H. Stiles (*Amer. J. clin. Path.*, 1941, 11, 871—877).—The mean metabolic rate of 166 persons with low-grade chronic illness was —8. 83% had rates of 0 or below, and 43% rates of —10 or lower. Persons with moderately severe and severe symptoms had lower rates than those with mild symptoms.
 C. J. C. B.

Temperature and metabolism of seal during diving. P. F. Scholander, L. Irving, and S. W. Grinnell (*J. Cell. Comp. Physiol.*, 1942, 19, 67—78).—During diving, temp. of all parts of the seal's body falls. This fall is greater in peripheral than in deep parts, and in blubber and brain reaches 2.5° in a 15-min. dive. Heat production is decreased by 50% or more, due probably to accumulation of metabolites and lack of O₂. Muscle metabolism, however, is increased during diving, as determined by O₂ depletion and lactic acid formed, so that the observed total lowering is dependent on other tissues.
 V. J. W.

Action of liver and kidney slices on l(+)-lysine, -glutamic acid, and -aspartic acid. K. Felix and S. Naka (*Z. physiol. Chem.*, 1940, 264, 123—134; cf. A., 1939, III, 720).—Pulped or sliced rat liver does not attack l(+)-lysine and only slightly attacks l(+)-glutamic and -aspartic acid. The sliced kidney does not attack l(+)-lysine but readily attacks -glutamic acid (with consumption of 2 O₂ and production of 2 CO₂ per mol. of acid) and -aspartic acid (with consumption of 1 O₂ and production of 1 CO₂ per mol. of acid). The amount of NH₃ produced from these two acids is only approx. 33% of that which would result from complete deamination, no evidence of the formation of the corresponding keto-acids being obtained.
 W. McC.

Diseases of metabolism. A. G. Hildebrand and E. H. Rynearson (*Arch. intern. Med.*, 1942, 69, 344—365).—A review of recent literature.
 C. A. K.

Function of thymonucleic acid in living cells. E. Hammarsten (*J. Mt. Sinai Hosp.*, 1939, 6, 115—125).—A lecture.
 E. M. J.

Effect of oral administration of iodoacetic acid on cystine content of rats. A. White and E. S. Stevenson (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 431—435).—Rats on a low-protein diet containing 0.1% of iodoacetic acid have a reduced body-SH content as compared with controls. This difference is abolished by addition to the diet of l-cystine or dl-methionine.
 V. J. W.

Metabolism following parenteral administration of casein hydrolysate. M. Sahyun (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 14—19).—Prep. of a solution of amino-acids by hydrolysis of casein by 5N-H₂SO₄ with addition of l-tryptophan and l-cystine is described. Subcutaneous injection of this or of glycine or of another hydrolysate was made into rabbits and blood-urea-N and blood-NH₂-N were determined for the succeeding 7 hr. Results indicate that the first product is best utilised.
 V. J. W.

Physiology of the amino-acids. D. D. Van Slyke (*Nature*, 1942, 149, 342—345).—A review.
 E. R. S.

Physiology of the amino-acids. D. D. Van Slyke (*Science*, 1942, 95, 259—263).—An address.
 E. R. S.

Degradation of amino-acids and serum-proteins. IV. l(-) and d(+)-Histidine. K. Dirr and E. Bader (*Z. physiol. Chem.*, 1940, 264, 135—140).—In a fasting rabbit and a fasting man, the histidine content of the serum was higher, and that of the deproteinised serum lower, after injection of 1—3 g. of l- than after that of d-histidine, the differences being greater in the rabbit than in the man.
 W. McC.

Fat and carbohydrate metabolism: new aspects and therapies. R. D. Lawrence (*Proc. Roy. Soc. Med.*, 1941, 35, 1—10).—Both fat and carbohydrate can serve as fuel for the body; when the latter is not available, as in starvation and diabetes, the former is utilised. There results a flow of depot fat from the liver, and ketonic compounds are formed and burned in the peripheral muscles independently of carbohydrate metabolism; this is a normal process and harmful only in diabetes, especially if it occurs suddenly. Insulin in the diabetic, and carbohydrate in the starved, switches the metabolism from fat to carbohydrate and ketonuria quickly disappears. Hyperglycaemia may give rise to "diabetic obesity." Lipaemia occurs when fat is on its way to the storage depots, and when it is passing in the opposite direction; the latter is common in disease. Diabetic children frequently have enlarged livers which regain normal size under treatment.
 W. J. G.

Origin of ketone bodies from fats. S. Soskin and R. Levine (*Arch. intern. Med.*, 1941, 68, 674—686).—A review. Ketonic compounds are probably normal products of fatty acid catabolism in the liver and appear in excess in the blood when fat metabolism is speeded up; they are readily utilised by peripheral tissues.
 C. A. K.

Glycogen and adipose tissue. E. Tuerkischer and E. Wertheimer (*J. Physiol.*, 1942, 100, 385—409).—When rats which have been starved are placed on a diet rich in carbohydrates, glycogen (up to 1%) occurs in their adipose tissue in the first days of recovery and disappears on the 4th day. Other carbohydrates are present in adipose tissue in only min. quantities if at all. A recovery diet of carbohydrate 70%, protein 20%, and fat 10% is optimal for glycogen deposition in fat. In the brown interscapular fat, deposition of glycogen is particularly rapid and large, resembling that in the liver. Fat is deposited in adipose tissue 1 day after beginning of recovery and approaches a max. after 4 days, *i.e.*, when glycogen disappears from adipose tissue. Deposition of glycogen and fat in adipose tissues of guinea-pigs and rabbits is less regular and smaller in order of magnitude than in rats. Bacterial endotoxins of the *Salmonella* group prevent deposition of glycogen and inhibit deposition of fat in adipose tissue during recovery feeding. Adipose tissue of thyrotoxic rats consumes glycogen more rapidly than that of normal rats. It is concluded that adipose tissue can synthesise glycogen; that glycogen metabolism of adipose tissue is specifically regulated; that adipose tissue can convert carbohydrate into fat; and that adipose tissue plays a more active part in carbohydrate-fat metabolism than has been assumed.
 J. A. C.

Disturbed carbohydrate metabolism in rats maintained more than a year on fat-deficient diet. L. G. Wesson (*Endocrinol.*, 1941, 29, 900—904).—If rats are maintained for more than a year on a fat-deficient diet by giving additional protein, their R.Q. during carbohydrate assimilation falls to a normal from the high val. known to be present at 6 months. It rises again if insulin is given. If fat is added to the diet this insulin effect does not occur.
 V. J. W.

Glucose-tolerance test in marginal malnutrition. G. W. Robinson, P. Shelton, and F. V. Smith (*Arch. intern. Med.*, 1941, 68, 945—956).—5 patients with mental diseases showed glucose-tolerance test curves of the diabetic type, with max. blood-sugar vals. of 200—250 mg.-%. When their state of general nutrition had been improved the curves returned to normal. There was no evidence that the mental disease *per se* was responsible for the changes, which were attributed to malnutrition alone.
 C. A. K.

Effect of infection on carbohydrate tolerance. H. Pollack and H. Feibes (*J. Mt. Sinai Hosp.*, 1940, 7, 87—89).—Report of 2 cases.
 E. M. J.

Carbohydrate metabolism and staphylococcus infection in rabbits. T. F. Nicholson and W. L. Holman (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 75—77).—2 large intradermal injections of *Staph. aureus*, or of its toxin, cause a permanent decrease in carbohydrate tolerance, with curves resembling those of diabetes.
 V. J. W.

Behaviour of alkylated malonic, succinic, and glutaric acids in the animal body. R. Emmrich, P. Neumann, and I. Emmrich-Glaser (*Z. physiol. Chem.*, 1941, 267, 228—241).—Experiments with dogs show that alkylated malonic, succinic, and glutaric acids are much more difficultly metabolised than normal dicarboxylic acids with the same no. of C atoms. Na dimethyl-, di-*n*-butyl-, and *n*-butyl-malonates are largely eliminated unchanged in the urine. Similarly, *dl*-ethyl-, *-n*-propyl-, *-n*-butyl-, and *-n*-hexyl-succinic acids are recovered largely unchanged and optically inactive. α -Methylglutaric acid behaves similarly. With increasing length of the side-chains, the ease of metabolism first increases and then remains const. or diminishes slightly. It appears probable that the lower alkylated dicarboxylic acids are degraded in the same manner as the higher dicarboxylic acids, with which readiness of metabolism often increases from adipic acid upwards. Succinic acid is invariably present in the urine of animals to which alkylsuccinic acids have been administered. Possibly the latter (with the exception of methylsuccinic acid) restrict the action of the succinic dehydrogenase in the same manner as does malonic acid. Immediate degradation products, such as the corresponding unsaturated dicarboxylic acids, are not observed. Succinic acid is not found in the urine of dogs fed exclusively with potatoes. H. W.

Formation of phosphorus compounds in egg yolk. E. Chargaff (*J. Biol. Chem.*, 1942, 142, 505—512).—The P compounds (free and combined phosphatides, vitellin, inorg. P) are isolated from the yolks of eggs laid in the course of 8 days following the intramuscular injection into hens of radioactive Na_2HPO_4 . The rates of formation of "free" lecithin and cephalin and of the "combined" phosphatides accompanying the vitellin fraction are the same. The phospho-protein, vitellin, in the earlier stages of the experiment exhibits considerably higher radioactivity than do the phosphatides on a comparable basis. The possible biological relationship of the phospho-proteins and -lipins is discussed. H. W.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Antibacterial substances allied to sulphanilamide.—See A., 1942, II, 221.

Sulphanilamides. J. Zozaya (*Ciencia*, 1941, 2, 255—261).—Absorption by mice of sulphanilamide, sulphapyridine, sulphathiazole, sulphaguanidine, and sulphadiazine is compared following oral administration of 0.5, 2, and 4 g. per kg. of a 10% suspension in gum arabic. Determination of the concn. in the blood at 10-min. intervals for 150 min. by the method of Bratton and Marshall (A., 1939, III, 773) shows that sulphanilamide is absorbed most rapidly, the proportion absorbed falling with the increase in the dose. Absorption by the stomach and intestines increases with rising pH . F. R. G.

Effect of various sulphonamides on hæmolytic staphylococcus measured with manometric technique. W. Kempner, C. Schlayer, and P. Summers (*Amer. J. med. Sci.*, 1942, 203, 172—177).—The effect of various sulphonamides on growth rate of 3 pathogenic strains of hæmolytic staphylococcus was determined by measuring manometrically the O_2 consumption and anaërobic CO_2 formation of glucose-peptone broth cultures. The order of potency of the various drugs tested was: least effective, sulphaguanidine with a bacterial growth after 4½ hr. which corresponded to an O_2 consumption of 665 cu. mm. per hr. as compared with 865 cu. mm. of the drug-free control; then sulphapyridine Na 623 cu. mm.; Na disulone 534 cu. mm.; sulphadiazine 402 cu. mm.; and sulphathiazole and sulphathiazole Na 203 and 182 cu. mm., respectively. The amount of staphylococcal growth in sulphapyridine Na was more than 200% in excess of that in sulphathiazole, whilst that in sulphadiazine was only 100%. In pneumococcus cultures examined under the same experimental conditions, sulphapyridine Na was superior to sulphadiazine. For both bacteria sulphathiazole was the most potent inhibitor. By varying the concns. of the drugs it was shown that sulphadiazine was only half as effective as sulphathiazole as a growth inhibitor of staphylococcus. The sulphonamides inhibit the staphylococcus growth rate not only at optimal, but also at lowered, O_2 concns. and under anaërobic conditions. C. J. C. B.

Response *in vitro* of pneumococcus, staphylococcus, α -hæmolytic streptococcus, and Friedländer's bacillus to sulphonamides. J. B. Tredway and J. F. Sadusk (*Yale J. Biol. Med.*, 1941, 14, 143—153).—With 10 strains of pneumococci, sulphathiazole exerted the greatest bacteriostatic effect, followed by sulphapyridine, sulphadiazine, and sulphanilamide in that order. Three strains of *Staph. aureus* growing in broth were unaffected. Four strains of α -hæmolytic streptococcus and 2 strains of Friedländer's bacillus showed wide variations in response to the drugs, sulphathiazole being the most effective. F. S.

Sulphapyridine in cattle. L. A. Klein, A. L. Kleckner, and R. O. Blitz (*Amer. J. Vet. Res.*, 1941, 2, 332—340).—A daily dose of 4 g. per 100 lb. body wt. given to cows by mouth in 4-hr. fractions gave a blood concn. of 3—6 mg.-%. Undesirable effects were observed with all doses used, but disappeared within a few days of giving the

last dose. The red cell count and hæmoglobin level were unaffected; there was a neutrophil leucocytosis. E. G. W.

Sulphonamide treatment of staphylococcal septicæmia. R. G. Torrey, L. A. Julianelle, and H. G. McNamee (*Ann. int. Med.*, 1941, 15, 431—445).—62 patients suffering from staphylococcal septicæmia, referred to the authors for serum therapy, had previously been under sulphonamide treatment. Of these, 18 patients were given sulphanilamide, 12 sulphapyridine, 2 sulphamethylthiazole, 20 sulphathiazole, and 10 combinations of the different compounds. The drugs failed in all these cases to suppress the infection. 20 patients survived, presumably because of other treatment. Na sulphathiazole in concns. up to 30%, which sterilises completely *in vitro* heavy growths of *B. coli* in less than 15 min., has no effect on growth of *Staph. aureus* after 1 hr. exposure. The drug may be effective when septicæmia is at an early stage, with a low virulence of the organism, and in few staphylococci per c.c. of blood. Diagnosis of septicæmia was based on several daily blood cultures, counting the no. of organisms per c.c. blood, mannitol fermentation, and extraction and pptn. of the sp. bacterial carbohydrate. A. S.

Comparison of effects of sulphadiazine and sulphathiazole on *Staph. aureus*. C. H. Rammelkamp and M. L. Jewell (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 27—33).—Sulphathiazole and, to a rather smaller extent, sulphadiazine increase the bactericidal action of normal human blood, whether they are added *in vitro* or given by mouth. V. J. W.

Effects of sulphanilamide and sulphapyridine on experimental streptococcal infections. C. H. Huang and R. H. P. Sia (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 109—112).—Both drugs were given orally and were effective in preventing death in mice from intracerebral inoculations of streptococcus. In larger doses sulphanilamide caused toxic effects (paralysis), but sulphapyridine in similar doses did not. V. J. W.

Chemotherapy of pneumonia and meningitis. H. F. Dowling (*Med. Ann. Columbia*, 1941, 10, 463—467).—Mortality rates of 14.1, 11.9, and 10.5% were seen in 426, 85, and 133 cases of pneumococcal pneumonia treated by sulphapyridine, sulphathiazole, and sulphadiazine, respectively. The incidence of toxic reactions varied with the drug; nausea and vomiting was present in 21.8% of 372 sulphapyridine, in 12.0% of 100 sulphathiazole, and in 3.7% of 165 sulphadiazine patients; dermatitis in 2.2, 12.0, and 0.6%, renal lithiasis in 1.9, 2.6, and 0%, respectively. Anæmia or leucopenia and toxic psychosis were seen in equal proportions. Indications for cessation of sulphonamide therapy or change over to another drug of the group are discussed. E. M. J.

Chemotherapy in acute otitis media and mastoiditis. J. F. Curtin (*Minnesota Med.*, 1941, 24, 1063—1066).—A review. E. M. J.

Recovery from otitic pneumococcal meningitis. P. M. Moore, jun. (*Cleveland Clin. Quart.*, 1941, 8, 213—217).—2 patients suffering from otitic pneumococcal meningitis recovered under treatment with type-sp. antipneumococcal serum and sulphonamides. In one patient, mastoidectomy was not required. A. S.

Prognosis of pneumococcal meningitis treated with chemotherapy. G. Hollander (*Amer. J. Med. Sci.*, 1942, 203, 370—376).—In 260 reported cases the % of recovery with sulphapyridine alone was approx. that of combined sulphapyridine-serum therapy. The combination is indicated in the treatment of types III and V pneumococcal meningitis, in those infections secondary to an otorhinological condition and pneumonia, and in the younger age groups. No correlation could be made between the dose of the sulphonamide drug used, its concns. in both blood and c.s.f., and the clinical response. The prognosis was favourable if the c.s.f. was sterilised within 4 days with sulphapyridine. The prognosis in pneumococcal meningitis secondary to pneumonia is poor, possibly due to an acquired tolerance of the invading organism to the sulphonamide drug. C. J. C. B.

Chemotherapy of pyogenic meningitis. W. B. Weary and J. J. A. Lyons (*N.Y. Sta. J. Med.*, 1941, 41, 2124—2129).—Report of 20 cases treated with sulphonamides, 13 of which recovered. Sulphathiazole was successfully used in 4 of 5 cases of the staphylococcal type. E. M. J.

[Sulphapyridine for] influenza meningitis in an infant. M. Josephi, J. Mehlman, and D. Hager (*J. Pediat.*, 1941, 19, 823—825).—A case of meningitis in a 7-months-old infant caused by *B. influenza* is described in which recovery without sequelæ occurred following treatment with 9 g. of sulphapyridine and 61 c.c. of serum over 32 days. C. J. C. B.

Chemotherapy in septic thrombophlebitis of cavernous sinus. L. A. Schall (*J. Amer. Med. Assoc.*, 1941, 117, 581—584).—3 consecutive patients with bacteræmic staphylococcal thrombophlebitis of the cavernous sinus of the anterior type were successfully treated with heparin + sulphathiazole (blood concn. of 5 mg.-%). C. A. K.

Heparin and sulphathiazole in cavernous sinus thrombosis. I. L. Ershler and I. H. Blaisdell (*J. Amer. Med. Assoc.*, 1941, 117, 927—930).—Successful case report. There was massive hæmaturia and many purpuric areas in the skin which were attributed to the

heparin, since they disappeared when it was withdrawn, although the sulphathiazole was continued. C. A. K.

Therapy of cerebrospinal fever [with antiserum, antitoxin, and sulphonamides]. C. J. Tripoli and R. E. Selsler (*New Orleans Med. J.*, 1941, 93, 232—237).—97 cases were treated by various combinations with an average mortality of 29% (ranging from 8 to 36%). Cases in whom intraspinal injection was used *inter alia* had a 40% mortality, where no intraspinal treatment was applied 4%. E. M. J.

Recovery from subacute bacterial endocarditis after prontosil and sulphapyridine. R. H. Major and L. H. Leger (*J. Kansas Med. Soc.*, 1939, 40, 324—325).—Sulphapyridine (1 g. 6-hourly) was given in a case of bacterial endocarditis with *Strep. viridans* in the blood after 3 weeks' unsuccessful treatment with prontosil during which time 1350 grains had been given by mouth and 190 c.c. intramuscularly. The temp. fell to normal within 24 hr., subsequent blood cultures were always negative, and the blood sedimentation rate became normal. A blood transfusion was given after 3 weeks, and sulphapyridine treatment continued for 5 weeks. E. M. J.

Sulphonamides in treatment of experimental *B. typhosus* infections of rabbits. J. A. Kolmer and A. M. Rule (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 388—390).—Out of 16 inoculated controls 4 survived. Oral administration of 0.2 g. of the drug twice daily caused survival of all of 12 animals in the case of sulphanilamide or sulphapyridine, and 4 out of 12 in the case of sulphathiazole. V. J. W.

Influence of mandelic acid on course of typhoid fever. J. Kleeberg (*Trans. R. Soc. Trop. Med.*, 1941, 35, 191—196).—In 10 of 14 cases the fever was influenced by mandelic acid, either immediately by lysis or some days later almost by crisis. After the fall of temp. the patient recovered. In all cases the general condition, breathing, mental state, and appetite improved. The duration of the disease was shortened but severe cases with complications were not influenced. The bacilli did not disappear more quickly from the urine or stools than in untreated cases. C. J. C. B.

In-vitro effect of sulphanilamide, sulphapyridine, and sulphathiazole on *C. diphtherie*. G. Ouyang (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 41—43).—After 4—8 hr. incubation all 3 substances were bactericidal to this organism, sulphathiazole being effective against the largest no. of strains, and sulphanilamide against the smallest. V. J. W.

Action of sulphonamides on *M. lysodeikticus* and lytic and bactericidal activities of lysozyme. E. Neter (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 106—109).—1% sulphanilamide is bacteriostatic to small nos. of this organism, and this concn. or 0.1% of sulphapyridine or sulphathiazole does not interfere with the lytic activity of egg-white. Egg-white and sulphonamides together are more bactericidal than either separately. V. J. W.

Sulphonamide inhibition of bacterial luminescence. F. H. Johnson and K. Moore (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 323—325).—Luminescence of marine bacteria is reduced by 50—80% by presence of 0.1% sulphanilamide. It is restored by washing and resuspension in fresh medium. O_2 consumption is not affected, and *p*-aminobenzoic acid does not affect the inhibition. V. J. W.

Failure of sulphanilamide in treatment of experimental vaccinia of rabbits. J. A. Kolmer and H. Brown (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 138—140).—0.1 g. per kg. by mouth twice daily had no effect on development or course of this infection. V. J. W.

Failure of sulphonamides in treatment of experimental *B. diphtherie* infections of guinea-pigs. J. A. Kolmer (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 390—391).—Neoprontosil, sulphanilamide, sulphapyridine, and sulphathiazole had no effect on the survival of guinea-pigs inoculated with 1—2 min. lethal doses of bacilli in saline. V. J. W.

Sulphonamides as protective agents against carbon tetrachloride poisoning. B. E. Leach and J. C. Forbes (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 361—363).—2 doses of 30 mg. per 100 g. of sulphanilamide, sulphathiazole, or sulphapyridine, given by stomach tube, prevented death from doses of CCl_4 which were 50—100% lethal in controls. Sulphanilic acid had no effect. V. J. W.

Chemotherapy of lymphogranuloma venereum with sulphonamides. H. P. Jones, G. Rake, and C. M. McKee (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 318—323).—Inoculated mice may be apparently cured by sulphonamide administration, but in all cases show symptoms again after some months and yield active virus from the brain and other organs. V. J. W.

Control of malaria infection in ducks by sulphonamides. H. A. Walker and H. B. van Dyke (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 368—372).—Addition of 0.5% of sulphathiazole or sulphadiazine to diet prevents death from *P. lophura* inoculations which are 100% fatal in controls. Sulphanilamide is less effective. V. J. W.

Local use of sulphathiazole in dermatoses. H. M. Robinson and H. M. Robinson, jun. (*Sth. Med. J.*, 1941, 34, 1093—1095).—There was no growth on agar plates inoculated with infected material from

impetigo contagiosa or ecthyma when they were immediately sprayed with sulphathiazole in powder form, in a 5% solution, or in a 5% ointment. 58 cases of staphylococcal skin infection were treated with a 5% sulphathiazole ointment in a greasy or non-greasy base. All but 2 cases responded in 3—32 days. There were 2 cases of sulphathiazole contact dermatitis which cleared up when the ointment was replaced by one containing boric acid. Secondary pyogenic infections were cleared in 2—14 days in 26 cases but the primary condition (various ulcers, pediculosis, eczema, or epidermophytosis) did not improve. E. M. J.

Sulphonamides in fresh compound fractures. W. C. Campbell and H. Smith (*J. Amer. Med. Assoc.*, 1941, 117, 672—675).—Infection occurred in 26 (18%) of 143 fresh compound fractures where sulphanilamide was applied locally, as compared with 25 (33%) of 75 cases where the drug was not used. C. A. K.

Intracranial use of sulphadiazine; experimental study of histology and rate of absorption. E. F. Hurteau (*Canad. Med. Assoc. J.*, 1942, 46, 15—17).—Following local application to a cerebral wound sulphanilamide was most rapidly, and sulphathiazole, sulphadiazine, and sulphapyridine less rapidly, absorbed in descending order. Sulphadiazine when in contact with meninges or cerebral parenchyma caused no neuronal destruction, no glial reaction, negligible foreign body reaction in the meninges, and no untoward effect on wound healing. C. J. C. B.

Experiences with sulphapyridine and sulphathiazole. W. D. Province and F. K. Heath (*N.Y. Sta. J. Med.*, 1942, 42, 59—63).—Of the toxic symptoms in 202 cases treated with sulphapyridine and 178 receiving sulphathiazole nausea and vomiting were more common in the first, urinary crystals in the second group; psychosis and cyanosis were seen in the first group alone. 272 cases of pneumonia were treated with a mortality rate of 8.5%. E. M. J.

Reactions from use of sulphathiazole. C. E. Burkland and R. W. Satterthwaite (*Sth. Med. J.*, 1941, 34, 1095—1102).—89 of 300 cases of urinary tract infection treated with an average daily dose of 3 g. of sulphathiazole for 6.5 days showed some form of reaction. In 36 cases this consisted only of a rise in temp., nausea, hiccoughs, or drowsiness. There were 13 cases with partial reduction of urinary output, 9 of conjunctivitis, 6 of dermatitis, 25 of nausea and vomiting, 4 of hæmaturia, 3 of anæmia, 1 of leucopenia, and 1 of nystagmus. All these reacted to stoppage of the drug. E. M. J.

Acute yellow atrophy of liver following sulphanilamide therapy and avertin anaesthesia. R. Ottenberg (*J. Mt. Sinai Hosp.*, 1940, 6, 249—254).—Case report. E. M. J.

Toxic reaction after sulphapyridine. F. C. Maddox (*Chinese Med. J.*, 1941, 59, 578—579).—A female patient with pneumonia was given 20 g. of sulphapyridine over a period of 4 days. 12 days later a further 6 g. were given during 36 hr. and stopped because of abdominal discomfort, nausea, vomiting, headache, and mental depression; there was no rash. A few hr. later hæmaturia developed, with pain on micturition, and lasted for 2 days. There was no pain or tenderness in the kidneys and ureters. W. J. G.

Urolithiasis medicamentosa caused by sulphadiazine. P. Gross, F. B. Cooper, and M. L. Hagan (*Amer. J. Clin. Path.*, 1941, 11, 882—889).—Sulphadiazine by mouth (dosage not given) causes urolithiasis in mice and rats. The sulphadiazine uroliths are deposited almost exclusively in the renal parenchyma, mostly in the collecting tubules, and in the urinary papilla, and, to a small degree, in the convoluted tubules in the cortex. They are not sharply spiculated and as they tend to be immobilised in the tubules, are unlikely to produce hæmaturia. In a few mice they may cause death by a rapidly progressing acute urinary retention from complete obstruction at the urinary papilla. Pyelonephritis secondary to urinary obstruction in sulphadiazine-treated animals was infrequent and mild, and the uroliths dissolved and disappeared spontaneously when the drug was stopped. (3 photomicrographs.) C. J. C. B.

Use of gramicidin and other agents in chronic bovine mastitis. R. B. Little, R. J. Dubos, R. D. Hotchkiss, C. W. Bean, and W. T. Miller (*Amer. J. Vet. Res.*, 1941, 2, 305—312; cf. A., 1941, III, 1048).—Mastitis streptococci were eliminated from 12 of 16 infected cows in a herd of 116 cows. Gramicidin and novoxil were injected into the udder using the technique previously described. Injection of 20—80 mg. of gramicidin in oil on each of 4 consecutive days produced a mild reaction in the udder. E. G. W.

Effect of colloidal silver oxide on bovine mastitis. F. J. Weirther, E. O. Anderson, and E. Jungherr (*Amer. J. Vet. Res.*, 1941, 2, 141—145).—Infusion into the udder of cows with streptococcal mastitis of colloidal Ag_2O in mineral oil (6—12 injections of 10 ml. of 5% solution) gave promising results. E. G. W.

Effect of novoxil liquid on chronic bovine mastitis. L. A. Klein, A. L. Kleckner, and R. O. Blitz (*Amer. J. Vet. Res.*, 1941, 2, 145—151).—Injections of novoxil (colloidal Ag_2O in mineral oil) were made into the udders of 23 cows with chronic streptococcal mastitis. The dose was 5—20 ml. of a 2.5—10% solution, 1—10 injections at

intervals of 12—72 hr. Most effective method was a 5% solution at 24-hr. intervals, using 3—5 injections. The infection was successfully treated in 59 of 67 infected quarters; effects on milk yield were only temporary. E. G. W.

Bacterial flora of normal skin. Effect of various ointments and solutions. D. M. Pillsbury, C. S. Livingood, and A. C. Nichols (*Arch. Dermat. Syphilol.*, 1942, 45, 61—80).—In the concns. ordinarily used in washing, commercial fatty acid soap is not a good antiseptic, and the mechanical action of washing or scrubbing is most important in lowering the bacterial count. After the bacteria of the skin have been reduced the flora tend to regain their previous level; this rise may be increased by wearing gloves which cause sweating and prevent evaporation. Ointment bases, particularly petrolatum, increase the bacterial regrowth by acting as a relatively impermeable grease glove. Up to 1 hr. ammoniated Hg ointment and Hg phenyl nitrate ointments had no effect on skin bacteria. $KMnO_4$, boric acid, and solution of Al acetate are also ineffective. 70% alcohol is effective in reducing the bacteria of the skin; lower % are less effective. Wetting and emulsifying agents have no effect in increasing the antiseptic action of ammoniated Hg or Hg phenyl nitrate ointments or of $KMnO_4$ solution. C. J. C. B.

Treatment of skin diseases with merfen (mercury phenyl borate). F. Wyss-Chodat (*Schweiz. med. Wschr.*, 1941, 71, 534—535).—The ointment was used clinically in the treatment of trichophytic and pyodermic conditions. It is also recommended in varicose ulcers. A. S.

Chemotherapeutical use of halogenised phenols as external disinfectants. B. Zondek (*Nature*, 1942, 149, 334—335).—2-Chloro-*m*-5-xyleneol was used clinically, as 10% solution in oil, for parenteral (giving occasional painful infiltrations) and as 30% ointment for percutaneous application. The substance is absorbed by both routes and excreted in the urine combined with H_2SO_4 and with glycuronic acid, and it is 6 times as active as sulphamylamide or sulphapyridine for producing sterile urine. Percutaneous application of a 15% ointment was used for surgical sterilisation of the skin. Successful clinical reactions were obtained in the treatment of infection due to staphylococci, proteins, and *B. coli*, and in urogenic infections. The treatment is harmless and causes no secondary effects. E. R. S.

Comparison of alkylmercuric chlorides as "skin-sterilising" agents. M. T. Bush and A. D. Bass (*J. Pharm. Exp. Ther.*, 1942, 74, 95—97).—Alkyl derivatives of $HgCl_2$ were tested as skin disinfectants, using the *in-vivo* "skin graft" technique on rabbit skin. The 0.0036*m*. solutions in 70% alcohol all gave a high % of sterile skin snips. If the 0.0036*m*. (1:1000) solution of Hg *n*-propyl chloride is taken as a standard, it is found that solutions of the simple Hg alkyl chlorides are as effective as any and more effective than many of the commonly used antiseptic solutions. Hg alkyl bromides showed bactericidal action but their solubilities were lower than those of the chlorides. A 0.034% solution of Hg diethyl in 70% alcohol was ineffective. Application of Hg propyl chloride in 1:1,000 solution produced no ill effects on normal human skin, and favourable results have been obtained in the treatment of several cases of trichophytosis. H. H. K.

Efficiency of soaps and other disinfectants in destroying mastitis streptococci. C. McCulloch (*Amer. J. Vet. Res.*, 1940, 1, 18—22).—Solutions of commercial soaps and soap powders at 40° were 2—3 times as effective in killing mastitis streptococci in presence of skimmed milk as phenol at the same concn. Ordinary toilet soap can replace other disinfectants in the cow byre both for milkers' hands and for the cows' teats. Soaps containing cresols are no more effective than non-medicated soaps. Household lye is the disinfectant of choice for the floors of byres. E. G. W.

Relative toxicity of certain antiseptics containing soap and alcohol, with special reference to mouth washes. H. Welch and C. M. Brewer (*Amer. J. Publ. Health*, 1942, 32, 261—267).—Using the destruction of phagocytic activity as a measurement of toxicity, and comparing toxicity with germicidal ability in a toxicity index, the addition of alcohol and especially soap to a solution of phenol increased the toxicity index. Only 9 of 87 mouth washes were germicidal while 62 were toxic to polymorphs in a 1:5 dilution, 14 in 1:10, 2 in 1:15, 5 in 1:20, and 1 each in dilutions of 1:25, 1:30, 1:40, and 1:50. C. J. C. B.

Athlete's foot control. C. Weirich and R. Pokorny (*Soap*, 1942, 18, No. 3, 97, 99, 117).— $Na_2S_2O_8$ is valueless as a disinfectant or prophylactic against *Trichophyton rosaceum* or *T. interdigitale* (cf. A., 1942, III, 411). E. L.

Irritation of soaps on human skin. L. D. Edwards (*Soap*, 1940, 16, No. 12, 33—34; cf. A., 1940, III, 762; B., 1940, 464).—4 hr. exposure of living human skin to solutions of soaps of pure fatty acids indicates that K soaps are more irritant than Na soaps; soaps of lauric and myristic acids are far the most irritant; soaps of acids possessing double bonds or substituent groups differ in irritant action from the saturated acid soaps of the same C content. Tests of soaps of refined oils showed that the coconut oil

group and avocado oil soaps (containing lauric and myristic acids) tend to have greater irritant action than others. E. L.

Chemotherapeutic studies in acridine series.—See A., 1942, II, 237.

Synthetic mydriatics. I, II.—See A., 1942, II, 224, 237.

β -Phenyl- α - β -dialkylethylamines.—See A., 1942, II, 221.

Effect of prostigmine and guanidine on serum- and muscle-potassium. V. Thompson and A. Tice (*J. Pharm. Exp. Ther.*, 1941, 73, 455—462).—Prostigmine was given subcutaneously to dogs in doses of 1 mg. regardless of wt. Guanidine carbonate (20 mg. per kg.) was dissolved in saline and administered intravenously. Both drugs lowered the serum-K. The max. effect of prostigmine was reached in 30 min., while that of guanidine required 60 min. The symptoms produced by prostigmine rarely lasted longer than 60 min. after injection. In some animals, the prostigmine reaction was so severe that atropine had to be administered. This did not prevent the fall in serum-K. Guanidine produced no inhibition of acetylcholine-esterase activity. Prostigmine, however, caused a prolonged decrease in esterase activity, the duration of this action being much longer than the signs of prostigmine activity and the lowering of the serum-K. Prostigmine and guanidine produced a decrease in serum-K and a rise of muscle-K in rats. The serum-K response to prostigmine in patients with myasthenia gravis is not const. The direction of change seems to depend on the initial level of serum-K and whether the therapy has included KCl. The duration of relief of symptoms in myasthenia gravis after prostigmine follows more closely the change in serum-K (whether elevated or lowered) than it does the decrease in acetylcholine-esterase activity. H. H. K.

Effects of mecholyl, potassium chloride, and prostigmine on neuromuscular atrophy and regeneration. H. M. Hines, J. D. Thomson, and B. Lazere (*J. Pharm. Exp. Ther.*, 1941, 73, 463—467).—Daily administration of 4.8 mg. of mecholyl (acetyl- β -methylcholine), 47 mg. of KCl, and 0.72 mg. of prostigmine to adult rats with experimental lesions in their tibial nerves neither delayed muscular atrophy nor hastened neuromuscular regeneration, as indicated by wt. changes, creatine concn., and strength of the gastrocnemius muscle at various times after denervation (12—35 days). H. H. K.

Cardio-circulatory effects in man of neo-synephrin (*l*- β -methylamino- α -hydroxy- α -hydroxyphenylethane hydrochloride). A. Keys and A. Violante (*J. clin. Invest.*, 1942, 21, 1—12).—The threshold dosage of neo-synephrin in the adult is 2 mg. subcutaneously, 0.4 mg. intravenously, and 50 mg. orally. The threshold effect is a decline in pulse rate and a slight increase in blood pressure. With 5 mg. subcutaneously, 0.8 mg. intravenously, or 250 mg. orally, the pulse rate declines by 15—35 beats per min., the systolic blood pressure rises 15—40 mm., and the diastolic blood pressure rises 10—30 mm. The upper limit for safety in normal adults is 10 mg. subcutaneously, 1.5 mg. intravenously and 300 mg. *per os*. Neo-synephrin increases the positivity of the *T* wave, decreases that of *P*, and prolongs the diastolic pause; otherwise the e.c.g. is unchanged. Cardiac irregularities occur rarely with the largest doses. Neo-synephrin increases the size of the heart in diastole and systole. The stroke output of the heart is increased but the min. output of the heart is decreased. There is a slight increase in circulation time, venous pressure, and total work of the heart. In the atropinised subject the pressor effect is augmented and tachycardia is produced. The same result is obtained in vagotomised dogs and rabbits, and in the isolated or denervated heart. Tachycardia of sinus origin is readily controlled with neo-synephrin but not tachycardia of ventricular or supra-ventricular origin. Sinus bradycardia responds to neo-synephrin with a further decrease in pulse rate. C. J. C. B.

Cardio-circulatory effects in man of synephrin (*d*- β -methylamino- α -hydroxy- α -hydroxyphenylethane tartrate). A. Keys and A. Violante (*J. clin. Invest.*, 1942, 21, 13—18).—The threshold dosage is 100 mg., and the therapeutic dosage for pressor action is 400 mg. given subcutaneously. In normal man synephrin tartrate produces a marked rise in systolic and a slight rise in diastolic blood pressure, and a slight fall in pulse rate. These effects are max. 10—30 min. after injection subcutaneously and last for more than 1 hr. It produces a well-marked rise in stroke output of the heart and an increase in the min. vol. The arm-to-tongue circulation time is shortened. The systolic heart size is slightly diminished. The e.c.g. is generally unaltered but the *P* wave may be depressed. No irregularities in heart action were seen. Synephrin tartrate is intermediate between adrenaline and neo-synephrin in its relative sympathetico-parasympathetico-mimetic action. C. J. C. B.

Acetyl- β -methylcholine. Council on Pharmacy and Chemistry (*J. Amer. Med. Assoc.* 1941, 117, 860—861).—A review, and admission to N.N.R. C. A. K.

Continuous spinal anaesthesia. G. E. Burford and W. H. Galvin (*N.Y. Sta. J. Med.*, 1942, 42, 54—57). E. M. J.

cycloPropane allergy. R. F. Bonham (*Sth. Med. J.*, 1941, 34, 874—877).—A review. E. M. J.

Use of barbiturates in surgery. M. A. Walker, G. R. Peters, and P. E. Hiebert (*J. Kansas Med. Soc.*, 1938, **39**, 383).—A degree of anaesthesia which allowed the correction of a fracture of the forearm and the suturing of a skin wound respectively was induced by 1½ grains of seconal (Na methylpropylcarbonylallylbarbiturate) in 5- and 6-year-old girls. E. M. J.

Pentothal sodium in major orthopaedic surgery. J. D. Bowen (*J. Kansas Med. Soc.*, 1939, **40**, 462—463).—Report of 200 cases. E. M. J.

Anaesthesia for thoracoplasty. H. N. Brewster (*Chinese Med. J.*, 1941, **60**, 270—275).—Local infiltration of the line of incision and intercostal block, combined with N₂O and O₂ carried to the depth of analgesia only, gives satisfactory results. Evipan may be substituted. W. J. G.

Present status of therapeutic regional analgesia. E. A. Rovenstiner and H. M. Wertheim (*N.Y. Sta. J. Med.*, 1942, **42**, 123—127). E. M. J.

Oil soluble anaesthetics in treatment of anal fissure. L. A. Smith (*J. Kansas Med. Soc.*, 1939, **40**, 17—19). E. M. J.

Dental anaesthesia and oxygen lack. A. S. Burgen and E. Schofield (*Brit. Dental J.*, 1941, **71**, 303—306).—Investigations on the effect of the increased dead space due to the connecting tube and nose-piece of the apparatus used for administering N₂O-O₂ mixtures showed that the resistance of the narrow nose-piece tubes impeded respiratory movements and the hyperventilation due to the resistance produced acapnia. The % of O₂ inhaled by unpremedicated dental patients during N₂O-O₂ anaesthesia is so low that the use of the method for longer than 2—3 min. is dangerous; the alkæmia produced by the hyperventilation also reduces O₂ availability. It is suggested that wide-bore tubes be used, CO₂ added to the gas mixture, and the anaesthesia never used for longer than 5 min., without the addition of ether or vinesthene and a higher O₂ content or alternatively after premedication with morphine or barbiturates. P. C. W.

Procaine hydrochloride infiltration of perineum in obstetrics. W. Bickers (*Sth. Med. J.*, 1942, **35**, 17—20).—Report of 174 cases. E. M. J.

Hypnotic action of 2-iminobarbituric acids [dialkylmalonylguanidines]. R. Barré and A. Jacques (*Rev. Canad. Biol.*, 1942, **1**, 454—463).—Of 5 compounds (A., 1942, II, 237) tested on rats, only 2-anilo-5:5-diethylbarbituric acid (which is toxic) has any hypnotic activity, probably because of its hydrolysis to 5:5-diethylbarbituric acid. H. B.

Glucose-insulin in treatment of toxic [alcoholic] states. E. A. Strecker and T. D. Rivers (*Penn. Med. J.*, 1942, **45**, 601—603).—Repeated intravenous injections of 100 c.c. of a 50% glucose solution with 30—40 units of insulin and 120 mg. of thiamin chloride produced recovery in 3—6 hr. in 44 cases of acute alcoholism, in 8—48 hr. in 24 early cases of delirium tremens, and in 3—24 hr. in 16 cases of toxic psychosis due to barbiturates. E. M. J.

Action of hypnotics. F. Meyers, E. D. Cook, and R. C. Page (*N.Y. Sta. J. Med.*, 1940, **40**, 12—19).—8 subjects with normal cardio-vascular systems and 4 with moderate congestive heart failure were given therapeutic doses of a placebo, *N*-tolylbutylethylbarbital, neonal, *N*-*o*-ethylphenyl-*N'*-ethylurea, Na pentobarbital, or Na amytal. The time of onset of sleep was not influenced by the hypnotics; the average length of sleep was increased by 20 min. Gross sleep movements were increased in the heart failure group, except by Na pentobarbital, and pulse rate, respiratory rate, and blood pressure were depressed in those with normal cardio-vascular systems. E. M. J.

Nitrogen derivatives of α -phenylcrotonic acid.—See A., 1942, II, 225.

Use of intravenous barbiturate in labour. B. R. Bonnot (*Ohio Sta. Med. J.*, 1941, **37**, 1050—1052).—1 c.c. per 12.5 kg. of a 10% solution of pernocton Na (Na sec.-butylbromoallylbarbiturate) was given in 1500 cases when the pains became severe. Delivery was effected under gas or ether anaesthesia. Amnesia was produced in 98% of cases, vomiting occurred in 5%, 2% complained of a bitter taste in the mouth during the injection. 4% had fine tremors during the injection, and in 15% excitement was caused, usually allayed by a further dose of pernocton Na. E. M. J.

Effect of scopolamine on foetus. R. Dreisbach and F. F. Snyder (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 197—198).—Foetal kittens and puppies showed no toxic results following injection of 10—150 mg. per kg. into the mother before and during parturition. V. J. W.

Effect of morphine on labour. F. F. Snyder and K. T. Lim (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 199—200).—Intravenous injection of 13 mg. per kg. of morphine into rabbits caused no lasting damage to foetuses delivered by laparotomy, but caused great prolongation of parturition and a high % of still births. V. J. W.

Comparative potentiating effects of certain therapeutic agents on sodium evipan hypnosis. O. W. Barlow, D. R. Climenko, and E. Homburger (*Proc. Soc. Exp. Biol. Med.*, 1942, **49**, 11—13).—

Duration of hypnosis caused in rats by Na evipan was prolonged by previous administration of acetylsalicylic acid, amidopyrine, "demerol" (ethyl 4-phenyl-1-methyl piperidine-4-carboxylate), or morphine in order of increasing effectiveness. V. J. W.

Effect of vitamin-C deficiency on action of different types of barbiturates. R. K. Richards, K. Kueter, and T. J. Klatt (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 403—409).—Vitamin-C deficiency in guinea-pigs does not alter the duration of sleep produced by barbital or pentothal, but it prolongs markedly that produced by mephambal. Prolongation is not due to decreased liver-glycogen, inanition, or increased liver-fat. V. J. W.

Effect of a barbituric acid derivative on lobeline circulation time. K. Berliner and A. Lilienfeld (*Amer. J. Med. Sci.*, 1942, **203**, 349—354).—Seconal, a derivative of barbituric acid, prolongs the lobeline circulation time. This prolongation is due to the depressant effect of seconal on the respiratory centre and the carotid sinus. It does not, therefore, represent a true slowing of blood flow but rather an increase in reaction time. C. J. C. B.

Dilantin sodium therapy in epilepsy. Y. K. Feng and Y. K. Hsu (*Chinese Med. J.*, 1941, **59**, 508—525).—Results of treatment with dilantin Na (epanutin) over 8—9 months in 6 cases were as good as with the bromide-luminal regime; epanutin may be substituted for the latter if this is not beneficial. 2 cases showed hypertrophy of the gums but no alteration in blood-ascorbic acid. W. J. G.

Effect of delvinal sodium on respiratory metabolism of rhesus monkey. S. A. Peoples and E. B. Carmichael (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 381—384).—Doses of 30—45 mg. per kg. caused a fall in O₂ consumption and in rectal temp. Doses of 40—45 mg. per kg. caused surgical anaesthesia for 3—5 hr. V. J. W.

Effect of metrazol on blood pressure of man and dog. R. A. Woodbury, W. F. Hamilton, H. M. Cleckley, and P. P. Volpitta (*J. Pharm. Exp. Ther.*, 1941, **73**, 430—440).—Continuous records of arterial pressure were obtained from 5 men and 6 dogs. Convulsant doses of metrazol were rapidly injected intravenously, either without premedication or after preliminary administration of curare, erythroidin, atropine, a spinal anaesthetic, or ergotoxine. Convulsant doses of metrazol increase the blood pressure by an average max. of 100 mm. Hg. Vasoconstriction plays only a minor rôle. The main rise is limited to the duration of and is produced by the contractions of the skeletal muscles. Large doses of curare or erythroidin, which prevented the convulsions, restricted the rise of pressure. Therapeutic doses, which reduced the severity of the convulsions, were less effective. During the first min. after the convulsion, the blood pressure decreased below the pre-injection level. In man metrazol excites the parasympathetic and sympathetic nervous systems. In the presence of high spinal anaesthesia metrazol can produce dangerous degrees of bradycardia. This can be controlled by atropine. The rise of blood pressure after injection of convulsive doses of metrazol in unanaesthetised dogs is produced by vasoconstriction. In dogs parasympathetic excitation also occurs, but is masked unless the sympathetic system is rendered ineffective by high spinal anaesthesia or ergotoxine. As in man, the convulsions themselves increase venous return and peripheral resistance, but they increase the arterial pressure only 20—30 mm. Hg. This is because the convulsions in dogs fail to produce a large increase in the intrathoracic-abdominal pressure. Consequently the large arteries and the blood vessels of the viscera are subjected to very little outside pressure. Subconvulsant and convulsant doses of metrazol produce only a slight rise in the pulmonary arterial pressure and very little change in the pulmonary gradient (pulmonary arterial pressure minus pulmonary venous pressure). H. H. K.

Pyridine-3-acetic acid.—See A., 1942, II, 203.

Expectorants. P. Holinger, F. P. Basch, and H. G. Poncher (*J. Amer. Med. Assoc.*, 1941, **117**, 675—678).—Bronchoscopic studies in patients showed that expectorants may help to liquefy sputum in the larger bronchi but rarely affect the viscid secretions in the smaller bronchi. Inhalation of steam or a high humidity atm., or inhalation of 5—10% CO₂, is the most efficient means of liquefying sputum. CO₂ also increases the resorbing power of the bronchial mucosa. O₂ has an antiexpectorant action. C. A. K.

Use of intravenous ergometrine in third stage of labour. E. J. Davin and T. N. Morris (*Med. Ann. Columbia*, 1940, **9**, 1—7).—0.2 mg. of ergometrine tartrate was given intravenously after completion of the second stage of labour in 1617 cases including 16 cases of Cæsarean section and placental expression with a resultant average length of the third stage of 2.3 min. (ranging from a few sec. to 14 min. excluding 20 cases of retained placenta). After delivery of the placenta 1 c.c. of neo-tygergen (containing 0.125 mg. of ergometrine and 0.25 mg. of ergotamine) and 0.5 c.c. of pituitrin were injected intramuscularly. The incidence of post-partum hæmorrhage in 637 cases was 2.66% (over 500 c.c.) or 1.73% (over 600 c.c.). E. M. J.

Oral administration of mercurial diuretic in treatment of congestive heart failure. K. L. Dickens (*New Orleans Med. J.*, 1942, **94**, 345—346).—5 enteric coated tablets containing 80 mg. of

salyrgan and 40 mg. of theophylline were given 2—3 times at 4—6 days interval to 9 patients with congestive heart failure and œdema while 3 g. of NH_4Cl were given daily for 3 days prior to the drug and 2 g. on the day. The daily urinary output was more than doubled in most cases and 5 patients lost 14 lb. in wt. during the first 24 hr.

E. M. J.

Use of diuretics in treatment of localised œdema. M. A. Schnitker (*Ohio Sta. Med. J.*, 1941, 37, 328—337).—11 cases of œdema of the extremities in the absence of cardiac or renal disease were treated by elevation of the part and intravenous injection of 2 c.c. of mercurpurin, repeated if necessary. 8 cases responded well and 2 more did so after additional administration of NH_4Cl for 2—4 days.

E. M. J.

Sodium phosphate in treatment of diabetes. B. Joseph (*N.Y. Sta. J. Med.*, 1941, 41, 2232—2235).—Insulin doses could be reduced in 104 diabetics with the help of a daily 2—3 g. of Na phosphate. In 24 patients the blood-sugar did not rise appreciably when the insulin previously given for 30 days was completely replaced by oral doses of 2.5—3.0 g. of Na phosphate for 8 days; urinary sugar rose on an average from 0.3 to 1.5%.

E. J. M.

Action of aminophyllin in hypertensive diabetics. H. H. Zinneman (*Nebraska Sta. Med. J.*, 1941, 26, 288—294).—Of 10 cases of hypertension and arteriosclerosis over the age of 50 and with a normal resting blood-sugar, 9 had a "diabetic" glucose-tolerance curve, 4 of these were observed for 4 months while taking aminophyllin orally (0.75 g. daily) or intravenously (0.48 g. twice daily). 2 showed no change in blood pressure or blood-sugar; in the other 2 blood pressure was reduced and normal tolerance tests were obtained after 2 and 4 months respectively. 8 cases of diabetes with hypertension over the age of 40 were similarly treated; previous insulin treatment was discontinued in 4. After 4 months 5 cases showed diminution in blood pressure, normal resting blood-sugar, and disappearance of glycosuria on an increased diet. 3 cases did not respond; two of them had only a moderate degree of hypertension.

E. M. J.

Toxicity of intravenous mercurial injections in nephrosis. M. C. Tyson (*J. Amer. Med. Assoc.*, 1941, 117, 998—999).—Fatal convulsions occurred in a boy aged 3 years with nephrosis immediately after the 2nd intravenous injection of mercurpurin. A man aged 27, also with nephrosis, had convulsions with respiratory and cardiac arrest after the 5th injection of esidrone, but he recovered after 6 hr. unconsciousness. It is suggested that these reactions are anaphylactic in nature and may be related to the altered blood-proteins.

C. A. K.

Cardiac depression by mercurial diuretics. R. L. Johnston (*J. Lab. clin. Med.*, 1941, 27, 303—307).—The mercurial diuretics are toxic to the isolated turtle heart in proportion to their Hg content. This side action is distinct from the diuresis and may sometimes impede it. Purines and other cardiac stimulants have some antidotal action. $\text{Na}_2\text{S}_2\text{O}_3$ perfused through the Hg-poisoned heart abolishes heart block.

C. J. C. B.

Massive dose arsenotherapy of early syphilis by intravenous drip. W. Leifer, L. Chargin, and H. T. Hyman (*J. Amer. Med. Assoc.*, 1941, 117, 1154—1160).—A review.

C. A. K.

Evaluation of massive dose therapy of early syphilis. D. C. Elliott, G. Baehr, L. W. Shaffer, G. S. Usher, and S. A. Lough (*J. Amer. Med. Assoc.*, 1941, 117, 1160—1166).—Massive arsenotherapy, e.g., intravenous drip of mapharsen, 1200 mg. in 5 days, was used in 968 cases of early syphilis. Within 6—12 months of therapy there were 5—15% of failures, the best results being obtained with seronegative primary syphilis. In a larger series of 1600 cases there were 5 deaths due to toxic encephalitis, but other toxic effects were mild.

C. A. K.

Arsenic acid in treatment of arsenical dermatitis. M. Delp (*J. Kansas Med. Soc.*, 1941, 42, 519—522).—7 cases of arsenical and one of exfoliative dermatitis were cured within 4 weeks by daily or 3 times weekly intravenous injection of 300—500 mg. of Na ascorbate combined in some cases with daily oral doses of 300 mg.

E. M. J.

Arsenical hepatitis. J. R. Scott (*N.Y. Sta. J. Med.*, 1940, 40, 53—54).—A jaundiced patient with temp. of 101—102°, anorexia, and headache excreted considerable amounts of As in the urine. The jaundice cleared up within a week and the patient was given $\text{Na}_2\text{S}_2\text{O}_3$, at first intravenously (1 g. in 10 c.c. of distilled water on alternate days for 10 days and then twice weekly for 2 weeks) and then by mouth (0.5 g. 3 times a day). After 3 months no more As was excreted. The source of the As was fruit and vegetables sprayed with arsenical solution.

E. M. J.

Rapid treatment of early syphilis with multiple injections of mapharsen. E. W. Thomas and G. Wexler (*Amer. J. Publ. Health*, 1941, 31, 545—556).—273 cases were treated with 0.1 g. of mapharsen intravenously twice a day for 10 days. There were 3 cases of hæmorrhagic encephalitis. 86% became serologically negative in 6 months. The combination of intravenous typhoid vaccine and mapharsen in 141 cases, especially when both are administered

the same day, gave more frequent transitory toxic effects than mapharsen alone. These combined fever- and mapharsen-treated cases have not been followed up long enough to evaluate the results.

C. J. C. B.

Potassium permanganate poisoning [after ingestion]. D. Green and O. S. Warr (*Sth. Med. J.*, 1941, 34, 1288—1289).—Report of 31 non-fatal cases.

E. M. J.

Dermatitis due to liquid lip rouge. I. L. Schonberg (*Arch. Dermat. Syphilol.*, 1942, 45, 152—155).—A case report with positive patch test.

C. J. C. B.

Resin dermatitis from new unlaundered underclothing. A. G. Gould, A. B. Beresford, and N. S. Moore (*N.Y. Sta. J. Med.*, 1941, 41, 2236—2237).—An acute dermatitis with œdema of the penis and scrotum was seen in 5 students after the use of new unlaundered pyjamas or shorts. Rapid relief was obtained after the use of 25 units of torantil, a histaminase prep., 4 times daily by mouth. 1.5 g. of Ca gluconate 3 times a day, starch baths, and local applications.

E. M. J.

Psychosis following use of marihuana (*Cannabis indica*). H. C. Curtis (*J. Kansas Med. Soc.*, 1939, 40, 515—517).—Report of 3 cases ending in acts of criminal violence.

E. M. J.

Boric acid poisoning. H. A. Peyton and D. Green (*Sth. Med. J.*, 1941, 34, 1286—1288).—A young man who after a nephrectomy was by mistake given a hypodermoclysis of 700 c.c. of a 4% solution of H_3BO_3 was given 4.5 l. of fluids daily for one week by mouth and intravenously and had MgSO_4 compresses applied to the thigh areas where the solution had been administered. Within 12 hr. the patient developed a general erythema most marked about the face and neck, which became a vivid scarlet. It lasted several days, gradually faded, and was followed by a desquamation similar to that of scarlet fever. There was also a dry, non-productive cough, sore throat, abdominal distention with pain, nausea, and vomiting. For 4 days there was low-grade pyrexia. Non-protein-N was 52 mg.-% on the 2nd and 75 mg.-% on the 4th day when intravenous phenolsulphonethalein showed an output of only 48%. Blood-Cl fell to 370 mg.-% and he developed acute urinary retention. Diastolic pressure fell to 50 on the 2nd day when he became restless and disoriented. On the 5th day he developed a *B. coli* pyelonephritis which was controlled by NH_4Cl therapy. Blood and urine chemistry returned to normal within one month.

E. M. J.

Toxic effects of bitter-tasting phenylthiocarbamide. C. P. Richter and K. H. Clisby (*Arch. Path.*, 1942, 33, 46—57).—8 rats given 0.5 mg. survived, 18 rats given 1—10 mg. died in 2—18 hr. with marked respiratory distress and decrease in body temp. to levels as low as 94° F. The thoracic cavity was filled with a clear serous fluid and the lungs were œdematous. Pathological changes were not found in other parts of the body. Administration of the drug in progressively larger amounts over 20—80-day periods increased the tolerance to 10—12 mg. per day. The body temp. of chronically poisoned rats first became subnormal (15 days), then elevated (10—30 days), and finally dropped to very low levels (96.6—94° F.). The body wts. remained unchanged for 20—40 days, then dropped sharply. Some of these rats showed tetany. 2 black rats showed striking greying of the hair in large areas over the back and head. At autopsy the thyroid glands were hypertrophied and hyperæmic. The thymus and ovaries showed atrophy; other glands showed no changes. Thyroid glands removed from rats while the body temp. were still elevated, and before the wts. showed a sharp decrease, presented typical hyperplasia. Thyroid glands removed from rats which had reached the terminal stages showed that almost all of the epithelial cells had become dislodged from their normal position and almost completely filled the lumina of the follicles. The hypertrophy of the thyroid resulted from an effort of the organism to compensate for the reduction of metabolism produced by the drug, and the terminal stage represented a state of exhaustion. (5 photomicrographs.)

C. J. C. B.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Hypothermia. J. H. Talbott, W. V. Consolazio, and L. J. Pecora (*Arch. intern. Med.*, 1941, 68, 1120—1132).—A patient with schizophrenia was exposed to low external temp. which lowered body temp. to below 98° F. (min. 80°) for 50 hr. During restoration of temp. external heat was applied too rapidly and death occurred from cardiovascular collapse. Autopsy showed patchy bronchopneumonia and slight degeneration of the cortical cells of the brain, but no morphological changes sufficient to account for death.

C. A. K.

Effects of [carbon monoxide] combustion products of natural gas [on public health]. H. G. Beck (*New Orleans Med. J.*, 1942, 94, 361—368).—The symptomatology of chronic CO poisoning was reviewed in connexion with the escape of CO from house or shop appliances. Of 279 cases living with faulty gas appliances 142 were asymptomatic. None of the 38 asymptomatic cases whose

blood was tested showed more than 8.7% of CO. The presence of CO in blood was associated with a high incidence of hæmoglobin val. of 90% and over and red cell counts of 4.5×10^6 and over.

E. M. J.
Carbon monoxide and particulate matter in air of Holland tunnel and Metropolitan New York. W. P. Yant, E. Levy, R. R. Sayers, C. E. Brown, C. E. Traubert, H. W. Frevert, and K. L. Marshall (*U.S. Bur. Mines*, 1941, *Rept. Invest.* 3585, 69 pp.).—The aerial content of CO and particulate matter in the vicinity of the tunnel did not differ significantly from that in Metropolitan New York.

E. M. K.
Mercury poisoning as a mining hazard. S. J. Davenport and D. Harrington (*U.S. Bur. Mines*, 1941, *Inf. Circ.* 7180, 27 pp.).—A summary of published work on the incidence, symptomatology, and treatment of chronic Hg poisoning.

XXII.—RADIATIONS.

Biological significance of recent advances of radiological physics and technique. J. H. Müller (*Schweiz. med. Wschr.*, 1941, *71*, 796—799).—A review.

A. S.
Biological effects of ionising radiation. G. Failla (*J. Appl. Physics*, 1941, *12*, 279—295).—A review. The genetic effects of ionising radiation, the variations in sensitivity to injury by such radiation between cells of different types and ages and between individuals of the same type, the process of recovery, and the time lag in development of effects are discussed. The detection and prevention of injury to workers exposed to ionising radiation are discussed.

O. D. S.
Effect of γ -radiation on cells *in vivo*. III. Spaced radiation. F. G. Spear and A. Glücksmann (*Brit. J. Radiol.*, 1941, *14*, 65—76; cf. A., 1938, III, 1045; 1941, III, 45).—Tadpoles were exposed to γ -radiation with exposures of 268 r. at 3.8 r. per min. (A), 536 r. at 0.34 r. per min. (B), 536 r. at 2.05 r. per min. (C), 536 r. at 3.8 r. per min. (F) and 2 exposures of 268 r. at 3.8 r. per min. separated by intervals of 24 hr. (D), 2 hr. (E), and 10 days (G). Irradiation always effected a reduction in mitotic activity for up to 12 hr. followed by a rise in the no. of dividing cells but with great disturbance of the normal ratio of 59 : 100 : 44 of cells in prophase, metaphase, and telophase, respectively. The prophase count was the highest at this period and recovery, *i.e.*, the point at which the metaphase count overtakes the prophase count again, was reached in 11.5—15.5 days in A—E, in 12 days from the 2nd exposure in G, and had not been reached in 21 days in F. Degenerative cells which were at their max. within the first 3 days had disappeared about the same time. The reduction of mitotic activity was most marked and persistent after the second exposure of G. The size of the germinative zone of the eye was reduced in all experiments in the first few days but began to increase again after 7 days except in G. The normal size was reached after 21 days except in F where a max. was reached in 14 days and in G where it was still small 14 days after the second exposure.

E. M. J.
Effect of ionising radiations on broad bean root. II. Culture methods and statistical treatment of mortality data. II. Lethal action of γ -radiation. III. Lethal action of neutron radiation. L. H. Gray and J. Read (*Brit. J. Radiol.*, 1942, *15*, 11—16, 39—42, 72—76).—I. Roots were made to grow straight by forcing them along $\frac{1}{2}$ -in. glass tubes held in a glass tank filled with tap water. They were kept in const. darkness so as to evade the diurnal variations in radiation-sensitivity of the tip of the bean root. For the statistical evaluation of the lethality curves it was assumed that the sensitivities were normally distributed against the logarithms of the dose.

II. 2 types of apparatus were devised for γ -irradiation. The second type described was also suitable for neutron irradiation. The effective dose rate was 4.85 energy units per min. with a standard deviation of 3%. The 2 methods gave 726 and 651 energy units respectively for mean lethal dose. The second was probably more accurate and the resulting sigmoid mortality curve showed no real difference from that obtained by neutron irradiation in previous experiments (cf. A., 1939, III, 1110).

III. The effective energy of the neutrons was 2.5—2.8 Me.v., practically unaccompanied by γ - or X-radiation. Red P tablets were placed immediately above and below the root tips and the β -ray activity of the radio-Si produced was measured during the 2—3 hr. following irradiation. Comparison with ionisation measurements and the knowledge that the tissue dose in energy units was equal to 7 ± 1.4 times the ionisation measured in e.s.u. per c.c. at equal to 7 ± 1.4 times the ionisation measured in e.s.u. per c.c. at the n.t.p. in the standard chamber gave by interpolation between the position of the 2 P tablets a chart of the dose distribution. The mean lethal dose was 75 ± 16 energy units, thus proving 8.7 ± 1.6 times as effective an irradiation as γ -irradiation (cf. II, above).

E. M. J.
Physical factors in indirect radiography. I. Optimum combination of film and fluorescing screen. B. Stanford. II. Light transmission of X-ray protective lead glass. R. Herz and B. Stanford. III. Simple method for detection of latent image reinforcement in fluorescing screen. IV. Quantitative estimation of actinic

value of afterglow of fluorescing screen. V. Effect on luminous output of variation of crystal size of fluorescing material. VI. Effect of variation of coating thickness of fluorescing material on luminous output. B. Stanford (*Brit. J. Radiol.*, 1941, *14*, 128—135, 181, 213—214, 244—246, 304—306, 392—395).

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Vitamin-E. XXXVI. Behaviour at the dropping mercury electrode of quinones related to vitamin-E. L. I. Smith, L. J. Spillane, and I. M. Kolthoff. XXXVII. Amperometric titration of α -tocopherol with auric chloride at the dropping mercury electrode. L. I. Smith, I. M. Kolthoff, and L. J. Spillane (*J. Amer. Chem. Soc.*, 1942, *64*, 644—645, 646—648).—XXXVI. α -Tocopherylquinone and 2 : 2 : 7 : 8-tetramethylchroman-5 : 6-quinone give satisfactory polarograms in 75% alcohol buffered with Na acetate-acetic acid or (for the former only) aniline-aniline perchlorate. 2 : 7 : 8-Tri-methyl-2- $\delta\mu$ -trimethyl-*n*-tridecylchroman-5 : 6-quinone is not obtained sufficiently pure from α -tocopherol and HNO₃.

XXXVII. 0.001—0.003M- α -Tocopherol is accurately ($\pm 0.3\%$) determined by amperometric titration by AuCl₃ in 75% alcohol using a dropping Hg electrode at an applied potential of -0.4 v. and 0.1M-benzoic acid-Na benzoate-NaCl as supporting electrolyte. Results with 6-hydroxy-2 : 5 : 7 : 8-tetramethylchroman are about 2% high.

R. S. C.
Electrophoresis of the chlorophyll-protein complex. M. Fishman and L. S. Moyer (*Science*, 1942, *95*, 128—129).—Suspensions of the complex prepared from young leaves of *Phaseolus vulgaris*, L., are isoelectric at p_H 4.7 in 0.02M-acetate buffers at 25° and migrate independently of size, shape, or degree of clumping. The complex is denatured by 0.04M-acetic acid in 5—10 min., the new isoelectric point being at p_H 5.0.

E. R. R.
Dielectric studies on muscle-hæmoglobin. H. O. Marcy 3rd and J. Wyman, jun. (*J. Amer. Chem. Soc.*, 1942, *64*, 638—643).—The dielectric properties of a 2.31% aq. solution of horse myoglobin have been determined over a range of frequency from 1.76 to 15 megacycles. The crit. frequency is 5.5 megacycles, which is approx. twice that of hæmoglobin, and half that calc. by Stokes' law, namely 10.9 megacycles. The observed val. of the static dielectric increment per g. of protein was 0.15 as compared with Oncley's val. of 0.33 for hæmoglobin.

W. R. A.
Electrical activity of acetylcholine.—See A., 1942, I, 241.

Absorption of ultra-violet energy by the peptide linkage.—See A., 1942, I, 194.

Long X-ray diffraction spacings of collagen.—See A., 1942, I, 231.

Spectrophotometric study of glutathione.—See A., 1942, I, 194.

XXIV.—ENZYMES.

Effect of X-rays on the conjugated protein *d*-amino-acid oxidase. W. M. Dale (*Biochem. J.*, 1942, *36*, 80—85).—Both the sp. protein and its prosthetic group, alloxazine-adenine-dinucleotide, are sensitive to X-rays, the max. sensitivity being observed when the two portions are irradiated separately. The radiosensitivity of the protein-dinucleotide system is approx. that of the protein alone, since the dinucleotide is protected by the protein. Other substances, particularly nucleic acids, but not NaCl, protect the dinucleotide in concns. higher than that of the latter but larger amounts are required for protection of the protein group.

H. G. R.
Preparation and properties of renin. O. Schales (*J. Amer. Chem. Soc.*, 1942, *64*, 561—564).—Prep. of renin (up to 93 μ g. per rabbit unit) from pig or human kidney is described. In rabbits the effect of human renin lasts longer than that of pig renin. Pig renin (up to 13 units per kg.) has no effect in man. In man human renin causes rise of venous and systolic pressure. Pig renin causes no permanent hypertension in rabbits.

R. S. C.
Acetylcholine-esterase concentration during the development of human foetus. K. A. Youngstrom (*J. Neurophysiol.*, 1941, *4*, 473—477).—The acetylcholine-esterase concn. in the several gross divisions of the central nervous system, in skeletal muscle, and in liver has been determined in man for the foetal period; it is highest in the liver in the early stage. In the nervous system the period of rapid concn. parallels the functional development.

S. CR.
Specificity of enzymes hydrolysing esters of substituted amino- and nitrogenous heterocyclic alcohols. D. Glick (*J. Amer. Chem. Soc.*, 1942, *64*, 564—567).—The term "azolesterase" is proposed for esterases acting on esters of nitrogenous alcohols. The rates of non-enzymic and enzymic hydrolysis of 43 such esters are determined, enzymes from horse serum and rabbit serum with and without atropine-esterase being used. Prevention of enzymic hydrolysis by NH₂ or Salkyl in the acidic part of the ester is confirmed. Esters of mono- and di-alkylamino- and 2-piperidyl-alcohols are not hydrolysed by enzymes of horse serum, but sometimes by the enzymes of one

or both types of rabbit sera; this hydrolysis, unless due to cocaine-esterase, must be due to a new enzyme. R. S. C.

Simple amidases and azylases. B. Trolle (*Fermentforsch.*, 1941, **6**, 1942—1948).—Brewers' and distillers' yeasts contain no simple amidases although they degrade certain amides of NH_2 -acids whilst *Torula agilis* degrades both NH_2 -acids and the simple amides and therefore contains amidases; these have also been isolated from extracts of organs, e.g., intestinal mucus. Their activity is measured from the NH_3 and CO_2H groups liberated. Azylases are diastases which degrade the amides of substituted acids, but do not attack the true peptides. They fall into 2 classes, viz., those accompanying the peptidases in the pancreas and mucus, and probably related to the carboxypolypeptidases; and hippuricase, which occurs principally in the kidney and muscle, and, unlike the former class, does not require the presence of a free CO group. J. G.

Histaminase. M. Vaisberg (*J. Lab. clin. Med.*, 1942, **27**, 628—634).—To prepare histaminase hog kidney was defatted with acetone, minced, dried with ether, and finely ground. The powder was extracted with PO_4''' buffer at p_{H} 7.2 under toluene overnight at 37°. Tests were carried out on human skin using varying quantities of histamine and the size of reaction was noted. Histaminase was then titrated by neutralisation tests with histamine. The original extract can be clarified and sterilised by Seitz filtration without immediate loss in potency. It is irritating and produces a distinct pain on intramuscular injection, lasting 10 min. A max. dose of 10 c.c. can be injected intramuscularly. It can be conc. to a dry tan powder, without loss of potency, by fanning in a Cellophane bag. If a histamine-histaminase mixture is adjusted to p_{H} 5.0 or less before incubation, the histaminase is irreversibly inactivated. Attempts to purify the solution by ultrafiltration or by $(\text{NH}_4)_2\text{SO}_4$ pptn. were not successful. The concn. of histaminase in ox and lamb kidney was much less than in hog kidney. C. J. C. B.

Protein-digesting enzymes of papaya and pineapple. A. K. Balls (*U.S. Dept. Agric. Circ.*, 1941, No. 631, 9 pp.).—Prep. and uses of papain and bromelin are discussed. A. W. M.

Inhibition of the proteolytic action of trypsin by soaps. R. L. Peck (*J. Amer. Chem. Soc.*, 1942, **64**, 487—490).—The degree of inhibition of cryst. trypsin by soaps is determined by the solubility of the soap. Thus, it is about equal for Na linolenate, oleate, tuberculostearate, and the Na salt of the acids from *Blastomyces dermatitidis*, slightly less for Na phthioate, and much less for Na stearate and dibromostearate. The effect is reversible, since addition of CaCl_2 restores the activity. R. S. C.

Enzymic hydrolysis of alkyl- β -D-glucosides.—See A., 1942, II, 218.

Optical activity of biochemically synthesised acetoin. B. Tankó, L. Munk, and I. Abonyi (*Z. physiol. Chem.*, 1940, **264**, 91—107).—Acetoin in deproteinised (trichloroacetic acid) extracts of animal or vegetable tissue is conc. by repeated distillation at p_{H} 4.5 and 100° without racemisation. $[\alpha]_{\text{D}}$ of acetoin produced by ground peas, soya beans, lupin seeds, and lucerne is approx. +38°, the material being possibly a mixture of optically active forms but containing none of the racemic form. Acetoin from animal tissues (e.g., pigeon muscle, pig heart, kidney, liver) has $[\alpha]_{\text{D}}$ -70° to -90° (the val. depending on the species and organ concerned) and probably contains varying proportions of active and inactive forms. $[\alpha]_{\text{D}}$ is not affected by addition of acetaldehyde with or without pyruvate and hence synthesis ascribed by Tomiyasu (A., 1937, III, 431) to carboligase is identical with spontaneous production of acetoin from nascent acetaldehyde. The mechanism of decarboxylation of pyruvic acid by animal tissues is the same as that by yeast, but different from that by tissues of higher plants. W. McC.

Multiple amylose concept of starch. II. Amylopectin and amylose.—See A., 1942, II, 219.

Basic mechanism in the biological effects of temperature, pressure, and narcotics. F. H. Johnson, D. Brown, and D. Marsland (*Science*, 1942, **95**, 200—203).—The effect of pressure on the luminescence intensity-temp. curves of certain luminescent bacteria indicates the importance of a reversible denaturation of luciferase. The mechanism for the luminescence reaction is: denatured luciferase ($\mu = 55,000$) \rightleftharpoons native luciferase \rightarrow ($\mu = 17,000$) excited luciferase \rightarrow native luciferase + $h\nu$. The action of alcohol, CHCl_3 , and other lipin-sol. narcotics is due to their effects on the equilibrium. The theory is extended to energy exchange in muscle. E. R. R.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Film-forming yeasts. II. Film-forming yeasts in rennet brine. V. E. Graham and E. G. Hastings (*Canad. J. Res.*, 1942, **20**, C, 63—67).—Salt-tolerant yeasts, *Debaryomyces tyrocola* and *D. guillermonti*, are responsible for the grey scum forming on the surface of brine used in soaking calves' stomachs for rennet manufacture.

The source of yeast infection was not detected. The organisms failed to grow in culture media of p_{H} 2.0 containing 20% of NaCl. A. G. P.

Zygosaccharomyces nectarophilus n.sp. and Z. rugosus n.sp. A. G. Lochhead (*Canad. J. Res.*, 1942, **20**, C, 89—91).—The two yeasts (morphology and biochemical characteristics described) were isolated from floral nectar, honey, and soil, and were capable of fermenting conc. sugar solutions. A. G. P.

Spectroscopic analysis of the mineral content of yeast grown on synthetic and natural media. O. W. Richards and M. C. Troutman (*J. Bact.*, 1940, **39**, 739—746).—The ash of *Saccharomyces cerevisiae* grown in Williams' and in malt extract media contained Ba, Bi, B, Ca, Cr, Cu, Au, Fe, La, Pb, Mg, Mn, P, Pt, K, Ag, Na, Tl, Sn, and Zn. Autolysed yeast contained Al in addition. Most of the "trace" elements were present as impurities in the asparagine used in culture media and may contribute more to the growth-promoting activities of asparagine than does its N content. A. G. P.

Constitution of yeast-ribonucleic acid.—See A., 1942, II, 238.

Steryl sulphates. II.—See A., 1942, II, 229.

Primary dispersal and isolation of fungal spores. C. G. Dobbs (*New Phytol.*, 1942, **41**, 63—69).—An apparatus and a technique for isolating fungal spores using air as dispersal medium are described. L. G. G. W.

Migration of fungal nuclei in an electric field. E. S. Dowding and E. H. Gowen (*Canad. J. Res.*, 1942, **20**, C, 92—100).—Passage of a current of 5 μ a. through cultures of *Neurospora tetrasperma* or *Gelasinospora tetrasperma* inhibits mycelial growth, which is, however, resumed when the current ceases. Currents of 1—10 μ a. passing in either direction through fused strains of *N. tetrasperma* do not alter the normal direction of nuclear migration from one strain to the other. A. G. P.

Dissociation of *Candida albicans* by lithium chloride and immune serum. W. A. Mickle and C. P. Jones (*J. Bact.*, 1940, **39**, 633—647).—Cultures of *C. albicans* in LiCl media or immune rabbit serum produced, in most cases, rough variants analogous to those occurring among bacteria. A. G. P.

Respiratory metabolism of malarial parasite, *P. cathemerium*, during its developmental cycle. S. F. Velick (*Amer. J. Hyg.*, 1942, **35**, 152—161).—The O_2 consumption of suspensions of parasitised red cells from experimentally infected canaries was measured in standard Warburg manometers. By means of differential counts the metabolism of the individual constituents of mixtures of mature red cells, reticulocytes, and parasites could be calc. Cytochrome-oxidase activity was determined using *p*-phenylenediamine. The O_2 uptake of *P. cathemerium* increased slowly as the parasite developed and was greatly accelerated when nuclear division began; acceleration was associated with an increase in R.Q. The oxidation of *p*-phenylenediamine by parasitised cells increased during the developmental cycle. The effect of antimalarial drugs on the parasites was demonstrated. O_2 uptake was reduced from 70×10^{-12} cu. mm. per hr. to 20×10^{-12} cu. mm. per hr. by sulphathiazole and to 66×10^{-12} cu. mm. per hr. by sulphanilamide. B. C. H.

Micro-technique in morphology of protozoan parasites. D. H. Wenrich (*Science*, 1941, **93**, 529—533).—Reagents and methods for staining and fixing protozoological specimens are discussed critically. E. R. R.

Constitution of agar.—See A., 1942, II, 219.

Biological decomposition of chemical lignin. III. Application of a new ultra-violet spectrographic method to determination of sodium lignosulphonate in culture media. G. A. Adams and G. A. Ledingham (*Canad. J. Res.*, 1942, **20**, C, 101—107; cf. A., 1942, III, 343).—The method described gives somewhat lower vals. than the β -naphthylamine pptn. method but is free from certain errors inherent in the latter method. The decomp. of lignosulphonates by wood-destroying fungi is confirmed. A. G. P.

Phase-contrast microscopy.—See A., 1942, I, 249.

Environmental control of epidemic contagion. I. Epidemiological study of radiant disinfection of air in day schools. W. F. Wells, M. W. Wells, and T. S. Wilder (*Amer. J. Hyg.*, 1942, **35**, 97—121).—In experiments carried out over a period of 4 years (1937—41) in the Germantown Friends School and 1 year (1940—41) in the Swarthmore public schools no epidemic spread occurred among the highly susceptible children of the primary schools within irradiated atm., although outbreaks occurred among less susceptible older children in atm. not irradiated. Figures are given for the incidence of mumps, chicken-pox, and measles among the two groups. Attack rates for the 1941 measles epidemic were 9.0—15.7% for irradiated classes as against 51.8—55.3% among upper unirradiated classes. B. C. H.

Fermentation of cellobiose by the *coli-aerogenes* group of bacteria. C. G. Batty-Smith (*J. Path. Bact.*, 1942, **54**, 45—50).—The specificity of citrate and cellobiose for the intermediate-*aerogenes-cloacae* group was compared using 600 cultures. Of 349 cultures of *Bact. coli* type I, 10% were cellobiose-positive and only 0.3% citrate-positive.

Of 7 cultures of *Bact. coli* type II, all were cellobiose-positive. Of 131 cultures of intermediate-*aërogenes-cloacæ* types, only about 2/3 were cellobiose-positive, even after 5 days, and of the atypical and unclassified strains, slightly more were cellobiose-positive than grew in citrate. Cellobiose was inferior to citrate as to both specificity and rapidity of reaction. C. J. C. B.

Significance of potentials developed at noble metal electrodes immersed in cultures of *Bact. coli* in synthetic medium. K. I. Johnstone (*J. Path. Bact.*, 1942, 54, 25—38).—The potential E_h —0.38 to —0.39 v. recorded by bright Pt electrodes in anaërobic cultures of *B. coli* in a synthetic medium, after concn. by anaërobic centrifugation, was independent of contact between the organisms and the electrodes. This potential was due to the action of a very mobile ion or mol. capable of rapid diffusion through a colloidion sac and present in the supernatant fluid separated from a culture with marked turbidity. Isolation of a Pt electrode immersed in a young culture of *B. coli* from the action of the N_2 current caused the potential to fall to E_h —0.38 to —0.39 v. and resumption of the gas current caused a swift positive movement in potential, suggesting that the active substance was a gas removed from solution by the stream of N_2 . Gilded Pt electrodes in cultures of *Bact. coli* were indifferent to the presence of the N_2 current and recorded potentials positive to those of plain Pt when the cultures had reached a marked turbidity. The observed facts are explained by the assumption that H_2 produced in the cultures was responsible for the negative potentials recorded by electrodes of plain Pt relative to those of gilded Pt. C. J. C. B.

Nature of sulphanilamide inhibition. O. Wyss (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 122—126).—Mathematical analysis of growth rates of *E. coli* in presence of various concns. of sulphanilamide and *p*-aminobenzoic acid indicates that both substances compete for the same receptor site in the organism. V. J. W.

Examination of [uterine] cervical smears as a means of rapid diagnosis in severe *Clostridium welchii* infections following abortion. H. M. Butler (*J. Path. Bact.*, 1942, 54, 39—44). C. J. C. B.

Nagler reaction: breakdown of lipo-protein complexes by bacterial toxins. E. M. Crook (*Brit. J. exp. Path.*, 1942, 23, 37—55).—This reaction between human sera and *Cl. welchii* toxin, whereby lipoidal material is liberated from combination with protein (Nagler, A., 1940, III, 263), was investigated in detail. Ca^{++} is necessary for the reaction; sera other than human can react under favourable conditions; *Clostridia* other than *Cl. welchii* may give Nagler-positive filtrates, although negative under Nagler's conditions. The lipoidal material separating during the reaction is complex and consists of all types of lipid and protein. The kinetics of the reaction in serum and egg-saline (Macfarlane *et al.*, A., 1941, III, 308) are characterised by a pronounced induction period, and are typical of an enzyme or enzymes. F. S.

Gas gangrene toxin production in gelatin-thioglycollate medium. G. B. Reed and J. H. Orr (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 535—540).—In a medium containing gelatin and 0.1% of Na thioglycollate and PO_4^{--} -buffered to pH 7.6 organisms of the gas-gangrene group grew well with a high yield of toxin. Gelatin should be crude and not highly purified. V. J. W.

Circulatory and other effects of toxin of *Cl. septique*. C. H. Kellaway, G. Reid, and E. R. Trethewie (*Austral. J. Exp. Biol.*, 1941, 19, 297—309). J. N. A.

Diphtheria in Baltimore: tonsillectomies as related to diphtheria carrier rates. K. F. Maxcy, J. J. Phair, and M. R. Smith (*Amer. J. Hyg.*, 1942, 35, 42—46).—A survey of the diphtheria carrier rate amongst 24,243 white and coloured children in the grade schools of north eastern Baltimore from 1921 to 1940 indicated a carrier rate higher among white children than coloured, in the age group 5—9 as compared with 10—14, and in children with tonsils. Owing to the increasing no. of tonsillectomies among white children it was impossible to present accurate numerical data (see following abstract). B. C. H.

Diphtheria in Baltimore: carrier rate in 12 surveys 1921—1939. J. J. Phair and M. R. Smith (*Amer. J. Hyg.*, 1942, 35, 47—54).—During 1939 nose and throat swabs from 2091 white and coloured children in the primary grades of schools in eastern Baltimore were examined for *C. diphtheria* by morphological and cultural methods. 5 (0.24%) showed virulent and 12 (0.75%) avirulent strains of diphtheria bacilli. All strains were designated mitis-like or "indeterminate." (Cf. preceding abstract.) B. C. H.

Value of intradermal johnin test on cattle. Agricultural Research Council's Committee on John's disease (*J. Hygiene*, 1941, 41, 297—319).—There was wide disagreement between clinical reactions to the double intradermal test with johnin and the post-mortem results. The reasons for this are speculative. J. H. B.

Enhancing effect of nicotinic acid and cysteine hydrochloride on growth of *Leptospira icterohæmorrhagica*. T. G. Ward and E. B. Starbuck (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 19—21).—Growth

on Noguchi semi-solid medium is favoured by these substances and inhibited by glycine. V. J. W.

Epidemiological features of leptospiral jaundice in Baltimore. T. G. Ward and T. B. Turner (*Amer. J. Hyg.*, 1942, 35, 122—133).—8 cases of leptospiral jaundice occurred in Baltimore during 1940—41. Sera which agglutinated *L. icterohæmorrhagica* to a titre of 1/10 or over were regarded as positive. *Leptospira* were recovered by inoculation into guinea-pigs of the centrifuged deposit from blood or urine. 13 of 75 poultry dressers and 3 of 48 meat packers showed positive agglutination reactions, the individual titres varied from 1/10 to 1/256,000. 9 out of 294 sera submitted for routine examination, and 13 out of 234 hospital patients, showed agglutinins for *L. icterohæmorrhagica*. 24 candy-makers, 146 university students, 41 sera giving a positive Wassermann reaction, and sera from 10 persons recently ill with jaundice all gave negative results. Virulent *L. icterohæmorrhagica* was demonstrated over a period of 2 months in a well used for drinking water. 3 cases of Weil's disease were traced to this well. Risk of infection appears highest in occupations in contact with water polluted by rat urine such as poultry dressing and meat packing. B. C. H.

Biological properties of the Morax-Axenfeld bacillus (*B. lacunatus*), with particular reference to hæmolysis. R. K. Oag (*J. Path. Bact.*, 1942, 54, 128—132).—8 strains of the Morax-Axenfeld bacillus (*B. lacunatus*) were investigated. Morphologically 2 types may be described, 1 conforming to the normal conception of short, paired bacilli, the other consisting of organisms in long or short chains, or even constituted entirely of long filaments. On blood agar, the organisms of normal morphology are hæmolytic, producing a fairly wide zone of partial lysis of the red blood corpuscles. Those strains in which chain formation is found are non-hæmolytic even after prolonged incubation. An antiserum produced against a hæmolytic strain agglutinated suspensions of hæmolytic strains readily, while showing little or no cross agglutination with non-hæmolytic strains and vice versa. All strains were non-pathogenic to laboratory animals, even after admixture with gastric mucin. C. J. C. B.

Differences between flagellate and non-flagellate forms of *B. proteus* in oxidising and reducing functions [and action of anti-bodies and antiseptics on these]. H. Braun and J. von Vászrhelyi (*Schweiz. Z. allg. Path. Bakt.*, 1940, 3, 84—105).—The action of various org. acids, alcohols, and amino-acids as donators was examined in suspensions of the flagellate and non-flagellate forms *HX*₁₉ and *OX*₁₉ of *Bact. vulgare indolicum* and of a flagellate form of *B. vulg. anindolicum*. There was no significant difference in the 3 organisms towards 14 org. acids, 7 of which acted as donators; ethyl alcohol was dehydrogenated only by *HX*₁₉ and *OX*₁₉, glycerol faster by *B. vulg. anindolicum* and *OX*₁₉ than by *HX*₁₉. No difference was seen towards carbohydrates, but besides several amino-acids dehydrogenated by all 3 organisms proline was dehydrogenated only by *B. vulg. anindolicum*. Increased density of the suspension in some cases masked differences seen with greater dilutions. Normal guinea-pig, rabbit, and human serum contained ample H_2 -donators for *B. proteus*; bacteria richly laden with antibodies often acted slower, and *HX*₁₉ bacilli killed by active sera lost their dehydrogenating functions. The inactivating action of salt solutions increased with Hofmeister's "anionic series"; even normal saline was not completely harmless. Antiseptics such as $HgCl_2$, phenol, and trypaflavin inactivated the dehydrogenases at concns. lying far below those which kill the bacteria and the concn. necessary for inactivation increased with the concn. of the donators. E. M. J.

Capsule formation. II. Influence of electrolytes on capsule formation by *Klebsiella pneumoniae*. J. C. Hoogerheide (*J. Bact.*, 1940, 39, 649—658).—Electrolytes when added to full-grown cultures of the encapsulated organism eliminate the negative charge on the bacterial cells, causing a small decrease in relative viscosity. When added to growing cultures electrolytes inhibit capsule formation, the effect varying with the nature of the cation in the order of the lyotropic series. Absorption of electrolyte on bacterial cells probably inhibits the enzyme responsible for synthesis of the bacterial polysaccharide. A. G. P.

Capsular polysaccharide in blood in pneumococcal pneumonia. S. C. Bukantz, P. F. de Gara, and J. G. M. Bullowa (*Arch. intern. Med.*, 1942, 69, 191—212).—Capsular polysaccharide was detected in the blood of 16 patients out of 135 with pneumococcal pneumonia (treated with sulphapyridine or serum). The mortality rate for the whole series was 12%, for those with bacteræmia 29%, and for those with blood capsular polysaccharide 63%; the mortality for patients without bacteræmia or capsular polysaccharide was 3%. It is suggested that sp. antibodies should be given to patients with circulating capsular polysaccharide to counteract the anti-immune effects of the latter. C. A. K.

Pneumococcal capsular polysaccharide and antibody in pleural exudates. P. F. de Gara, J. G. M. Bullowa, and S. C. Bukantz (*Amer. J. med. Sci.*, 1942, 203, 376—383).—24 pleural exudates from 16 patients with lobar pneumonia were positive on culture, and contained detectable capsular polysaccharide, but no antibody.

Capsular polysaccharide was found in 6 sterile pleural fluids from 4 patients. On 1 occasion the pleural culture was positive. 14 fluids from 9 patients were negative on culture, and contained no sp. sol. substances (SSS); in 8 of these fluids (from 4 patients) antibodies could be detected. Pooled serum was satisfactorily used for the detection of SSS in pleural exudates. C. J. C. B.

Pneumococcal infections other than pneumonia. H. S. van Ordstrand (*Cleveland Clin. Quart.*, 1941, 8, 218—224).—Pneumococcus was associated with conditions other than pneumonia in 51 patients. The source of material was mainly sputum, ear, throat, and bronchoscopic aspirations. The clinical diagnoses covered various conditions of the respiratory tract (e.g. common cold, bronchiectasis, bronchitis), otitis media, and sinusitis. Chemotherapy in these cases was as effective as in the treatment of pneumococcal pneumonia. A. S.

Outbreak of paratyphoid B fever. C. B. Hogg and R. Knox (*J. Hygiene*, 1941, 41, 553—565).—The outbreak was traced to a bakery, although a true chronic carrier could not be found. The danger of temporary carriers is stressed. J. H. B.

Oponocytophagic test in acute diarrhoea in infants and children. M. L. Cooper and J. P. Milliken (*J. Lab. clin. Med.*, 1941, 27, 347—351).—Whole blood from patients suffering from acute infections with the *Shigella paradyserteriae* group gave increased oponocytophagic counts with antigens of these organisms. Blood from patients suffering from infection with *S. paradyserteriae* and from those with diarrhoea whose stools did not contain these organisms gave high phagocytic counts at times with various bacteria other than *Shigella* isolated from their stools. A negative oponocytophagic test (counts less than 0.5) probably indicates the absence of dysentery infection. C. J. C. B.

Bacteræmia caused by *Staphylococcus aureus*. D. Skinner and C. S. Keefer (*Arch. intern. Med.*, 1941, 68, 851—875).—122 cases of bacteræmia caused by *S. aureus* in man are discussed and the literature on experimental staphylococcal infections in animals is reviewed. C. A. K.

Classification of staphylococci. E. S. Moss, G. V. Squires, and A. C. Pitts (*Amer. J. Clin. Path.*, 1941, 11, 857—863).—From examination of 1056 strains it is concluded that all coagulase-positive strains of staphylococci are pathogenic, but that a negative coagulase test does not exclude pathogenicity. Pigment production is strong evidence of pathogenicity, but non-pigment-producers may also be pathogenic. Although mannitol was fermented by a high % of the pathogenic strains, it was also fermented by non-pathogenic strains. The high % of hæmolytic *albus* strains completely excludes this method as a means of determining pathogenicity. Failure to produce abscesses in white mice does not exclude pathogenicity in the human, although no coagulase-negative strains were abscess producers. C. J. C. B.

Hæmolytic streptococci in throats of normal individuals. C. J. Wu (*Chinese Med. J.*, 1941, 60, 34—45). W. J. G.

Hæmolytic streptococci from parturient women. C. J. Wu (*Chinese Med. J.*, 1941, 60, 109—117). W. J. G.

Puerperal infection associated with hæmolytic streptococci other than Lancefield's group A. A. M. Ramsay and M. Gillespie (*J. Obstet. Gynec.*, 1941, 48, 569—585). P. C. W.

Scarlet fever immunisation. C. B. Summers (*J. Kansas Med. Soc.*, 1939, 40, 65). E. M. J.

Evaluation of different methods of scarlet fever immunisation. H. C. Graham (*Sth. Med. J.*, 1942, 35, 132—138). E. M. J.

Epidemiological study of scarlet fever. R. M. Kiskaddon (*Arch. Pædiat.*, 1941, 58, 706—730).—A general review. C. J. C. B.

Milk-spread epidemic of scarlet fever. R. Douglas, J. Smith, I. N. Sutherland, and R. J. P. Watson (*J. Hygiene*, 1941, 41, 543—552).—An account of an epidemic in Elgin. One apparently healthy cow in the herd was excreting hæmolytic streptococci giving the reactions of Lancefield's group A and Griffith's type 3 from one udder quarter. The usual selective incidence in children was replaced by a more widespread incidence in both sexes and all age groups of the population. The proportion of houses with multiple cases is different if the cases are primary from that if the cases are secondary. J. H. B.

Cultivation of *Spirochæta gallinarum*. I. J. Kligler and D. Kaplan (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 103—106).—Successful growth was obtained on a medium containing mineral salts, peptone, glucose, Na lactate, rabbit serum, and chicken red cells. Cultures were covered by liquid paraffin or stoppered with rubber. Optimum temp. was 37°. W. J. W.

Increased resistance to syphilis in rabbit following bilateral orchidectomy. C. K. Hu and S. N. Tsao (*Chinese Med. J.*, 1941, 60, 118—125).—Elimination of the natural supply of sex hormones increased the male rabbit's resistance to syphilis; the course of the disease approached in mildness that observed in the female. W. J. G.

Serodiagnostic tests for syphilis in U.S.A. state laboratories. T. Parran, H. H. Hazen, J. F. Mahoney, A. H. Sandford, F. E. Seneor, W. M. Simpson, and R. A. Vonderlehr (*J. Amer. Med. Assoc.*, 1941, 117, 1167—1168).—An evaluation. C. A. K.

False positive tests for syphilis. C. F. Mohr, J. E. Moore, and H. Eagle (*Arch. intern. Med.*, 1941, 68, 898—912).—Details are given of 9 normal, non-syphilitic subjects who gave what were regarded as false positive reactions to serological tests for syphilis. C. A. K.

False positive serological reactions for syphilis after vaccination. F. W. Lynch, R. E. Boynton, and A. C. Kimball (*J. Amer. Med. Assoc.*, 1941, 117, 591—595).—False positive serological reactions for syphilis occurred in 43 (16%) of 263 subjects after primary vaccination for smallpox. C. A. K.

False positive serological tests for syphilis in children. M. L. Bridgeman and L. D. Jacobson (*Northw. Med.*, 1941, 40, 325—328).—Report of 18 cases, 12 of which were suffering from acute infections. E. M. J.

Laughlen test for syphilis. C. T. Nelson (*J. Lab. clin. Med.*, 1941, 27, 374—381).—In 3100 inactivated sera the results of the Laughlen reaction agreed with those of the Hinton test in 92.8%. The sensitivity of the Laughlen test in 305 syphilitic patients was 81% and its specificity 98.4% in 1094 nonsyphilitic persons. The Laughlen test is unreliable when used to test non-inactivated sera. C. J. C. B.

Comparative study of Laughlen test. M. J. Dirstine, A. W. Ratcliffe, and F. B. Queen (*Amer. J. Clin. Path.*, 1941, 11, 842—847).—Laughlen tests were made on 2034 specimens in a serological laboratory by one not especially trained in serology and the results of the first 293 tests and the subsequent 1741 tests compared. Agreement with the results of the Kline diagnostic and standard tests and the Mazzini test was poor in the first series but showed great improvement in the second series; of 78 specimens from the second series 28 were Laughlen-negative, 17 Kahn-negative, 10 Kline-negative, and 4 Mazzini-negative. C. J. C. B.

Comparative study of four slide precipitation tests for syphilis. E. C. J. Sung (*Chinese Med. J.*, 1941, 60, 126—140).—Of the 4 slide pptn. tests (Laughlen, Leiboif, Ide, and Mazzini), the last is superior, being simple, rapid, sp., and of 100% sensitivity in untreated, and 88% in treated, cases. W. J. G.

Egg-albumin-complement mixtures in Wassermann test with normal and syphilitic rabbit sera. J. A. Kolmer, E. R. Lynch, and L. Groskin (*Amer. J. Clin. Path.*, 1941, 11, 828—834).—In the Kolmer complement-fixation test with rabbits the sera should be heated at 62° for 30 min. and tested with either 2 full units of egg-albumin-complement or 4 units of plain complement in order to avoid false positive reactions. The latter is preferred. C. J. C. B.

Serological results in Swiss soldiers vaccinated against typhoid, paratyphoid, and tetanus. R. Regamey (*Schweiz. Z. allg. Path. Bakt.*, 1941, 3, 304—317). E. M. J.

Trigeminal neuralgia as complication after prophylactic use of tetanus antitoxin. M. Rosenbaum (*Ohio Sta. Med. J.*, 1941, 37, 1060—1061). E. M. J.

Active immunisation against tetanus by combined subcutaneous and intranasal routes. H. Gold (*Penn. Med. J.*, 1941, 44, 1565—1569). E. M. J.

Recent developments in bacteriophage therapy. W. J. McNeal (*N.Y. Sta. J. Med.*, 1941, 41, 1531—1536). E. M. J.

Acute infectious gingivostomatitis. T. F. M. Scott, A. Steigman, and J. H. Convey (*J. Amer. Med. Assoc.*, 1941, 117, 999—1005).—In acute infectious gingivostomatitis of childhood herpes simplex virus can be isolated from the mouth and herpes-neutralising antibodies are seen in the blood during convalescence. Herpetic stomatitis occurs in two forms, primary, with fever and lymphadenopathy, and recurrent, with local lesions only. C. A. K.

Trypan-blue vital staining in studies of virus lesions on chorio-allantoic membranes. J. V. Cooke and R. J. Blattner (*Amer. J. Path.*, 1942, 18, 163—167). C. J. C. B.

Virus disease of guinea-pigs. H. Beeuwkes (*Schweiz. Z. allg. Path. Bakt.*, 1940, 3, 65—74).—Intracerebral inoculation of the vesicular contents of a patient with dermatitis polymorpha dolorosa into guinea-pigs caused a febrile disease of moderate mortality, characterised by peritoneal hæmorrhages. A virus-like agent was isolated. A similar vague disease was produced by repeated cerebral passage starting with the brain of a "normal" guinea-pig; the possibility of a latent virus infection, independent of the skin disease used in the first series is discussed. The virus is filterable, and is inactivated at 65°; rabbits, white mice, and monkeys are resistant. E. M. J.

Fœtal encephalomyelitis: prenatal inception of infantile toxoplasmosis. A. Wolf, D. Cowen, and B. H. Paige (*Science*, 1941, 93, 548—549).—The mothers of two infants with proven toxoplasmosis (lesions found at birth) possessed neutralising antibodies in their blood. The disease begins *in utero*. E. R. S.

Isolation of virus from case of acute poliomyelitis in Peiping. C. H. Yen and Y. K. Hsu (*Chinese Med. J.*, 1941, 60, 199—206).

W. J. G.

"Sparing effect" of lymphocytic choriomeningitis on poliomyelitis [in monkeys]. G. Dalldorf (*N.Y. Sta. J. Med.*, 1940, 40, 187—189).—50—70% of rhesus monkeys recovered from poliomyelitis if inoculated with lymphocytic choriomeningitis virus 1—20 days before the poliomyelitis inoculation.

E. M. J.

Influenza virus A infections of cynomolgus monkeys. F. M. Burnet (*Austral. J. Exp. Biol.*, 1941, 19, 281—290).

J. N. A.

Growth of influenza virus in allantoic cavity of chick embryo. F. M. Burnet (*Austral. J. Exp. Biol.*, 1941, 19, 291—295).

J. N. A.

Cultivation of influenza A virus in roller tubes. H. E. Pearson and F. J. Enders (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 140—143).—Growth went on for 30 days in tubes containing chick embryo tissue and nutrient fluid containing embryo extract. After 3 days virulence remained const., but fell off if nutrient fluid was replaced by Tyrode's solution. Extracts from chick heart, brain, and muscle did not support growth.

V. J. W.

Active immunisation against epidemic influenza and pneumococcal pneumonia at Letchworth Village. III. Results of active immunisation against epidemic influenza from 1937 to 1940. M. Siegel, R. S. Muckenfuss, M. Schaeffer, H. L. Wilcox, and A. G. Leider (*Amer. J. Hyg.*, 1942, 35, 55—96; cf. A., 1942, III, 347).

B. C. H.

Similarities and possible relationships among viruses of psittacosis, meningopneumonitis, and lymphogranuloma venereum. G. Rake, M. D. Eaton, and M. F. Shaffer (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 528—531).—Cross reactions occur for all 3 viruses in complement fixation tests as well as in active immunity tests in mice, in which the lesions produced by intranasal inoculation are indistinguishable.

V. J. W.

Pneumonitis in mice infected intranasally with Q fever. G. M. Findlay (*Trans. R. Soc. Trop. Med. Hyg.*, 1942, 35, 213—218).—Intranasal instillation of the rickettsia of Q fever, both Australian and American strain, in mice causes an interstitial pneumonia. The lesions are similar in character to those induced in mice by the intranasal instillation of the rickettsia of exanthematic and murine typhus. (12 photomicrographs.)

C. J. C. B.

Hypersensitivity to rabies vaccine [with systemic reaction]. W. Dorfman (*N.Y. Sta. J. Med.*, 1940, 40, 215—216).—Report of a case known to be sensitive to rabbit dander.

E. M. J.

Physiology of virus diseases of potato. IV. Comparison of nitrogen relations of healthy and crinkle potatoes; nitrogen relations of a "carrier" variety. E. Barton-Wright (*Ann. Appl. Biol.*, 1941, 28, 229—237).—Crinkle-infected (virus A + X) plants contained higher proportions of protein and total N in all parts and at all periods of growth than did normal plants. Significant differences occurred in residual and amide-N and, late in the season, in NO_3^- -N of leaves. Loss of yield from infected plants probably results from disturbed N metabolism. Presence of a latent virus in a "carrier" variety (paracrinkle in President variety) did not cause significant differences in total N or N fractions in the plants. (Cf. A., 1933, 546.)

A. G. P.

New immunisation programme in the Royal Canadian Air Force. A. H. Sellers (*Canad. Publ. Health J.*, 1941, 32, 509—512).

C. G. W.

Heteroallergy: parallerger and metallergy. E. Urbach (*Arch. Pediat.*, 1941, 58, 780—793).—A review of the classification of allergic diseases.

C. J. C. B.

Cold allergy: report of unusual case. W. M. Yater and E. W. Nicklas (*Ann. int. Med.*, 1941, 15, 743—748).—The cold allergy was associated with purpura hæmorrhagica, mainly of the acral parts of the body. There were no systemic reactions on exposure to cold. The patient did not respond to treatment.

A. S.

Vasomotor rhinitis [and its treatment with allergens]. H. I. Shabon (*N.Y. Sta. J. Med.*, 1941, 41, 2419—2424).—Report of 45 cases.

E. M. J.

Identification and treatment of allergic nose [and action of benzedrine and histidine]. L. W. Oaks and W. L. Allen (*J. Kansas Med. Soc.*, 1939, 40, 277—280).

E. M. J.

Causes of atopic dermatitis. L. M. Smith and R. P. Hughes (*Sth. Med. J.*, 1941, 34, 870—872).—A review.

E. M. J.

Contact dermatitis. M. W. Rubenstein (*Penn. Med. J.*, 1941, 45, 127—129).

E. M. J.

Problems in management and diagnosis of contact dermatitis. A. R. McFarland (*N.Y. Sta. J. Med.*, 1942, 42, 239—242).

E. M. J.

[Special] mattress and pillow coverings [against allergy]. H. Iker (*Ohio Sta. Med. J.*, 1942, 38, 37—38).

E. M. J.

Influence of splenectomy on natural and acquired immunity of rats to *Nippostrongylus muris*. L. M. Yutuc (*Philippine J. Sci.*, 1941, 75, 255).

A. S.

Species-specificity of helminths. R. W. Wilhelmi (*Biol. Bull.*, 1940, 79, 64—90).—Trematodes and worms of a cestode species were washed, frozen, and desiccated. Lipins were then removed with alcohol-ether and an aq. extract of the residue gave species-sp. precipitin reactions; heterologous reactions are produced if the lipins are not first removed. Larval and adult antigens are not serologically distinct. Protein-free polysaccharide extracts were also precipitinogenic.

D. M. SA.

Serodiagnosis of trichinosis by complement fixation. E. Witebsky, P. Wels, and A. Heide (*N.Y. Sta. J. Med.*, 1942, 42, 431—435).—Boiled aq. extract of powdered larvæ of *Trichinella spiralis* was used as antigen. Rabbits infested experimentally and one human case of trichinosis gave a positive pptn. test, the rabbit a strong ppt. up to 1:400, the patient a weak one at 1:100. The same patient showed complement fixation with 1:6400 dilution of antigen 2 weeks after the beginning of the illness, 1:20 after 5 months, and still positive 14 months later. 6 other cases of trichinosis reacted positively whether dilutions of antigen or of serum were used. There was only 1 positive case amongst 1000 controls without history of trichinosis.

E. M. J.

XXVI.—PLANT PHYSIOLOGY.

Tragopogon dubius, its response to length of day. H. A. Allard (*Ecology*, 1942, 23, 53—58).—Short days (10 hr.) inhibit normal growth and reproduction. Increased periods of illumination favour stem elongation and flower production.

L. G. G. W.

Transplantation of tissue cultures of endive, salsify, and Jerusalem artichoke. R. Gautheret (*Compt. rend.*, 1941, 213, 317—318).—In the presence of indolyl- and naphthyl-acetic acid the tissues of endive, salsify, and colewort develop much more rapidly than in their absence. The presence of heteroauxins is essential to the development of tissues of the Jerusalem artichoke.

H. W.

Vegetative propagation of conifers. XI. Effects of type of cutting on rooting of Norway spruce cuttings. J. L. Farrar and N. H. Grace (*Canad. J. Res.*, 1942, 20, C, 116—121; cf. A., 1940, III, 872).—Plain cuttings of spruce taken in July—Oct. rooted better than those bearing a heel of old wood. Heeled cuttings grew better in summer. Effects of the length and position of the cutting on the branch are recorded. Improved development of new growth on cuttings propagated in sedge peat media may be due to substances absorbed from the peat which affect bud development. Shortening cuttings may restrict new growth by lessening the amount of nutrients available to the twig.

A. G. P.

Comparative rates of division in large and small cells of developing fruits. E. W. Sinnott (*Proc. Nat. Acad. Sci.*, 1942, 28, 36—38).—In the early stages of development of the cucurbit ovary the rate of cell division is essentially the same for all tissues and is unrelated to the size of the cell or to the rate of increase of cell size as growth proceeds.

A. G. P.

Plant nutrition. XII. Carbohydrate changes in the organs of the barley plant during growth: development and ripening of the ear. H. K. Archbold and B. N. Mukerjee (*Ann. Bot.*, 1942, 6, 1—41; cf. A., 1938, III, 355, 855).—During the development of barley ears there is little interchange of carbohydrate between roots and aerial parts of the plant. The decrease in sugar content of stems during this stage accounts for only 10% of the increasing dry wt. of the ear. At least 80% of this dry wt. is derived from sugars photosynthesised by leaves and by the ear itself. Stored sugar plays no part in ear development. No interconversion of glucose and fructose is apparent; the contents of both sugars show the same type of seasonal trend.

A. G. P.

Metabolism of cereal grains. I. Output of carbon dioxide by wheat grains during absorption of water and germination. W. Leach (*Canad. J. Res.*, 1942, 20, C, 160—168).—Germination of wheat is associated with three consecutive stages of acceleration of respiratory activity, (1) an initial slow rate of acceleration, (2) an increased rate followed by a decreasing rate, and (3) a final uniform and relatively high rate. Absorption of water has no effect on the respiratory stages but fungal infection of germinating grain restricts respiration.

A. G. P.

Factors affecting germination of various dropseed grasses (*Sporobolus* spp.). V. K. Toole (*J. Agric. Res.*, 1941, 62, 691—715).—Treatment with 71% H_2SO_4 , moistening with 0.2% aq. KNO₃, prechilling (3°), or alternation of the temp. of germination improved the germination of several species of *Sporobolus* to varying extents. After-ripening effects were observed in some species.

A. G. P.

XXVII.—PLANT CONSTITUENTS.

Dissolution of nitrogenous matter of barley by solutions of sodium salicylate. G. Lejeune (*Compt. rend.*, 1941, 213, 277—279).—At p_{H} 4.5 aq. 10% Na salicylate dissolves the same amount (25.7%) of N as does 5% K_2SO_4 , whilst at p_{H} 7 it dissolves 56.5% as against 31.8%. In the latter case, if the p_{H} is afterwards adjusted to 4.5 not

only is the increased solvent action reversed but approx. 25% of the N originally sol. at this p_H is pptd. Of that remaining in solution 12% is heat-coagulable and 42% is pptd. by $MgSO_4$, compared with 33 and 35% in the case of K_2SO_4 . The bulk of the alcohol-sol. hordeine fraction, which is utilised during germination, is sol. in Na salicylate. P. G. M.

Fatty substance from coast of Pianá. C. Rolin (*Publ. Inst. Nac. Tecn., Rio de Janeiro*, 1941, 12 pp.).—The wax, d 0.950, sap. val. 17.4, I val. 30.5, Hehner val. 97.7, unsaponifiable fraction 0.5%, is of vegetable origin. F. R. G.

Salvia carnosa (Dougl.). I. Phytochemistry. II. Carnosol. A. I. White and G. L. Jenkins (*J. Amer. Pharm. Assoc.*, 1942, 31, 33—37, 37—43).—I. The dried plant (ash 5.14, water content 7.92%), extracted with 50% alcohol, yielded 0.63% of carnosol, m.p. 219.5° (uncorr.; decomp.), $[\alpha]_D^{25}$ -66.0° in alcohol, carbohydrates (including reducing sugars), and tannins, but no alkaloid. Steam-distillation of the leaves afforded 3.46% of volatile oil, d 0.9209, n 1.4705, $[\alpha]_D^{25}$ +2.83°, sap. val. 48.3, acid val. 1.62, ester val. 46.65, acetyl val. 42.55, fractionation data for which are given.

II. Carnosol, $C_{19}H_{26}O_4$, is a derivative of (?) octahydrophenanthrene containing two phenolic hydroxyl groups (cf. A., 1942, II, 242). F. O. H.

Constituents of the concrete oil of tobacco leaves (Nicotiana tabacum). S. Sabetay, L. Trabaud, and F. Emmanuel (*Compt. rend.*, 1941, 213, 321—323).—The oil contains nicotine among other bases, acetic acid with small amounts of an acid with an odour of valeric acid, phenols with odour of leather, a hydrocarbon with an odour of pinene, a ketone, free and esterified alcohols, principally *l*-linalol and borneol. H. W.

Isolation and separation of sterols.—See A., 1942, II, 229.

Constituents of tuber of Coqui (Cyperus rotundus, L.). III. Sugars. C. F. Asenjo (*J. Amer. Pharm. Assoc.*, 1942, 31, 88—89; cf. A., 1941, III, 945).—The molasses obtained from alcoholic extracts of the tubers contained 41.7% of glucose, 9.3% of fructose, and 4% of non-reducing sugars. F. O. H.

Development of a pectin-cellulose complex in refrigerated fruits. R. Echevin (*Compt. rend.*, 1941, 213, 458—460).—Formation of sol. pectin by hydrolysis of propectin (pectic substances insol. in water at 15—18°) is inhibited by refrigeration of winter pears. At the commencement of maturation, rapid hydrolysis occurs together with a decrease in cellulose content, eventually attaining the val. observed in fruit stored at room temp. The decrease in water and dry matter is much less on storage at low temp. H. G. R.

Ultracentrifuge and diffusion studies on gluten. A. G. McCalla and N. Gralén (*Canad. J. Res.*, 1942, 20, C, 130—159).—The proportion of total gluten which is molecularly dispersed in aq. Na salicylate rises with increase in concn. of the dispersing medium (up to 12% Na salicylate). The sedimentation const. of the dispersed portion is unaffected by the concn. of the medium. The most sol. 25% of the gluten was all molecularly dispersed but was not homogeneous (average mol. wt. 44,000, min. 35,000). Of the remaining fractions all contained aggregate particles but only the most insol. caused opacity. None of the fractions showed normal diffusion curves; this is attributable partly to differences in properties of dispersed mols., and partly to aggregate formation. The data confirm that gluten is a protein system showing progressive changes in properties with change in solubility. A. G. P.

Osage orange pigments. Improved separation; establishment of the isopropylidene group.—See A., 1942, II, 242.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Multiple tissue washer and processing assembly. F. W. Cook and G. H. Satterfield (*J. Lab. clin. Med.*, 1942, 27, 673—679).—A combination apparatus facilitating the prep. of tissues for paraffin sections is described. C. J. C. B.

Measurement of formaldehyde fixation. N. C. Pervier and F. L. Hansen (*J. Lab. clin. Med.*, 1942, 27, 666—669).—A simple portable meter is described for measuring the hardness of tissues, organs, or cadavers. The instrument has afforded information on the synergistic effects of various compounds used in embalming fluids. C. J. C. B.

Modified Noyons thermic diaferometer for respiratory gas analysis. T. M. Carpenter and V. S. Coropatchinsky (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 159—163).—A modification of the thermic diaferometer of Noyons (A., 1939, III, 221) is described. The general principle is the analysis of the CO_2 content and O_2 deficit of respiratory chamber gases based on the measurements of a sensitive galvanometer that indicates changes in resistance of Pt wires caused by a difference in the cooling powers of surrounding gases. Standardisation of the apparatus is described, and its accuracy demonstrated. L. S. T.

Study of sweat secretion by quinizarin method. L. Guttman (*Proc. Roy. Soc. Med.*, 1941, 35, 77—78).—The following powder is used as a sweat indicator: quinizarin-2:6-disulphonic acid 35 g.,

Na_2CO_3 (powder) 30 g., rice starch 60—70 g. It should be stored in an air-tight container. The powder is dusted over the skin with cotton wool using moderate pressure to fill the orifices of the sweat ducts. Onset of sweating is indicated by the appearance of a dark blue-violet colour, the individual sweat ducts appearing as dark dots. When the test is complete the dye can be removed with soap and water or with dil. acetic acid. W. J. G.

Determination of 3:4-benzopyrene in whole animals, their tissues, and excreta. I. Berenblum and R. Schoental (*Biochem. J.*, 1942, 36, 86—91).—The fluorescence method of Berenblum and Kendal for 1:2:5:6-dibenzanthracene has been adapted for 3:4-benzopyrene and gives an accuracy of $\pm 20\%$ over a range of 1—10,000 μg . per mouse. Interfering substances are adsorbed on Al_2O_3 from benzene solution; the benzopyrene concn. is unchanged if the first runnings are discarded. With low benzopyrene vals. a diffuse blue fluorescence may interfere; this may be eliminated by adsorption from light petroleum on Al_2O_3 together with benzopyrene and elution of the latter with a 1:3 mixture of benzene and light petroleum. A similar separation of the pigments in faeces derived from green vegetables in the diet may be effected by this method. H. G. R.

Micro-diffusion methods based on the bisulphite reaction. II. Determination of lactic acid by oxidation with ceric sulphate. III. Determination of threonine by oxidation with periodate. T. Winnick (*J. Biol. Chem.*, 1942, 142, 451—459, 461—466; cf. A., 1942, III, 76).—II. The Conway micro-diffusion unit was applied to the determination of lactic acid in blood filtrates, tissue extract, and urine. The method of Gordon and Quastel (A., 1939, III, 953) is modified in that single determinations of lactic acid are performed on 1-ml. blood samples or on about 0.5 g. of tissue. $Zn(OH)_2$ is used in place of trichloroacetic acid to ppt. blood-proteins; the recoveries are low by 5—10% if either trichloroacetic or tungstic acid is used. Blood filtrates are freed from sugar by $Cu(OH)_2$ prior to analysis. Determinations are usually made at room temp. instead of at 50°. The lactic acid is oxidised quantitatively by $Ce(SO_4)_2$ in the outer chamber of the apparatus and the resulting acetaldehyde passes by gaseous diffusion into the central chamber where it is absorbed by $NaHSO_3$ solution. Combined HSO_3' is determined iodometrically.

II. The sample of protein hydrolysate is treated with neutral, aq. KIO₄ in the outer chamber of the Conway unit and the acetaldehyde resulting from oxidation of the threonine passes by gaseous diffusion into the central chamber where it is absorbed by $NaHSO_3$ solution. PO_4''' buffer is used in place of $NaHCO_3$ to maintain a p_H of approx. 7.0 during the oxidation process. After 4—5 hr., HSO_3' bound by the acetaldehyde is determined iodometrically. The contents of threonine in gliadin, lactoglobulin, and male and female chimpanzee hair are reported. H. W.

Determination of methionine.—See A., 1942, II, 243.

Determination of hypoxanthine.—See A., 1942, II, 244.

Turbidimetric determination of sulphates. J. F. Treon and W. E. Crutchfield, jun. (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 119—121).—Details for the determination of inorg. SO_4'' and total inorg. and org. SO_4'' in urine are given. The SO_4'' is finally determined by addition of solid $BaCl_2 \cdot 2H_2O$ to give more permanent suspensions, the turbidity being measured by means of a wedge photometer, a spectrophotometer, or a photo-electric colorimeter. Comparison with the gravimetric method is given. The urine- SO_4'' of rabbits treated with cyclic compounds has been determined by this method; the proportion of inorg. SO_4'' fell to below 10%. The presence of proteins does not interfere. L. S. T.

Spectro-photometric determination of iron. II. Use of 2:9'-di-pyridyl. R. A. Koenig and C. R. Johnson (*J. Biol. Chem.*, 1942, 143, 159—163; cf. A., 1942, III, 428).—Procedure applicable to foods and biological material is described. J. W. S.

XXIX.—NEW BOOKS.

The vitamin content of meat. H. A. Waisman and C. A. Elvehjem (Burgess Publishing Co., Minneapolis, Minn., 1941, 210 pp. Price \$3).—After summarising present knowledge as to the content of protein, fat, carbohydrates, and minerals in meat, the vitamins are considered in detail. The greater part of the work is devoted to the individual vitamins of the B group which have been specially studied in the authors' laboratory at the University of Wisconsin. The preparation of samples and methods of assay receive attention and a comprehensive selection of analyses is given. The bibliography is extensive. J. H. B.

Composition of depot fats of aquatic animals. J. A. Lovern (*Department Sci. Ind. Research, Food Investigation Board, Special Report No. 51*, 1942, iii + 72 pp. Price 1s. 6d.).—This monograph comprises 3 chapters: the first reviews the methods of analysis, in the second, the composition of the fats for which quant. data are available are classified biologically, and the third is devoted to a discussion of the results in the light of the various theories as to the means by which the animals have modified their depot fats. J. H. B.

