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A., III.—PHYSIOLOGY & BIOCHEMISTRY (INCLUDING ANATOMY)

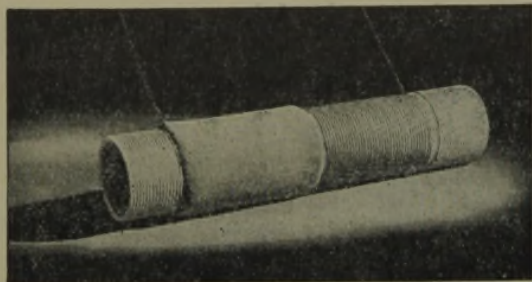
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A., III.—Physiology and Biochemistry (including Anatomy)

AUGUST, 1943.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Congenital cardiac anomalies. E. B. Krumbhaar (*J. Mt. Sinai Hosp.*, 1942, 8, 737—743).—Report of a case of atresia of mitral orifice with separation of left auricle and ventricle and one of absent left ventricle. E. M. J.

Variations in origin and course of hepatic artery and its branches. E. Z. Browne (*Surgery*, 1940, 8, 429—445).—Results of the dissection of 280 cadavers. P. C. W.

Development of the renal fascial sheath. A. Baumann (*Arch. Sci. phys. nat.*, 1942, [v], 24, Suppl., 197—200).—The fascial sheath is not a pre-determined structure but is a condensation of the retroperitoneal fibrous tissue brought about by mechanical forces. The kidney is maintained in position by the perirenal fat. F. S.

Exceptional tortuosity of splenic artery. W. B. Stanton (*Anat. Rec.*, 1943, 85, 157—162).—Excessive tortuosity of the splenic artery in a male aged 85 years is described grossly and microscopically. A method of comparing tortuosity of such structures by an index is described; using the method, the specimen described has the highest index yet observed. W. F. H.

Plantar arterial arch of human foot. H. M. Vann (*Anat. Rec.*, 1943, 85, 269—275).—In the majority of cases the plantar arch was formed by the deep plantar branch of the dorsalis pedis artery. In 15% the arch was formed by the lateral plantar artery. W. F. H.

Laryngeal tonsils of mammals, with special reference to their structure and development in cat. B. F. Kingsbury (*Amer. J. Anat.*, 1943, 72, 171—197).—The laryngeal tonsil of man occupies the appendix ventriculi laryngis. Its significance is discussed. In the cat, this tonsil lies in the ary-epiglottic fold and is not developed until after birth. No evidence of a sp. function for tonsils was found. The appendix laryngis of man and the ary-epiglottic folds in the cat are regarded as vestigial structures. The passage of lymphocytes through epithelium and their subsequent fate are described. W. F. H.

Pathological physiology of joints. H. Keflikian (*Surg. Gynec. Obstet.*, 1940, 71, 416—436).—Review and discussion of clinical material. P. C. W.

Radiological signs of decalcification. A. A. Meyer, S. F. Oosthuizen, and H. A. Shapiro (*Lancet*, 1942, 243, 639—640).—Recent X-rays in Cape Town showed signs of osteoporosis in all types of patients as compared with 2 years ago. C. A. K.

Multiple muscle herniæ. I. D. Kitchin and D. A. Richmond (*Brit. Med. J.*, 1943, I, 602—603).—Case reports. I. C.

Congenital prepyloric membranous obstruction in premature infant. A. S. W. Touroff and R. M. Sussman (*Surgery*, 1940, 8, 739—755).—A case is reported. P. C. W.

Congenital hour-glass bladder. N. F. Ockerblad and H. E. Carlson (*Surgery*, 1940, 8, 665—671).—15 cases reported in the literature and 1 personal case are described and analysed. P. C. W.

Interatrial septal defect. S. T. Laufer (*Canad. Med. Assoc. J.*, 1942, 47, 330—336).—Case report. C. J. C. B.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Developmental horizons in human embryos. Description of age group XI, 13 to 20 somites, and age group XII, 21 to 29 somites. G. L. Streeter (*Carnegie Inst. Wash., Contrib. to Embryol.*, 1942, 30, 211—245).—A review of the structural organisation of the human embryo during its first 7 weeks is undertaken. The following age groups are defined: I, one-celled egg; II, segmenting egg; III, free blastocyst; IV, implanting ovum; V, ovum implanted, but still avillous; VI, primitive villi, distinct yolk sac; VII, branching villi, axis of germ disc defined; VIII, Hensen's node, primitive groove; IX, neural folds, elongated notochord; X, early somites present; XI, 13—20 paired somites; XII, 21—29 paired somites. A review of the developmental stage of age groups XI and XII is given. W. J. H.

541

Normal changes in position of embryonic kidney. P. Gruenwald (*Anat. Rec.*, 1943, 85, 163—176).—Human embryos of 6—48 mm. were investigated by graphic reconstruction from transverse serial sections. The movement of the kidney cranially from the sacral region is due to a diminution of body curvature. The cranial pole avoids the umbilical artery by deviating ventrally. No active cranial migration takes place at any time. Congenital pelvic kidney results from failure of the organ to undergo normal change of position. Arrest of displacement is favoured by the position of the umbilical artery. W. F. H.

Origin and differentiation of epithelium of urogenital sinus in opossum, with a study of modifications induced by oestrogens. R. K. Burns, jun. (*Carnegie Inst. Wash., Contrib. to Embryol.*, 1942, 30, 63—83).—The histological response of sinus epithelium to oestrogens from 10 to 15 and from 18 to 20 days is described. The rôle of the hormone in these cases calls forth visible changes in the sinus epithelium which make the derivatives of this tissue readily identifiable. The action of the hormones in the earliest stages is more sp. than in later stages when local differentiation has occurred. The histological identity, and the identity of physiological response, on the part of the stratified epithelium in all parts of the urogenital sinus are considered to be indicative of its common origin which can be traced to the ectoderm of the primitive cloaca. The transition between the epithelium of the sinus and that of the Mullerian and Wolffian ducts is abrupt and these structures do not respond to oestrogen stimulation. W. J. H.

Extrauterine pregnancy in rabbit. M. D. F. Nutting (*Anat. Rec.*, 1942, 84, 215—219).—Two fetuses were attached to the mesentery and omentum. No gross or microscopic signs of tubal abortion or rupture of the uterus were found. An enlargement of the left horn of the uterus near the distal end was identified as a spontaneous adeno-carcinoma without metastases. From this it is assumed that the escape of ova took place soon after fertilisation. W. F. H.

Hereditary variations in vena cava inferior of the rabbit. C. W. McNutt and P. B. Sawin (*Amer. J. Anat.*, 1943, 72, 259—289).—29 variants from the normal are described. The variations are traced to irregularities in the portions of the embryonic post-cardinal, supracardinal, and cardinal collateral systems which persist. Forces of growth and differentiation determining the vena caval pattern are primarily genetic. Sex has no effect on the incidence or expression of this character. W. F. H.

Germ cell studies in male fox (*Vulpes fulva*). D. W. Bishop (*Anat. Rec.*, 1942, 84, 99—115).—Germ cell activity continues throughout the breeding season (Jan.—Mar.). Mature germ cells are produced at a reduced rate 2 months before and 1 month after matings. The diploid no. of chromosomes is 32 and somatic pairing of homologous chromosomes in diploid spermatogonia is believed to occur. The sex-chromosome complex consists of a small Y and a larger X which segregate during the first meiotic division. W. F. H.

Development of human mesencephalic trigeminal root and related neurons. W. F. Windle and J. E. Fitzgerald (*J. comp. Neurol.*, 1942, 77, 547—608).—Based on the study of 16 human and 9 cat embryos of between 4 and 18 mm. crown-rump length, stained with the pyridine-Ag technique. The mesencephalic root arises in common with Probst's tract from a lateral longitudinal fasciculus which has its origin in a column of cells extending along the sulcus limitans from the isthmus caudalwards. The mesencephalic nucleus differentiates in a caudo-rostral direction and its cells reach the mesencephalon at the 10—12-mm. stage. The definitive 5th motor nucleus arises at about the same stage by a secondary migration in which a rudimentary genu is formed, as in the 7th nerve. J. D. B.

Development of cranial sympathetic ganglia in cat. E. J. Cowgill and W. F. Windle (*J. comp. Neurol.*, 1942, 77, 619—630).—From studies on cat embryos of 4—60 mm. crown-rump length, stained with the pyridine-Ag technique, it is concluded that the cranial sympathetic ganglia arise from neuroblasts which migrate from the 5th, 7th, and 9th (petrosal) cranial sensory ganglia by migration along the branches of the nerves concerned. J. D. B.

Development of Mauthner's fibres in *Fundulus* embryos. J. M. Oppenheimer (*J. comp. Neurol.*, 1942, 77, 577—587).—On the basis of observations in operated embryos in which Mauthner's cells were

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abnormally located it is suggested that decussation of the fibres occurs only if they reach the decussation level at a time specifically related to the occurrence of other particular events at this level.

J. D. R.

Differentiation of the neuroblasts in the internal plexiform layer of the retina in *Triton cristatus*. L. Burton (*Arch. Sci. phys. nat.*, 1942, [v], 24, Suppl., 200—203).—In the larva of *T. cristatus* the retinal neuroblasts of the ganglionic and the inner nuclear layers form thick cytoplasmic protrusions which extend into the inner plexiform layer and meet to form primitive synapses. In these protrusions appear argyrophil granules, then neurofibrils, and finally nerve fibres.

F. S.

Morphogenetic forces in newt embryos. C. H. Waddington (*J. Exp. Biol.*, 1942, 19, 284—293).—The yolk granules are ellipsoidal and (except in the spindle) are oriented at random in the cells; this suggests that no general fibrillar cyto-architecture is present. Rough measurements of the breaking strain of the cells were made by bringing them into surfaces of known tension and observing whether disruption occurred; the breaking strain is some tens of dynes per cm., highest in neural tissue and lowest in endoderm, and increases gradually with age. The proteins of the cell surface are perhaps fibrillar and oriented in the surface.

G. P. W.

Neural induction by chemical stimulation. S. C. Shen (*J. Exp. Biol.*, 1942, 19, 5—10).—Neural structures were induced in azoloti gastrula epidermal explants by Na 1:2:5:6-dibenzanthracene-*α*-*endo*succinate in solution.

G. P. W.

Determination in *Drosophila* development. C. H. Waddington (*J. Exp. Biol.*, 1942, 19, 101—117).—Heavy doses of X-rays were given to larvæ and pupæ. Irradiation of pupæ, or of very young larvæ, produced no abnormalities. Late larvæ showed effects probably due to killing of individual cells. Mid-larvæ (60—90 hr.) showed local increases of growth and changes of histogenesis, large regions being affected. This suggests that determination in normal development occurs fairly late, and through the agency of tissue interactions.

G. P. W.

Atropine-esterase, a genetically determined enzyme in the rabbit. P. B. Sawin and D. Glick (*Proc. Nat. Acad. Sci.*, 1943, 29, 55—59).—Rabbits which have in their blood serum an enzyme capable of hydrolysing atropine (and monoacetylmorphine) inherit that peculiarity in a gene (*As*) borne in the same chromosome as the gene (*E*) for the extension of black pigment in the coat. The gene (*As*) is incompletely dominant, homozygotes producing the enzyme more effectively than heterozygotes. The enzyme is not present at birth but appears at about one month and is more frequent and in higher concn. in females than in males.

F. S.

Hereditary aspects of cystinuria. J. C. Andrews and K. C. Andrews (*J. Elisha Mitchell Sci. Soc.*, 1940, 56, 329—332).—Observations on two cystinuric families are recorded.

A. G. P.

Inheritance of training in rats. W. E. Agar, F. H. Drummond, and O. W. Tiegs (*J. Exp. Biol.*, 1942, 19, 158—167).—Second report, covering 20 generations, of an experiment in which training was not inherited.

G. P. W.

Relationship between body temperature and genetic resistance to *Salmonella pullorum* in fowl. J. C. Scholes and F. B. Hutt (*Cornell Univ. Agr. Exp. Sta.*, 1942, Memoir 244, 35 pp.).—By brooding Rhode Island Red chicks at 28° C. the body temp. was lowered by 0.7—1.4° F. below the temp. of control chicks brooded at 35° C. Chicks thus "chilled" were consistently more susceptible to *S. pullorum* than controls, when both classes were inoculated on the day after hatching. Following injections of Na amytal, which lowered the mean body temp. by 8.4° F., susceptibility was again higher. The resistance of chicks subjected to artificial fever was consistently greater than that of untreated controls. Among chicks from different dams, those with mean familial body temp. higher than the average were more resistant than were those with temp. below the average. The body temp. in Rhode Island Red and White Leghorn chicks rises fairly rapidly in the first 8 days after hatching as does the resistance to *S. pullorum*.

W. F. H.

Hereditary chondrodystrophy in fowl. W. F. Lamoreux (*J. Heredity*, 1942, 33, 275—283).—In 5 generations of White Leghorns an extreme type of chondrodystrophy was inherited as an autosomal recessive, for which the gene-symbol, *ch*, is proposed. Among 1713 classified embryos or chicks from heterozygous parents, 22.6% were chondrodystrophic. No significant difference between males and females with respect to incidence was noted, and unlike the sporadic type of chondrodystrophy the incidence is affected little by change of season.

W. F. H.

III.—PHYSICAL ANTHROPOLOGY.

Blood group frequencies in North Wales. J. A. F. Roberts (*Ann. Eug.*, 1942, 2, 260—271).—A detailed account of studies already noted (A., 1942, III, 509).

W. F. H.

Stature of South American Indians. M. Steggerda (*Amer. J. phys. Anthropol.*, 1943, [ii], 1, 5—20).—Numerous data concerning the names, locations, and stature of 82 South American Indian tribes are presented. The smallest (below 160 cm.) are located in the northwest and central portions of South America. The next group (160—185 cm.) live practically in the same area but continue farther south into Chile. The third group (165—170 cm.) is found in a narrow strip in northern Brazil and southern Argentina. The tallest (above 170 cm.) occur mainly in south Argentina and the Archipelago.

W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Hepatic-cell mitochondria in fatty liver produced by high-sugar diet. H. W. Deane (*Anat. Rec.*, 1942, 84, 171—191).—The mitochondria became short, swollen, and sometimes vesiculated. After 2 weeks of the diet they became finer and more elongated and often coalesced. No direct relationship between the mitochondria and the deposited fat was observed but it is suggested that enspherulation of mitochondria may result from an alteration in cellular metabolism under the conditions of the experiments. The normal mitochondrial picture is restored within a week when a balanced diet is given.

W. F. H.

Lipin and pigment in corpus luteum of rhesus monkey. I. Rossman (*Carnegie Inst. Wash., Contrib. to Embryol.*, 1942, 30, 97—109).—The retrogressing corpus luteum of the rhesus monkey accumulates luteolipin which stains with Sudan III despite its insolubility in lipin and hydrocarbon solvents. The accumulation of luteolipins makes it possible to estimate the age of the retrogressing corpus luteum with some accuracy. Lipin droplets are found in the granulosa cells of primordial follicles, are absent in growing follicles, but appear in mature ones. The granulosa cells of the corpus aberrans contain no lipins and rarely luteolipins. The administration of progesterone for varying periods after the corpus luteum becomes mature produces retrogression.

W. J. H.

Photodynamic action of neutral-red on embryonic chick cells grown in vitro. E. F. Stilwell (*Anat. Rec.*, 1942, 84, 193—213).—The concn. of the dye used was 1:100,000 and the variables were light intensity and duration of exposure. The reactions of the cells involved both nuclear and cytoplasmic alterations. Normal mitosis was interrupted and cells did not enter prophase. Division abnormalities included nuclear fragmentation, chromatin bridges in anaphases, and formation of binucleated cells. Cytoplasmic response consisted of various degrees of "blister cytotoxicity" following exposure to lower ranges of light intensities (3000—5000 ft.-candles). Exposure to higher intensities (5000—6000 ft.-candles) produced rapid denaturation of cell constituents and cell death.

W. F. H.

Ascorbic acid in chick explants. S. A. Barnett (*J. Exp. Biol.*, 1942, 19, 88—91).—Few of the cells in heart, bone, and adrenal cultures contained histologically demonstrable ascorbic acid.

G. P. W.

Phosphatase in chromosomes. E. N. Willmer (*J. Exp. Biol.*, 1942, 19, 11—13).—The chromosomes of dividing cells in chick heart explants give a strongly positive reaction for phosphatase.

G. P. W.

Calcification and phosphatase. G. Gomori (*Amer. J. Path.*, 1943, 19, 197—207).—A new microtechnical method for the simultaneous demonstration of preformed Ca salt deposits and of sites of phosphatase activity is described. Calcification of living or recently necrosed tissues seems invariably to involve phosphatase activity but calcification of hyaline connective tissue occurs without any phosphatase action. Acid phosphatase plays no rôle in calcification. (8 photomicrographs.)

C. J. C. B.

Non-resinous secretions of lac insects. S. Mahdihassan (*J. Osmania Univ.*, 1941, 9, 53—89).—A study of comparative physiological activity with special reference to the secretion of waxes indicates that the genus *Metatarchia* is more primitive than *Lakshadia*. Lac-producing activity has been evolved from a more primitive, wax-secreting type. *Metatarchia* also secrete a crystalline substance of unknown chemical nature, which is embedded in the lac cell wall.

W. F. H.

Architecture of the lac cell. S. Mahdihassan (*J. Osmania Univ.*, 1941, 9, 91—121).—A hard wax secreted from 6 patches of pores in the girdle region of the insect forms a homogeneous wall for the main resinous lac cell. The ceiling of the cell contains two splint-like processes and a "spinoid tubercle" which anchor the insect into the ever-growing ceiling. As the ceiling grows the body of the insect is pulled vertically. The rôle of the "spinoid tubercle" can be understood only on recognising the cell material to be a concretion of lac-resin and waxes.

W. F. H.

Colchicine-Feulgen leaf smears. J. R. Meyer (*Stain Tech.*, 1943, 18, 53—56).—Pre-treatment of young leaves with colchicine before fixation, followed by Feulgen staining and smearing in acetic acid, gave successful chromosome preps. from various species of *Phlox*.

K. C. R.

Spectrophotometric analysis of tissue staining. R. E. Stowell (*Stain Tech.*, 1943, 18, 57—71).—Absorption spectra of routine staining solutions were compared with the absorptions of stained gelatin, tendon, blood plasma, thymus, and fat. The curves obtained were strikingly similar, indicating that in the process of tissue staining a chemical alteration in the chromophore group was unlikely. K. C. R.

V.—BLOOD AND LYMPH.

Mechanism of red blood cell destruction. B. G. Maegraith, N. H. Martin, and G. M. Findlay (*Brit. J. exp. Path.*, 1943, 24, 58—65; cf. A., 1943, III, 302).—Washed erythrocytes are lysed when they are incubated at 37° in the presence of washed tissue. The lytic agent, which is present in all the tissues examined, is species-sp. and is inhibited by serum from the same or other species. The lytic agent is destroyed by heating to 80°, is inhibited by 1 in 2×10^7 KCN and by 1 in 64,000 HgCl_2 , and has the time relations of an enzyme in its action. F. S.

Artificial antigen with blood-group A specificity. W. T. J. Morgan (*Brit. J. exp. Path.*, 1943, 24, 41—49).—By methods previously described (A., 1940, III, 452, 935; 1942, III, 942) an antigenic complex was prepared from the non-antigenic A polysaccharide-amino-acid complex derived from commercial pepsin or hog gastric mucin and the conjugated protein component of the sp. O somatic antigen of *Bact. shiga*. In rabbits the artificial antigen induced serum antibodies which agglutinated human group A erythrocytes in high titre but failed to agglutinate those of group B or O. The anti-A sera in the presence of complement caused hæmolysis of sheep erythrocytes which was inhibited by the homologous hapten (gastric mucin A polysaccharide) and by human A polysaccharide in saliva. These high-titre sera should be used for the detection of weakly reacting erythrocytes, such as those of groups A_2B , A_3 , and A_2B , and for differential agglutination. F. S.

Pernicious anæmia treated with pyloro-duodenal extract and liver in tablet form. J. S. Lawrence (*Brit. Med. J.*, 1943, I, 567).—Successful treatment in one case. I. C.

Intolerance to liver extract in pernicious anæmia. E. Delikat (*Brit. Med. J.*, 1943, I, 539—540).—Report of 3 cases of pernicious anæmia, in which the patients became sensitive to parenteral injections of liver extract. Skin tests cannot be relied on to indicate intolerance. Desensitisation was successful in 2 cases with divided doses of liver extract over a period of several weeks. I. C.

Products of hydrolysis of highly active preparations of the anti-pernicious [anæmia] factor. P. Karrer and R. Keller (*Helv. Chim. Acta*, 1943, 26, 55—56; cf. A., 1938, III, 458).—Histidine, arginine, lysine, glutamic acid, leucine, alanine, valine, and some proline are identified as derivatives or as the free acids. Aspartic acid and glycine are absent. Tyrosine and phenylalanine are present, at the most, in traces. H. W.

Properties of red cell ghost. E. Ponder (*J. Exp. Biol.*, 1942, 18, 257—266).—The ghost tends to assume the vol. and size of the original cell. It retains a considerable amount of hæmoglobin, perhaps by adsorption. It no longer exhibits disc-sphere transformations. G. P. W.

Changes in blood picture of dog following subcutaneous injections of sodium selenite.—See A., 1943, III, 515.

Aggregation and metabolism of erythrocytes. B. Bergenhem (*Arkiv Kemi, Min., Geol.*, 1941, 14, B, No. 35, 7 pp.).—Measurements of sedimentation rate show that the extent of aggregation of erythrocytes suspended in heat-inactivated serum decreases as the inorg. $\text{PO}_4^{'''}$ content increases. If the suspension is shaken, production of inorg. $\text{PO}_4^{'''}$ is retarded or prevented. Non-inactivated serum, and also glucose, prevent production of inorg. $\text{PO}_4^{'''}$ and increase the extent of aggregation. The results show a close connexion between metabolic changes (especially dephosphorylation) and increased extent of aggregation. W. McC.

Blood transfusion in nocturnal hæmoglobinuria. J. V. Dacie and D. Firth (*Brit. Med. J.*, 1943, I, 626—628).—Report of a case of chronic hæmolytic anæmia with nocturnal hæmoglobinuria (Marchiafava-Micheli disease). Stored normal serum given intravenously had no effect on *in vivo* or *in vitro* hæmolysis. A blood transfusion was followed by severe hæmolysis, in which more than half of the patient's own red cells were destroyed; the survival of the transfused blood was, however, unimpaired. Transfusion was followed by a remission of hæmoglobinuria lasting 6 weeks. I. C.

Chronic hæmolytic anæmia with paroxysmal nocturnal hæmoglobinuria (Marchiafava-Micheli syndrome). P. P. Pierce and C. A. Aldrich (*J. Pediat.*, 1943, 22, 30—42).—A case of chronic hæmolytic anæmia with paroxysmal nocturnal hæmoglobinuria is reported in a child 5 years of age (the youngest reported). Thrombocytopenia was marked and purpuric manifestations were present. Splenectomy was performed but the essential features of the disease except the thrombocytopenia were not altered. C. J. C. B.

H 2 (A., III.)

Investigation of hæmolytic transfusion reaction. P. L. Mollison (*Brit. Med. J.*, 1943, I, 529—532, 559—561).—Signs of abnormal destruction of red cells of the donor or the recipient appear following transfusion of incompatible blood, blood stored for an excessively long time, or containing high-titre incompatible agglutinins, or transfusion to persons with hæmolytic anæmias. The presence of free hæmoglobin, methæmalbumin, or increased concn. of bilirubin within 12—24 hr. after transfusion is evidence of blood destruction; after the above period the method of differential agglutination is often the only way of demonstrating that the donor's red cells are rapidly destroyed. I. C.

Protoporphyrin. III. Photo-electric and fluorophotometric determination of protoporphyrin in blood. M. Grinstein and C. J. Watson (*J. Biol. Chem.*, 1943, 147, 675—684; cf. A., 1943, II, 209).—The protoporphyrin of washed erythrocytes (not less than 5 ml.) is extracted by the method of Van den Bergh *et al.* (A., 1934, 208) (the time of shaking is greatly shortened, however) and is determined with the photo-electric colorimeter or the fluorophotometer. If whole blood is used, porphyrin present in the plasma is included. W. McC.

Kinetics of hæmoglobin reactions [with oxygen and carbon monoxide].—See A., 1943, I, 204.

Absorption spectra of hæmoglobin and its derivatives in visible and near infra-red regions. B. L. Horecker (*J. Biol. Chem.*, 1943, 148, 173—183).—The visible and infra-red absorption spectra of oxy-, met-, carbonyl-, reduced, and metcyan-hæmoglobin were examined and several new bands in the infra-red are described. The spectra of oxy- and carbonyl-hæmoglobin in hæmolyzed human blood were identical with those obtained from pure calf hæmoglobin in the visible region, but in the infra-red, the whole hæmolyzed blood had a somewhat higher absorption. A method of evaluating the purity of hæmoglobin preps. and a spectrophotometric procedure for determining the CO and methæmoglobin contents of blood are described. J. E. P.

apoFerritin of horse spleen.—See A., 1943, II, 146.

Effect of iron on hæmoglobin regeneration in blood donors. A. P. Barer and W. M. Fowler (*Amer. J. med. Sci.*, 1943, 205, 9—16).—The administration of Fe to blood donors hastens the regeneration of hæmoglobin, but the effect of Fe is transient. Fe therapy given after subsequent blood donations does not cause as great an acceleration as with its first administration. Fe apparently has a stimulatory effect on hæmoglobin formation as well as acting as replacement therapy. C. J. C. B.

Copper and iron in human blood. A. Sachs, V. E. Levine, F. C. Hill, and R. Hughes (*Arch. intern. Med.*, 1943, 71, 489—501).—A review. C. J. C. B.

Significance of plasma and blood volume studies (in clinical medicine). N. M. Keith (*J. Mt. Sinai Hosp.*, 1942, 8, 692—702). E. M. J.

Treatment of leg ulcers with blood and concentrated plasma.—See A., 1943, III, 516.

Paradoxical blood-concentrating effect of intravenous 4 × normal plasma injections. H. N. Harkins, R. T. Boals, and B. Brush (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 14—16).—Intravenous injections in dogs of 4 × normal reconstituted dried dog or human plasma caused an immediate blood concn., hæmatocrit val. rising from 38 to 45%. No secondary dilution followed. Similar injections of 20% glucose caused a blood dilution, hæmatocrit val. falling from 44 to 33%. V. J. W.

Antiproteolytic activity of serum. I—III.—See A., 1943, III, 519.

Plasma clotting time and serum-calcium of patients recovered from attacks of coronary thrombosis. M. E. Ewing, O. S. Cullimore, and N. R. Blatherwick (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 23—25).—There was no difference between such patients and controls in prothrombin time, appearance of film, or serum-Ca. In the controls the interval between the appearance of fibrin and formation of a solid clot was less. V. J. W.

Clotting action of fer-de-lance venom. G. L. Kauer, jun., R. M. Bird, and P. Reznikoff (*Amer. J. med. Sci.*, 1943, 205, 16—24).—*Bothrops atrox* venom is a powerful coagulant of whole blood and fibrinogen solution *in vitro*, but when administered to dogs intravenously it produced marked prolongation of the clotting time with a reduction in prothrombin and fibrinogen. An antivenom serum was developed in rabbits which completely neutralised the clotting properties of the venom *in vitro*. *In vivo*, this antivenom serum modified the effect of the venom on the clotting time, blood-prothrombin and -fibrinogen, and protected dogs from a lethal dose of venom. Normal rabbit serum had a slight protective action against the toxic effects of intravenous administration of fer-de-lance venom. The thrombic activity of post-injection plasma was due to the venom present. C. J. C. B.

Prothrombin level of blood after intramuscular injection of sodium citrate. A. J. Quick (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 1—3).—Injections of 0.5 g. per kg. did not affect prothrombin of dogs or rabbits. V. J. W.

New method for prothrombin determination. A. W. Ulin and E. Barrows (*J. Amer. Med. Assoc.*, 1942, **120**, 826—827).—A rapid, simple, accurate method employing a loop coagulometer and a drop of blood is described. C. A. K.

Dicoumarin. I. S. Wright and A. Prandoni (*J. Amer. Med. Assoc.*, 1942, **120**, 1015—1021).—A review of pharmacological and therapeutic effects. C. A. K.

Dicoumarin and prothrombin time. E. V. Allen, N. W. Barker, and J. M. Waugh (*J. Amer. Med. Assoc.*, 1942, **120**, 1009—1015).—A review, and clinical report on the use of dicoumarin in 374 cases. 200—300 mg. were given daily to keep the prothrombin time at 35—60 sec. and there is evidence that dicoumarin helps to prevent intravascular thrombosis. The danger of producing hæmorrhage is discussed. C. A. K.

Experimental administration of dicoumarin. J. L. Bollman and F. W. Preston (*J. Amer. Med. Assoc.*, 1942, **120**, 1021—1024).—Dicoumarin had no harmful effects in dogs when given in doses of 1 mg. per kg. daily for 6 weeks, although prothrombin time was increased 2—3 times. 10—20 mg. per kg. daily produced a condition resembling hæmorrhagic sweet clover disease. Vitamin-K deficiency, inanition, or hepatic or renal injury enhances the effect of dicoumarin. Clotting in glass or metal cannulæ is retarded by dicoumarin. C. A. K.

Clinical use of dicoumarin. W. L. Butsch and J. D. Stewart (*J. Amer. Med. Assoc.*, 1942, **120**, 1025—1026).—Prophylactic and therapeutic uses are discussed. Dicoumarin should not be given where there are ulcerating lesions. C. A. K.

Action of 3:3'-methylenebis-(4-hydroxycoumarin) (dicoumarin). C. S. Davidson and H. MacDonald (*Amer. J. med. Sci.*, 1943, **205**, 24—33).—The drug diminishes blood-prothrombin concn. sometimes to very small vals. The coagulation time measured in "Lusteroid," although more variable than in glass, showed greater delay in clotting than in glass after the administration of the drug. Coagulation time in "Lusteroid" may indicate the true coagulation defect more closely than does glass. The relation of the abnormal clotting mechanism to other coagulation factors, foreign surface, platelets, "globulin substance," and plasma-proteolytic enzyme was studied and the results are discussed. The administration of the drug had no effect on blood cytology, liver function, or plasma-proteins. Vitamin-K is not an antidote to dicoumarin. Whole blood transfusion had only a transitory or no effect on the abnormal clotting mechanism in patients receiving the drug. C. J. C. B.

Comparative effect of vitamin-K and whole blood on prothrombin deficiency of newborn infant. H. C. Willumsen, H. E. Stadler, and C. A. Owen (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 116—121).—Intramuscular injection of 1 mg. of 4-amino-2-methyl- α -naphthol was more effective in raising prothrombin level of 3—4-day-old infants than was injection or transfusion of 15 c.c. of maternal blood. The effect of the latter was only additive and no prothrombin production was caused. V. J. W.

Vitamin-K in hæmorrhagic disease of newborn infant. C. E. Snelling and W. Nelson (*J. Pediatr.*, 1943, **22**, 1, 77—81; cf. A., 1941, III, 418).—Thyloquinone (2-methyl-1:4-naphthaquinone) in oil given by mouth in 5-mg. doses to mothers after labour has commenced, at least more than 4 hr. before delivery, prevents extreme degrees of hypoprothrombinæmia in the newborn infant for the first 10 days of life. It prevents hæmorrhagic disease of the newborn infant. Hypoprothrombinæmia in untreated infants has a seasonal incidence, being more frequent in February and March, which is the period when hæmorrhagic disease is common. The diet of the mother bore no relation to the hypoprothrombinæmia of the offspring. C. J. C. B.

Clinical experience with water-soluble vitamin-K-like substance (tetrasodium 2-methyl-1:4-naphthaquinol diphosphate). J. G. Allen (*Amer. J. med. Sci.*, 1943, **205**, 97—102).—The ester, a water-sol. vitamin-K-like substance, was administered to 31 patients with obstructive jaundice and 17 with intrahepatic jaundice. It uniformly elevated blood-prothrombin in patients with obstructive jaundice. In patients with intrahepatic jaundice the prothrombin response was slight. No toxic symptoms were noted during the clinical trials, even though a single dose of 200 mg. was administered in 2 instances. The coagulation time was not abnormally shortened. C. J. C. B.

Inheritance and linkage relations of acholuric jaundice.—See A., 1943, III, 451.

Role of thrombocytopenia in hæmorrhage produced in sarcoma 37.—See A., 1943, III, 492.

Complement titrations in human sera. M. Heidelberger (*J. Mt. Sinai Hosp.*, 1942, **8**, 622—624). E. M. J.

Transfusion of leucocytotic blood in treatment of leucopenic states. R. Ottenberg (*J. Mt. Sinai Hosp.*, 1942, **8**, 895—897).—Case report. E. M. J.

Leucocytosis induced by methyl-acetamide with *p*-chloroxylenol. Chemotactic effect on bone marrow. B. Zondek and Y. M. Brom-

berg (*Amer. J. med. Sci.*, 1943, **205**, 82—89).—Methylacetamide injected intramuscularly induces leucocytosis, which reaches its max. 24 hr. after injection. This effect on leucopoiesis is proportional to the dose employed. The injection of methylacetamide combined with *p*-chloroxylenol gives a much higher leucocytosis than that of methylacetamide alone. The leucocytic effect produced is proportional to the quantity of chloroxylenol dissolved in methylacetamide. In all the 4 cases of leucopenia in typhoid fever treated with injections of chloroxylenol, leucocytosis was induced. The characteristic features of the leucocytosis produced by chloroxylenol are the shift to the left, with a significant increase in young and band forms, indicating that it is due to a stimulation of the bone marrow. The results obtained in normal and in typhoid cases suggest the trial of these substances in neutropenic conditions. C. J. C. B.

Case of granulocytopenia [from drugs].—See A., 1943, III, 515.

Virus of infectious feline agranulocytosis. I, II.—See A., 1943, III, 528.

Morphology and development of the megakaryocytes [in normal human marrow]. J. Japa (*Brit. J. exp. Path.*, 1943, **24**, 73—80).—Megakaryocytes are multinucleated cells which develop by repeated synchronous and independent mitotic division of their nuclei without division of the cytoplasm. The rate of division was 17 per 1000. 2.5% had 2 nuclei, 25.5% had 4, 53% had 8, 18% had 16, and 1% had 32. There were 36 degenerating megakaryocytes per 100 and 2—5 megakaryocytes per 1000 marrow cells. F. S.

Changes in chemical composition of blood coming from damaged tissues. H. Selye and C. Dosne (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 143—148).—In the macaque, occlusion by tourniquet of the blood supply of one limb causes no shock until the tourniquet is released, when severe shock ensues. Blood from such a limb is no more toxic to the adrenalectomised mouse than normal blood. In similar experiments on rats and cats, blood from a damaged limb had a low content of sugar but a high content of hæmoglobin and non-protein-N. V. J. W.

Dynamics of symptom production in splenomegaly [and nervous pathways]. R. Isaacs (*J. Mt. Sinai Hosp.*, 1942, **8**, 651—655).

Prognostic blood tests in tuberculosis. J. T. Paterson (*Edinb. Med. J.*, 1943, **50**, 288—295).—In 30 cases of tuberculosis, 28 of which were pulmonary, the sedimentation rate gave results which were 80% accurate; the total leucocyte count was 72%, Weltmann serum reaction 68%, and the monocyte/lymphocyte ratio (Medlar) 45%. H. S.

Photoelectric micro-determination of calcium in serum. J. Sendroy, jun. (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 136—138).—The Ca is pptd. as oxalate and this oxalate is oxidised by excess of standard $\text{Ce}(\text{SO}_4)_2$. The I liberated from KI by the excess of $\text{Ce}(\text{SO}_4)_2$ is estimated colorimetrically. L. L. W.

Comparison of effects of large doses of various activated sterols on serum-calcium. E. W. McChesney and H. Kocher (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 156—159).—In adult rats vitamin- D_2 and Ertron (an irradiated ergosterol) produced identical effects on serum-Ca. Vitamin- D_3 caused a more prolonged hypercalcaemia than D_2 , and dihydrotachysterol has more effect on serum-Ca than on rickets. V. J. W.

VI.—VASCULAR SYSTEM.

Intrinsic pulsation rates of fragments of embryonic chick heart. A. Barry (*J. exp. Zool.*, 1942, **91**, 119—130).—Hearts of embryonic chicks of from 29 to 120 hr. incubation age were transected into several fragments and the pulsations of these fragments, in a const. environment of oxygenated Tyrode's solution at 37.5°, recorded photographically. The results demonstrate a gradient of inherent rhythmicity with fragments of the myocardium beating more rapidly than segments lying anterior to it and more slowly than those posterior to it along the cardiac axis. Observations on heart block are also recorded. J. D. B.

Activity of toad lymph hearts. V. G. Foglia and E. Braun-Menendez (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 57—59).—Movements were recorded by an optical method. Rate was reduced by hypophysectomy or adrenalectomy. The hearts were always stopped by curare, erythrine, acetylcholine, or nicotine, and usually by adrenaline. Amplitude was reduced by eserine, veratrine, or ouabain. Pilocarpine, atropine, or pituitrin had no effect. V. J. W.

Electrocardiographic changes with exercise. W. H. Barrow and R. A. Ouer (*Arch. intern. Med.*, 1943, **71**, 547—554).—E.c.g. were taken before and immediately after active exercise in 100 normal men [50 under 40 years of age (average 31) and 50 over 40 (average 49)]. There were no changes in auriculoventricular or intraventricular conduction time. Inversion of P in lead CF_4 after exercise occurred in half. Changes in T wave voltage occurred. The size of QRS was changed in 8%. There were no significant differences between the two age groups. There was no correlation between the Schneider

index rating and the e.c.g. changes. The smokers (60%) had a lower Schneider index than the non-smokers and changes in *P* in lead *CF*₄ and in *T* wave were more frequent. A few distortions of *T*, *ST*, and *QRS* disappeared with vigorous exercise and may be considered as occasional normal variants. C. J. C. B.

Electrocardiograms with normal limb leads and abnormality of one of four precordial leads. H. E. B. Pardee (*J. Mt. Sinai Hosp.*, 1942, 8, 898—900).—Summary of 14 cases. E. M. J.

Displacement of RST segment by potassium chloride. J. S. Robbs, M. S. Dooley, and R. C. Robb (*J. Mt. Sinai Hosp.*, 1942, 8, 946—952). E. M. J.

Uterine electrocardiogram. H. Mann and M. D. Mayer (*J. Mt. Sinai Hosp.*, 1942, 8, 805—810).—Case report. E. M. J.

Abnormal roentgenkymograms in myocardial infarction [with normal electrocardiogram]. M. L. Sussman and S. Dack (*J. Mt. Sinai Hosp.*, 1942, 8, 1064—1070).—Report of 18 cases. E. M. J.

Form of QRS deflexion of electrocardiogram in bundle branch block. F. N. Wilson (*J. Mt. Sinai Hosp.*, 1942, 8, 1110—1117). E. M. J.

Extreme tachycardia : with report of non-fatal paroxysms following myocardial infarction. J. Edeiken (*Amer. J. med. Sci.*, 1943, 205, 52—60).—Report of 2 cases and review. C. J. C. B.

Mechanism of heart failure. L. N. Katz (*J. Mt. Sinai Hosp.*, 1942, 8, 668—681). E. M. J.

Compensatory mechanisms in heart failure. A. Penner and A. I. Bernheim (*J. Mt. Sinai Hosp.*, 1942, 8, 901—908). E. M. J.

Paroxysmal auricular fibrillation and flutter [without signs of organic cardiac disease]. R. L. Levy (*J. Mt. Sinai Hosp.*, 1942, 8, 765—770).—Report of 2 cases who are brothers. E. M. J.

Mechanism of auricular flutter and fibrillation. I. R. Roth (*J. Mt. Sinai Hosp.*, 1942, 8, 965—979).—A review. E. M. J.

Transient ventricular fibrillation. S. P. Schwartz (*J. Mt. Sinai Hosp.*, 1942, 8, 1005—1020).—A review and report of 8 cases. E. M. J.

Mechanisms of inspiratory filling of cervical veins and pulsus paradoxus in venous hypertension. W. M. Hitzig (*J. Mt. Sinai Hosp.*, 1942, 8, 625—644). E. M. J.

Quantitative determination of collateral coronary circulation. M. Prinzmetal, S. Kayland, C. Margoles, and L. J. Tragerman (*J. Mt. Sinai Hosp.*, 1942, 8, 933—945). E. M. J.

Calcification of pericardium and chronic cardiac compression. W. M. Yater (*J. Mt. Sinai Hosp.*, 1942, 8, 1144—1160).—Report of 4 cases. E. M. J.

Diagnosis and evaluation of compensated and uncompensated patency of ductus arteriosus. J. P. Hubbard (*J. Pediat.*, 1943, 22, 50—59).—These cases may be diagnosed by the characteristic murmur in the absence of any other sign or symptom. The murmur, as illustrated by the phonocardiogram, is crescendo in systole, continues into diastole, becoming decrescendo. The term "uncompensated patent ductus arteriosus" is used for those patients having a large arteriovenous shunt with evidence of present or impending circulatory insufficiency. In such cases, in addition to the characteristic murmur, there is a low diastolic pressure with the peripheral signs of aortic regurgitation, cardiac enlargement, pulmonary congestion, and impaired growth and development. C. J. C. B.

Aneurysm of heart. J. H. Crawford (*Arch. intern. Med.*, 1943, 71, 502—515).—A review with report of 13 cases. C. J. C. B.

Comparison of simultaneous indirect (auscultatory) and direct intra-arterial measurements of arterial pressure in man. J. M. Steele (*J. Mt. Sinai Hosp.*, 1942, 8, 1042—1050). E. M. J.

Peripheral blood flow in Graves' disease. H. J. Stewart and W. F. Evans (*J. Mt. Sinai Hosp.*, 1942, 8, 1051—1059).—Report of 10 female cases. E. M. J.

New theory of pathogenesis of coarctation of aorta. C. K. Friedberg (*J. Mt. Sinai Hosp.*, 1942, 8, 520—533). E. M. J.

Manifestations of polyvalent sensitisation in vascular allergy. J. Harkavy (*J. Mt. Sinai Hosp.*, 1942, 8, 592—605).—Report of 4 cases. E. M. J.

Physical measures in treatment of peripheral vascular disease. I. S. Wright (*J. Mt. Sinai Hosp.*, 1942, 8, 1128—1143).—A review. E. M. J.

Thrombo-angitis obliterans in cases of polycythæmia vera. S. Silbert (*J. Mt. Sinai Hosp.*, 1942, 8, 1021—1026).—Report of 3 cases. E. M. J.

Neurological manifestations of periarteritis nodosa. I. S. Wechsler and M. B. Bender (*J. Mt. Sinai Hosp.*, 1942, 8, 1071—1078).—Report of 7 cases. E. M. J.

Effect of therapeutic agents and renal implantations in experimental hypertension. B. Friedman, J. Jarman, and J. Marrus (*J. Mt. Sinai Hosp.*, 1942, 8, 534—539). E. M. J.

Effect of hypophysectomy on experimental renal hypertension. H. Goldblatt, S. Braden, J. R. Kahn, and W. A. Hoyt (*J. Mt. Sinai Hosp.*, 1942, 8, 579—584). E. M. J.

Incidence of hypertension in people over 40 years of age. A. M. Master and S. Dack (*J. Mt. Sinai Hosp.*, 1942, 8, 1232—1235).—Report of 5686 cases. E. M. J.

Family history in arterial hypertension. R. H. Feldt and D. E. W. Wenstrand (*Amer. J. med. Sci.*, 1943, 205, 61—65).—In 4376 applicants for life insurance, the incidence of familial cardiovascular disease was only slightly greater among hypertensive persons than among persons with normal blood pressure. There was no significant difference in the familial incidence of diabetes. C. J. C. B.

Renin and production of cardiac and gastro-intestinal hæmorrhages and necroses [in dog]. L. Leiter and L. Eichelberger (*J. Mt. Sinai Hosp.*, 1942, 8, 744—753). E. M. J.

Mechanism of arterial hypertension. I. H. Page (*J. Amer. Med. Assoc.*, 1942, 120, 757—762).—A review. C. A. K.

Renal ischæmia from aneurysm of abdominal aorta. B. J. Hoffman (*J. Amer. Med. Assoc.*, 1942, 120, 1028—1030).—An aneurysm of the aorta compressed the left renal artery in a negro aged 28 and produced hypertension with death from heart failure. C. A. K.

Effect of antipressor kidney extract, angiotonin, methylguanidine, and tyramine on cardiac output as measured by the ballistocardiograph in hypertensive and normal persons. R. D. Taylor and I. H. Page (*Amer. J. med. Sci.*, 1943, 205, 66—76).—Tyramine increased stroke vol. and greatly reduced heart rate, resulting in slight reduction in cardiac output. Methylguanidine decreased stroke vol. and rate, resulting in sharp reduction of cardiac output. Angiotonin decreased stroke vol. but reduced the rate only slightly, resulting in marked reduction of cardiac output. Tyramine produced severe symptoms, methylguanidine less severe, and angiotonin none. The cardiodynamics, as recorded by the ballistocardiograph when tyramine and methylguanidine are injected, differ strikingly from those in patients with essential hypertension or after injection of angiotonin into normotensives. Antipressor angiotonin-destroying kidney extract administered to hypertensive patients elevated cardiac output, the mean arterial pressure fell, and the contour of the ballistocardiographic curves resumed a normal or near normal appearance. Stroke vol. and cardiac output are reduced in many hypertensive patients. C. J. C. B.

Effect of angiotonin and renin on glomerular circulation in frog kidney. K. G. Wakim, G. T. Root, and H. E. Essex (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 72—75).—Angiotonin applied directly or intravenously to the frog's kidney causes a vasoconstriction for about 1 min. followed by vasodilatation. When injected into the lymph sac only the dilating effect is produced. Renin has no action. V. J. W.

Pyelograms in patients with essential and malignant hypertension.—See A., 1943, III, 486.

Site of renin formation in kidney. Renin content of mammalian kidney following specific necrosis of proximal convoluted tubular epithelium.—See A., 1943, III, 486.

VII.—RESPIRATION AND BLOOD GASES.

Aviation medicine. L. G. Rowntree (*J. Mt. Sinai Hosp.*, 1942, 8, 980—986). E. M. J.

Concentration of carbon dioxide in expired air in heart disease. P. K. Boyer and C. V. Bailey (*Arch. intern. Med.*, 1943, 71, 529—535).—In man, regardless of age, sex, basal metabolism, or state of nutrition, CO₂ % in the expired air is const. As the cardiac decomposition increased ventilation also increased. C. J. C. B.

Kinetics of respiration in experimental pulmonary embolism. R. S. Megibow, L. N. Katz, and M. Feinstein (*Arch. intern. Med.*, 1943, 71, 536—546).—After embolism of major and moderately sized pulmonary arteries in dogs by pea or radish seeds there is tachypnoea, dyspnoea, and hyperpnoea. These changes are not dependent on anoxia, or alterations in CO₂ or pH of the blood or of elasticity of lungs. Bilateral vagotomy produces slow breathing. The hyperpnoea is reflexly produced from afferent nerve endings scattered throughout the pulmonary arterial bed, right heart, and superior vena cava. Through rapid increases in elasticity of the lungs secondary reflexes are initiated, altering the primary respiratory response, and these account for the absence of dyspnoea and hyperpnoea in miliary embolism. Of the drugs studied, only papaverine exerts any beneficial action. C. J. C. B.

Resuscitation of drowned. F. C. Eve (*Brit. Med. J.*, 1943, I, 535—537).—Schäfer's method of resuscitation fails in the nearly drowned, in whom the elastic form of the respiratory muscles is absent. The rocking method is effective in shifting the flaccid

diaphragm up and down, and in conveying blood from the abdomen and limbs to the heart. I. C.

Postoperative atelectasis. H. W. Schmidt, L. H. Mousel, and S. W. Harrington (*J. Amer. Med. Assoc.*, 1942, 120, 895—900).—A review with case illustrations and discussion. C. A. K.

Causation and treatment of bronchial asthma. O. Müller (*Schweiz. med. Wschr.*, 1942, 72, 833—838).—A review. A. S.

Treatment of asthma by nicotinic acid. G. Melton (*Brit. Med. J.*, 1943, I, 600—601).—Intravenous administration of nicotinic acid (50—100 mg.) during paroxysms of asthma produced marked relief in 16 out of 19 patients. Nicotinic acid treatment given orally between attacks of asthma for periods of a few weeks to several months in doses of 50—100 mg. two or three times daily (children half doses) reduced the frequency and severity of the attacks in 16 out of 30 patients. I. C.

Function of *Chironomus* hæmoglobin. R. F. Ewer (*J. Exp. Biol.*, 1942, 18, 197—205).—Experiments with CO show that at 17° the hæmoglobin of *Chironomus* larvæ transports O₂ at O₂ pressures below 3 c.c. per l., but not above. G. P. W.

Function of earthworm hæmoglobin. M. L. Johnson (*J. Exp. Biol.*, 1942, 18, 266—277).—CO depresses the O₂ consumption of whole *Lumbricus herculeus*, but not that of its tissue slices, in atm. containing 20% of O₂. The effect is due to combination with the hæmoglobin, which is therefore important in transport at the atm. partial pressure of O₂. G. P. W.

VIII.—MUSCLE.

Potassium relations of invertebrate muscles [and hearts]. G. P. Wells (*J. Exp. Biol.*, 1942, 18, 213—222).—The effects of varying the K concn. of the medium on the cloaca of *Cucumaria*, and the hearts of *Aplysia*, *Helix*, and *Carcinus*, are discussed. There is a fundamental resemblance in K responses between most, and perhaps all, rhythmic preps. Comparison of marine with terrestrial forms shows that K acts in balance with a constituent either of the medium or of the cells. G. P. W.

Muscular fatigue and adrenal glands. Theory of muscle contraction. F. Verzar (*Schweiz. med. Wschr.*, 1942, 72, 661—667).—A lecture, with special emphasis on the rôle of K in phosphorylation processes. A. S.

Night cramps and quinine. A. Gootnick (*Arch. intern. Med.*, 1943, 71, 555—562).—The commonest single disorder predisposing to cramps in 30 cases studied was arthritic change in the wt.-bearing joints; none showed peripheral arterial disease. In 28, including several who had not had a cramp-free night in months, administration of quinine (3 grains) at bedtime abolished the spasms. Use of quinine to control muscular spasm in other clinical states (tetanus and strychnine poisoning) is suggested. C. J. C. B.

Muscular dystrophy in absence of testicular degeneration in vitamin-E deficiency. C. G. Mackenzie and E. V. McCollum (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 148—152).—In the rabbit, as opposed to the rat, deficiency of vitamin-E causes muscular degeneration, and may prove fatal, before any changes are produced in the testis. V. J. W.

Treatment of myasthenia gravis with oral prostigmine. D. L. Fink and A. J. Moss (*Minnesota Med.*, 1940, 23, 795—797).—Report of a case who had been treated previously by splenectomy for congenital hæmolytic jaundice. E. M. J.

IX.—NERVOUS SYSTEM.

Medullated nerve fibres of prawns. W. Holmes, R. J. Pumphrey, and J. Z. Young (*J. Exp. Biol.*, 1941, 18, 50—54).—The nerve fibres of *Leander serratus* have a myelin sheath, relatively thicker in the thinner fibres. Nodes of Ranvier are present in fibres of diameter over about 13 μ . The fibres conduct more rapidly than apparently non-medullated fibres of similar diameter in other crustaceans. G. P. W.

Peripheral inhibition in crustaceans. C. A. G. Wiersma and C. H. Ellis (*J. Exp. Biol.*, 1942, 18, 223—236).—When an excitatory and an inhibitory fibre to a muscle are stimulated simultaneously, *Rc* (the ratio of frequency of inhibitory impulses to frequency of excitatory impulses which they can just suppress) is const. over a wide range of frequencies. Different muscles vary greatly in *Rc* val. In most muscles, no reduction of action potential is obtained during inhibition. G. P. W.

Mechanisms controlling locomotor activity in crayfish. W. Schallek (*J. exp. Zool.*, 1942, 91, 155—166).—*Cambarus virilis* is normally active at night and quiet during the day. This behaviour continues if the animal is kept in const. darkness. The animal becomes continually active if the eye-stalks, which contain both nerve centres and an endocrine organ (sinus gland), are removed. As injections of extracts of the gland do not affect the activity while

section of the optic nerve results in increased activity it is concluded that the activity of the crayfish is inhibited during the quiet phase by the action of fibres in the nerve. J. D. B.

Centripetal discharges in dorsal and ventral roots following stimulation of muscle by ventral root volleys. D. P. C. Lloyd (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 44—47).—In cats, under dial, stimulation by single shock of the 7th lumbar or 1st sacral anterior root causes 2 centripetal spike potentials in adjacent anterior and posterior roots. Denervation experiments show that the 1st arises in the proximal and the 2nd in the distal part of the leg. They are abolished by curare, and their time relations indicate that they arise in the muscle at the moment of the action potential of its contraction. V. J. W.

Effect of carbon dioxide on amœboid changes in motor nerve plates in intercostal muscle. E. J. Carey (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 67—72).—Samples of intercostal muscle were removed from an anæsthetised (nembutal) rat which was then placed in 15% CO₂. More samples were taken of intercostal muscles so stimulated, and the two sets compared. In the stimulated muscle the motor end plates were expanded (52 μ), with thin moniliform processes. In the normal muscle the plates were retracted (25 μ), with wide short projections. (17 photomicrographs.) V. J. W.

Colour changes of sea robin (*Prionotus strigatus*) with special reference to erythrophores (rôle of pituitary and nerves). R. E. Lee (*J. exp. Zool.*, 1942, 91, 131—153).—A description of the chromophore reactions and of the influence of nerves in their control. The influence of the hypophysis in melanophore and erythrophore regulation is not established. J. D. B.

Visceral nervous system of earthworm. I. Nerves controlling tone of alimentary canal. N. Millott (*Proc. Roy. Soc.*, 1943, B, 131, 271—295).—The alimentary canal of *Lumbricus* exhibits autonomous rhythmic movements. There is also indirect control by antagonistic extrinsic nerves. Those augmenting the tone leave the central nervous system by the middle and posterior nerves of each segment, join a nerve plexus in the peritoneum of the body wall, and pass to the gut by the ventro-lateral regions of each septum. Nerves diminishing the tone are present in anterior, middle, and posterior nerves of each segment and join a nerve plexus in the muscular layer of the body wall, from which nerves enter the gut via the dorso-lateral region of each septum. Further nerves reach the gut from the peri-pharyngeal commissures by fine plexiform nerves partially embedded in the pharyngeal musculature of both sides. Stimulation of the pharyngeal plexuses causes a fall in tone in all parts of the gut behind the pharynx. P. C. W.

Tocopherol level in serum of normal subjects and patients with amyotrophic lateral sclerosis. I. S. Wechsler, G. Gernsheim, and H. Sobotka (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 152—156).—Tocopherol is determined by its reduction of Fe⁺⁺⁺ to Fe⁺⁺ and colorimetric determination of the latter as a 2:2'-dipyridyl complex. Vals. were normal in the patients examined. They were increased by oral and decreased by intramuscular administration. V. J. W.

Method for experimental production of brain abscess. G. M. Markley (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 171—175).—Cerebral abscess can be produced in dogs by subcortical injection of 0.5 c.c. of 0.3% Na ricinoleate followed after 5 days by injection of a 12-hr. culture of pneumococcus. V. J. W.

Extensive destruction of cerebral cortex in newborn rat: operative technique and survival time. A. Rey (*Arch. Sci. phys. nat.*, 1942, [v], 24, Suppl., 218—222).—About 50% of the cerebral hemispheres of rats 50—150 hr. old were removed by suction through incisions in the cranium. Of 47 rats, 39 survived 1 day, 21 survived 20 days, 11 survived 30 days, and 5 survived 180 days. The high mortality at 20—30 days corresponded to the weaning period. F. S.

Electro-encephalographic diagnosis of extradural and subdural hæmorrhage. M. A. Glaser and H. Sjaardema (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 138—140).—Similar encephalographic changes were observed in 3 patients with subdural hæmatoma and in 30 rabbits in which a blood-filled gelatin capsule was inserted either extra- or sub-durally. The change was chiefly an increased e.m.f. in the 16 cycles per sec. waves. V. J. W.

Duodenal ulcer following acute injury of spinal cord. S. E. Moolten (*J. Mt. Sinai Hosp.*, 1942, 8, 868—877).—Case report. E. M. J.

Retainment of central vision in case of bilateral thrombosis of posterior cerebral arteries. K. Schlivek (*J. Mt. Sinai Hosp.*, 1942, 8, 995—997). E. M. J.

Bilateral thrombosis of posterior calcarine arteries with sparing of macular vision.—See A., 1943, III, 472.

Eyelid closure reaction.—See A., 1943, III, 468.

Treatment of psychiatric patients in general hospitals. D. E. Sands (*Brit. Med. J.*, 1943, I, 628—630).—Investigation of 281 patients, all female, selected for psychiatric treatment in a general hospital, shows that after an average in-patient period of 6 weeks,

over 75% were able to return to work, the usual length of illness having been greatly shortened and chronicity avoided in many cases. Clinical recovery and improvement on discharge (82%) were maintained on follow-up. 5% relapsed. The scheme of modern psychiatric treatment used is described. I. C.

Convulsive treatment of climacteric depression. E. P. Dodds (*Brit. Med. J.*, 1943, I, 603—604).—Treatment by electrically induced convulsions gave good results in cases of melancholia, especially of the involuntal type, but poor results in schizophrenia. I. C.

Head injuries in motor-cyclists. H. Cairns and H. Holbourn (*Brit. Med. J.*, 1943, I, 591—598).—Report of 106 cases of head injury in motor-cyclists. 50% of the blows are on the front; blows on the occipital region are least dangerous, those on the temporal region most dangerous; blows on the crown may be associated with fractures of vertebrae. The pulp type of helmet gives more effective protection than the vulcanised rubber helmet. I. C.

X.—SENSE ORGANS.

Lid retraction in toxic diffuse goitre. K. C. Eden and W. R. Trotter (*Lancet*, 1942, 243, 385—387).—Lid retraction occurred in 72 (54%) of 134 cases of toxic diffuse goitre and in 39 cases was associated with true or concealed exophthalmos. Unlike exophthalmos, lid retraction usually disappears after thyroidectomy. C. A. K.

Vitamin-B complex in ophthalmology. W. B. Clark (*Sth. Med. J.*, 1942, 35, 489—496).—Vitamin-B₁ was given in 10—40-mg. doses up to 500 mg. in 4 cases of retrobulbar neuritis with disappearance of scotoma in three. Riboflavin was given in daily doses of 5 mg. intravenously or intramuscularly, or 15 mg. by mouth up to 840 mg. (generally a total of 210—420 mg. in all), in 46 cases of marginal keratitis, 10 of corneal ulceration, 14 of seborrhoeic blepharitis, with improvement or recovery in 32, 8, and 5 cases respectively. 29 cases with different pathology were similarly treated including 5 of interstitial keratitis, when total doses of 10—50 mg. had no effect. -B₂ was given to 12 cases of hypocyclusia and premature presbyopia in doses 50 mg. intramuscularly daily for 6 days, then every third day for 6 doses, and then weekly for 6 doses. The amplitude of accommodation improved markedly in 8 cases. E. M. J.

Avascular healing in cornea. B. D. Pullinger and I. Mann (*J. Path. Bact.*, 1943, 55, 151—157).—Avascular healing of the cornea in lesions due to dichlorodiethyl sulphide and other chemical agents occurred when the corneo-scleral junction was uninjured and free from oedema. A macroscopic demonstration of epithelial healing by sliding was provided by rabbits which were pigmented at the corneo-scleral junction. Invasion of the substantia propria, during healing, by wandering cells in nos. far greater than normal was observed in vitally stained animals. Some of the wandering cells act as macrophages; others are transformed into keratoblasts (corneal fibre-forming cells) and fibrocytes, and perhaps into corneal corpuscles. (13 photomicrographs.) C. J. C. B.

Corneal vascularisation in arbofloviriosis. W. Cochran, N. M. De Vaughn, and L. Allen (*Sth. Med. J.*, 1942, 35, 888—889).—Photographs are presented of the vessels of the human cornea after injection post mortem of the ophthalmic artery with India ink. E. M. J.

Production and treatment of experimental pneumococcal hypopyon ulcers in rabbit. J. M. Robson and G. I. Scott (*Brit. J. exp. Path.*, 1943, 24, 50—56).—Corneal ulcers, frequently associated with hypopyon, were produced by the intracorneal injection of a type 19 pneumococcus. The local application of penicillin (65 Oxford units per c.c.) or of 30% Na sulphacetamide was beneficial. Tyrothricin (1 mg. per c.c.) was of little val. A delay in treatment with sulphacetamide for 6 hr. greatly decreased its val. whereas penicillin was effective after 24 hr. F. S.

Atropine glaucoma. J. E. Martin (*Brit. Med. J.*, 1943, I, 631—632).—The physiology of the drainage system of the canal of Schlemm is described and the dangers of the use of atropine in cases of glaucoma are pointed out. Homatropine or euphthalmine can be used with greater safety. I. C.

(A) **Effect of low oxygen tension on tissue metabolism (retina).**
(B) **Effect of carbon dioxide tension on tissue metabolism (retina).**
F. N. Craig and H. K. Beecher (*J. Gen. Physiol.*, 1943, 26, 5, 467—472, 473—478).—(A) A report on the lactic acid production of rat retina in PO₄''' and HCO₃' media at various O₂ tensions. In a medium containing PO₄''', the rate of respiration or O₂ uptake decreased by 51% when the O₂ tension was lowered from 100% to 5%. Lactic acid production being proportionately increased. In HCO₃' medium, reduction of O₂ tension was accompanied by greatly increased glycolysis, but the rate of respiration was unaffected. The rate of glycolysis evidently depends on the O₂ tension rather than on the rate of respiration.

(B) During the foregoing experiments, lactic acid production by the retina in a HCO₃' medium was twice as great as in one containing PO₄'''. This difference was found to be related to the concn. of the

CO₂—HCO₃' system. Thus, increasing CO₂ from 1% to 5%, at const. pH, nearly doubled both respiration and glycolysis, though a further increase to 20% depressed the former while having no effect on the latter. Addition of succinate to a medium containing glucose and the 1% CO₂—HCO₃' buffer still further increased respiration, but had no effect in a medium containing glucose and PO₄'''. J. H. A.

Visual purple. R. Granit (*Nature*, 1943, 151, 631—632).—A review of recent work on visual purple, particularly of the accurate determination of its absorption curve by Lythgoe and of the absorption curves of the transient orange and indicator-yellow which he found to be produced by the action of light. Evidence of the chemical nature of visual purple, particularly the part played by carotenoids in vision, and knowledge of the chemical and other conditions favouring regeneration of visual purple in the dark are also summarised. K. J. W. C.

Angioid streaks of fundus oculi. H. P. Wagener (*Amer. J. med. Sci.*, 1943, 205, 301—309).—A review. C. J. C. B.

Neural mechanisms of vision. H. K. Hartline (*Harvey Lect.*, Ser. 37, 39—68).—A review. E. M. J.

Retinal pigment distribution in frog. B. Dawes (*J. Exp. Biol.*, 1941, 18, 99—109).—Increase and decrease in amount of retina pigment probably occur during light and dark adaptation in *Rana temporaria*. Hypophysectomy does not affect the amount or distribution of pigment. Spectrophotometric data show no essential difference between the pigments from frog skin and frog and ox retinas. G. P. W.

Specifications for dark-adaptation tests. K. J. W. Craik (*Brit. Med. J.*, 1943, I, 632—633).—Standardisation and calibration of adaptometers are discussed in relation to the question of the exact specification of the light used. I. C.

Expediting visual adaptation to darkness. K. Kekcheyev (*Nature*, 1943, 151, 617—618).—It is claimed that the time necessary for dark adaptation to become nearly complete can be decreased from 25—45 min. to 5—6 min. by light muscular exercise. It is suggested that nerve impulses imparted by muscles and cartilages facilitate the central nervous system and the eye. K. J. W. C.

Critique of Bishop Harman test for night vision. J. Yudin and A. Ferguson (*Brit. Med. J.*, 1943, I, 633—635).—The Bishop Harman apparatus for the measurement of dark adaptation is objectionable in theory and unsatisfactory in practice compared with well-standardised apparatus, since other factors as well as dark adaptation are involved. I. C.

Tangent screen scotometry. W. F. Duggan (*N.Y. Sta. J. Med.*, 1942, 42, 1842—1847). E. M. J.

Value of pseudo-isochromatic colour vision test in original applicants for military flying. M. S. White (*Eye, Ear, Throat*, 1943, 22, 140—143).—Comparison of candidates' performance on the Ishihara and on various practical (Véry pistol, navigation light, air-navigation map) tests showed that failure in the Ishihara test was associated with failure in these particular practical tests and meant a deficient performance of three of the main requirements of a military pilot. Candidates who cannot pass the Ishihara test, therefore, should be disqualified even if they are able to select gross shades of red and green. K. T.

Adaptation in colour space. D. E. Spencer (*J. Opt. Soc. Amer.*, 1943, 33, 10—17).—The trichromatic specification of colours is extended to deal with colour and brightness contrast by a mathematical method based on the Stiles and Holladay glare-formulae, and a tensor representing composite colours in three-dimensional colour space. K. J. W. C.

Investigations of intrinsic properties of the colour domain. II.
L. Silberstein (*J. Opt. Soc. Amer.*, 1943, 33, 1—10).—Using MacAdam's data on just perceptible colour-differences at different regions on the colour triangle (which take the form of ellipses of standard deviation of colour matches), a mathematical method is used to find the curvature of the colour surface on which these ellipses would become circles of const. radius. K. J. W. C.

Specification of small chromaticity differences. D. L. MacAdam (*J. Opt. Soc. Amer.*, 1943, 33, 18—26).—I.C.I. chromaticity diagrams are given showing the contours of equal val. for various functions of the standard-deviation ellipses for colour-matching. K. J. W. C.

Sensory energy, with special reference to vision and colour-vision.
J. H. Shaxby (*Phil. Mag.*, 1943, [vii], 34, 289—314).—A theory of brightness and colour-vision is proposed in which the three responses of the Young-Helmholtz theory are avoided and replaced by a response—possibly total no. of nerve impulses per unit time—which represents brightness and a response to the no. of quanta contributing to this total energy. This no. of quanta will decrease steadily towards the violet end of the spectrum. K. J. W. C.

Amaurotic family idiocy. J. H. Globus (*J. Mt. Sinai Hosp.*, 1942, 9, 451—503).—A review and report of 12 cases. E. M. J.

Anatomy and physiology of ear. J. R. Richardson (*Arch. Otolaryngol.*, 1943, 37, 567—590).—A review of the otological literature for 1942 on the following subjects: aviation physiology; developmental anatomy; cochlear physiology; vestibular physiology.

K. T.

Otoscope picture in deafness. W. Mueller (*Ann. Otol., etc., St. Louis*, 1943, 52, 20—24).—A description of the more common appearances of the tympanum with an explanation of what can be deduced from them as to the history and condition of the middle ear.

K. T.

Investigation of pressure in tympanic cavity in school children and consequences of abnormal pressure for hearing. R. E. van den Borg (*Acta Otolaryngol.*, 1942, 30, 500—511).—Investigation of 500 school children by the whispering voice test and of the pressure in their tympanic cavities by the pneumophone showed that only 33% of those whose hearing was menaced were revealed by the former test alone. Further investigation of children with a negative middle ear pressure with the audiometer showed that a negative pressure in the tympanic cavity (usually due to catarrh of the Eustachian tube) was accompanied by impaired hearing of both high and low tones. The hearing could be temporarily improved if the negative pressure was removed by catheterisation.

K. T.

Audiometric investigation of treatment of nerve deafness with vitamin-B₁. J. Varga (*Acta Otolaryngol.*, 1943, 31, 1—22).—A description of the general technique (made possible by the use of the audiometer) of measuring small variations in the threshold of hearing. Nerve deafness is believed to be a symptom of vitamin-B₁ deficiency since deficiency lowers the resistance of the acoustic nerve to noxious substances such as bacterial toxins etc. 27 cases of nerve deafness were treated with daily intravenous injections of 50 mg. of "vitaplex B" for 10 days followed by a -B₁-rich diet. Of these, 17 showed markedly improved hearing after treatment and 10, of which 4 developed various illnesses (1 dying), showed no change. 5 of the 17 cases had other symptoms attributed to -B₁ deficiency. In the 10 cases which did not improve it was thought that the acoustic nerve had already been destroyed and could not, therefore, be restored by any form of therapy.

K. T.

Quinine in relation to nerve deafness. S. B. Forbes (*Ann. Otol., etc., St. Louis*, 1943, 52, 109—125).—Of all the cases of nerve deafness coming under the author's observation during 17 years, 34.6% were associated with the ingestion of quinine over a considerable period of time. Several cases of deafness and amblyopia in children whose mothers had large or repeated doses of quinine during pregnancy are described. The perception of high tones is affected first and, since these are above the conversational range, the patient is often unaware of his disability during the early stages.

K. T.

Salicylate and quinine deafness and Mygind-Dederding view of hearing tests. E. Foght (*Acta Otolaryngol.*, 1943, 31, 40—52).—A criticism of a recent paper by Falbe-Hansen (*A.*, 1943, III, 475) in which he concluded that the deafness following large doses of salicylates and quinine is a conduction deafness. It is claimed that Falbe-Hansen's own results on the effect of this treatment on bone conduction indicate that a nerve deafness was, in fact, produced, that the audiometric results published give no real differential diagnosis, and that a rise in the threshold for low notes cannot, as Falbe-Hansen believes, be taken as diagnostic of conduction deafness.

K. T.

Interpretation of hearing tests. C. E. Kinney (*Laryngoscope*, 1943, 53, 223—231).—Under some circumstances (*e.g.*, after clearing a blocked Eustachian tube or a fenestration operation, changes in atm. pressure) the author does not believe that the audiometer gives a true picture of the changes in the hearing of the spoken voice. Investigation showed that in otosclerosis hearing loss for the spoken voice is much greater than that for pure tones, in otitis media the loss is about equal, while in nerve deafness the impairment for pure tones is greater. It is also suggested that the perception and analysis of the complicated tone patterns of human speech lies central to the cochlea and has a bilateral innervation, so that where there is a bilateral hearing deficiency speech is heard better with both ears than with either one separately.

K. T.

Audiometric and word test findings. R. P. Guilder (*Ann. Otol., etc., St. Louis*, 1943, 52, 25—34).—A preliminary description of an investigation of deafness in young people not due to middle ear inflammation. A high correlation was found between the audiometric and the word test score although individuals who did badly on these tests often passed a perfect no. test. It is suggested that this is because they suffer from high tone losses which reduce their hearing of consonants (important for word test) but not of vowels. These patients fell into two groups: (1) otosclerosis; (2) developmental high tone deafness. In group 1 the audiometric findings were typical of conduction deafness in general and the deafness often progressed very rapidly in 11—12-year-olds and sometimes even in 9-year-olds. All types of deviation from normal hearing were found in children with an otosclerotic family history. High tone deafness may indicate incipient otosclerosis or may belong to group 2.

K. T.

Hearing aid clinic. B. H. Senturia, S. R. Silverman, and C. E. Harrison (*Ann. Otol., etc., St. Louis*, 1943, 52, 131—145).—A description of the apparatus and procedure used and the type of hearing aid recommended for different kinds of deafness at the Hearing Aid Clinic of the Central Institute for the Deaf, St. Louis.

K. T.

Importance of regression in hearing and of physical, physiological, and psychological factors for hearing aids. H. C. Huizing (*Acta Otolaryngol.*, 1942, 30, 487—499).—Discussion of the difficulties encountered in prescribing hearing aids, particularly in cases of nerve deafness where regression (the "recruitment phenomenon") results in the normal hearing of tones of high intensity even when the threshold of hearing is much raised.

K. T.

Histological findings in Ménière's symptom complex. F. Altmann and E. P. Fowler (*Ann. Otol., etc., St. Louis*, 1943, 52, 52—80).—A striking dilatation of the endolymphatic system of the inner ear, indicating increased endolymphatic pressure, was found on examination of 3 patients who had suffered from giddiness and deafness and who came to post-mortem from other causes. In one case the change was unilateral. No changes were observed in the perilymphatic space and no signs of inflammation. The possible causes of this dilatation and the way in which it might produce the symptoms are discussed.

K. T.

Treatment of Ménière's syndrome with magnesium salts. A. Schick (*Ann. Otol., etc., St. Louis*, 1943, 52, 45—51).—In the belief that in Ménière's syndrome, as in migraine, vasomotor disturbances are an important causative factor, 18 cases were treated by intravenous injections of 5 c.c. of 50% MgSO₄ 2—3 times weekly until 10—20 injections had been given. Of the 18, 7 cases had no recurrence during the period of observation, 7 showed marked improvement, and 4 no change. Besides its effect on the vasomotor system, Mg may act (via its diuretic effect) by counteracting the retention of Na and water in or exudation into the labyrinthine spaces.

K. T.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

War and problem of ageing [gland changes]. V. Korenchevsky (*Ann. Eug., Lond.*, 1942, 2, 314—332).—Pathological changes occur with ageing in the sex, thyroid, and adrenal glands. A similarity exists between certain senile changes and some features of deficiency of these glands and also vitamin deficiency. Successful treatment of some senile features with hormones and vitamins is claimed.

W. F. H.

Periodicity in endocrinopathic states. W. Timme (*J. Mt. Sinai Hosp.*, 1942, 9, 818—825).—Report of 3 cases.

E. M. J.

Endocrine disturbances in relation to skin diseases. F. W. Lynch (*Minnesota Med.*, 1940, 23, 829—834).—A review.

E. M. J.

Emaciation and endocrine dysfunction. D. L. Sexton (*Sth. Med. J.*, 1943, 36, 276—283).—Report of 8 cases.

E. M. J.

Familial cretinism. I. P. Bronstein, L. E. Bower, and J. Murphy (*Amer. J. med. Sci.*, 1943, 205, 114—117).—Report of 2 brothers exhibiting thyroid deficiency and epiphyseal dysgenesis.

C. J. C. B.

Cholesterol and thyroid function. W. Fleischmann and H. B. Shumacker, jun. (*Johns Hopkins Hosp. Bull.*, 1942, 71, 175—183).—Total body-cholesterol in thyroidectomised rabbits and rats, in rats given thyroxine, and in normal controls did not run parallel with serum-cholesterol. Thyroxine influences shift of cholesterol to and from blood plasma rather than its metabolism. Serum-cholesterol level reflects rate of transportation of fatty acids for oxidation or storage.

T. F. D.

Action of iodine and thyroxine on excretion of androgenic substances in thyroid diseases. D. Marine and S. H. Rosen (*J. Mt. Sinai Hosp.*, 1942, 8, 811—819).

E. M. J.

Blood-iodine after thyroidectomy. S. Silver and B. Magasanik (*J. Mt. Sinai Hosp.*, 1942, 8, 1027—1031).

E. M. J.

Technique for thyroidectomy in pigeon; early effect of thyroid removal on heat production. H. N. Marvin and G. C. Smith (*Endocrinol.*, 1943, 32, 87—91).—A two-stage operation is described for the removal of thyroids from pigeons; the technique avoids "crob-binding," which is a frequent sequel of other methods. The basal heat production of the birds was depressed within 4—5 days after the operation.

G. P.

Correlation of histological differentiation with beginning of function of developing thyroid of frog. A. Gorbman and H. M. Evans (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 103—106).—Tadpoles were kept in water containing radioactive I for 2 days. Histological preps. were then made, and the lower jaws with thyroids were placed on photographic film. In tadpoles of less than 10 mm. no storage of I took place, but began at a length of 12 mm. No I was dissolved out of the sections by water, alcohol, ether, or xylol.

V. J. W.

Beginning of function in thyroid of foetal rat. H. M. Evans (*Endocrinol.*, 1943, 32, 113—115).—The thyroids of 15—21-day rat

foetuses were examined for ^{131}I content after the mothers received a single injection of ^{131}I 48 hr. previously. The ability to store I begins in the 18–19-day rat embryo. This coincides with the formation of acini in the gland. G. P.

Localised pretibial myxœdema in association with toxic goitre. W. R. Trotter and K. C. Eden (*Quart. J. Med.*, 1942, 11, 229–240).—Irregular firm swellings of the pretibial skin giving histological reactions for mucin occur in 3% of cases of primary toxic goitre, rarely in secondary toxic goitre, and in no other condition. They may appear at any stage of the disease, and commonly in recurrent or residual thyrotoxicosis. The age incidence is higher than in toxic goitre, and the sex incidence is less predominantly female. In 3 cases out of 77 analysed, exophthalmos and pretibial myxœdema developed simultaneously after thyroidectomy. The condition may regress after thyroidectomy, but it follows a fluctuating course unaffected by any treatment, e.g., thyroid extract. Trauma may be a factor in the pretibial localisation. Mucin is not a conspicuous feature of the skin in hypothyroidism, but it does occur. R. K.

Value of blood-iodine estimations in diagnosis of borderline hyperthyroidism. H. J. Oerkin and R. B. Cattell (*West. J. Surg. Obstet. Gynec.*, 1940, 48, 50–53).—Blood-I, basal metabolic rate, and clinical symptoms were compared in 235 cases of suggested mild hyperthyroidism. 204 of the cases were shown clinically or by operation not to have hyperthyroidism; only 10–15% of these cases had raised blood-I (above 10 $\mu\text{g.}\%$). 2 groups (13 and 18 cases) in which hyperthyroidism was confirmed had 54% and 61% with raised blood-I which fell after operation. Blood-I gave a better indication of the presence of hyperthyroidism than the basal metabolic rate. P. C. W.

Serum-iodine fractions in hyperthyroidism. E. B. Man, A. E. Smirnow, E. F. Gildea, and J. P. Peters (*J. clin. Invest.*, 1942, 21, 773–780).—On giving Lugol's I prior to thyroidectomy, precipitable I of 11 of 14 patients decreased to concns. below or just above the max. normal. In 3 patients, whose precipitable I did not decrease noticeably, the clinical response to I administration was poor. Serum-total or -precipitable I of 10 of the 15 patients was within or just above the normal range about 2 weeks after thyroidectomy. C. J. C. B.

Effects of various thyroid substances in patients with obesity. S. W. Kalb (*J. clin. Endocrinol.*, 1943, 3, 7–11).—Obese patients given 180 mg. of dried thyroid or thyroglobulin daily showed no change in systolic or diastolic blood pressure, increased pulse rate, and increased basal metabolic rate. The calorogenic action of Parke Davis thyroid, thyroglobulin, and Armour thyroid decreased in that order; the effects on pulse rate were the same. P. C. W.

Thyroidal action of synthetic thyroprotein. E. P. Reineke and C. W. Turner (*J. clin. Endocrinol.*, 1943, 3, 1–6).—Review and analysis of experiments on the production of iodoproteins with thyroid activity. The most active products are more active than dried thyroid gland and contain 4–11% of the biological activity of thyroxine. Optimal conditions for the iodination process are: pH 6.8–8, I concn, sufficient for the substitution of 2 atoms of I for each mol. of tyrosine in the protein used, and a temp. of 70°. The biological activity of a product formed at 38° was increased if subsequently heated at 70°. Thyroxine can be extracted from the iodoproteins in higher amounts than from dried thyroid gland. P. C. W.

Tetany of newborn. M. H. Bass (*J. Mt. Sinai Hosp.*, 1942, 9, 314–321).—A review. E. M. J.

Treatment of tetany in severely traumatised newborn. W. R. Shannon (*Minnesota Med.*, 1942, 25, 884–886).—A 2-day-old boy in whom the whole scalp had been torn loose from the underlying tissues with the formation of a large hæmatoma was at once given parathyroid injections. Tetany set in on the following day and by the day after when 5.5 c.c. of parathyroid extract had been given and the tetany was increasing 25 c.c. of hæmolyzed fluid was withdrawn from the hæmatoma. This contained 7.5 mg.-% P and 7.6 mg.-% Ca. 24 hr. later the remaining fluid was withdrawn, containing 6.7 mg.-% P and 7.5 mg.-% Ca. Improvement then set in and the child was well 12 days later, by which time another 6 c.c. of parathyroid extract had been given. E. M. J.

Mitotic activity of mouse parathyroid gland. C. L. Foster (*Nature*, 1943, 151, 277).—There is a sharp peak of mitotic activity in the mouse parathyroid gland during the third week after birth. E. R. S.

Spontaneous cessation of effects of adrenaline on isolated intestine without destruction of adrenaline. Conditions that favour or inhibit this destruction. M. Beauvallet (*Compt. rend.*, 1942, 214, 747–749).—Adrenaline in low concn. in Tyrode's solution at 38° is oxidised rapidly and becomes physiologically inactive, but if the solutions are made from Tyrode's solution which has been in contact with a fragment of guinea-pig intestine for 30 min., this oxidation occurs at a very slow rate. Hence the intestine liberates a protective substance into the solution. When such stabilised solutions are treated with another piece of intestine, there is a typical inhibition effect,

which is followed by a slow, spontaneous return to the initial active condition. J. N. A.

Effect of adrenaline and sympathomimetic amines on total body water [in frogs].—See A., 1943, III, 511.

Use of adrenal extract in fever therapy. A. Edelmann, D. L. Mahanna, L. A. Lewis, J. S. Thatcher, and F. A. Hartman (*J. clin. Endocrinol.*, 1943, 3, 20–27).—12 patients undergoing fever treatment (maintenance of body temp. at 105–106° F. for 2½ hr.) were injected with adrenal extract or deoxycorticosterone acetate. Adrenal extract diminished fatigue and increased the rate of recovery; deoxycorticosterone acetate had no effect. Na excretion in the sweat was reduced and the fall in plasma-Na prevented; the Na retention was not sufficient in itself to account for the amelioration of symptoms. The blood-sugar fell during fever therapy but rose when adrenal extract was given. P. C. W.

Addison's disease in Negroes. J. R. Lisa, C. Solomon, and E. J. Gordon (*N.Y. Sta. J. Med.*, 1942, 42, 1940–1943).—Adding 3 cases to the 17 in the literature. E. M. J.

Diabetes mellitus without other endocrine manifestations in case of tumour of adrenal cortex. R. G. Sprague, J. T. Priestley, and M. B. Dockerty (*J. clin. Endocrinol.*, 1943, 3, 28–32).—A case is reported. The carbohydrate metabolism was restored when the adrenal tumour was removed. P. C. W.

Stimulating effect of adrenalectomy on hair growth and melanin deposition in black rats fed diets adequate and deficient in filtrate factors of vitamin-B. Effect of diet on post-operative survival. E. P. Ralli and I. Graef (*Endocrinol.*, 1943, 32, 1–12).—The pigmented bands of the skin of black rats disappeared and their hair showed greying and atrophy of hair follicles when kept on diets deficient in filtrate factors of vitamin-B. Adrenalectomy in animals kept on deficient and adequate diets accelerated hair growth and increased deposition of melanin in the hair follicles all over the body. The hyperplastic state of the hair follicles persisted for 30 days and then began to subside. The longer the animals were kept on the deficient diet, the shorter is the survival time after adrenalectomy. G. P.

Morphologic changes in the rat's adrenal cortex. E. L. Sarason (*Arch. Path.*, 1943, 35, 373–390).—The administration of deoxycorticosterone acetate (DCA) (2 mg. daily for 30 days) caused considerable atrophy of the male but not the female adrenal; the zona glomerulosa was shrunken and depleted of lipid in both sexes. Equiv. depression of muscle- and serum-K by dietary measures produced no changes. The adrenal atrophy after hypophysectomy is due to shrinkage of the zona fasciculata; the zona glomerulosa is slightly hyperplastic. DCA given to hypophysectomised animals caused further atrophy of the adrenal, especially of the zona glomerulosa. Castration of adult females caused no adrenal atrophy. DCA in castrated females only produced depletion of the lipid of the zona glomerulosa. Acute inanition resulted in moderate adrenal hypertrophy in the female and slight hypertrophy in the male. The adrenals of rats fed a rich diet in protein were enlarged and showed some lipid depletion. The latter change is produced by a single injection of stilbestrol. (16 photomicrographs.) C. J. C. B.

Deoxycorticosterone. G. W. Thorn (*J. Mt. Sinai Hosp.*, 1942, 8, 1177–1199).—A review. E. M. J.

Methods of administering deoxycorticosterone and its inactivation by liver. W. J. Eversole and R. Gaunt (*Endocrinol.*, 1943, 32, 51–56).—The ability of deoxycorticosterone acetate to maintain adrenalectomised rats is slightly less if it passes through the portal circulation than if it is absorbed through the systemic circulation. The acetate given daily in sesame oil through stomach tube is ineffective. G. P.

Deoxycorticosterone in Addison's disease. D. M. Dunlop (*Brit. Med. J.*, 1943, I, 557–558).—Administration of deoxycorticosterone sublingually or sublabially in Addison's disease is wasteful. Implantation in deep subcutaneous tissue of doses of 200 mg. was convenient, and more economical than intramuscular injection. With implantations, patients remained well for 6–8 months. I. C.

Inability of deoxycorticosterone to maintain lactation. R. Gaunt (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 28–31).—In female rats adrenalectomised within 24 hr. after parturition, daily doses of 0.1–1 mg. of deoxycorticosterone acetate failed to maintain lactation as judged by growth of the litter, which was inferior to that in untreated adrenalectomised controls. V. J. W.

Atypical response of rabbit to deoxycorticosterone acetate. A. E. Rakoff, K. E. Paschkis, and A. Cantarow (*Science*, 1942, 96, 322).—2.5 mg. of the acetate daily for 3 days had no effect on the urinary excretion of water or Cl⁻ in 2 rabbits; given for 3 months it had no effect on blood pressure though wt. increased by 40% and 47% in 2 rabbits. 2 pregnant rabbits treated similarly showed no wt. increase, œdema, or blood pressure increase, though both aborted at 4 weeks' gestation. E. R. S.

Effect of 11-deoxy-17-hydroxycorticosterone on renal excretion of electrolytes. M. Clinton, jun., and G. W. Thorn (*Science*, 1942, **96**, 343—344).—The compound has the "Na- and Cl-retaining" property, but to a smaller degree than deoxycorticosterone.

E. R. S.

Presence of cortin-like substance (cold-protecting material) in urine of normal men. R. I. Dorfman, B. N. Horwitz, and W. R. Fish (*Science*, 1942, **96**, 496—497).—Ethylene dichloride extracts of urine increased the survival time of adrenalectomised rats by 37—48%. Normal urine contains the equiv. of 0.15—0.18 ml. of Wilson adrenal cortical extract per day. No such activity was found in urine of patients with Addison's disease.

E. R. S.

Insulin hypoglycæmia and vascular accidents in diabetes mellitus. H. F. Root and C. W. Styron (*J. Mt. Sinai Hosp.*, 1942, **8**, 953—964).

E. M. J.

Control of renal excretion of water.—See A., 1943, III, 487.

Sugar content of blood, lymph, and artificial peritoneal fluid following injection of insulin. K. E. Paschke and A. Cantarow (*Endocrinol.*, 1943, **32**, 41—45).—The blood-sugar of dogs fell to 30—40 mg.-% during the first 2 hr. after insulin (1—3 units per kg.) and remained at this level for a further 2—4 hr. The sugar content of peritoneal fluid fell to the level of blood-sugar only 4.5—5.5 hr. after insulin; coma developed at this time. The decrease of sugar content of the lymph from the hind limb paralleled that of the blood.

G. P.

Absorption and distribution of insulin labelled with radioactive iodine. L. Reiner, A. S. Keston, and M. Green (*Science*, 1942, **96**, 362—363).—Iodoaniline (containing radio-I) was diazotised and coupled with insulin. Solutions containing 80 units of insulin per ml. were injected subcutaneously into rabbits ($\frac{1}{2}$ unit per kg.). 80% of the radioactivity disappeared from the site of injection in 2 hr., and a small proportion remained after 8 hr. when the blood-sugar had returned to normal. 1 hr. after intravenous injection into rats a considerable fraction of the radioactivity was found in the blood, and large quantities were found in the liver and kidneys.

E. R. S.

Pituitary gland. A. G. Hildebrand and E. H. Rynearson (*Arch. intern. Med.*, 1943, **71**, 262—296).—Review of the literature for 1940 and 1941.

C. J. C. B.

Reaction of orbital tissues in experimental exophthalmos following removal of Harder's gland. G. K. Smelser (*Anat. Rec.*, 1943, **85**, 245—259).—The presence of Harder's gland, in the guinea-pig, is not necessary to the exophthalmos, caused by the injection of anterior pituitary extracts, or to the concomitant increase in the palpebral fissure width, or to hypertrophy of orbital fat and muscles. Grafts of orbital fat react to the injected hormones as uniformly as does native orbital fat. Ablation of Harder's gland has no apparent deleterious effect on the eye.

W. F. H.

Retrolbulbar tissues in experimental exophthalmos in guinea-pigs with reference to primary and secondary modifications. G. K. Smelser (*Amer. J. Anat.*, 1943, **72**, 149—169).—Edematous infiltration and hypertrophy of orbital fat produced by injections of anterior pituitary extracts are primary changes. Hypertrophy of extra-ocular muscles is in part secondarily induced by the exophthalmos. The width of the palpebral fissure is increased by forward movement of the globe, but the widening is not proportional to the degree of exophthalmos. Exophthalmos is dependent on, and is proportional to, the increase in amount of retrolbulbar tissue.

W. F. H.

Experimental tumour of pituitary of white rat. A. Weil and A. W. Hetherington (*J. Mt. Sinai Hosp.*, 1942, **9**, 842—849).

E. M. J.

Naso-genital relationship [and naso-pituitary nervous pathway]. S. Rosen (*J. Mt. Sinai Hosp.*, 1942, **9**, 755—760).

E. M. J.

Protein hormones of pituitary. H. B. van Dyke (*Ann. New York Acad. Sci.*, 1943, **43**, 255—258).—A review introducing a symposium.

P. C. W.

Effect of hypophysectomy on concentration of ascorbic acid in rat adrenal. R. Tyslowitz (*Endocrinol.*, 1943, **32**, 103—108).—The ascorbic acid content of adrenals, testes, liver, kidney, and serum of 21—40-day rats decreases 3 days after hypophysectomy. Hypophysectomy-thyroidectomy has the same effect as hypophysectomy alone. Starvation for 6 days reduces ascorbic acid in liver and kidney to a greater degree than in the adrenals, testes, or serum. Injection of pituitary extract increases the ascorbic acid content of adrenals of hypophysectomised rats.

G. P.

Effects of prolonged daily treatment of normal rats with saline anterior pituitary extract. I. Sexual differences in appetite, growth, and organ weights. II. Protein and energy metabolism. LeR. Voris, M. Kriss, L. F. Marcy, and R. S. Bowman (*J. Nutrition*, 1942, **24**, 469—479, 481—494).—I. Administration of a 1% saline extract of bovine anterior pituitary to male rats produced no sp. growth stimulation independent of food intake. In females growth and appetite were stimulated independently. In both sexes liver wts. per unit body wt. diminished after pituitary treatment. Treated

males, but not females, had heavier adrenals and thyroids than did controls.

II. In young normal rats of both sexes the feeding of anterior pituitary extract caused increased heat production due to diminished oxidation of protein and increase in that of non-protein. In males, fasting heat production increased at first but declined subsequently; in females vals. increased progressively throughout the experiment. Fasting protein catabolism showed an apparent increase during the first 1—2 weeks of treatment. Pituitary extract probably acts as a sp. stimulant of cell metabolism and also promotes increase in body-wt. In males an antagonistic substance is formed; this opposes both effects of pituitary extract.

A. G. P.

Effect of pregnancy and lactation on thyrotropic hormone of rabbit. A. J. Bergman and C. W. Turner (*Endocrinol.*, 1943, **32**, 59—63).—The thyrotropic hormone content of pituitaries of pregnant and lactating rabbits was the same as that of controls. During the first 10 days post partum the pituitaries were slightly heavier; as a result there was increase in the thyrotropic content per gland without increase in concn. per g.

G. P.

Growth and metabolic hormones of anterior pituitary. C. N. H. Long (*Ann. New York Acad. Sci.*, 1943, **43**, 383—426).—A review.

P. C. W.

Treatment of gigantism: observations on pituitary giant for 6 years. L. M. Hurxthal (*J. clin. Endocrinol.*, 1943, **3**, 12—19).—A case is described with the effects of X-irradiation of the pituitary, injection of pituitary and chorionic gonadotropins, and implantation of testosterone propionate tablets. X-Irradiation produced retardation of growth but epiphyseal closure occurred only during the testosterone treatment. Genital development was stimulated during the gonadotropin treatment but regressed when this was stopped; stimulation occurred again when testosterone was given.

P. C. W.

Bioassay of pituitary growth hormone. Width of proximal epiphyseal cartilage of tibia in hypophysectomised rats. H. M. Evans, M. E. Simpson, W. Marx, and E. Kibrick (*Endocrinol.*, 1943, **32**, 13—16).—Pituitary growth hormone was assayed in hypophysectomised rats by measuring the increase in the width of the proximal epiphyseal cartilage of the tibia. This test is 3 times as sensitive as the body-wt. method.

G. P.

Effects of growth hormone of anterior hypophysis (antuitrin G) on the skeleton of mice and guinea-pigs. M. Silberberg and R. Silberberg (*Amer. J. Path.*, 1942, **18**, 1141—1153).—In growing mice and guinea-pigs, antuitrin G causes temporary stimulation of the proliferation of the epiphyseal cartilage, associated with shortening of the growth period and followed by premature onset and accelerated course of age changes such as degeneration, calcification, and breakdown of the cartilage. Antuitrin G promotes bone formation and resorption. In adult mice, antuitrin G does not cause renewed proliferation of epiphyseal cartilage. (6 photomicrographs.)

C. J. C. B.

Periodic administration of anterior pituitary extract as affecting metabolism of rats on diets of different composition.—See A., 1943, III, 503.

Differential cell counts of anterior lobe of pituitary glands of rats showing diabetic traits. M. A. Geiss (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 121—123).—Cell counts did not differ from those of controls.

V. J. W.

Lactogenic hormone and mammogen. A. White (*Ann. New York Acad. Sci.*, 1943, **43**, 341—381).—A review of the chemistry of prolactin and the chemistry and physiology of mammogen.

P. C. W.

Pituitary (mammogen) control of mammary development. E. T. Gomez (*J. Dairy Sci.*, 1942, **25**, 698—699).—Implanting or injecting 20—50 mg. of anterior pituitary tissue or injecting an alcohol-ether extract caused growth of mammary ducts of hypophysectomised-castrated guinea-pigs. The alcohol-ether-extracted gland (100—250 mg.) did not function in this way. 10 mg. daily of an impure prep. containing lactogenic hormone, alone or mixed with other hormones, produced no response, but 25 mg. daily alone caused slight growth of the ducts, which was improved by the addition of 75 i.u. of oestrone per day. Treating the prep. with warm alcohol-ether destroyed its duct-growth-promoting activity but not its lactogenic power. Thyrotropic, gonadotropic, and adrenotropic activities were found in the prep. both before and after alcohol-ether treatment.

N. J. B.

Effect of adrenalectomy on lactogenic hormone and initiation of lactation. J. L. Trentin, J. Meites, and C. W. Turner (*J. Dairy Sci.*, 1942, **25**, 699—700).—Failure of rats adrenalectomised during pregnancy to lactate sufficiently after parturition is not due to a deficiency of lactogenic hormone in the pituitary. Lactation cannot be initiated or maintained in adrenalectomised animals by administering lactogenic hormone.

N. J. B.

Röntgen therapy of pituitary in functional menstrual disorders. J. C. King (*Sth. Med. J.*, 1942, **35**, 616—621).—Two or three 2-day courses of deep X-rays giving 75 r. through each of 4 fields directed at the pituitary were given at monthly intervals to 230 women

complaining of disturbed menstrual cycle, headaches, nervousness, fatigue, sterility, impaired sexual feeling, or excessive gain in wt. 105 were completely relieved, 61 improved, and 45 were not followed.

E. M. J.

Inhibitory effect of steroid sex hormones on gonadotropic activity of pituitary. S. H. Geist and U. J. Salmon (*J. Mt. Sinai Hosp.*, 1942, 9, 446—450).—A review.

E. M. J.

Chemistry of thylakentrin (follicle-stimulating hormone of anterior pituitary). B. F. Chow (*Ann. New York Acad. Sci.*, 1943, 43, 309—320).—A review.

P. C. W.

Luteinising hormone of anterior pituitary. H. L. Fevold (*Ann. New York Acad. Sci.*, 1943, 43, 321—339).—A review of the chemistry and assay of the hormone.

P. C. W.

Excretion of pituitary hormones in human urine. G. E. S. Jones and N. L. R. Bucher (*Endocrinol.*, 1943, 32, 46—50).—Follicle-stimulating hormone was isolated from the urine of menopausal and normally menstruating women and of normal men. The urine was conc. by dialysis and the active principle pptd. by saturation with $(\text{NH}_4)_2\text{SO}_4$ at pH 6.8.

G. P.

Maintenance of pregnancy in hypophysectomised rat. E. Cutuly (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 126—128).—In rats hypophysectomised on or before the 9th day of pregnancy, pregnancy was maintained by injections of lactogenic hormone or anterior pituitary extract (Difco), or by hypophyseal synergist (Schering), but not by pregnant mare serum.

V. J. W.

Influence of ascorbic acid on the gonadotropic hormone content of male rat pituitary gland. R. P. Peece and E. J. Weatherby (*J. Dairy Sci.*, 1942, 25, 707—708).—No effect was demonstrated.

N. J. B.

Hormones of posterior pituitary. G. W. Irving and V. du Vigneaud (*Ann. New York Acad. Sci.*, 1943, 43, 273—307).—A review of the chemistry.

P. C. W.

Renal excretion of pituitary (posterior lobe) extracts. H. Heller (*Nature*, 1943, 151, 502—503).—Rats given 5% of their body wt. of water by mouth were injected intravenously with 1500 milliunits of posterior pituitary extract and their urine was collected for 3 hr. When this urine was injected into other rats the mid-excretion point was 270—300 min. after the injection compared with 90 min. in rats injected with normal rats' urine. The literature is reviewed and the failure of Walker (*A.*, 1939, III, 303) to obtain excretion of posterior pituitary activity in the urine attributed to his use of subcutaneous injection.

P. C. W.

Pituitary, thyroid, and colour response in dogfish. H. Waring, F. W. Landgrebe, and J. R. Bruce (*J. Exp. Biol.*, 1942, 18, 306—316).—The time relations of colour response in *Scyllium canicula* confirm the two-hormone hypothesis. One month after hypophysectomy, the condition of the thyroid affords no evidence for pituitary control of the thyroid.

G. P. W.

Effect of continuous injection of pitocin on milk and milk-fat production. C. B. Knodt and W. E. Petersen (*J. Dairy Sci.*, 1942, 25, 709—710).—The injection of pitocin into 4 cows immediately after milking and removal of the resulting milk caused an increase in milk and fat production, followed by a decrease after the 14-day period of injection. As the injection period progressed the amount of "pitocin milk" increased, with a concomitant decrease of normal milk.

N. J. B.

XII.—REPRODUCTION.

Physical changes in constituent parts of developing salmon eggs. F. R. Hayes and F. H. Armstrong (*Canad. J. Res.*, 1942, 20, D, 99—114).—Changes in the wts. of eggs, egg capsules, attached embryos, and yolk sacs between fertilisation and the end of yolk absorption are examined. No significant change in wt. of capsules occurs during development. Hardening of eggs on transfer from coelomic fluid to water is independent of fertilisation. Stoppage of water uptake is not due to hardening of the capsule. It is probable that all water taken up becomes perivitelline fluid, that yolks suffer no loss of salt or gain in water, and that the transfer of water through the capsule is not due to osmosis but to imbibition by protein liberated into the perivitelline space by the yolk. The water content of yolks decreases during development from 63.5 to 55.5%. Irrespective of egg size the embryo utilises 30% of the yolk in converting the remaining 70% into living tissue.

A. G. P.

Parthenogenetic stimulation of aged anuran eggs. A. Zoroli and R. Rugh (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 166—167).—Hibernating frogs (*R. pipiens*) were caused to ovulate and then cooled so that the eggs were retained in the uterus for 1—8 days, and after removal were stimulated by pricking with a glass needle. The older eggs showed a higher % of cleavage but a lower % of gastrulation than did normal eggs so treated.

V. J. W.

Oviduct and egg transport in albino rat. R. H. Alden (*Anat. Rec.*, 1942, 84, 137—169).—Observations by transillumination of movements of ova within the oviduct and of tubal contractions suggest a

H 3 (A., III.)

possible explanation of the mechanics and rate of egg transport. Entrance of the egg into the oviduct is effected primarily by ciliary action; further progress is governed by muscular contraction. An alternate degeneration and genesis of cilia occur in the isthmus. Ciliated elements probably secrete.

W. F. H.

Correlation between spring moult and spring changes in sexual cycle in weasel. P. L. Wright (*J. exp. Zool.*, 1942, 91, 103—110).—Fourteen litters of young were born to 12 captive *Mustelus frenata*. In 13 of these the young were born 35—73 days after the beginning of the spring moult. This correlation between moult and littering times is statistically significant. The testes of *M. frenata* and *M. ciconani* begin their spring hypertrophy close to the time of the moult and reach a max. in 6 weeks. This correlation is also statistically significant. It is suggested that the skin, hair, and reproductive tracts may be responding to stimuli from the same source. Two laparotomies performed on a female weasel indicate that the time of implantation of the embryos is 21—28 days before the young are born.

J. D. B.

Histology of opossum ovary.—See A., 1943, III, 452.

Fate of medullary cords of human ovary.—See A., 1943, III, 450.

Hermaphroditism and sex determination. J. P. Greenhill and H. E. Schmitz (*West. J. Surg. Obstet. Gynec.*, 1940, 48, 36—41).—A case is reported of a girl with female secondary sex characters who had not menstruated up to 22 years. An atrophic testis was removed at laparotomy. Urinary excretion of oestrogen and gonadotropin was low after operation, suggesting pituitary insufficiency.

P. C. W.

Ovulation and oviposition in anura. H. Waring, F. W. Landgrebe, and R. M. Neill (*J. Exp. Biol.*, 1941, 18, 11—25).—In *Xenopus* and *Rana*, ripening and liberation of ovarian eggs are under endocrine control. In *Xenopus*, ovulated eggs are automatically carried to the exterior by ciliary action. In *Rana*, they accumulate in the oviduct and are expelled in a mass, expulsion being probably under nervous control.

G. P. W.

Lopping of combs in White Leghorn females. C. D. Mueller and F. B. Hutt (*Poultry Sci.*, 1942, 21, 430—436).—Of 6625 single-comb White Leghorn pullets with lopped combs 73% lopped to the right. This proportion was fairly consistent over 4 years in 4 different strains. The combs of newly-hatched chicks may be bent to right or left, but the direction of lop in adults is independent of the condition in chicks. No hereditary effects could be detected. Direction of comb lop bore no relation of age or body wt. at sexual maturity, or to the no. of eggs laid to 500 days. Direction of lopping had no effect on viability of the pullet. 5.3% of the birds had combs that did not lop, and these birds were inferior to their full sisters with lopped combs.

P. C. W.

Effects of dubbing White Leghorn males. W. F. Lamoreux and D. G. Jones (*Poultry Sci.*, 1942, 21, 437—444).—Removal of the comb and wattles in White Leghorn males had no effect on body wt., size of the testes or anterior pituitary, yield of semen, or amount of gonadotropin in the pituitary when the birds were kept in pens with feed and water *ad lib*. Dubbed males were heavier and yielded more semen when kept in cages.

P. C. W.

Endocrine disturbances in adolescent females. E. Novak (*West. J. Surg. Obstet. Gynec.*, 1940, 48, 6—12).

P. C. W.

Fundamentals of endocrinology in obstetrics and gynaecology. E. Allen (*West. J. Surg. Obstet. Gynec.*, 1940, 48, 1—5).

P. C. W.

Treatment of dysmenorrhoea and its causation. A. Labhardt (*Schweiz. med. Wschr.*, 1942, 72, 805—808).—A lecture.

A. S.

Prolongation of sex hormone effects by adsorption on powdered carbon. J. Sklow (*Endocrinol.*, 1943, 32, 109—112).—The action of oestrone, progesterone, and testosterone is prolonged if adsorbed on powdered animal or plant C. Oestradiol benzoate adsorbed on C produces oestrus of the same duration as the non-adsorbed crystals.

G. P.

Effects of sex hormones on body growth, skin, hair, and sebaceous glands in rat. C. W. Hooker and C. A. Pfeiffer (*Endocrinol.*, 1943, 32, 69—76).—Injection of 83 μg . of oestradiol benzoate twice weekly suppressed body growth of rats; simultaneous administration of 2.5 mg. of testosterone propionate did not prevent the stunting of growth of females, but the stunting of males was less marked. All the oestrogen-treated animals exhibited marked loss of hair, atrophy of hair follicles, sebaceous glands, and all the layers of the skin. When androgen was given together with oestrogen no such changes occurred. Cystine added to the diet did not prevent the effect of oestrogen on the skin and its accessories.

G. P.

Circulatory effects of diethylstilboestrol in cats and rats and its intestinal absorption. F. E. Emery, C. S. Matthews, and F. L. Tabrah (*Endocrinol.*, 1943, 32, 77—80).—Diethylstilboestrol injected intravenously or into the small intestine causes slight and brief fall in blood pressure. The doses necessary are far greater than those used for oestrogenic action. Absorption from the small intestine is evident 3 min. after injection.

G. P.

Absorption of subcutaneously implanted pellets of diethylstilboestrol in men.—See A., 1943, III, 489.

Influence of fat mobilisation on acetone body production [action of stilboestrol].—See A., 1943, III, 505.

Metabolism of oestrogens: effect of pregnancy on metabolism *in vitro* of oestrone, oestradiol, and oestriol. C. G. Heller and E. J. Heller (*Endocrinol.*, 1943, 32, 64—68).—Pregnancy does not alter the action of tissue slices from rabbits and rats *in vitro* on oestrone, α -oestradiol, and oestriol. G. P.

Synthetic oestrogens. F. von Wessely (*Angew. Chem.*, 1940, 53, 197—202).—A lecture.

Standardisation of oestrogens. Council on Pharmacy and Chemistry (*J. Amer. Med. Assoc.*, 1942, 120, 921).—Satisfactory standardisation of oestrogens will require tests in human beings. Meanwhile, compounds in which oestrogen is bound to an inactive component, e.g., diethylstilboestrol dibenzoate and dipalmitate, should be standardised on the basis of their active component. C. A. K.

Prophylactic implantation of oestrogens following surgical and radium castration. S. H. Geist, R. I. Walter, and U. J. Salmon (*J. Mt. Sinai Hosp.*, 1942, 8, 543—546).—Report of 50 cases. E. M. J.

Clinical significance of degree of calcification of placenta as shown by X-ray photography. A. M. Fleming (*J. Obstet. Gynaec.*, 1943, 50, 135—139).—About half of 200 placentae examined showed moderate calcification. Addition of Ca and vitamins to the maternal diet increased the proportion with calcification. There was some relation between the degree of calcification and the absence of dental caries, absence of oedema, duration of labour, wt. of the child at birth, absence of transient difficulty in suckling, and the absence of transient icterus neonatorum. When control and dietary-supplemented groups with comparable degrees of calcification of the placenta were compared there were no differences in the above factors. P. C. W.

Antenatal care in obstetrics. J. D. Green (*J. Obstet. Gynaec.*, 1943, 50, 83—93).—A discussion. P. C. W.

Effect of methods of delivery on foetal and neonatal mortality. H. C. Miller (*West. J. Surg. Obstet. Gynec.*, 1940, 48, 13—22).—The higher infant mortality among children delivered by Caesarean section is due to the higher incidence of prematurity in this class. The survival of premature infants is determined almost wholly by their birth wt. P. C. W.

Aschheim-Zondek and other pregnancy tests. H. von Wattenwyl (*Schweiz. med. Wschr.*, 1942, 72, 637—642).—A lecture. A. S.

Effects of antigonadotropic serum on early postnatal development of reproductive system of male rat. H. N. Marvin and R. K. Meyer (*Anat. Rec.*, 1943, 85, 177—193).—Following injections of antigonadotropic serum from the 1st to 11th day of life, slight inhibition of testis growth and retardation of growth of accessory reproductive organs occurred. Almost complete inhibition of differentiation of seminiferous tubules resulted when the injections were continued to the 20th day. The degree of pituitary basophilism found is detailed. The rate of tubular differentiation and growth in the testis is max. during the early postnatal period. W. F. H.

Ovulatory response of *Rana pipiens* to mammalian gonadotropic factors and sex hormones. W. B. Langan (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 59—61).—Ovulation was produced by 0.4—1 mg. of progesterone, in 8 out of 10 by 2.5—12.5 mg. of testosterone propionate, but in no case by pregnant mare serum or oestradiol dipropionate. V. J. W.

First response of developing opossum gonads to equine gonadotropic treatment. C. R. Moore and C. F. Morgan (*Endocrinol.*, 1943, 32, 17—26).—The earliest precocious sex hormone secretion can be induced by gonadotropic hormone in the 70-day male and in the 100-day female opossum. G. P.

Effect of propylene glycol and progesterone on motility of isolated intestine of the rabbit. J. Ferguson (*Endocrinol.*, 1943, 32, 57—58).—1% propylene glycol has a stimulating, in lower concn. an inconst., effect on smooth muscle of the rabbit's intestine *in vitro*. Progesterone 1 : 256,000, or greater concn., depresses the motility of the smooth muscle *in vitro*. G. P.

Metabolism and utilisation of progesterone [in man]. E. C. Hamblen (*J. Mt. Sinai Hosp.*, 1942, 8, 1200—1215).—A review. E. M. J.

Oxygen uptake and carbon dioxide. Elimination of bovine mammary gland.—See A., 1943, III, 503.

Production of testis atrophy by steroids. H. Selye (*Endocrinol.*, 1943, 32, 116—117).—A mixture of Δ^6 -androstene-3 β : 17 α -diol and α -oestradiol (200 : 1) administered subcutaneously to young rats causes more pronounced atrophy of testes in small than in large doses, imitating the effect of testosterone. G. P.

Inactivation of testosterone propionate in liver during vitamin-B complex deficiency. Alteration of the oestrogen-androgen equilibrium. M. S. Biskind and G. R. Biskind (*Endocrinol.*, 1943, 32, 97—102).—Vitamin-B complex deficiency does not impair the

inactivation of testosterone propionate by the liver of the male rat, in contrast to previous results with oestrogens (cf. A., 1942, III, 750; 1943, III, 31). G. P.

Effects of testosterone propionate on mammary glands of female albino rats. G. L. Laqueur (*Endocrinol.*, 1943, 32, 81—86).—Testosterone propionate injected into virgin female rats during late oestrus produces hypertrophied corpora lutea and development of acini in the mammary glands within 20 days. Such mammary glands lactate when exposed to a suckling stimulus; 6—10-day rats were successfully fostered on these rats. Treatment with testosterone propionate beyond 20 days results in regression of corpora lutea and increased storage of secretion in the mammary glands. G. P.

Induction of female behaviour in male *Anolis carolinensis* with testosterone propionate. G. K. Woble and B. Greenberg (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 32—37).—Implantation of testosterone pellets in intact or castrated lizards causes increased pugnacity and sexual activity; those which are successful in fighting adopt a male attitude and vice versa. V. J. W.

Morphogenesis of gonopodial suspensorium in *Gambusia affinis* and induction of male suspensorial characters in female by androgenic hormone. C. L. Turner (*J. exp. Zool.*, 1942, 91, 167—193; cf. A., 1941, III, 718).—An account of the development of the suspensorial apparatus in males from the undifferentiated condition and of the inductive action of ethinyl- and methyl-testosterone in producing suspensorial-like structures in females. J. D. B.

Peculiar growth lesions in frogs induced by irradiation of sperm cells with X-rays.—See A., 1943, III, 491.

Qualitative changes induced in gonadotropic complex of pituitary by testosterone propionate. A. A. Hellbaum and R. O. Greep (*Endocrinol.*, 1943, 32, 33—40).—The pituitary of normal male rats contains primarily follicle-stimulating hormone (FSH), and the blood serum luteinising hormone (LH). 2—5 months after castration the pituitary LH and FSH and serum FSH increased. Treatment of castrated rats with testosterone propionate (0.5 mg. daily for 30—35 days) reduced pituitary LH but had little effect on FSH. Serum FSH of these animals was lowered; LH increased after 15 and 30 days' treatment, but not after 45 days. G. P.

XIII.—DIGESTIVE SYSTEM.

Development of gastro-intestinal tract of rat.—See A., 1943, III, 450.

Gastric secretion. J. E. Thomas (*J. Amer. Med. Assoc.*, 1942, 120, 735—738).—Review of modern views. C. A. K.

Determination of hydrogen sulphide in stomach contents of experimental animals. B. F. Christensen and R. Wong (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 54—56).—Stomach contents are warmed with Zn and HCl and the evolved H_2S is passed through $CdCl_2$ and determined by I and $Na_2S_2O_3$ titration. V. J. W.

Relation of diet to development of gastric lesions in rat.—See A., 1943, III, 491.

Physiological basis for dietetic therapy in duodenal ulcer. H. Shay, J. Gershon-Cohen, S. S. Fels, and H. Siple (*J. Amer. Med. Assoc.*, 1942, 120, 740—742).—Review of the inhibitory effects of milk and cream on gastric motility and secretion. C. A. K.

Intragastric drip therapy for peptic ulcer. A. Winkelstein, A. Cornwell, and F. Hollander (*J. Amer. Med. Assoc.*, 1942, 120, 743—745).—Review and case illustrations. C. A. K.

Deaths from bleeding peptic ulcers. J. M. Blackford and H. E. Allen (*J. Amer. Med. Assoc.*, 1942, 120, 811—812).—161 fatal cases are discussed. C. A. K.

Treatment of bleeding peptic ulcer. J. Meyer, H. K. Sorter, and H. Necheles (*J. Amer. Med. Assoc.*, 1942, 120, 813—816).—8 (7.2%) of 111 cases of bleeding peptic ulcer died after medical treatment, all 8 being over 45 years old. The mortality rate was 21% in those over 45. There were 6 deaths in 27 patients on whom resection was performed. C. A. K.

Chronic gastritis, its relation to gastric and duodenal ulcer and to gastric carcinoma.—See A., 1943, III, 492.

Psychosomatic correlations of duodenal ulcer. S. Morrison and M. Feldman (*J. Amer. Med. Assoc.*, 1942, 120, 738—740).—Studies in 208 cases are reported. 80 of the cases also had radiological signs of spastic colon. Psychological characteristics are discussed. C. A. K.

Gastro-duodenal surgery in aged. N. C. Tanner (*Brit. Med. J.*, 1943, I, 563—565).—Cases of gastro-duodenal perforation, gastric carcinoma, and chronic peptic ulceration in patients between 60 and 91 are recorded. Prophylactic sulphapyridine is efficient in preventing pulmonary and peritoneal infection. I. C.

Experimental alimentary azotaemia: comparative effects of red cells and plasma. C. F. Chunn and H. N. Harkins (*Proc. Soc. Exp.*

Biol. Med., 1941, 47, 7—8).—The rise in blood-urea-N caused in dogs by ingestion of blood (A., 1941, III, 271) is caused by the cells and not by the plasma. A similar increase is caused by administration of hæmoglobin, but not by salts of Fe. V. J. W.

Relative effect of blood given by jejunostomy and ileostomy. C. F. Chunn, H. N. Harkins, and R. T. Boals (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 9—11).—Introduction of blood or red cells into the stomach or jejunum of dogs increases the blood-urea-N. No such increase follows their introduction into the lower part of the ileum or into the peritoneal cavity. V. J. W.

Intestinal motility in man. C. B. Puestow (*J. Amer. Med. Assoc.*, 1942, 120, 903—908).—Intestinal motility was studied in a patient who had a colostomy of the ascending colon and a thin hernial sac into which loops of small intestine protruded. Other patients with ileostomy or colostomy were also observed. Rhythmic and tonic activity of the small intestine was almost invariably associated with inactivity of the colon. There was no definite relation between feeding and the activity of small or large gut. Morphine (10 mg. subcutaneously) increased the tone and motility of the small intestine without subsequent depression, and caused relaxation and diminished motility of the right colon. Prostigmine (0.5 mg. subcutaneously) had similar actions to morphine, but was less powerful than morphine, and eserine (1.3 mg. subcutaneously) was weaker still. Acetylcholine and mecholyl had little effect. Posterior pituitary solution (1—2 c.c.) or pitressin (10—20 pressor units subcutaneously) inhibited motility and tone of the small intestine and increased motility and tone of the colon. Atropine (0.4 mg. subcutaneously) alone inhibited activity in the small intestine and to a smaller extent in the colon, and it inhibited the stimulant effect of morphine (10 mg.) on the small intestine. Postoperative distension of the bowel may be due to the colonic action of morphine. C. A. K.

Mitochondria in intestinal epithelial cells of starved and fed salamanders.—See A., 1943, III, 452.

Chloride excretion in steatorrhea: comparison with conditions in Addison's disease.—See A., 1943, III, 504.

Effect of pantothenic acid on rate of intestinal absorption of galactose in the rat.—See A., 1943, III, 500.

XIV.—LIVER AND BILE.

Liver and biliary tract. C. H. Greene (*Arch. intern. Med.*, 1943, 71, 563—578).—A review of the literature of 1942. C. J. C. B.

Histophysiological study on activity of stellate cells of frog liver. R. Höber and J. Höber (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 39—41).—Uptake of trypan-blue by stellate cells of the perfused frog liver is increased by addition to the perfusing fluid of bile salts and a no. of other substances with a marked polar-non-polar mol. configuration. V. J. W.

Synthesis of urea in liver. Citrulline as an intermediary in ornithine cycle. A. G. Gornall and A. Hunter (*J. Biol. Chem.*, 1943, 147, 593—615; cf. A., 1943, III, 414).—In liver-tissue slice experiments, NH_3 consumed is completely accounted for by formation of urea and, in the presence of high concns. of ornithine, accumulation of citrulline. Ornithine and citrulline are equally active as catalysts. Added ornithine is converted into citrulline. The slowest stage in the urea cycle is the conversion of citrulline into arginine. The ratio of $\text{NH}_3\text{-N}$ consumed to urea-N formed is 1. R. L. E.

Liver glycogenesis and fasting in the rat. Effect of glucose feeding on the water balance. J. J. McBride (*J. Biol. Chem.*, 1943, 147, 333—339).—A decrease, which becomes greater with increasing length of the fast, in the non-glycogen liver solids is produced when the glycogen reaches a high level after fasting for 36—48 hr. followed by administration of glucose for 12 hr. In some rats feeding of large amounts of glucose results in a disturbance in the water balance, resulting in a decrease in the liver-water instead of the expected increase; a marked distension of the stomach due to gas without diarrhoea is also observed. During the glucose feeding period the liver does not appear to be involved in the process of conversion of glucose into fat. The ratios of proteins and lipids to the non-glycogen solids do not vary and the former constitute an essential part of the cell and do not represent storage materials. When the liver loses solids following a 36-hr. fast it is whole cells which are lost, but this is not the case in agar-fed or in 24-hr.-fasted rats. H. G. R.

Kephalin-cholesterol flocculation and other tests of liver function. C. H. Greene and M. Bruger (*N.Y. Sta. J. Med.*, 1943, 43, 318—322).—The kephalin flocculation test was mostly negative in obstructive jaundice except when combined with biliary cirrhosis, positive in 55 of 62 cases of hepatogenous jaundice, as well as in 3 of 5 cases of portal cirrhosis, 3 cases of Gaucher's disease, 2 of malaria, and in 11 of 26 cases of rheumatoid arthritis. E. M. J.

Liver function in therapeutic malaria. I. Kopp and H. C. Solomon (*Amer. J. med. Sci.*, 1943, 205, 90—97).—Tertian malaria was induced in 9 male patients for general paresis and liver function

determined before and after therapy. Malaria produces disturbances in liver function as revealed by moderate bromsulphthalein retention, a marked reduction in cholesterol and cholesterol esters, a moderate fall in the phospholipins, diminished hippuric acid excretion, and a strongly positive kephalin flocculation test. The impairment of liver function is transient and clears within 3—6 weeks after termination of the malaria. The kephalin flocculation test is the last to revert to normal. The administration of As^V as tryptasamide immediately after malaria did not delay the return of liver function tests to normal except kephalin flocculation. C. J. C. B.

Recent advances in treatment of hepatic disease [and vitamins]. A. M. Snell (*Minnesota Med.*, 1940, 23, 551—556).—A review. E. M. J.

Present status of non-obstructive jaundice due to infectious and chemical agents. R. Ottenberg and R. Spiegel (*Medicine*, 1943, 22, 27—71).—A review. E. M. J.

Choline chloride in treatment of icterus gravis neonatorum. P. G. Danis and W. A. D. Anderson (*Sth. Med. J.*, 1942, 35, 1070—1076).—Daily doses of 5 grains of choline chloride, together with a diet of "Olac" (Mead Johnson) which supplies a readily absorbable fat given when the anæmia had been controlled by blood transfusions, accelerated the recovery in 3 cases, although jaundice and increased prothrombin time persisted (in spite of vitamin-K). E. M. J.

Role of liver in surgery and] kephalin flocculation test. A. O. Whipple (*N.Y. Sta. J. Med.*, 1943, 43, 53—56). E. M. J.

Excretion of coproporphyrin in hepatic disease. Isolation and identification of urinary coproporphyrin isomers. S. Nesbitt (*Arch. intern. Med.*, 1943, 71, 483—488).—The urinary coproporphyrin of 10 patients who had various types of hepatic damage or biliary obstruction and who were maintained on a meat-free diet was isolated. It was coproporphyrin-I and -III in 6. In 3, -III was a small fraction of the total coproporphyrin, whereas in the other 3 it was mainly -III. In 3 cases, -I alone was isolated and in one -III alone. C. J. C. B.

Effect of adrenalectomy and adrenocortical steroids on liver-arginase.—See A., 1943, III, 390.

Influence of bile on gastric motility.—See A., 1943, III, 395.

XV.—KIDNEY AND URINE.

Use of intrapelvic coagulum in pyelolithotomy. J. E. Dees (*Sth. Med. J.*, 1943, 36, 167—174).—After exposure of the renal pelvis a small incision was made and a catheter introduced through which after aspiration of the urine a mixture of 90% of human fibrinogen and 10% of "clotting globulin" (Lederle) was injected. 5 min. later the ensuing clot was extracted. It contained formed calculi and sand, thus removing the nidus for further calculi formation. 5 successful cases are reported. E. M. J.

Validity of nephrosis as nosological concept. E. Moschcowitz (*J. Mt. Sinai Hosp.*, 1942, 8, 878—891).—A review and report of a case. E. M. J.

[Intravenous amino-acids in treatment of] nephrotic crisis. K. Emerson and D. D. Van Slyke (*J. Mt. Sinai Hosp.*, 1942, 8, 495—501). E. M. J.

Adrenal rests in kidney.—See A., 1943, III, 390.

Clearance of diodrast, phenolsulphonethalein, and inulin in hypertension and nephritis. T. Findley, J. C. Edwards, E. Clinton, and H. L. White (*Arch. intern. Med.*, 1942, 70, 935—947).—The conclusion of Goldring *et al.* (A., 1941, III, 15) that adrenaline in man constricts the efferent glomerular vessels is confirmed. Vals. are given for normal plasma-diodrast and -inulin clearance and max. diodrast excretion (*Im*). Seven of 12 cases of essential hypertension gave no indication of renal ischæmia. C. A. K.

Renal pathological changes in hypertension and glomerulonephritis. J. P. Simonds (*J. Amer. Med. Assoc.*, 1942, 120, 89—93).—A lecture. C. A. K.

Focal glomerulitis in elderly patients. P. Gross and W. Morningstar (*Amer. J. Path.*, 1943, 19, 333—338). (3 photomicrographs.) C. J. C. B.

Mode of action of substances injected under pressure into renal pelvis. S. Ohmori (*Japan. J. Med. Sci.*, 1941, [xiii], 2, 223—233).—Excellent results were obtained in human chyluria by injection into the renal pelvis from the ureter of NaI (15—25%), NaBr (20—25%), AgNO_3 (1—3%), NaCl (0.9%), or glucose (5—10%). These substances and Indian ink were injected into the renal pelvis from the ureters in rabbits. At a pressure of 8—12 mm. Hg, Indian ink particles penetrate between the pelvic epithelium, at 15—20 mm. Hg particles penetrate into the renal tissue, and at higher pressures particles were found in the subcapsular renal space. AgNO_3 produced necrotic changes in the renal tissues. Mild inflammatory reactions were obtained with NaI and NaBr . A. S.

Irritation of urinary tract by "doped" beer. G. A. Ballance (*Brit. Med. J.*, 1943, I, 540).—Acute pyelitis and acute anterior

urethritis developed after drinking beer, probably "doped" with an aphrodisiac, thought to be of the nature of cantharides. I. C.

Pentosuria and diabetes mellitus in one patient. R. E. Moss and B. S. Walker (*J. Amer. Med. Assoc.*, 1942, 120, 25—26).

C. A. K.

Diuretic effect of combination of salyrgan and intravenous sorbitol or sucrose. H. L. Richardson, J. C. Kennedy, and E. S. West (*Northw. Med.*, 1943, 42, 80—83).—Blood-sorbitol vals. following intravenous injection of 100 and 200 c.c. of 50% sorbitol solution rose to 70—180 and 180—210 mg.-% in 4 and 2 cases within 30 min.; most of the sorbitol disappeared from the blood after 2 hr. except in 2 cases of hepatic disease. Urinary excretion was increased during the first 4 hr. but decreased for the first 24 hr. 9—27% of the injected sorbitol was excreted in 8 cases, and 38 and 46% in a case of hepatic cirrhosis and one of Banti's disease respectively. Intravenous injection of 100 or 200 c.c. of hypertonic solutions of sucrose or sorbitol if combined with 1—2 c.c. of intravenous salyrgan caused a marked diuresis. E. M. J.

Effect of optical stimuli on [pituitary and] output of urine in albino rats. E. M. Boyd, B. K. Lee, and M. E. T. Stevens (*Endocrinol.*, 1943, 32, 27—32).—Optical stimuli in the form of flashes of bright light caused diuresis in the rat during the first 3 hr.; the urine output in the next 3 hr. was less than in controls. This reaction did not occur if the eyes were removed. Pituitrin in doses corresponding to the amount present in one rat pituitary, or extracts of one rat hypophysis, when injected into rats also caused diuresis. Optical stimuli lasting for 2—3 hr. increase the amount of water-balance principle extractable from the pituitary. Optical stimuli had no effect if the rats were already in a state of diuresis from another cause. G. P.

Effect of optical stimuli on output of urine in albino rats.—See A., 1943, III, 387.

Renal concentration test using solution of posterior pituitary. H. C. Wall (*Arch. intern. Med.*, 1943, 71, 454—459).—The test was done without special prep. in the morning or afternoon. No food or fluid was allowed during the 2-hr. period of the test. The bladder was emptied. 10 U.S.P. units of posterior pituitary were injected subcutaneously. The urine was collected at 1 and 2 hr. A higher sp. gr. was recorded. The results obtained in normal subjects, for patients with hypertension with and without impaired renal function compared favourably with those obtained with the Fishberg and phenolsulphonethalein tests. C. J. C. B.

Occurrence in urine of a protein soluble in trichloroacetic acid. W. M. Beckman, A. Hiller, T. Shedlovsky, and R. M. Archibald (*J. Biol. Chem.*, 1943, 148, 247—248).—In the urine of proteinuric patients 4—20% of the total protein was not pptd. by trichloroacetic acid. This fraction was not dialysable, was pptd. by heat, acetic acid, and half-saturated $(\text{NH}_4)_2\text{SO}_4$, and had the analytical and physical characteristics of a protein, probably a globulin. It may occur in human plasma. R. L. E.

Determination of iodides in urine. I. A. Pearl (*J. Biol. Chem.*, 1943, 148, 85—88).—Objectionable matter is removed and I^- oxidised to IO_3^- by boiling with Br and Br-water. I^- is then liberated with KI and titrated with $\text{Na}_2\text{S}_2\text{O}_3$. A slight excess of Br must be present when boiling is stopped, and this is removed by phenol. H. G. R.

Composition of glomerular urine. XV. Concentration of sodium in glomerular urine of *Necturi*. P. A. Bott (*J. Biol. Chem.*, 1943, 147, 653—661).—Na (0.2—0.7 μg .) is determined by pptn. as Na Zn uranyl acetate and colorimetric determination of Zn by diphenylthiocarbazone. The Na content of glomerular fluid of *Necturi* is the same as that of serum, indicating that glomerular fluid is an ultrafiltrate of plasma. R. L. E.

Quantitative formulation of maximum urinary specific gravity. A. C. Corcoran and I. H. Page (*J. Mt. Sinai Hosp.*, 1942, 8, 459—468). E. M. J.

Dissolution of phosphatic urinary calculi by retrograde introduction of citrate solution containing magnesium. H. I. Suby and F. Albright (*New England J. Med.*, 1943, 228, 81—91).—6 cases are reported in whom intermittent irrigation of the renal pelvis over weeks or months led to partial (2 cases) or complete (4 cases) dissolution of renal calculi. One other case in whom a previously removed stone showed a coating of old blood clot did not react. The solution used contained 3.25 g.-% of monohydrated citric acid, 0.384 g.-% of MgO, and 0.437 g.-% of anhyd. Na_2CO_3 and was introduced through a ureteric catheter in 2 and a nephrostomy opening in 4 cases. E. M. J.

Effect of urine extracts on prevention and healing of experimental peptic ulcers in dogs.—See A., 1943, III, 395.

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

Child mortality in Lagos, Nigeria. E. C. Smith (*Trans. R. Soc. trop. Med. Hyg.*, 1943, 36, 287—303).—An analysis of 500 post-

mortems on children up to the age of 3 years is given. The respiratory group totalled 343 cases. C. J. C. B.

Blast injury to abdomen by depth charge. D. D. Pinnock and P. Wood (*Brit. Med. J.*, 1943, I, 537—539).—Report of 5 cases, 4 of which had "blast-abdomen" and one "blast-lung." Patients with blast-abdomen developed board-like rigidity of abdomen, but remained in good general condition for some hr. in spite of the damage to abdominal viscera. The prognosis of "blast-abdomen" is grave. I. C.

Nodular non-suppurative panniculitis [post-mortem findings]. J. L. Miller and R. A. Kritzler (*Arch. Dermat. Syphilol.*, 1943, 47, 82—95).—The first autopsy findings in a patient who died with active lesions of relapsing febrile nodular non-suppurative panniculitis are recorded. They include accumulation of fat and focal necrosis of the liver, hydropic degeneration of the adrenal cortex cells, and phagocytosis of red cells by the reticuloendothelial system. Sulphonamide compounds had no influence on the course of the illness. C. J. C. B.

Melanin content of frog skin. B. Dawes (*J. Exp. Biol.*, 1941, 18, 26—49).—A method is described for extraction and photometric estimation of melanin. Frogs were kept on dark or light backgrounds for 5 weeks, when those kept on dark had 60% more melanin, and 12—15% more melanophores, than the others. Frog and mammalian melanin are apparently identical. G. P. W.

Osmotic regulation in *Chirocephalus*. N. K. Panikkar (*J. Exp. Biol.*, 1941, 18, 110—114).—The blood is isotonic with 0.44—0.5% NaCl. This val. is well maintained in tap water but falls rapidly in glass-distilled water. The changes in hypotonic saline media indicate active absorption of ions. G. P. W.

XVII.—TUMOURS.

Inactivation and conversion of oestrogens *in vitro* by liver and other tissues from human cancer patients and from mice of strains susceptible to mammary carcinoma. G. H. Twombly and H. C. Taylor (*Cancer Res.*, 1942, 2, 811—817).—Human liver slices when incubated in aq. solutions of oestradiol did not have as great a capacity for inactivating the hormone as did rat or mouse liver. A diminished capacity for destroying oestradiol could not be correlated with the presence of cancer in the patient. The livers of four strains of mice differing in their susceptibility to spontaneous mammary cancer did not differ significantly in their ability to destroy oestradiol *in vitro*. In some cases human cancers augmented the activity of oestrone, while with other malignant tissues the tendency to destroy oestrone was absent. F. L. W.

Effect of oestrone on mouse skeleton, with particular reference to Newcastle bone tumour (N.B.T.) strain. E. W. Miller, J. W. Orr, and F. C. Pybus (*J. Path. Bact.*, 1943, 55, 137—150).—Because of sex difference in the incidence of spontaneous bone tumours, oestrone was given to mice of the Newcastle bone tumour (NBT) strain and to 3 other inbred strains with a low bone tumour incidence. The treated animals died at early ages. The hind limb bones of the older untreated NBT females showed great quiescent bone hyperplasia with medullary trabeculae. These abnormalities were fewer in untreated males and spayed females. They were absent from untreated mice of other strains. Ovariectomy at an early age thus shifted the histological picture towards normality and delayed the appearance of palpable bone tumours by 4 months. Treatment of young NBT males with massive implanted doses of oestrone caused intense osteoclastic activity accompanied by bone formation, the marrow being almost entirely replaced by vascular tissue, histiocytes, and osteoclasts. In some animals bony nodules appeared in various sites at a very early age. In adult males similar changes occurred but the replacement of the haemopoietic marrow was less complete. With smaller doses of oestrone, given by painting, the changes were qualitatively similar but quantitatively less; bone production was greater. In young mice of the other 3 strains treated by painting the changes resembled those seen in young painted NBT mice but were quantitatively very much less. The induced lesions were reversible and even palpable bony nodules regressed on cessation of treatment. It is concluded that the work affords no evidence as to whether oestrinisation increases tumour incidence, but suggests that it can act as an adjuvant agent when the determining factor or factors are present. (12 photomicrographs.) C. J. C. B.

Influence of carcinogens on age incidence of leukaemia in the high-leukaemia *F* strain of mice. A. Kirschbaum and L. C. Strong (*Cancer Res.*, 1942, 2, 841—845).—The efficiency of methylcholanthrene, 3:4-benzpyrene, and 1:2:5:6-dibenzanthracene when dissolved in benzene and applied to the skin in hastening the appearance of leukaemia in the high-leukaemia *F* strain of mice bears a direct relation to their potency as carcinogens. Methylcholanthrene and benzpyrene reduced the preleukaemic latent period; dibenzanthracene did not. The latent period was the same whether treatment was begun at birth or at 35 days of age. Intravenous injection of 0.2 mg. of methylcholanthrene at 6 weeks of age did not influence the age of appearance of leukaemia in 13 *F* strain mice, but 3 of 6

female breeders developed mammary cancer. The incidence of mammary cancer in untreated female breeders of the *F* strain is less than 1%.
F. L. W.

Histological changes preceding spontaneous lymphatic leukaemia in mice. J. S. Potter, J. Victor, and E. N. Ward (*Amer. J. Path.*, 1943, 19, 239–249).—Restricted areas of reticulum hyperplasia are the sites for primary malignant lymphocytosis; these occur particularly in the medullary tissue of lymph nodes and in perivascular regions of the liver. Such areas have not been observed in non-leukæmic strains. In mice of strain C58, hyperplasia of the germinal centres of lymphoid tissues was not observed in early stages of leukaemia. Following the production of a population of free malignant lymphocytes, invasion accounts for the majority of the widespread lesions common to the terminal stages of leukaemia. (7 photomicrographs.)
C. J. C. B.

Isolation of chromatic threads from resting nucleus of leukaemic cells. A. Claude and J. S. Potter (*J. Exp. Med.*, 1943, 77, 345–354).—Chromatin threads were obtained from mouse spleen of animals suffering from experimental lymphatic leukaemia and from dibenzanthracene groin leukæmic tumours in rats by a process of repeated washing and differential centrifuging. The filaments were 0.5–1.0 μ in diameter and, after staining, were strikingly similar to those seen in the original tissues. The Feulgen and Thomas reactions for the presence of thymonucleic acid were positive. The threads contained N 15.58, P 3.72, C 45.60, H 6.49, and S 1.70%. A considerable part of the threads consisted of deoxyribose nucleoprotein. Thymonucleic acid constituted 40% of the threads, assuming that all P was present in that form. A part of the complex belonged to the histone group.
A. S.

Bile acids and pulmonary tumour incidence in A strain mice. L. W. Law (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 37–39).—Subcutaneous injection of 10 mg. of Na deoxycholate increases incidence of such tumours.
V. J. W.

Effect of feeding wheat germ oil on production of liver cancer by butter-yellow. K. Sugiura (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 17–19).—Feeding with wheat germ oil has no protective action against the production of hepatic cancer in rats by *p*-dimethylaminoazobenzene.
V. J. W.

Necrosis, cirrhosis, and cancer of liver in rats fed with dimethylaminoazobenzene. P. Gyorgy, E. C. Poling, and H. Goldblatt (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 41–44).—Addition of 0.6 g. of dimethylaminoazobenzene per kg. to a diet of rice and carrots caused severe hepatic injury which was prevented by presence of 18% of casein, or of 10–20 mg. of choline + 25–50 mg. of cystine. Either cystine or choline alone was ineffective.
V. J. W.

Influence of a polished rice diet on spontaneous mammary cancers in mice treated with yeast extract. R. Lewisohn, C. Leuchtenberger, R. Leuchtenberger, D. Laszlo, and Z. Dische (*Cancer Res.*, 1942, 2, 818–821; cf. A., 1942, III, 402).—By combining intravenous injection of yeast extract with a diet of polished rice and carrot the relative no. of complete regressions of spontaneous breast cancers in mice was increased. The average time was 20 days as compared with 47 days for treatment with yeast extract alone.
F. L. W.

Effect of intravenous glycogen administration on the rate of growth of the Walker carcinosarcoma 256 and sarcoma 180. H. A. Ball (*Cancer Res.*, 1942, 2, 823–827).—Injection of glycogen (10% solution in saline) into the blood of tumour-bearing rats and mice retarded the growth rate of the Walker carcinosarcoma 256 in rats and of sarcoma 180 in mice.
F. L. W.

Effect of variations in oxygen pressure on tumour transplants. M. A. Pollack, A. Taylor, and C. L. Sortomme (*Cancer Res.*, 1942, 2, 828–832).—The rate of growth and the lethal effect of mammary adenocarcinoma transplants in *DBA* mice are unaffected by increased or decreased atm. pressure. Surrounding the transplants with large gas bubbles of high O_2 content is also without effect. Periodic starvation and low atm. pressure is without beneficial action.
F. L. W.

Mechanism of action of certain urea derivatives on normal and tumour tissue. W. C. Grant and J. C. Krantz (*Cancer Res.*, 1942, 2, 833–836).—Urea derivatives depressed the respiration of tissues *in vitro*. The effect increased with increasing mol. wt. Resistance to depression by *n*-butylurea was in the order: muscle, liver, tumour, brain. *n*-Propylurea depressed the respiration of tumour tissue more than that of normal tissue. The depressant action is attributed to interference with the initial respiratory enzyme complex (the dehydrogenase co-enzyme).
F. L. W.

Permeability of sarcoma cell wall to phosphate and rate of formation of phosphorus compounds in sarcoma cells. G. von Hevesy and H. von Euler (*Arkiv Kemi, Min., Geol.*, 1942, 15, A, No. 15, 17 pp.).—The amount of ^{32}P taken up by rat Jensen sarcoma after subcutaneous injection of rats with $^{32}PO_4^{4-}$ is determined. Comparison of the amount of ^{32}P in 1 mg. of free plasma-P with the ^{32}P content of 1 g. of sarcoma gives the amount of sarcoma-P which has been exchanged for plasma-P. The membranes of 1 g. of sar-

coma cells are penetrated by 1 mg. of P per hr. Comparison of the ^{32}P content of various organs shows that only liver cells have a greater permeability to PO_4^{4-} than have sarcoma cells, and that considerably less P is transferred through the membranes of muscle, testis, and brain cells. During 2 hr. after injection of $^{32}PO_4^{4-}$, ^{32}P is equally distributed between plasma- PO_4^{4-} and free PO_4^{4-} of the liver, and there is nearly equal distribution between plasma- PO_4^{4-} and free PO_4^{4-} of the sarcoma. When isolated sarcoma tissue is placed in saline containing $^{32}PO_4^{4-}$, acid-sol. ^{32}P compounds are formed. Slightly more ^{32}P is present in the adenosine triphosphate than in the hexose phosphate fraction, whilst the nucleic acid contains only a very small amount of ^{32}P .
J. N. A.

Development of Jensen sarcoma and simultaneous change in pyruvic acid content of blood. C. von Euler and H. von Euler (*Arkiv Kemi, Min., Geol.*, 1941, 14, B, No. 36, 7 pp.).—In rats, the greatly increased pyruvic acid content of the blood (45–65 μ g. per c.c.) which accompanies the growth of Jensen sarcoma is restored to the normal val. (12–20 μ g.) by extirpation of the tumour. Intramuscular injection of material from the pituitary containing 10 i.u. of intermedin together with vasopressin and oxytocin increases the pyruvic acid content of the blood of healthy rats and decreases that of rats having sarcoma. Pregnancy results in decrease in the content in rats having sarcoma. Decrease is also produced by injection of prolactin in cases where diminution of the tumour takes place.
W. McC.

Splitting of optically active dipeptides by malignant tumours and by serum. III. B. Skarżyński and H. von Euler (*Arkiv Kemi, Min., Geol.*, 1940, 14, B, No. 11, 4 pp.; cf. A., 1942, III, 250).—*D*-Leucylglycine was hydrolysed by serum from 1 completely healthy, 3 non-carcinomatous, and 6 carcinomatous patients; the individual rates varied widely. Serum from 1 healthy rabbit and from 2 with Brown-Pearce tumours did not hydrolyse the dipeptide, but that from 2 other rabbits with similar tumours caused rapid hydrolysis.
M. H. M. A.

Thymonucleic acid from Jensen sarcoma. R. B. Vowles (*Arkiv Kemi, Min., Geol.*, 1940, 14, B, No. 10, 5 pp.; cf. A., 1934, 1127; 1936, 1014).—Jensen sarcoma tissue contains 5.5–7.5% of thymonucleic acid, a content similar to that found in liver, spleen, and kidney. The acid appears to be identical with that from thymus gland.
M. H. M. A.

Endocrine aspects of antitumoral autodefense. A. Lipschutz (*Rev. Canad. Biol.*, 1943, 2, 92–104).—A review.
A. S.

Complement-fixation tests on rabbits with Brown-Pearce carcinoma. J. L. Jacobs and J. D. Houghton (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 88–90).—When precautions were taken to eliminate individual differences, no certain evidence of complement-fixation could be obtained.
V. J. W.

Natural antibody reacting with sedimentable constituents of normal tissues. J. G. Kidd and W. F. Friedewald (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 128–130).—Centrifuged saline extracts of various normal rabbit tissues fix complement in adult rabbit serum, but not in serum from rabbits less than 4 weeks old. The serum antibody is destroyed in 30 min. at 65° but not at 56°; it is removed by saline liver extract. The antigen is impaired by keeping, by glycerol, or by 56° for 30 min. It is not present in alcoholic extracts or in saline extracts centrifuged at over 20,000 r.p.m.
V. J. W.

Distinct types of antibodies in blood of rabbits carrying transplanted V2 carcinoma. W. F. Friedewald and J. G. Kidd (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 130–132).—The serum of such rabbits contains, in addition to the natural antibody described above, an antibody which fixes complement in presence of V2 carcinoma extracts, and a different antibody which reacts with papilloma virus. The last two antibodies are not destroyed in 30 min. at 65°.
V. J. W.

Local immunity to fowl sarcoma. M. J. A. Des Ligneris (*S. Afr. J. med. Sci.*, 1942, 7, 184–211).—The blood of fowls bearing sarcomas contains antibodies sp. against these sarcomas (Rous, Fujinami, or the author's "new" sarcoma which originated in chick embryo culture treated with dibenzanthracene). Using the "new" tumour 2 types of local immunity reaction are described; hard, white tumours sometimes develop which have yellowish centres and are relatively slow-growing. In these tumours there is overgrowth of fibrous tissue with tumour-cell destruction. Antibodies develop more rapidly in the blood of fowls bearing these tumours than in that of fowls with normal fast-growing sarcomas. Filtrates from these tumours do not produce progressive tumours on inoculation. Tumours occasionally develop with liquefied centres, forming a cyst lined with myxomatous tissue. Liquid tapped from one such tumour showed gradually increasing amounts of antibody present. The tumour was finally reduced to a small cyst with no tumour cells in the walls when it was killed after 6 months.
P. C. W.

Sex hormones and lymphomatosis in fowls. D. Marine and S. H. Rosen (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 61–62).—Out of 41 capons, 12 were treated during 6 months with oestradiol dipropionate and 12 with testosterone dipropionate. Lymphomatosis occurred

in 7 of the oestrogen group, in 4 of the androgen group, and in 4 of the 17 controls. V. J. W.

Effect of Röntgen radiation on tumour incidence in *Drosophila melanogaster*. E. W. Hartung (*Cancer Res.*, 1942, 2, 837—840).—Eggs of a strain of *Drosophila* showing an hereditary incidence of tumours of 15% were X-irradiated. Above 500 r. an increase in incidence appeared reaching a peak of 48.3% at 1500 r. A continuous decline then set in and at doses of 5000 r. the incidence was less than in controls. F. L. W.

Neoplastic disease of pancreas of snakes (*Serpentes*). H. L. Ratcliffe (*Amer. J. Path.*, 1943, 19, 359—366).—The acinar tissue of the pancreas in many species of snakes undergoes unexplained focal necrosis followed by abortive regenerative growth, apparently of the terminal ducts, producing small, oedematous adenoma-like structures. Of 136 snakes of 5 families of the order *Serpentes*, all of which died in captivity, 45 presented some stage in the development of this disease, but of 261 snakes of species that seemed most susceptible to the disease, killed for examination 60 to 90 days after capture, only 10 had developed lesions of this sort and none of them presented the more advanced stages of the disease. (9 photomicrographs.) C. J. C. B.

Cancer research. J. B. Murphy (*J. Amer. Med. Assoc.*, 1942, 120, 107—111).—A lecture. C. A. K.

Effects of X-rays and neutrons on mouse lymphoma chromosomes [in different stages of nuclear cycle]. A. Marshak (*Radiology*, 1942, 39, 621—626).—Chromosomes of the cells of mouse lymphoma were more sensitive to irradiation during the resting stage than at the onset of the prophase. The % of chromosomes remaining normal 8, 12, and 24 hr. after irradiation by X-rays or neutrons is a negative exponential function of the dose. At 18 hr. the curve was composite, one portion having the slope of the 24-hr., the other at lower doses the slopes of the 12-hr. curve. The ratio of the slopes (n/x) rose from 5.9 at the onset of the prophase to 8.8 in one period of the resting stage. E. M. J.

Treatment of cancer with fast neutrons. R. S. Stone and J. C. Larkin, jun. (*Radiology*, 1942, 39, 608—620).—Using the 60-in. cyclotron which produces a beam of deuterons with energies of 16-Me.v. neutrons with max. energy of 21 Me.v. were obtained. The min. threshold skin reaction was seen with 110 n. ("neutrons") so that 1 n. equals 6 r. by this biological measure. Fractionated treatment through a single field caused no more than a first degree epidermitis with doses of 650 n. or less; the same reaction was seen with 700—710 n. given at daily rates of 16—20 n., a 2nd and 3rd degree epidermitis with higher daily rates and total doses (up to 1165 n.). Similar dependence of degree of reaction on dosage rate (7—20 n.) rather than on total doses (up to 650 n.) was seen in cases treated with cross fire technique. 120 cases of malignant disease are reported, using fields of 7×7 , 10×10 , and 10×15 sq. cm. and giving daily doses of 50—75 n. up to totals of 500 n. on two or 650 n. on one field in 30—40 days. Complete regression was obtained in 20 cases during treatment, in 26 during the first 3 months, partial regression in 57 and 53, no response in 43 and 24 cases respectively. Of the 31 cases on whom autopsies were done 14 showed no gross or microscopical evidence of cancer in the treated regions, 5 only microscopical evidence of persisting cancer. In 9 of 16 cases who had had cancer of the mouth or throat and with persistent ulceration there was no microscopical evidence of cancer. The cases treated included 13 cancers of the skin and lip, 9 of larynx and pharynx, 18 of the tongue, 11 of the breast, and 18 of the prostate. Almost all the patients were considered incurable by other means. E. M. J.

Treatment of lymphosarcoma with radioactive phosphorus. J. M. Kennedy and L. F. Craver (*Radiology*, 1942, 39, 598—607).—22 cases of lymphosarcoma were treated with ^{32}P administered in courses of 80—120 μc . per kg. body-wt. at intervals of 7—14 days up to a total of 150—400 μc . (average 250 μc). 10 patients are alive, 4 of these with complete remissions of 3—12 months; 10 of the 12 dead patients were at no time benefited. Cases previously controlled by deep X-rays did better than those only partially or uncontrolled by X-rays. E. M. J.

Endocrine effects in advanced prostatic cancer [and serum-phosphatase]. C. Huggins (*N.Y. Sta. J. Med.*, 1943, 43, 519—521).—31 of 45 patients with prostatic cancer with or without bony metastases showed sustained improvement lasting up to 30 months following orchidectomy; 9 showed temporary improvement; no effect was seen in 5 cases. In 11 cases serum-phosphatase returned to the normal range after previous high vals. E. M. J.

Castration in treatment of prostatic cancer. E. Rupel (*Sth. Med. J.*, 1943, 36, 251—255).—Report of 26 cases in whom bilateral orchidectomy was performed with immediate and sustained relief of pain and clinical shrinkage of the prostate in many cases. There were 3 deaths in the series. E. M. J.

Association of other malignant tumours with cancer of skin. H. L. Lombard and S. Warren (*Amer. J. Publ. Health*, 1943, 33, 533—536).—From an analysis of 1990 cases of cancer followed 10—13

years it is concluded that there is a greater susceptibility to cancer in persons who have had one cancer than in the normal population. Whether this susceptibility is caused by the first cancer or is inherent in the individual is not known. C. J. C. B.

Multiple skin cancer [in Texas]. C. Phillips (*Sth. Med. J.*, 1942, 35, 583—588).—Report of 704 cancers in 226 persons, 52.4% of whom lived an out-door life. E. M. J.

Post-operative radiotherapy in carcinoma of breast. R. McWhirter (*Edinb. Med. J.*, 1943, 50, 193—207).—In an analysis of 1879 cases in the operable groups (stages I, II, and III) with an average age of 55.5 years the 3-year symptom-free rate (complete freedom from symptoms during 3 years) was a reliable guide to the 5-year survival rate and permits a more rapid assessment of results. The 3-year symptom-free rate in all 3 stages is 20—30% higher as a result of effective post-operative radiotherapy following radical surgery even when the axillary glands have become involved. Very encouraging results followed simple mastectomy + radiotherapy (80—90% symptom-free at 1 year) and this method is now on trial. Delay between first symptom and treatment is 9 months, half of which is "medical" delay. Cure of at least 1 in 2 of all cases is possible with present methods. H. S.

Interstitial radiation in carcinoma of cervix. R. W. Teahan, H. Wammock, and J. Weatherwax (*J. Amer. Med. Assoc.*, 1942, 120, 423—426).—A lecture with report on 52 cases. C. A. K.

[Results of] radiation treatment of carcinoma of cervix. H. W. Jones (*Sth. Med. J.*, 1942, 35, 959—965). E. M. J.

Unique cell rest in uterine fibroid. A. R. Peale and L. W. Smith (*Arch. Path.*, 1943, 35, 594—597).—Their origin may be adrenal cortical cell inclusions or Walthard cell rests. (2 photomicrographs.) C. J. C. B.

Non-malignant mesothelioma of genitalia. P. Masson, J. L. Riopelle, and L. C. Simard (*Rev. Canad. Biol.*, 1942, 1, 720—751).—In 9 cases of non-malignant mesothelioma, arising from the Fallopian tubes, uterus, spermatic cord, epididymis, and tunica vaginalis of the testis, the tumours consisted of anastomosing tubules with squamous, cuboidal, or columnar epithelium, and of compact or vacuolised epitheloid strands; clear serous fluid was found in the vacuoles, staining with mucicarmine and containing mononucleated cells. Islands of lymphoid cells were found in the tumour. The cells frequently had a superficial cuticle with a brush-border and a supra-nuclear diplosome with a flagellum. A. S.

Seminoma developing in an undeveloped genital anlage. H. G. Wells, jun. (*Arch. Path.*, 1943, 35, 590—593).—A case is reported of complete failure of the right genital anlage to develop, associated with immaturity of the left genital anlage. At the age of 47 the patient died with a retroperitoneal seminoma arising in the rest of undeveloped right genital anlage. C. J. C. B.

Interstitial cell growths of testicle. S. Warren and K. W. Ols-hausen (*Amer. J. Path.*, 1943, 19, 307—327).—A review of 29 cases including the literature. (7 photomicrographs.) C. J. C. B.

Neuroblastoma of mediastinum with pheochromoblastomatous elements. H. R. Wahl and D. Robinson (*Arch. Path.*, 1943, 35, 571—578).—A case report. (6 photomicrographs.) C. J. C. B.

Lung cancer and early diagnosis. C. K. Robertson (*Edinb. Med. J.*, 1943, 50, 296—304).—In a series of 52 cases radiological evidence of secondary changes was present in all but one. 30 cases gave diagnostic X-rays. In 18 out of 43 the correct diagnosis was made outside hospital. H. S.

Neuroepithelioma of radial nerve; its behaviour in vitro. A. P. Stout and M. R. Murray (*Rev. Canad. Biol.*, 1942, 1, 651—659).—The tumour metastasised into the lungs. The cells did not show any signs of differentiation. Tissue cultures showed the growth characteristics of early undifferentiated embryonic epithelium. A. S.

Calcified odontomes. J. Staz (*S. Afr. J. med. Sci.*, 1942, 7, 173—183).—6 cases are reported, the literature is reviewed, and modified definitions and new classifications are suggested. P. C. W.

Multiple myeloma with nitrogen retention. R. H. McDonald (*Cleveland Clin. Quart.*, 1943, 10, 36—39).—A case is reported. A. S.

Giant cell tumours of patella. V. Richards, A. F. Giberson, and D. King (*West. J. Surg. Obstet. Gynec.*, 1940, 48, 47—49).—A case is reported and compared with 16 cases collected from the literature. P. C. W.

Östrogenic reaction in adrenal cortical carcinoma. R. T. Frank (*J. Mt. Sinai Hosp.*, 1942, 8, 514—519). E. M. J.

Monocytic leukaemia. T. S. Evans (*Medicine*, 1942, 21, 421—456).—A review. E. M. J.

Incidence of malignancy in prepyloric ulcers. B. R. Kirklin and W. C. MacCarty (*J. Amer. Med. Assoc.*, 1942, 120, 733—735).—71 prepyloric ulcers were diagnosed radiologically and operation in all cases showed that 8 (11.3%) were malignant. C. A. K.

Mechanism of development of skin derivatives in vertebrates [action of carcinogens].—See A., 1943, III, 450.

Tumour embolism of common femoral artery treated by embolotomy and heparin.—See A., 1943, III, 463.

[Tumour of iter and 4th ventricle associated with meningomyelocele and] absence of cerebellum in 5-week-old infant. [Unusual cerebellar tumour and] cerebellar function.—See A., 1943, III, 466.

Electroencephalogram [in posterior fossa tumours]. Reliability of roentgenographically determined pineal gland shift in brain tumours. Anterior and posterior fossa cerebral tumours.—See A., 1943, III, 467.

Sympathicotrophic cell tumour of ovary and virilism.—See A., 1943, III, 479.

XVIII.—NUTRITION AND VITAMINS.

Feeding an army. P. E. Howe (*J. Amer. Med. Assoc.*, 1942, 120, 93—96).—A lecture. C. A. K.

The navy ration. E. W. Brown (*J. Amer. Med. Assoc.*, 1942, 120, 96—99).—A lecture. C. A. K.

Feeding of healthy infants and children. P. C. Jeans (*J. Amer. Med. Assoc.*, 1942, 120, 913—921).—A review. C. A. K.

Diet in diabetes. R. H. Micks (*Brit. Med. J.*, 1943, I, 598—600).—The objects to be achieved in severe diabetes are: (1) to administer enough insulin to prevent ketosis; (2) to arrange the meals of patients so as to avoid hypoglycæmia. Strict dietetic control is unnecessary. Diet is more important in very recent diabetes. Uncontrolled diet in diabetic children may be dangerous because it may lead to vomiting. In treatment of coma, insulin and intravenous saline are essential. I. C.

Milk. H. W. Soper (*Arch. Pediat.*, 1943, 60, 1—21).—A review from the point of view of public health. C. J. C. B.

Substitutes for milk in treatment of allergies.—See A., 1943, III, 443.

Sugar, candy, and sweetened carbonated beverages. Council on Foods and Nutrition (*J. Amer. Med. Assoc.*, 1942, 120, 763—765).—Review of nutritional aspects. Restriction of sugar should improve health in America. C. A. K.

Unusual foods of high nutritive value. R. M. Wilder and T. E. Keys (*J. Amer. Med. Assoc.*, 1942, 120, 529—535).—A review. C. A. K.

Foods of plant origin. L. A. Maynard (*J. Amer. Med. Assoc.*, 1942, 120, 692—697).—A review. C. A. K.

Food value of mushrooms (*Agaricus campestris*). E. E. Anderson and C. R. Fellers (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 301—304).—Rats receiving mushrooms as sole source of protein made, in a 6-week test period, a gain equiv. to 30% of that made by rats on a casein diet. Mushrooms contain a "partly incomplete protein." Fresh mushrooms contain vitamin-B₁ 0.12, -B₂ 0.52, -C 8.60, nicotinic acid 5.85, panthothenic acid 2.38 mg. per 100 g., appreciable amounts of -K, but no -A, -D, or -E. L. G. G. W.

Linear arrangement of palatability of natural foods with an example of varietal preference in Leguminosæ and Cruciferæ by new, rapid laboratory method. W. F. Dove (*J. Nutrition*, 1943, 25, 447—462).—A method is described by which the preference of rabbits for different varieties of various foods (clover, lucerne, cabbage, kale) is measured. A positive correlation between palatability (as measured by preference) and moisture content of succulent foods and a negative correlation between palatability and fibre content are observed. When preference relationships between the members of two pairs of three foods are known the relationship between the members of the third pair can be predicted. Cumulative and non-cumulative negative factors in preference are distinguished. W. McC.

White, national, or wholemeal bread. J. D. Robertson (*Chem. and Ind.*, 1943, 222—225).—Comparisons of the carbohydrate, protein, B-vitamins, Ca, Mg, P, Fe, and phytic acid contents and the calorie vals., digestibilities, and other characteristics of the breads indicate the nutritional superiority of white bread especially if it is fortified with thiamin, riboflavin, nicotinic acid, and Ca. W. McC.

Peculiarities of ruminant nutrition. H. Goss (*Nutr. Abs. Rev.*, 1943, 12, 531—538).—A review. W. McC.

Proteins in nutrition. H. B. Lewis (*J. Amer. Med. Assoc.*, 1942, 120, 198—204).—A review. C. A. K.

Low-protein diet augments hyperproteinæmia produced by repeated injections of homologous plasma. Hypoalbuminæmia produced by protein-deficient diets.—See A., 1943, III, 374.

Intravenous alimentation with amino-acids. G. J. Martin and M. R. Thompson (*Medicine*, 1943, 22, 73—86).—A review. E. M. J.

Growth in mice on diets deficient in cystine but not methionine. C. D. Bauer and C. P. Berg (*J. Nutrition*, 1943, 25, 497—502).—Growth in mice is better when protein is given as 14.7% of caseinogen supplemented with 0.3% of cystine than when it is given as 18 or 32% of caseinogen, the diets being otherwise adequate. Since the retarded growth observed when the protein is given as caseinogen hydrolysate, deficient in cystine but not in methionine, is accelerated to the same extent by supplements of cystine and methionine, the mouse is probably capable of synthesising cystine from dietary methionine. W. McC.

Choline content of animal and plant products. R. W. Engel (*J. Nutrition*, 1943, 25, 441—446; cf. A., 1942, III, 952).—Choline contents of animal and plant products are recorded. In general, animal products (e.g., egg-yolk, liver, brain, kidney) are richer in choline than plant products. W. McC.

Nutritive value of the flesh of red and white spring salmon. B. E. Bailey (*Prog. Rept. Pacific Biol. Sta., Fish. Res. Bd., Canada*, 1939, No. 41, 8—9).—Analyses of red and white spring salmon indicate that they are essentially equal in nutritive val. The free oil from both species is an excellent source of vitamin-D but a very poor source of -A. R. G. W.

Metabolism studies [digestibility] with algin and gelatin.—See B., 1943, III, 155.

Effect of dietary fat on bone calcification in growing rat. R. Bunkfeldt and H. Steenbock (*J. Nutrition*, 1943, 25, 479—489).—Cottonseed oil, included in a low-P (inorg. P or phytic acid), cereal-free rachitogenic diet, decreases calcification (as measured by wt. of ash of femur) uniformly and in proportion to the amount of oil consumed. The decrease occurs when the Ca : P ratio is 6 : 1, 3 : 1, and 1 : 1 in presence and absence of vitamin-D. When the P content of the diet is increased to 0.25%, the oil increases calcification even when the Ca : P ratio is 1 : 1 and 4 : 1. When this ratio is 6 : 1 the increase is very slight. W. McC.

Sea-water and dehydration. R. F. Bradish, M. W. Everhart, W. N. McCord, and W. J. Witt (*J. Amer. Med. Assoc.*, 1942, 120, 683—685).—Sea-water was administered per rectum to 3 normal dehydrated subjects and to 1 patient with a colostomy. NaCl was absorbed and there was no subjective or objective evidence that sea-water could be conc. so as to make water available for the organism. Sea-water per rectum is positively harmful to dehydrated subjects. C. A. K.

Principal mineral elements in nutrition. I. G. Macy (*J. Amer. Med. Assoc.*, 1942, 120, 34—42).—A review. C. A. K.

Trace elements in nutrition. M. E. Shils and E. V. McCollum (*J. Amer. Med. Assoc.*, 1942, 120, 609—615).—A review of Mn, Co, Zn, F, Se, B, and Al and their relation to animal life. C. A. K.

Endemic fluorosis in Great Britain. L. Spira (*Edinb. Med. J.*, 1943, 50, 237—246).—Fluorosis, as evidenced by mottled teeth and other dystrophies, is endemic in this country. The F contained in the drinking water is derived from various sources, e.g., filtration media used in purification, clay, chalk, lime, cement and concrete used in construction of wells and storage tanks, Fe pipes, and water tanks. Neither the incidence of fluorosis nor the F content of drinking water can be correlated with geological formation of the soil. H. S.

Mottled nails, early sign of fluorosis. L. Spira (*J. Hygiene*, 1943, 43, 69—71).—Various diseases of the nails, characterised by brittleness, softening, furrows, or bleaching, are grouped under the description "mottled nails." They are symptomatic of F poisoning and, unlike mottled teeth, are curable. D. D.

Clinical aspects of recent vitamin advances. W. A. Sodeman (*Amer. J. med. Sci.*, 1943, 205, 141—151).—A review. C. J. C. B.

Fat-soluble vitamins. H. R. Butt (*J. Amer. Med. Assoc.*, 1942, 120, 1030—1039).—A review. C. A. K.

Vitamin deficiencies in diabetic children. J. M. Freston and W. C. Loughlin (*N.Y. Sta. J. Med.*, 1942, 42, 1833—1837).—25 of 93 diabetic children showed clinical evidence of vitamin deficiencies. There was vitamin-B₁ deficiency alone in 14 and in combination with -A, -B₂, or -C in 4 cases, -B₂ deficiency alone in 6 and in combination in 4 cases. 1 case had -A and -C deficiency. 5 of the 63 otherwise normal diabetics showed liver enlargement and 8 of the 25 in the avitaminotic group. Blood plasma-carotene was normal in 32 examinations in 24 children and raised in one; plasma-A was low 15 times in 11 patients and -C 15 times in 10 patients. E. M. J.

Neuro-psychiatric manifestations of vitamin deficiencies. N. Jolliffe (*J. Mt. Sinai Hosp.*, 1942, 8, 658—667). E. M. J.

Vitamins and experimental hyperthyroidism.—See A., 1943, III, 389.

Vitamins, minerals, carbohydrates, and proteins in tubers.—See A., 1943, III, 446.

Nutrition of tapeworms. A. C. Chandler (*Amer. J. Hyg.*, 1943, 37, 121—130).—Groups of 6 or more albino rats were fed on a com-

plete diet and after 3—4 days infected with 10 cysticercoids of *Hymenolepis diminuta* from artificially infected *Tenebrio molitor*; experimental diets were started the same day; comparisons were made as to length of prepatent period, egg output to time of post-mortem, and size of worm. The tapeworm was independent of protein in the host's diet but was very sensitive to restriction of carbohydrate, complete lack of which reduced the no. of worms and stunted their growth. The worm was independent of vitamins-A, -D, -E, and -B₁, but was affected by lack of -B₂ in female but not male hosts; this was more marked in animals deprived of protein and vitamins than in animals fed on normal amount of protein. Withholding the entire -B complex prevented the establishment of worms in female but not in male rats. Toxic effects of tapeworms may be due to absorption of proteins and vitamins from the mucosa rather than to absorption by the host of toxic products of the worms. Induced -B deficiency may be partly responsible for tapeworm toxicity.

B. C. H.

Accessory growth factor requirements of *Brucella* group.—See A., 1943, III, 433.

Chromatographic removal of growth-promoting factors from natural glycerides.—See A., 1943, III, 446.

Effects of vitamin-A depletion in young adults. S. Brenner and L. J. Roberts (*Arch. intern. Med.*, 1943, **71**, 474—482).—3 women and 2 men were placed on a vitamin-A-low diet for 7 and 4 months respectively. There were no changes in dark adaptation, blood-A and -carotene, total white blood cell counts and differential blood counts, and structure of skin and conjunctiva.

C. J. C. B.

Vitamin-A absorption and its relation to intestinal motility in fibrocystic disease of pancreas.—See A., 1943, III, 396.

Determination of carotene in vegetable oils without saponification. E. Bickoff and K. T. Williams (*Ind. Eng. Chem. [Anal.]*, 1943, **15**, 266—268).—The carotene is separated from other chromogens by passing a light petroleum solution of the oil through a Tswett column containing Al₂O₃ and eluting with 2% acetone in light petroleum. The carotene is then determined in an Evelyn photoelectric colorimeter.

J. D. R.

Determination of carotene in plant tissues. Rapid chromatographic method.—See A., 1943, III, 446.

Effect of high-vitamin diet on carotenoid metabolism of chickens.—See A., 1943, III, 414.

Clinical aspects of vitamin-B deficiencies. N. Jolliffe (*Minnesota Med.*, 1940, **23**, 542—551).—A review.

E. M. J.

Postoperative precipitation of vitamin-B complex deficiencies. H. Pollack, M. Ellenberg, and H. Dolger (*J. Mt. Sinai Hosp.*, 1942, **8**, 925—932).—Report of 9 cases.

E. M. J.

B-Hypovitaminotic anorexia. J. Grosgrin (*Schweiz. med. Wschr.*, 1942, **72**, 767—768).—Report of 3 cases.

A. S.

Increased resistance to ulcerative caecitis of rats on diet deficient in vitamin-B complex. A. L. Bloomfield and W. Lew (*J. Nutrition*, 1943, **25**, 427—431).—Deficiency of vitamin-B complex resulted in almost complete resistance to spontaneous ulcerative caecitis. The incidence of the disease in rats on adequate diet was 50%.

W. McC.

Rumen synthesis of vitamin-B complex on natural rations. M. I. Wegner, A. N. Booth, C. A. Elvehjem, and E. B. Hart (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 90—94).—This synthesis, as previously (A., 1941, III, 374) reported for a vitamin-B-low diet, also takes place with a normal diet.

V. J. W.

Nutrition of *Tribolium confusum* (Duval). II. Effect of vitamin-B complex on metamorphosis, growth, and adult vitality. B. A. Schneider (*Amer. J. Hyg.*, 1943, **37**, 179—192; cf. A., 1942, III, 612).—The flour beetle, *T. confusum*, is sensitive to small amounts of vitamin-B complex when added to a larval diet of white flour. Larval wt. was accelerated, pupal wt. increased, and length of life of starved adults increased by concn. of -B up to an equiv. of 10 U.S.P. units of -B₁ per g. of flour. Larval mortality was not influenced by concn. ranging from 10⁻³ to 10² but 10³ units resulted in high mortality, possibly due to a lethal factor in the complex. The physiological processes of *Tribolium* resulting from a white flour diet may be stimulated by supplementing the diet with -B complex. It is suggested that other insects may also be of val. for biological assay in vitamin research.

B. C. H.

Influence of thiamin, riboflavin, pyridoxine, and pantothenic acid on nitrogen metabolism.—See A., 1943, III, 413.

Value of dairy products in nutrition. III. Riboflavin, pantothenic acid, nicotinic acid, and biotin content of cheese. R. A. Sullivan, E. Bloom, and J. Jarmol (*J. Nutrition*, 1943, **25**, 463—470).—Fresh cheese (12 types examined) contains riboflavin 2.0—8.3, pantothenic acid 1.3—9.6, nicotinic acid 0.3—16.0, and biotin 0.011—0.076 µg. per g. The riboflavin content of Limburger cheese does not change much during ripening but the contents of the other three vitamins are doubled or trebled.

W. McC.

Is breast milk adequate in meeting thiamin requirement of infants? E. M. Knott, S. C. Kleiger, F. W. Schultz, and G. Collins (*J. Pediatr.*, 1943, **22**, 43—49).—9 infants receiving unsupplemented breast milk excreted 3.0 µg. of thiamin and 9.0 µg. of pyrimidine during the first 4 hr. and 6.5 µg. of thiamin and 8.4 µg. of pyrimidine during the second 4 hr. The administration of a test thiamin dose between the 2 periods did not affect the results. These infants had received breast milk containing 20 µg. of thiamin per 100 ml. (equiv. to daily intakes of 150—210 µg.). 8 infants whose mothers had received vitamin-B₁ supplements, or who had been given evaporated milk, excreted larger amounts of both thiamin and pyrimidine than did the unsupplemented breast-fed infants. Young infants have a min. thiamin requirement of 200 µg. daily. This can be met by the normal healthy infant if the mother's milk contains 20 or more µg. of thiamin per 100 ml.

C. J. C. B.

Vitamin-B₁ and toxæmia of pregnancy. R. Kapeller-Adler and J. A. Cartwright (*Edinb. Med. J.*, 1943, **50**, 305—314).—No benefit was obtained from vitamin-B₁ therapy in 11 mild and 8 severe cases of pre-eclamptic toxæmia. In severe cases harm was done. In 8 severe cases the urinary excretion of both histidine and histamine was greatly reduced, probably owing to renal damage. Aneurin inhibits activity of histaminase and in normal pregnancy (2 cases) histaminuria was increased after -B₁ administration.

H. S.

Association of deficiency of vitamins-B₁ and -E during pregnancy. E. Shute (*Canad. Med. Assoc. J.*, 1942, **47**, 350—351).—In 957 successive, unselected gynaecological patients the incidence of vitamin-B₁ deficiency neuritis was 4%. In 580 successive, unselected obstetrical patients it was 17%. In 172 of these pregnant women without vitamin-E deficiency the incidence was only 10% but in the other 408 with -E deficiency the neuritis incidence increased to 24%.

C. J. C. B.

Development of myocardial necrosis and absence of nerve degeneration in thiamin deficiency in pigs. R. H. Follis, jun., M. H. Miller, M. M. Wintrobe, and H. J. Stein (*Amer. J. Pathol.*, 1943, **19**, 341—354).—Cardiac dilatation without hypertrophy, and focal and diffuse myocardial necrosis, were found in 6 pigs dying of thiamin deficiency. The lesions were infiltrated with polymorphonuclear and mononuclear cells; later scarring occurs. No changes were found in the nervous system. (4 photomicrographs.)

C. J. C. B.

Effect of vitamin-B₁ deprivation on appearance, growth rate, and course of Jensen rat sarcoma.—See A., 1943, III, 402.

Thiamin values of frozen peas. M. L. Fincke, R. Little, E. Redelings, and J. Perkins (*Food Res.*, 1943, **8**, 123—127).—The thiamin content of peas varies between 2.0 and 7.1 µg. per g. for Laxton's Progress and World Record varieties, respectively. No variation is observed between fresh and frozen peas before and after cooking for a short time in a small amount of water. Environment may affect the thiamin content of the peas; those grown in one place in 1938 contained significantly less than those grown in the same place in 1939, whereas some varieties grown in different localities in the same year exhibited no variation.

H. G. R.

Effect of storage on thiamin content of wheat germ.—See B., 1943, III, 150.

Recovery of solvents used in the chemical determination of thiamin.—See A., 1943, III, 448.

Failure of riboflavin therapy in patients with accepted picture of riboflavin deficiency. T. E. Machella and P. R. McDonald (*Amer. J. med. Sci.*, 1943, **205**, 214—223).—20 cases of so-called riboflavinosis with lesions of the lips, cornea, and tongue did not respond to riboflavin treatment.

C. J. C. B.

Acne rosacea keratitis and riboflavin. Circumcorneal injection in human riboflavin deficiency.—See A., 1943, III, 384, 385.

Effect of riboflavin on liver changes produced in rats by p-dimethylaminoazobenzene.—See A., 1943, III, 402.

Collaborative study of riboflavin assay methods. Vitamin-B complex factors in malted and unmalted barley and wheat of the 1941 crop.—See B., 1943, III, 151.

Control of pellagra [in U.S.A.]. W. De Kleine (*Sth. Med. J.*, 1942, **35**, 992—996).—The pellagra death rate in 13 Southern States dropped from 22.4 per 100,000 in 1928 to 5.1 in 1937. These States contributed in 1928 7396 of the 7673 deaths occurring in the U.S.A.

E. M. J.

Relationship of niacin (nicotinic acid) to porphyria in the aged. H. A. Rafsky and B. Newman (*Amer. J. med. Sci.*, 1943, **205**, 209—213).—The administration of niacin to a group of normal, aged individuals resulted in the disappearance of porphyria. The niacin was stored by the body for 4.5 days (average), as evidenced by a return of the porphyria.

C. J. C. B.

Vasodilating effects of nicotinic acid. G. A. Goldsmith and S. Cordill (*Amer. J. med. Sci.*, 1943, **205**, 204—208).—The administration of nicotinic acid orally or intravenously produced no change in metabolic rate or body temp. before the appearance of the characteristic skin reaction.

C. J. C. B.

Preparation and decolorisation of cereal extracts for nicotinic acid determination.—See B., 1943, III, 151.

Destruction of pyridoxine by light. M. Hochberg, D. Melnick, L. Siegel, and B. L. Oser (*J. Biol. Chem.*, 1943, **148**, 253—254).—Pyridoxine in neutral or alkaline solution is rapidly destroyed (50—80% in 24 hr.) by light. R. L. E.

Determination of vitamin-B₆ (pyridoxine) in foods. A. F. Bina, J. M. Thomas, and E. B. Brown (*J. Biol. Chem.*, 1943, **148**, 111—116).—The material is hydrolysed with 0.04N-H₂SO₄ at 15 lb. pressure and digested with a mixture of takadiastase and papain. After pptn. of protein and interfering substances with Na₂WO₄, pyridoxine is adsorbed on "superfiltrol" and selectively eluted with alkaline alcohol. It is coupled with diazotised sulphanilic acid and the colour measured in a fluorophotometer. The colour produced is stable, a decrease of 15% being observed after 24 hr. H. G. R.

Pyridoxine and coacervates in plant cells.—See A., 1943, III, 446.

Effect of aromatic hydrocarbons on growth. Reversible inhibition of pantothenic acid by sulphapyridine. H. D. West, N. C. Jefferson, and R. E. Rivera (*J. Nutrition*, 1943, **25**, 471—477).—In rats on a diet low in caseinogen, retardation of growth and symptoms of pantothenic acid deficiency are produced by administration of sulphapyridine, the effect being smaller when *l*-cystine or *dl*-methionine is also administered. The symptoms are reversed by supplementing the diet with Ca pantothenate. W. McC.

Determination of pantothenic acid in normal blood and urine by microbiological technique. M. I. Pelczar, jun., and J. R. Porter (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 3—7).—Assays were made by addition to a pantothenate-free culture medium inoculated with *Proteus morganii*. Blood content was 0.03—0.01 µg. per ml., and urine contained 1.46—6.79 mg. per 24 hr. V. J. W.

Influence of buffer and glucose in the *Lactobacillus casei* assay for pantothenic acid. J. L. Stokes and B. B. Martin (*J. Biol. Chem.*, 1943, **147**, 483—484; cf. Clarke *et al.*, A., 1942, III, 492).—An increase from 1 to 2% in the glucose content of Pennington's medium (A., 1940, III, 915) increases the max. amount of acid formed in 10 ml. of medium from 10.5 to 14.5 ml. of 0.1N-acid in presence of 1 µg. of pantothenic acid. A further increase to 18.5 and 19.3 ml. is produced on increasing the acetate buffer from the customary 0.6% to 1.2 and 1.8%. The additional buffer does not increase acid formation in presence of 1% of glucose. Similar results can be obtained by periodical neutralisation of the cultures with NaOH, when as much as 32 ml. of 0.1N-acid can be produced in 10 ml. of medium containing 3% of glucose. H. G. R.

Microbiological assay for *p*-aminobenzoic acid. H. K. Mitchell, E. R. Isbell, and R. C. Thompson (*J. Biol. Chem.*, 1943, **147**, 485—486).—A method of assay utilising a mutant strain of *Neurospora crassa* has been developed. Results indicate that the method of Landy and Dicken (A., 1942, III, 761) responds to only a fraction of the total amount of *p*-aminobenzoic acid obtainable after acid or alkaline hydrolysis. Enzymic hydrolysis or autolysis does not always give the max. yield but it may be increased considerably by heating with 6N-H₂SO₄ for 1 hr. in the autoclave at 115.5°. By this method the following vals. have been obtained: ox liver 2.5, spinach 0.6, oats 0.5, mushroom 1.3, fresh yeast 4.0 µg. per g. of moist tissue. H. G. R.

Two chemically unidentified, water-soluble vitamins necessary for chicks. G. M. Briggs, jun., T. D. Luckey, C. A. Elvehjem, and E. B. Hart (*J. Biol. Chem.*, 1943, **148**, 163—172; cf. A., 1942, III, 621).—Feeding experiments show that liver contains a factor, vitamin-B₁₀, essential for proper feather development and a factor, -B₁₁, necessary for growth but not active in feather production. These vitamins, which are distinct from all known vitamins and from folic acid, are water-sol. and are adsorbed at pH 3 by norit and superfiltrol. They are eluted with water-alcohol-NH₃ mixture and partly separated by fractional pptn. with alcohol. W. McC.

Vitamin-C in the war. H. N. Holmes (*Science*, 1942, **96**, 384—386).—A clinical review. E. R. S.

Hay fever and vitamin-C. H. N. Holmes and W. Alexander (*Science*, 1942, **96**, 497—499).—Hay fever patients improved when given 200—500 mg. of ascorbic acid daily for a week. One patient got immediate relief after a single dose of 1 g. The vitamin was partly neutralised with NaHCO₃ before administration. E. R. S.

Evidence against progesterone-like action of ascorbic acid. P. C. Pratt (*Endocrinol.*, 1943, **32**, 92—96).—Ascorbic acid injected subcutaneously or locally into the uterus of infantile rabbits has no progesterone-like effect. G. P.

Ascorbic acid nutrition of college students. A. P. Brown, M. L. Fincke, J. E. Richardson, E. N. Todhunter, and E. Woods (*J. Nutrition*, 1943, **25**, 411—426).—Results of determinations, on two non-consecutive mornings, of the plasma-ascorbic acid of 471 healthy women and 342 healthy men students are recorded. No correlation existed between the content and height, wt., or age. The average

vals. for men were 0.592 mg. and for women 0.797 mg. per 100 c.c. The proportions of men and women whose plasma contained 1 or more, 0.80—0.99, 0.40—0.79, and less than 0.40 mg. per 100 c.c. were respectively 7.3 and 23.8, 16.4 and 26.3, 49.4 and 42.3, and 26.9 and 7.6%. W. McC.

Ascorbic acid deficiency among Papago Indians. M. Pijoan, C. A. Elkin, and C. O. Eslinger (*J. Nutrition*, 1943, **25**, 491—496).—Determination of the ascorbic acid content of the plasma and food (chiefly beans and carbohydrate) of Papago children shows that the ascorbic acid consumption of these Indians is habitually inadequate. Signs of sub-clinical scurvy are frequently observed. W. McC.

Vitamin-C deficiency in Cape Peninsula school children. W. E. Baumann and J. F. Brock (*S. Afr. J. med. Sci.*, 1942, **7**, 212—216).—An analysis of saturation, capillary fragility, and intradermal tests on 380 school children. The results of the intradermal test bore no relation to those of the saturation test, long bleaching times being as frequent among those children excreting more than 40% of the test dose of ascorbic acid as among those excreting less. Only 4 of the 380 children had more than 8 petechiae in the capillary fragility test and all of these excreted more than 40% of the test dose. P. C. W.

Changes in liver and kidneys of guinea-pigs deficient in vitamin-C. W. O. Russell and C. P. Callaway (*Arch. Path.*, 1943, **35**, 546—552).—Trypan-blue injected subcutaneously into scorbutic guinea-pigs is more heavily deposited in the parenchymal cells of the liver and in the proximal convoluted tubules of the kidney than in controls. The scorbutic animals showed fatty metamorphosis of the liver cells but no morphological change in the kidneys. (3 photomicrographs.) C. J. C. B.

Effect of mechanical force on skeletal lesions in acute scurvy in guinea-pigs. R. H. Folliis, jun. (*Arch. Path.*, 1943, **35**, 479—482).—By immobilising an extremity in experimental scurvy in guinea-pigs, the classic picture, with fractures, of Truemmerfeldzone and Geruestmark failed to appear. (2 photomicrographs.) C. J. C. B.

Effect of ascorbic acid on sensitivity to salicylates in rheumatic fever.—See A., 1943, III, 423.

Winter sources of vitamin-C. E. W. Crowe and E. A. M. Bradford (*Nature*, 1943, **151**, 505).—Vals. for ascorbic acid (mg. per 100 g. of fresh material) are: Australian cress 148, American cress 108, Italian corn salad 93, Nüsslisalat 55—84, watercress 37—54. A. E.

Relation of season, weight, and price to vitamin-C content of oranges. A. D. Holmes, J. A. Patch, and F. Tripp (*New England J. Med.*, 1943, **228**, 8—11).—There were great seasonal differences in the vitamin-C content of oranges independent of price and size. The juice required to give 75 mg. of -C was 113—278 c.c. E. M. J.

Influence of variety, size, and degree of ripeness on ascorbic acid content of peaches. G. M. Schroder, G. H. Satterfield, and A. D. Holmes (*J. Nutrition*, 1943, **25**, 503—509).—Examination of eight varieties of fresh peaches grown under comparable climatic and soil conditions shows that the average ascorbic acid content varies from 3.84 mg. per 100 g. in one variety to 12.86 mg. in another. There is no correlation between ascorbic acid content and the size of fruit but the content increases as ripening proceeds, reaching a max. at full maturity. Within the fruit, the content decreases with increasing distance from the skin, which has the highest proportion. W. McC.

Mechanism of inhibition of β -amylase by vitamin-C.—See A., 1943, III, 427.

Determination of ascorbic acid in whole blood and urine through the 2:4-dinitrophenylhydrazine derivative of dehydroascorbic acid. J. H. Roe and C. A. Kuether (*J. Biol. Chem.*, 1943, **147**, 399—407).—A trichloroacetic acid filtrate of blood or urine is shaken with norit and filtered; this process clarifies the solution and oxidises ascorbic acid to dehydroascorbic acid, which is then condensed with 2:4-dinitrophenylhydrazine in presence of thiourea at 37°. The colour is developed with 85% H₂SO₄ and is measured on a photoelectric colorimeter. The colour is quite stable, no fading being observed in 40 min. H. G. R.

Assay of ascorbic acid.—See B., 1943, III, 159.

Value of the bones of canned salmon in the prevention and cure of rickets. B. E. Bailey (*Progr. Rept. Pacific Biol. Sta., Fish. Res. Bd., Canada*, 1939, No. 41, 17—19).—The softened bones in canned salmon serve as a valuable nutritional source of bone-forming minerals. 2% of extracted and dried salmon bones added to a rachitogenic diet delayed the onset of rickets in young albino rats whilst the addition of 4% of bones to a similar diet fed to rachitic rats caused definite although incomplete recalcification. R. G. W.

Effect of vitamin-E on blood plasma-lipins of chick. H. Dam and E. M. Kelman (*Science*, 1942, **96**, 430; cf. A., 1943, III, 461).—Vitamin-E, similarly to lipocain, increases the ratio of phospholipins to other lipins of blood plasma of chicks, whilst cholesterol produces the opposite effect. E. R. S.

Effect of tocopherol on creatinuria. M. Ellenberg and G. G. Mayer (*J. Mt. Sinai Hosp.*, 1942, 9, 407—412). E. M. J.

Biological determination of vitamin-E. H. Gottlieb, F. W. Quackenbush, and H. Steenbock (*J. Nutrition*, 1943, 25, 433—440).—Female rats attain const. wt. (approx. 190 g.) at 10–12 weeks of age on a diet of alcohol-extracted casein 18, glucose 75, salts 4, and rice bran concentrate 3 parts supplemented with riboflavin, β -carotene, calciferol, and cottonseed oil freed from vitamin-E by passage through Al_2O_3 . When they then become pregnant, doses of -E not exceeding 0.9–1.0 mg. produce proportionate increases in wt. during gestation and advantage is taken of this fact to determine -E biologically. The amount of -E required to produce a given wt. increase on a high-fat diet is more than double that required on a low-fat diet. The relative biological activities of α -, β -, and γ -tocopherol and α -tocopheryl acetate are 100, 25, 19, and 100. W. McC.

Hæmorrhagic diathesis in patients with jaundice and vitamin-K.—See A., 1943, III, 397.

Barbiturates and vitamin-K. Intravenous use of vitamin-K₁ oxide.—See A., 1943, III, 372.

Chemical nature of vitamin-P. R. H. Higby (*J. Amer. Pharm. Assoc.*, 1943, 32, 74—77).—Citrin and eriodictin from lemon peel both consist of a mixture of hesperidin, m.p. 261—262°, limonin, m.p. 291—292°, and eriodictyol glucoside. These substances, together with pure eriodictyol from the glucoside, had no effect on blood pressure or capillary fragility. The water-sol., yellow pigment from crude orange-hesperidin, however, contained a pigment, active in reducing blood pressure and probably hesperidin chalcone. Hesperidin, heated with N-NaOH in absence of air, affords active 2':3:6'-trihydroxy-4-methoxychalcone glucoside (sinters and decomp. 110—112°). This substance readily reverts to insol. (and inactive) hesperidin. A more stable derivative that is effective in lowering blood pressure and affording protection against capillary fragility is given by methylation of the 6'-hydroxy-group. Thus, solubilisation of hesperidin permits assimilation and subsequent functioning as vitamin-P. F. O. H.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Changes in body weight in relation to constitution. E. Schreider (*Rev. Canad. Biol.*, 1943, 2, 2—6). A. S.

Thermoanalysis of organ and whole-animal respiration. M. F. Morales (*J. Gen. Physiol.*, 1943, 26, 381—389).—The respiratory rates of frog liver, kidney, and striated muscle at various temp. are determined. There are fundamental differences in the Q_{O_2} -temp. curves amongst the tissues and also between the tissues and the whole animal. The Arrhenius plots of these curves show that at least for some tissues the availability of O_2 at the tissue, as limited by diffusion of gas through skin and lungs, controls the Q_{O_2} of the tissue. It is unsatisfactory to use only the Q_{O_2} of the whole animal as a metabolic index. J. N. A.

Intermittent hypothermia with hyperhydrosis. A. M. Hoffman and F. W. Pobirs (*J. Amer. Med. Assoc.*, 1942, 120, 445—447).—Case report. C. A. K.

Effect of vitamin deficiencies on basal metabolism and respiratory quotient in rats.—See A., 1943, III, 407.

Metabolism of central nervous system in experimental poliomyelitis.—See A., 1943, III, 383.

Metabolism of induced and spontaneous leukæmias in mice.—See A., 1943, III, 402.

Respiratory quotient of liver.—See A., 1943, III, 397.

Influence of protein metabolism on distribution of nitrogen compounds in liver. E. P. Pick and S. Glaubach (*J. Mt. Sinai Hosp.*, 1942, 8, 909—916). E. M. J.

Creatine formation in chicks. H. J. Almquist, F. H. Kratzer, and E. Mecchi (*J. Biol. Chem.*, 1943, 148, 17—20; cf. A., 1942, III, 257).—Intravenous injection of creatinine into chicks increases rate of growth and muscle-creatine in a similar manner as when it is administered in a diet deficient in creatine precursors. After oral administration of hydantoic acid there is no noticeable conversion into glycocyamine. A dietary deficiency of choline or methionine or both has only a comparatively slight effect on muscle-creatine. J. N. A.

Ten amino-acids essential for plasma-protein production effective orally or intravenously.—See A., 1943, III, 374.

Biochemistry of lipoidoses. W. M. Sperry (*J. Mt. Sinai Hosp.*, 1942, 9, 799—817).—A review. E. M. J.

Chemical differentiation of Tay-Sachs disease and other lipoidoses. H. Sobotka (*J. Mt. Sinai Hosp.*, 1942, 9, 795—798). E. M. J.

Disturbances in lipid metabolism and central nervous system. C. Davison (*J. Mt. Sinai Hosp.*, 1942, 9, 389—406).—A review. E. M. J.

Effect of high-fat test meal on blood-cholesterol in normal and obese individuals. E. Oppenheim and M. Bruger (*Amer. J. med. Sci.*, 1943, 205, 77—82).—In 7 subjects with normal body wt. the ingestion of a diet low in fat and cholesterol or a test meal high in fat (500 ml. of 20% cream) failed to alter the cholesterol content of the serum, whole blood, plasma, and saline-washed red blood cells over 6 hr. In 13 obese women, a test meal high in fat was followed by significant increases in concn. of total lipins and fatty acids in the serum but failed to influence the total cholesterol content of the serum, whole blood, plasma, and saline-washed red blood cells. The free cholesterol content of the serum expressed as % of the total cholesterol remained const. in normal and obese individuals on both dietary regimes. C. J. C. B.

Influence of linoleic and palmitic acids of the diet on synthesis and storage of fatty acids in the white rat. F. E. Visscher and R. C. Corley (*J. Biol. Chem.*, 1943, 147, 291—295).—The addition of 5% of palmitic acid to an otherwise low-fat diet does not affect the relative amounts of various fatty acids stored in the body. The further addition of 100 mg. of the linoleate per week has no effect other than a considerable increase in the amount stored. H. G. R.

Use of high-fat and high-purine diets in diagnosis of gout. C. McEwen (*J. Mt. Sinai Hosp.*, 1942, 8, 854—862). E. M. J.

Storage and significance of tissue-glycogen in health and in disease. S. Soskin (*Arch. intern. Med.*, 1943, 71, 219—229).—A review. C. J. C. B.

Control of diabetes mellitus. H. J. John (*J. clin. Endocrinol.*, 1943, 3, 33—36). P. C. W.

Juvenile diabetics surviving for 20 years. H. E. Eisele (*J. Amer. Med. Assoc.*, 1942, 120, 188—190).—The clinical course in 73 patients is discussed. C. A. K.

Ocular changes in young diabetics. C. S. O'Brien and J. H. Allen (*J. Amer. Med. Assoc.*, 1942, 120, 190—192).—23 of 555 young diabetics showed retinopathy and 43 of 260 cases had signs of diabetic cataract. C. A. K.

Anticipation in inheritance of diabetes. R. T. Woodyatt and M. Spetz (*J. Amer. Med. Assoc.*, 1942, 120, 602—605).—90 out of 100 diabetic families showed anticipation in inheritance, i.e., earlier onset with succeeding generations. C. A. K.

Metabolic interrelationships of ascorbic and citric acids. H. J. Purinton and C. Chuck (*J. Biol. Chem.*, 1943, 148, 237—243).—There is a general inverse relation between the tissue content and urinary excretion of citric and ascorbic acids. Excretion of either can be increased by adding it to the diet, excretion of the other being decreased. R. L. E.

Influence of prolonged electrolyte deprivation and final restoration on fluid intake, balance, and distribution. J. W. Remington, W. M. Parkins, and H. W. Hays (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 183—187).—Dogs received intraperitoneal injections of 100 c.c. per kg. of 5.5% glucose. Intraperitoneal fluid was removed 5 hr. later, and they were kept on a salt-free diet. This caused absence of fluid intake and negative water balance as long as intracellular water (total — extracellular) was above normal. When it reached a stable min., polydipsia took place but positive balance was not fully restored. Voluntary water intake was correlated with changes in intra- and not extra-cellular water. V. J. W.

Phosphorus exchange in tissues of patients with lymphoid leukaemia. L. A. Erf and G. Friedlander (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 134—136).— ^{32}P , given as phosphate intravenously or by mouth, was determined 2—19 days later in various tissues on 4 leukæmic patients. Content was max. at the 2nd day and decreased to the 19th. It was independent of type of disease, age of patient, dose, or route of administration. V. J. W.

Metabolism of zinc with the aid of its radioactive isotope. I. Excretion of administered zinc in urine and faeces. G. E. Sheline, I. L. Chaikoff, H. B. Jones, and M. L. Montgomery (*J. Biol. Chem.*, 1943, 147, 409—414).—Following intravenous injection of ^{65}Zn a large fraction appears in the faeces, the mouse and the dog eliminating 50 and 25% by this means in 170 hr. and 12—14 days, respectively. It is also observed in much smaller amounts in the urine and is continuously excreted by that path throughout the period of observation; in the same times the mouse and dog excrete 2 and 1.4—4.7%. H. G. R.

Metabolism of a paraffin. DeW. Stettin, jun. (*J. Biol. Chem.*, 1943, 147, 327—332).— Δ^9 -Nonenoic acid obtained by condensation of malonic acid with heptaldehyde and subsequent decarboxylation is shaken with PtO_2 in an atm. of D_2 at room temp. The resulting $\alpha\beta$ -dideuterio-nonenoic acid on electrolysis yields deuteriohexadecane, m.p. 18°. When fed to rats at the level of 83 mg. per day the latter compound is efficiently absorbed from the gastro-intestinal tract and partly deposited as such in the tissue-lipins. Much of the absorbed hexadecane is oxidised to fatty acid, probably in the liver. H. G. R.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Toxicity and efficacy of penicillin. H. J. Robinson (*J. Pharm. Exp. Ther.*, 1943, 77, 70—79).—Penicillin is a highly effective chemotherapeutic agent in infections by Gram-positive bacteria. The range between lethal and effective dose is considerable, particularly if the toxicity is determined under the same conditions as are present in therapy. Crude penicillin is toxic for mice intravenously in single doses of 0.5–2.0 g. per kg. Mice will tolerate 1.6 g. per kg. daily for five days, but under the same conditions 3.2 g. per kg. was at times lethal. The toxic dose of crude penicillin appears to be about 64 times the effective dose by subcutaneous injection in mice. On a wt. basis, this drug appears to be more effective than the sulphonamides in streptococcal, pneumococcal, and staphylococcal infections in mice. Experimental infections with *M. tuberculosis*, *Trypanosoma equiperdum*, and the influenza virus PR8 failed to respond to penicillin treatment. H. C. S.

Inhibitory effect of sulphonamides on development and growth of phage-resistant bacteria. E. Neter (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 20—23).—Sulphonamides inhibit or delay the development of phage-resistant staphylococci in broth and delay that of *S. dysenteriae* and *E. coli* in broth containing bacteriophage. V. J. W.

Mode of action of sulphonamides. III. Purines, amino-acids, peptones, and pancreas as antagonists and potentiators of sulphonamide in *E. coli*. H. I. Kohn and J. S. Harris (*J. Pharm. Exp. Ther.*, 1943, 77, 1—16).—The effect on *E. coli* of growing it on a medium containing certain purines, amino-acids, peptones, and extract of pancreas was determined with regard to which of these substances could antagonise or potentiate sulphonamides (for methods cf. A., 1943, III, 477). Only four purines were active as antagonists or potentiators, viz., xanthine, guanine, adenine, and hypoxanthine. In the absence of methionine, all four are potentiators of sulphonamide action, the last two being most marked in this respect. When methionine is present, xanthine and guanine antagonise, whereas adenine and hypoxanthine potentiate, the sulphanilamide inhibition. None of these effects could be obtained when 1% of proteose-peptone was added to the medium. Further methylation or oxidation of the purine, as in caffeine and uric acid, abolished all activity. The optimum concn. of purine to produce these effects was nearer 10^{-5} than 10^{-4} M. The results divided commercial peptones into two groups. For inhibitions of less than 65%, the antagonistic action of peptone was attributed to its content of methionine, serine, glycine, and xanthine. At greater inhibitions, another factor (or group of factors), which is neither a known naturally occurring amino-acid nor *p*-aminobenzoic acid, makes a great contribution. This second antagonist has been previously designated P-2. The best source of P-2 is fresh pancreas. It is a water-sol. substance, though it is neither insulin nor a protein. The current theories of sulphonamide action are discussed in the light of these results. H. C. S.

Inhibition of bacteriostatic action of sulphanilamide by yeast extracts. T. A. Loomis, R. S. Hubbard, and E. Neter (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 159—163).—The antisulphanilamide action of yeast extracts is due partly to *p*-aminobenzoic acid and partly to another factor which persists after ether extraction and acetylation. There is no relationship between growth-promoting activity and antisulphanilamide activity of the extracts. V. J. W.

Inhibition of sulphapyridine by procaine in chest fluids after procaine anaesthesia. D. A. Boroff, A. Cooper, and J. G. M. Bullowa (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 182—183).—Procaine concn. in pleural fluid of patients who had received 1.5 c.c. of 2% procaine was 0.0002%. This concn. inhibited *in vitro* the bacteriostatic action of 0.005% sulphapyridine on pneumococcus III. No inhibition was produced by 0.05% urethane. V. J. W.

Inactivation of sulphonamide inhibitor by azochloroamide. F. C. Schmelkes and O. Wyss (*Proc. Soc. Exp. Biol. Med.*, 1942, 49, 263—267).—Azochloroamide potentiates the bacteriostatic action of sulphanilamide. It abolished the sulphanilamide-inhibiting action of *p*-aminobenzoic acid in the case of *E. coli*, and the resistance of a sulphanilamide-fast strain of this organism. V. J. W.

Sulphapyridine bacteriostasis of *Lactobacillus arabinosus* and its counteraction. L. J. Teply, A. E. Axelrod, and C. A. Elvehjem (*J. Pharm. Exp. Ther.*, 1943, 77, 207—214).—Sulphapyridine prevents growth of *L. arabinosus*; this bacteriostatic effect is completely antagonised by *p*-aminobenzoic and nicotinic acids, or fresh or dried liver. Liver extract and grass juice contain acid-labile factors counteracting the sulphapyridine bacteriostasis which are distinct from *p*-aminobenzoic acid. The non-*p*-aminobenzoic acid fraction shows properties similar to those reported for folic acid preps. Nicotinamide compounds counteract sulphapyridine only partially. Sulphaguanidine and sulphasuxidine are less potent bacteriostatics than sulphapyridine; they are also completely antagonised by *p*-aminobenzoic acid. A. S.

Chemotherapeutic experiments with viruses of influenza A, lymphogranuloma venereum, and vaccinia. C. H. Andrewes, H. King, and

M. van den Ende (*J. Path. Bact.*, 1943, 55, 173—179).—None of 115 substances of diverse groups tested had any beneficial effect on influenza A virus infection of mice. Tests of 40 drugs against the virus of lymphogranuloma venereum in mice revealed none, outside the sulphonamide group, having any activity. The power of 74 compounds to inactivate vaccinia virus *in vitro* was tested; those showing any activity did not do so in such dilutions as to give promise of chemotherapeutic val. C. J. C. B.

Poliomyelitis and neoprontosil. J. A. Toomey (*Arch. Pediat.*, 1943, 60, 22—23).—Sulphanilamide had no effect in the prevention of experimental poliomyelitis in the macaque monkey. C. J. C. B.

Sulphapyrazine; activity against experimental infections with β -haemolytic streptococci compared with sulphadiazine, sulphathiazole, sulphapyridine, and sulphanilamide. L. H. Schmidt and C. L. Sesler (*J. Pharm. Exp. Ther.*, 1943, 77, 277—289).—Single large doses of sulphapyrazine were considerably more effective than similar doses of sulphathiazole, sulphapyridine, or sulphanilamide and were identical in activity with sulphadiazine against intraperitoneal strains C 203 and Schw haemolytic streptococcal infections in mice. Sulphapyrazine was equal to sulphadiazine and more effective than the other drugs if given in repeated small doses in C 203 infections and in infections with 4 freshly isolated strains of streptococci which were more susceptible to the sulphonamides than strain C 203. The max. blood concn. of sulphapyrazine after administration of a small dose was higher than that of the other sulphonamides with the exception of sulphadiazine. The blood concn. of sulphapyrazine increased to a smaller extent with increase in dosage and the max. concn. was lower on the largest dose than with any other compound; the blood concn. of sulphapyrazine was maintained at a const. level for a longer period. A. S.

Causes for unsuccessful sulphonamide therapy of pneumonia. H. F. Flippin (*Sth. Med. J.*, 1943, 36, 219—223). E. M. J.

Comparative value of high and low doses of sulphadiazine in treatment of pneumococcal pneumonia. H. F. Dowling, C. R. Hartman, H. A. Feldman, and F. A. Jenkins (*Amer. J. med. Sci.*, 1943, 205, 197—203).—81 unselected adults with typed pneumococcal pneumonia were treated with an initial dose of 2 g. of sulphadiazine followed by 0.5 g. every 4 hr. until recovery or death ensued; an alternate group of 79 patients was given 6 g. initially, followed by 1 g. every 4 hr. The mortality rates were the same but the duration of hospital stay of the patients receiving the larger doses averaged 3—4 days less. C. J. C. B.

Sodium sulphadiazine in subacute bacterial endocarditis. G. F. Dick (*J. Amer. Med. Assoc.*, 1942, 120, 24—25).—Recovery occurred after intravenous injection of 40 g. of Na sulphadiazine. C. A. K.

Sulphonamides in pneumococcal endocarditis. N. Blumberg, W. T. Heine, and J. Lipshutz (*J. Amer. Med. Assoc.*, 1942, 120, 607—609).—A patient with type XXVIII pneumococcus endocarditis recovered after administration of sulphadiazine, sulphathiazole, and type-sp. rabbit antipneumococcus serum. C. A. K.

Influenzal meningitis in child treated with sulphapyridine. M. E. Matthews (*Brit. Med. J.*, 1943, I, 540).—Case report with recovery. I. C.

Meningitis due to *Diplococcus mucosus*. P. T. Bray and J. C. Cruickshank (*Brit. Med. J.*, 1943, I, 601—602).—Case report; treatment with sulphapyridine led to recovery. I. C.

Recovery from pneumococcal [type III] meningitis after sulphapyridine. L. R. Critchfield, L. T. Simons, T. H. Emmens, and F. W. Newell (*Minnesota Med.*, 1940, 23, 247—249).—Case report. E. M. J.

Subacute and chronic meningococcal septicaemia. A. M. Hutson (*Med. J. Austral.*, 1943, I, 67—71).—A report of 6 cases successfully treated with sulphapyridine. F. S.

Use of sulphonamides in renal insufficiency. A. M. Fishberg (*J. Mt. Sinai Hosp.*, 1942, 8, 509—513). E. M. J.

Preoperative use of sulphathiazole [in urology]. J. A. C. Colston and R. W. Satterthwaite (*Sth. Med. J.*, 1942, 35, 1006—1012).—110 cases who received 2—3 g. of sulphathiazole during 2½ preoperative days showed lower temp. throughout the 4 immediate post-operative days than 196 untreated cases. Serious complications occurred in 2 and 12 cases respectively, with 2 deaths in the second group. E. M. J.

Sulphathiazole in venereal disease. A. Creecy and H. L. Swittes (*Sth. Med. J.*, 1942, 35, 1003—1006).—Treatment was successful in 55 of 59 cases of acute and 10 of 12 cases of chronic gonorrhoea, and 10 cases of chancroid. E. M. J.

Treatment of male gonorrhoea with intravenous injection of *p*-aminobenzenesulphonacetamide. K. Iwashita, S. Mizoguchi, and T. Yasuda (*Japan. J. Med. Sci.*, 1941, [xiii], 2, 213—217).—The drug was used as a 33% aq. solution of the Na salt, in 63 patients suffering from gonorrhoea in doses of 15—20 c.c. per day for 5—7 days. A second cure should not be started before a 3—4 days

drug-free interval. Intravenous administration was preferred where oral use led to gastro-intestinal disturbances. The curative effect was the same with both modes of administration. A. S.

Mortality from diseases treated with sulphonamides. W. D. Sutcliffe (*N.Y. Sta. J. Med.*, 1943, 43, 144—147).—The amounts of sulphonamides purchased annually for use in New York City Municipal Institutions rose from 260 kg. in 1937 to 1216 kg. in 1941. The average mortality rates of 14 listed diseases for the 5-year period 1937—1941 showed a reduction of 41% against 1932—36 (82% in erysipelas and scarlet fever to 29% in appendicitis; 65% in meningococcal meningitis, 39% in pneumonia).

E. M. J.

Use of sulphanilamide locally in microaerophilic streptococcal infection. A. Hurwitz and E. L. Prien (*New England J. Med.*, 1942, 227, 46—48).—A widespread infection in the skin of the inguinal region from which a hæmolytic microaerophilic streptococcus was isolated had been present for 3 months when a wide incision was made followed by ZnO₂ cream dressings without evidence of healing. 2 months later a spontaneous perforation of the femoral artery occurred, stopped by clamping and subsequent ligation. Application of a sulphanilamide powder spray caused the wound to close by granulations in 2 weeks. After a skin graft epithelialisation was complete in 6 weeks. Metatarsals and toes had to be amputated later.

E. M. J.

Local use of sulphathiazole in treatment of staphylococcal infections. W. W. Spink and J. R. Paine (*Minnesota Med.*, 1940, 23, 615—619).—Report of 16 cases.

E. M. J.

Sulphonamide therapy in dermatology. M. J. Costello, A. M. Rubinowitz, and S. E. Landy (*N.Y. Sta. J. Med.*, 1942, 42, 2309—2317).—Report of 261 cases.

E. M. J.

Local sulphadiazine for burns. M. Rothman, J. Tamerin, and J. G. M. Bullowa (*J. Amer. Med. Assoc.*, 1942, 120, 803—805).—2.5% sulphadiazine in 8% triethanolamine was successfully used locally in 30 of 32 patients with burns of 2nd or 3rd degree. There were no toxic effects from the drug.

C. A. K.

Enterococcal infections [and sulphonamide]. L. A. Rantz and W. M. M. Kirby (*Arch. intern. Med.*, 1943, 71, 516—528).—The enterococci form a group of hæmolytic and non-hæmolytic streptococci and are members of the Lancefield group D. They are exceedingly resistant to the bacteriostatic action of sulphonamides. They have been demonstrated to cause otitis media, endocarditis, and infections of the abdomen and urinary tract.

C. J. C. B.

Sulphanilamides in acute bacillary dysentery. G. M. Lyon (*Sth. Med. J.*, 1942, 35, 606—611).—A review.

E. M. J.

Chemotherapy in ulcerative intestinal disease. J. A. Barga (*N.Y. Sta. J. Med.*, 1942, 42, 2011—2015).

E. M. J.

Diagnosis and control of bacillary dysentery. A. V. Hardy, J. Watt, J. Peterson, E. Schlosser, and T. M. DeCapito (*U.S. Publ. Health Repts.*, 1942, 57, 521—535).—Sulphaguanidine has given promising results in the treatment of bacillary dysentery.

C. G. W.

Selective action of sulphanilylguanidine on different *Salmonella* types and its practical importance. S. Bornstein and L. Strauss (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 112—115).—*In vitro* and *in vivo* this drug is effective against *S. cholerae suis* and *S. paratyphi A*, but not against other members of the *Salmonella* group.

V. J. W.

Excretion of sulphanilylguanidine in material drained from human biliary tract. R. S. Hubbard, W. L. Butsch, and A. H. Aaron (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 132—133).—After administration of 2 g. of sulphanilylguanidine to each of 2 patients with biliary fistulae, its concn. in the bile was always less than that in blood.

V. J. W.

Excretion of sulphathiazole in tears. J. Turkell and S. F. Wilhelm (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 97—100).—In 14 patients concn. of sulphathiazole in tears was 0.1—1 mg.-%, and was not proportional to concn. in blood; high concns. were not correlated with conjunctivitis. Irrigation of normal eyes with 10 mg.-% of sulphathiazole caused no conjunctivitis.

V. J. W.

Effect of sulphathiazole in treatment of dysentery in children. E. Rubens, M. Kaplan, M. P. Borovsky, and M. L. Blatt (*J. Pediat.*, 1943, 22, 70—76).—Patients with clinical dysentery and from whose stools positive cultures of *B. dysentericus* and *Salmonella* were obtained responded to sulphathiazole better than a group clinically identical but with negative stool cultures.

C. J. C. B.

Dysentery in the Middle East with special reference to sulphaguanidine treatment. N. H. Fairley and J. S. K. Boyd (*Trans. R. Soc. trop. Med. Hyg.*, 1943, 36, 253—278).—Bacilli causing dysentery in the Middle East included the 6 Flexner and 3 Boyd strains, as well as *B. dysenteriae* of Shiga, Schmitz, and Sonne types. Material collected by direct swabbing of the ulcers may yield positive findings where examination of faeces is negative. Therapeutic results with polyvalent anti-dysenteric serum were disappointing; serum sickness was a common complication. 5—10 c.c. of refined anti-

dysenteric Shiga serum (1 c.c. = 20,000 i.u.) prepared by partial peptonisation produced transient clinical improvement and toxæmia decreased. Sulphaguanidine is a sp. cure in both the acute and chronic stages; it exerts a bacteriostatic or bactericidal action which rapidly decreases toxæmia and stops damage to the gut. In subacute and chronic cases ulcers resistant to other treatment healed rapidly. The drug is relatively non-toxic and never led to hæmaturia or renal blockage. Crystals which appear in the urine are "soft" and never produce blockage. The actions of sulphaguanidine which is bacteriostatic, and anti-dysenteric Shiga serum which is anti-toxic, are complementary.

C. J. C. B.

Sulphaguanidine toxicity. S. L. Cole (*J. Amer. Med. Assoc.*, 1942, 120, 196—197).—A patient with ulcerative colitis developed a morbilliform skin eruption with fever, oliguria, hæmaturia, and crystals in the urine, after 110 g. of sulphaguanidine in 9 days, when the blood concn. was 2 mg.-%.

C. A. K.

Sulphathiazole toxicity. C. G. Dennie (*J. Amer. Med. Assoc.*, 1942, 120, 197).—1 patient developed angioneurotic oedema, and 2 others developed vesicular lesions like those seen with poison ivy dermatitis, after sulphathiazole.

C. A. K.

Succinylsulphathiazole. E. J. Poth (*J. Amer. Med. Assoc.*, 1942, 120, 265—269).—Succinylsulphathiazole was successfully given before and after operation in 50 abdominal cases. It reduces the bacterial content of the gut very greatly, the free drug level in the blood does not exceed 1.5 mg.-%, and not more than 5% is excreted in the urine. Toxic reactions were slight and renal complications did not occur.

C. A. K.

Toxic reactions to sulphathiazole. H. C. Scott (*Brit. Med. J.*, 1943, I, 635).—Records of two cases in which sulphathiazole caused toxic skin lesions.

I. C.

Cutaneous reactions due to sulphanilamide. R. W. Fowlkes, A. Pepple, and E. W. Vaughan (*Sth. Med. J.*, 1942, 35, 1015—1016).—One case developed multiple macules 3 months after a course of sulphanilamide for an urethral discharge (10 grains daily for 10 days, and unknown amounts at irregular intervals later). The macules disappeared on complete cessation of the drug and were reproduced twice within 20 min. of giving a test dose of 20 grains. Another case developed local dermatitis following the use of a sulphanilamide ointment.

E. M. J.

Action on hæmopoietic system of monkeys of drugs of the sulphonamide group administered in therapeutic doses. S. Chaudhuri (*Ann. Biochem. Exp. Med.*, 1942, 2, 129—180).—Normal blood picture was established in 10 normal monkeys (*Silenus rhesus*) and compared with human standards. Therapeutic doses of prontosil soluble (intramuscularly) or prontosil album or sulphapyridine (both orally) were given daily. Decrease in hæmoglobin and red cell count started within 24—72 hr. and reached max. 7—10 days after the start of treatment in all cases; coagulation time was increased and there was a loss of wt. which developed more slowly than the anæmia. Recovery within 2—4 weeks followed stoppage of treatment. With injections of prontosil soluble there was increased red cell vol. and reticulocyte count.

P. C. W.

Thrombocytopenic purpura caused by sulphonamide drugs. L. W. Gorham, S. Propp, J. L. Schwind, and D. R. Climenko (*Amer. J. med. Sci.*, 1943, 205, 246—257).—A report of 3 cases. Thrombocytopenia precedes the signs of purpura, and early observation of platelet reduction may prove life-saving.

C. J. C. B.

Nature of renal lesion with sulphonamides and its prevention with urea. S. S. Sobin, L. M. Aronberg, and H. C. Rolnick (*Amer. J. Path.*, 1943, 19, 211—217).—Intrarenal foreign material following sulphonamide drug therapy consists of pptd. sulphonamide and its acetylated products, and cellular debris with Ca and Fe deposition around or on this material. Urea simultaneously administered with Na acetylsulphapyridine prevents pptn. of sulphonamides and formation of renal calculi in rats. The action of urea is not due to its diuretic action but to a sp. solvent effect on acetylsulphapyridine. The nephrotoxic properties of acetylsulphapyridine are mechanical in nature, and result from its pptn. in the renal tract. Calcification in the kidney and the resultant calculus formation in sulphonamide-treated animals is dependent on local tissue damage and the secondary deposition of Ca and Fe on focal, non-viable structures. (7 photomicrographs.)

C. J. C. B.

Effects of administration of sodium sulphadiazine to dogs. B. Maisel, B. McSwain, and F. Glenn (*Arch. Surg., Chicago*, 1943, 46, 326—335; cf. A., 1942, III, 840).—Dogs were given subcutaneous injections of a 20% solution of Na sulphadiazine in doses of 0.1 g. per kg. for 2 weeks. Initial blood-sulphadiazine vals. of 10—15 mg.-% were followed within a few days by increases in sulphadiazine up to 60—100 mg.-% and in blood-urea up to 50—120 mg.-%. 6 of 8 dogs treated continuously died in 6—18 days. Some had a rise in blood pressure; all had proteinuria and hæmaturia. There were sulphadiazine deposits in the renal tubules and renal pelvis with granulomatous reactions. There were phlebitis and interstitial reaction in the kidney and other viscera. There was no apparent liver damage.

F. S.

Paresis of accommodation following sulphadiazine therapy.—See A., 1943, III, 470.

Tetanus from sulphonamide dusting powders. H. Welch, G. G. Slocum, and R. P. Herwick (*J. Amer. Med. Assoc.*, 1942, 120, 361—364).—When sulphanilamide contaminated with tetanus spores is implanted in guinea-pigs, the drug does not protect against, and in fact predisposes to, the development of tetanus. Sulphanilamide powders should be sterilised for use in deep wounds. C. A. K.

Medication by chewing sulphadiazine and other drugs incorporated in paraffin base. J. H. Arnett (*Amer. J. med. Sci.*, 1943, 205, 6—8).—The incorporation of various drugs in a paraffin base to be chewed offers a means of prolonged medication of the mouth, pharynx, and upper gastro-intestinal tract. C. J. C. B.

Administration of sulphonamide micro-crystals by inhalation. T. N. Harris, H. E. Sommer, and C. C. Chapple (*Amer. J. med. Sci.*, 1943, 205, 1—6).—A technique is described for producing a "smoke" of sulphonamides in air by spraying a suspension of minute crystals. Mice inhaling sulphonamide smoke develop high blood concns. of the drug and this method can be used to reduce greatly the mortality due to inhalation of pneumococcus in mice suffering with influenza. C. J. C. B.

Treatment of intestinal carriers of the enteric group of organisms [with opacol]. R. Caile (*Brit. Med. J.*, 1943, I, 604).—Treatment by Na iodophthalein (opacol) was successful in cases of infection by *Bact. paratyphosum B*, and *Bact. typhosum*. I. C.

Experiments on wound healing. Effects of oxalic acid, oxalates, and calcium-precipitating substances. L. P. Dugal and H. Laugier (*Rev. Canad. Biol.*, 1942, 1, 687—719).—Experimental wounds in rabbits heal more rapidly if treated with oxalic acid, Na or K oxalate, or NaI than those treated with chloramine-T. The most effective concn. was 0.01N. The wound-healing time was reduced by 22% in 19 of 23 experiments when 0.2% oxalic acid in 0.8% NaCl was used, compared with 0.8% NaCl alone. The best results were obtained on using oxalic acid throughout the healing period (one dressing per day). A. S.

Relation of extrinsic nerves of intestine to inhibitory action of atropine and scopolamine on intestinal motility. W. B. Youmans, A. I. Karstens, and K. W. Aumann (*J. Pharm. Exp. Ther.*, 1943, 77, 266—273).—Subcutaneous injection of atropine sulphate or scopolamine hydrobromide (0.1 mg. per kg.) into unanæsthetised dogs with Thiry jejunal fistulae inhibits tonus and rhythmic motility of the small intestine independently of the extrinsic nerve supply; vagotomy does not alter the drug effects but sympathectomy sensitises the intestine to the inhibitory effect of the drugs. The inhibition of the motility and tone of the denervated intestine following administration of small doses of atropine is not caused by adrenaline or sympathin but probably by a local action of the drug on the neural or muscular elements of the intestinal wall. The amount of atropine required to inhibit intestinal motility was less than needed to produce cardiac acceleration. A. S.

Effect of atropine on mecholyl and whealing reaction of skin. M. B. Bender, H. A. Abramson, and G. Ehrlich (*J. Mt. Sinai Hosp.*, 1942, 9, 322—328). E. M. J.

Effect of drugs on pulmonary and systemic arterial pressures in trained unanæsthetised dog. Renin, angiotonin, adrenaline, pitressin, paredrine, digitalis, acetylcholine, papaverine, histamine, amyl nitrite, and aminophyllin. L. Friedberg, L. N. Katz, and F. S. Steinitz (*J. Pharm. Exp. Ther.*, 1943, 77, 80—106).—Large dogs, weighing about 20 kg., were used. A modified London cannula was attached to the pulmonary artery, so that after the animal had convalesced, and had been trained to remain quiet during the experiment, a needle could be inserted into this cannula, and the pulmonary pressure recorded without opening the chest. Renin, angiotonin, adrenaline, pitressin (usually), paredrine, acetylcholine (usually), histamine, and aminophyllin caused an elevation of pulmonary arterial pressure, while amyl nitrite and digitalis produced little if any change. Of the drugs tested, only paredrine appeared to produce its effect by direct vasomotor action on the lung blood vessels. H. C. S.

Relation of molecular configuration to inactivation of sympathomimetic amines in presence of phenol oxidase. K. H. Beyer (*J. Pharm. Exp. Ther.*, 1943, 77, 247—257).—Potato phenolase initiated the oxidation of *p*-phenolic sympathomimetic amines but not of *m*- or *o*-homologues. *p*-Phenolic sympathomimetic amines with a *tert*. amino-group, or a OH group on the C atom adjacent to the ring, were less rapidly oxidised than the *p*-hydroxyphenylethylamine homologues. The *p*-phenolic nucleus did not undergo oxidation in compounds where a ketone group existed in a C atom of the side chain in α -position to the ring. The *o*-dihydroxy phenolic compounds were oxidised as a unimol. reaction and at a rate dependent on the concn. of substrate in solution at a given time. A. S.

In-vitro conservation of acetylcholine in whole blood. P. Babkin, M. Schachter, S. Dworkin, and G. M. Rosenberg (*Rev. Canad. Biol.*, 1942, 1, 761—768).—Acetylcholine is preserved in acidified blood—

Ringer's solution mixtures (pH 5.0—5.3) for 4 min. Prostigmine methosulphate (1:15,000) preserves acetylcholine in blood from destruction for 40—48 hr.; higher concns. are not more effective. Addition of prostigmine to acidified blood—Ringer's solution mixtures potentiates the acetylcholine-preserving effect. At pH 5.0—5.3 and 10—12^o prostigmine (1:40,000) preserved acetylcholine (1:8 million) in blood for 1 week without destruction. A. S.

Evaluation of prinine hydrochloride as a nasal vasoconstrictor. N. D. Fabricant and O. E. van Alyea (*Amer. J. med. Sci.*, 1943, 205, 122—125).—A 0.1% solution of prinine hydrochloride is isotonic and has pH 6.2. It is a non-toxic nasal vasoconstrictor which is not detrimental to ciliary activity, and its pH approximates to the normal nasal pH in man; its use was satisfactory. C. J. C. B.

Biological assay of a new extract of *Convallaria majalis* leaves using pigeons. J. R. Weeks and H. G. O. Holck (*J. Amer. Pharm. Assoc.*, 1943, 32, 53—54).—The potency of a conc. purified aq. extract was found to be lower (6.1 ± 0.37 U.S.P. XI digitalis units per 0.1 g.) by the pigeon emesis method than was previously indicated (10.1 ± 0.5) by the frog method. J. E. P.

Action of veratridine and cevine on isolated mammalian heart. G. K. Moe and O. Krayer (*J. Pharm. Exp. Ther.*, 1943, 77, 220—228).—Veratridine had little effect in the heart-lung prep. without signs of failure; in the failing heart, it diminishes the diastolic vol. and increases the work of the heart. The smallest effective concn. was 1:16 million; a max. therapeutic effect (restoration of normal cardiac output and pulmonary pressure) was obtained with concn. of 1:2.5—1:4 $\times 10^6$. The duration and magnitude of the veratridine effect is similar to that of veratrine. Repeated toxic doses suddenly increase the heart rate by 30—40%, followed by arrhythmias and ventricular fibrillation. Cevine is much less potent than veratridine. 70 mg. of cevine produced a therapeutic response equiv. to that of 0.2 mg. of veratridine. When an ineffective dose of 20 mg. of cevine was followed within 20—40 min. by subsequent doses, the second as well as further doses became effective. Effective sub-toxic doses of veratridine have no effect on heart rate; cevine causes slowing. Toxic doses of cevine cause acceleration. Veratridine in concns. up to 1:9000 in the normal and up to 1:2500 in the failing heart had no effects. A. S.

Measurement of speed and duration of effect following oral and intramuscular administration of quinidine in man. E. L. Sagall, C. D. Horn, and J. E. F. Riseman (*Arch. intern. Med.*, 1943, 71, 460—473).—After administration of a cinchona derivative in man the e.c.g. shows an increase in QT; this was used to measure the speed and duration of action of quinidine and quinine administered. The effect became evident shortly after the administration of a single dose by mouth, reached a max. in 1½—3 hr., was then maintained at a lower level for 3—5 hr., then decreased, and disappeared in 24 hr. Quinine was less effective than quinidine. Larger doses of quinidine sulphate did not change the time of the max. response, although the effect became evident sooner and was more prolonged. The response to intramuscular administration of injectable quinidine (a solution of quinidine hydrochloride with urea and antipyrine) was more prompt (within 15 min.), the magnitude of effect was greater, but the duration was the same as with an equiv. oral dose. When doses are given repeatedly, either orally or intramuscularly, the response at any moment is the sum of the separate effects of the individual doses acting at that moment. C. J. C. B.

Quinidine in prevention of sudden death. J. F. Borg (*Minnesota Med.*, 1940, 23, 783—786).—There were only 5 sudden deaths from heart disease (0.56% of all deaths in the hospital) in a year in which 3 grains of quinidine sulphate was given 3 times daily to all patients with degenerative heart disease, aortic stenosis, or syphilitic aortitis on admission to hospital. Only one of these had taken quinidine. In the 2 previous years there had been 23 sudden deaths each from these causes (2.6 and 2.9% of all deaths). E. M. J.

Cessation of repeated pulmonary infarction and congestive failure after termination of auricular fibrillation by quinidine therapy. P. D. White and H. L. Blumgart (*J. Mt. Sinai Hosp.*, 1942, 8, 1095—1103).—Report of 2 cases. E. M. J.

Use of ouabain in rapid cardiac arrhythmias. W. I. Gafter and W. G. Leaman, jun. (*Amer. J. med. Sci.*, 1943, 205, 190—197).—1 intravenous dose of ouabain reduces ventricular rate. It is effective in rapid cardiac arrhythmias of auricular origin. It is relatively ineffective in simple tachycardia or in the presence of severe infection. When combined with 1 oral dose of digitalis, intravenous ouabain is an effective aid in producing full digitalisation. C. J. C. B.

Effects of atropine, prostigmine, adrenaline, and calcium on movements of fasting human stomach. W. F. Anderson and N. Morris (*J. Pharm. Exp. Ther.*, 1943, 77, 258—265).—Atropine was injected intravenously in doses of 0.05—1.0 mg. and subcutaneously in doses of 0.6—2.0 mg. into healthy subjects; small doses increased the frequency and amplitude of the hunger contractions (balloon method) and diminished the pulse rate; an anti-parasympathetic action was obtained from a second small dose. In large doses atropine in-

hibited the movements of the stomach and increased the heart rate. Intravenous injection of 0.5 mg. of prostigmine stimulated gastric motility; preceding small doses of atropine did not alter the prostigmine effect, large doses of atropine antagonised it. The effects of atropine were not changed by previous administration of prostigmine. Adrenaline was given intravenously (0.0025–0.025 mg.) and subcutaneously (0.6–1.0 mg.); small doses occasionally increased, large doses constantly depressed, gastric motility. Intravenous injection of 10 c.c. of a 10% solution of Ca gluconate completely abolished hunger contractions and diminished pulse rate; it had no effect on the powerful prostigmine contractions. A. S.

Efficacy of product from oil of rose geranium for removal of intestinal parasites from dogs. W. R. Jones and H. A. Jones (*J. Parasit.*, 1943, 29, 151–152).—The product contained 92% of citronellol and, in doses of 1–25 c.c. per dog, removed 100% of 46 ascarids from 10 dogs, 97% of 400 hookworms from 12, and 40% of 708 whipworms from 7 dogs. F. S.

Intramuscular histaminase in hay fever. D. E. Frank (*N.Y. Sta. J. Med.*, 1943, 43, 339–341).—69 of 85 cases of ragweed pollinosis treated with histaminase were followed up. They were treated pre-seasonally (4 units weekly in July and 4–6 units twice weekly in August), pre- and co-seasonally (9–12 units every other day while symptoms lasted), or co-seasonally alone. 27 cases showed a fair result. There was no difference in the 3 groups. The results were twice as good in 25 cases without previous treatment as in 36 cases who had benefited by pollen therapy in previous years. E. M. J.

Comparative physiological actions of some β -4-iminazolyalkylamines. G. A. Alles, B. B. Wisegarver, and M. A. Shull (*J. Pharm. Exp. Ther.*, 1943, 77, 54–62).—An α -methyl group was introduced into histamine and 5-methylhistamine to determine whether such changes in their mols. would affect their oxidation by diamine oxidase. The non-oxidisability of these derivatives of histamine in the presence of diamine oxidase parallels the relations found with regard to amine oxidase substrate-specificity. As compared with the depressor effect of histamine in dogs under ether or pentobarbital anaesthesia, the α - and 5-methyl derivatives are about 1/100 as active, and its α : 5-dimethyl derivative only 1/1000 as active. On isolated rabbit and mouse intestine, histamine and these methyl derivatives are all relatively inactive. With guinea-pig intestine, histamine produced its normal contraction, though the effects of its α - and 5-methyl compounds were only 1/100–1/300 as great, whilst that of the α : 5-dimethyl derivative was even less. For mice, histamine was less toxic than the methyl derivatives, but 40 or more times as toxic as the latter in guinea-pigs owing to its marked bronchoconstrictor effect. In man, all these substances, like histamine itself, were inactive by mouth in doses as high as 200 mg. of the dihydrobromide, whereas in the production of the triple response, histamine was 50 times as active as the methyl derivatives. H. C. S.

Absorption of carbon dioxide in anaesthesia apparatus. D. H. Batten (*N.Y. Sta. J. Med.*, 1943, 43, 539–543).—Using the to-and-fro method of inhalation anaesthesia "baralyme," a mixture of 20% Ba(OH)₂ and 80% Ca(OH)₂, was more efficient as a CO₂-absorber than soda-lime. Overall efficiency of "baralyme" with consecutive anaesthetics lasted up to 9 hr., that of soda-lime less than 6 hr. E. M. J.

Use of nicotinamide as adjunct in obstetrical analgesia. J. R. Perdue (*Sth. Med. J.*, 1943, 36, 198–201).—100 mg. of nicotinamide was given intravenously once or repeatedly in 159 confinements together with Na pentobarbital and hyoscine analgesia. There were 153 live births, of which only 8 required resuscitation; 5 neonatal deaths occurred. Maternal restlessness was seen in 7% of cases. E. M. J.

Use of bulk ether in anaesthesia. H. Gold (*J. Amer. Med. Assoc.*, 1942, 120, 44–45).—A review. C. A. K.

Measurement of depth of anaesthesia by studying the lingual-maxillary reflex. J. A. Blais, H. Laugier, and E. Robillard (*Rev. Canad. Biol.*, 1942, 1, 523–538).—The depth of anaesthesia, following the use of CHCl₃, ether, cyclopropane, nembutal, pentothal, chloralose, chloral-morphine, or urethane, was gauged by following the changes in the threshold of the lingual-maxillary reflex of the dogs in response to electrical stimulation. A. S.

Convulsions [in children] during general anaesthesia. O. S. Wyatt (*Minnesota Med.*, 1940, 23, 101–105).—An 11-year-old boy, after preoperative hypodermic injection of $\frac{1}{2}$ grain of morphine and $\frac{1}{16}$ grain of atropine, was operated on for acute appendicitis under ether given by the drop method after N₂O induction. After 15 min. anaesthesia there was cyanosis and twitching of the eyelids. The pupils were dilated but reacted to light. Temporary withdrawal of the ether brought the colour back to normal. The operation was completed successfully in 35 min. when the pulse rate was 150 per min. 25 min. later the child had a severe convulsion, became blue, and presented marked carpo-pedal spasm. Temp. rose to 108.4°, the heart sounds and respiration stopped during the convulsion and did not return. E. M. J.

Interdependence of function in anaesthesia. W. Bourne (*J. Amer. Med. Assoc.*, 1942, 120, 997–999).—A review. C. A. K.

Intravenous anaesthesia. H. F. Bishop and F. F. Rudder (*J. Amer. Med. Assoc.*, 1942, 120, 807–810).—Lecture and discussion. C. A. K.

Movement of body-water in anaesthesia. H. G. Barbour (*N.Y. Sta. J. Med.*, 1942, 42, 1936–1939). E. M. J.

Procaine injections for shoulder pain. J. Travell, S. Rinzler, and M. Herman (*J. Amer. Med. Assoc.*, 1942, 120, 417).—1% procaine solution was injected intramuscularly into tender spots in 58 cases with pain in arm and shoulder region. Pain was abolished and movements were completely restored in 62% and 31% were improved. C. A. K.

Papaverine in heart disease. S. R. Elek and L. N. Katz (*J. Amer. Med. Assoc.*, 1942, 120, 434–441; cf. A., 1942, III, 709).—Papaverine was given by mouth in doses of 0.1 g. 3 or 4 times daily in 17 closely studied cases of angina pectoris; 75% were much benefited. Papaverine, by mouth or intravenously, temporarily abolished premature systoles particularly those of ventricular origin, its action being comparable with that of quinidine. It is superior to the latter since it is a potent coronary vasodilator, it may be given intravenously, it is not a myocardial depressant, and its only toxic effects are the production of sleepiness in large doses and the occasional occurrence of heart block and transient ectopic rhythms. There was no evidence of drug addiction from continued use. C. A. K.

Pharmacological action of drugs on isolated ureter. D. Slaughter, R. E. v. Duzen, T. U. Johnson, and N. Tobolowsky (*Sth. Med. J.*, 1942, 35, 541–547).—2.5 mg. of trasentin-A added to a 100-c.c. bath relaxed dog ureter contracting spontaneously or after stimulation by prostigmine, adrenaline, eserine, or morphine, or the isolated human ureter stimulated by morphine. After the spasmolytic action the original stimulant was ineffective in twice the starting standard dose. Emmenin, an oestrogenic substance, was antispasmodic when preceded by atropine. E. M. J.

Dilantin sodium and phenobarbital in [Negro] epileptics. S. B. McLendon (*Sth. Med. J.*, 1943, 36, 303–305).—29 Negro epileptics had 253 convulsions during a 3-week drugless period. On $1\frac{1}{2}$ grains of dilantin Na three times daily in 23 of these and 4 times daily in 6 there were 63 convulsions during 8 weeks and much less restlessness. 11 cases were without convulsions. There were 78 convulsions and 13 cases without any during 8 weeks on a similar dosage with phenobarbital but more irritability and lethargy. 5 cases benefited from a combination of these drugs. E. M. J.

Relationship between chemical constitution and hypnotic action of some aromatic ketones. R. Cahen (*Rev. Canad. Biol.*, 1942, 1, 752–756).—Aceto- and propio-phenone, benzyl methyl ketone, indan-1- and -2-one are weak hypnotics in mice and gudgeons because of their low solubility in water. The hypnotic activity increases with cyclisation of the side-chain. The ethyl radical provides greater hypnotic activity than the methyl group. A. S.

Demerol; substitute for morphine in the treatment of postoperative pain. R. C. Batterman and J. H. Mulholland (*Arch. Surg., Chicago*, 1943, 46, 404–409).—488 post-operative cases were given demerol (ethyl 4-phenyl-1-methylpiperidine-4-carboxylate hydrochloride) in doses of 50–150 mg. orally or parenterally in single or repeated doses. It was more suitable than morphine in controlling pain and rarely produced respiratory depression. It had an antispasmodic effect on the gastrointestinal tract and bronchi. Its short action was overcome by frequent dosage. F. S.

Modification of morphine abstinence syndrome by drugs. C. K. Himmelsbach and H. L. Andrews (*J. Pharm. Exp. Ther.*, 1943, 77, 17–23).—The moderately intense morphine abstinence syndrome was found to be most suitable for the purpose of such studies, since it was sufficiently uniform to permit a reasonably accurate prediction of the course it would have taken had no medication been administered. Suitable cases were stabilised for at least a week on the min. amounts of morphine required to prevent signs of abstinence. 5 were given no medication, 7 were given 2 c.c. of normal saline subcutaneously, and 7 received 100 mg. of thiamin intravenously. A curve of abstinence syndrome expectancy was obtained from the mean data, on 19 patients, of the effect of drugs, administered at the 30th hr. of abstinence, expressed as % deviations from the expected course of abstinence syndrome. By this method, thiamin and, in the doses given, prostigmine, pentobarbital, atropine, and codeine are all ineffective. Pyridoxine caused a slight but presumably non-significant reduction. Diethylaminomethyl-3-phenanthrylcarbinol caused a prolonged and probably significant reduction. Significant reductions were caused by 52 and 104 mg. of codeine; 5, 10, and 20 mg. of morphine; 100 and 200 mg. of demerol; and by 80 mg. of morphine sulphuric ether. The morphine effect, in the same dose, was greater and more sustained intravenously than subcutaneously. H. C. S.

Relative effects of toxic doses of alcohol on foetal, newborn, and adult rats. A. Chesler, G. C. LaBelle, and H. E. Himwich (*Quart. J. Stud. Alcohol*, 1942, 3, 1–4).—Intraperitoneal injections of 20%

alcohol cause death within 24 hr. in doses of 6–9 mg. per g. in adult rats. Newborn rats were more resistant, surviving doses up to 8 mg. per g. The resistance of rat fetuses was the same as that of the adults. P. C. W.

Influence of alcohol on circulation. A. Grollman (*Quart. J. Stud. Alcohol*, 1942, 3, 5–14).—A review. P. C. W.

Alcohol and driving. H. Newman, E. Fletcher, and M. Abramson (*Quart. J. Stud. Alcohol*, 1942, 3, 15–30).—The effect of a given blood-alcohol concn. on vision, co-ordination, and the performance of a driving test had wide individual variations. At 150 mg.-% all individuals were affected, but not all sufficiently to reduce their ability below normal. P. C. W.

Alcohol absorption from skin of man. R. V. Bowers, W. D. Burleson, and J. F. Blades (*Quart. J. Stud. Alcohol*, 1942, 3, 31–33).—A case of intoxication in a child is reported, due to inhaling fumes from an alcoholic orthopaedic prep. The same prep. was applied to 4 children and 1 adult in whom inhalation of the fumes was prevented. No alcohol could be detected in the blood of any of these cases. It is concluded that there is no appreciable absorption of alcohol through the skin. P. C. W.

Alcoholic personality: statistical study. N. Moros (*Quart. J. Stud. Alcohol*, 1942, 3, 45–49).—A statistical study of world-war veterans admitted to a state institution in 1936–1939. Chronic alcoholism was prevalent in 3rd generation Americans and 1st and 2nd generation Irish, but rare among 1st and 2nd generation Jews or Italians. Frequency of psychopathy bore no relation to prevalence of alcoholism. Psychoneurosis was most frequent in the non-drinking groups. Chronic alcoholism is rarely justified as a primary mental diagnosis. A basic personality defect probably precedes the alcohol habit. P. C. W.

Alcoholism and mental disorders in Massachusetts, 1917–1933. N. A. Dayton, M. Moore, D. A. Kunberger, and M. C. Gray (*Quart. J. Stud. Alcohol*, 1942, 3, 50–64).—An analysis of 56,579 first admissions to mental hospitals, the patients being graded as intemperate drinkers, temperate drinkers, or abstainers. The nos. in each grade were about equal among males. Females show $\frac{1}{2}$ as much intemperance as the males. Alcoholism was highest in 1917, lowest in 1920 (1st year of prohibition), and rose in succeeding years. Chronic alcoholism is most prevalent in the 40–49 age group. Intemperance was lowest among single people and higher among married, widowed, and divorced people in that order. Alcoholism is inversely related to educational and economic status. Urban people are more intemperate than rural people, and foreign-born people show a higher incidence of intemperance than native-born. P. C. W.

Alcoholism and mental disorders. J. M. Thomas (*Quart. J. Stud. Alcohol*, 1942, 3, 65–78).—5 cases representative of different clinical states are reported and discussed. P. C. W.

Present-day methods of treatment of alcoholism. B. Glueck (*Quart. J. Stud. Alcohol*, 1942, 3, 79–91).—Crit. discussion. P. C. W.

Effect of insulin on rate of disappearance of alcohol from stomach. G. Lolli and L. A. Greenberg (*Quart. J. Stud. Alcohol*, 1942, 3, 92–96).—Injection of insulin (2–4 units) had no effect on the rate of disappearance of 50% alcohol from the rat's stomach; spasm of the pylorus occurs. With lower concn. (25%) no spasm occurred, and insulin accelerated the rate of disappearance. The effect is due to more rapid emptying time, and not to increased absorption from the stomach. Administration of insulin to a patient in alcoholic coma may thus increase blood-alcohol if alcohol is still present in the stomach. P. C. W.

Effects of acetophenetidine, acetanilide, amidopyrine, aniline, and p-aminophenol on rate of disappearance of ethyl alcohol from blood. N. Rakiety (*Quart. J. Stud. Alcohol*, 1942, 3, 97–102).—Phenacetin (400–800 mg. per kg.), acetanilide (600 mg. per kg.), and aniline (400 mg. per kg.) decrease the rate of disappearance of alcohol from the blood of rats. p-Aminophenol (600 mg. per kg.) and amidopyrine (200–600 mg. per kg.) had no such effect. Almost complete inhibition of alcohol oxidation for 9 and 12 hr. was produced in 2 rats injected with 800 mg. of phenacetin per kg. 1.3 g. of aspirin or phenacetin or 1 g. of pyridone had no effect on rate of disappearance of alcohol from the blood of 2 human subjects when given with 120 ml. of 90 proof whisky. The effects are attributed to alterations in hepatic function. P. C. W.

Methods of stating dosages of alcohol and concentration of alcohol in tissues. T. M. Carpenter (*Quart. J. Stud. Alcohol*, 1942, 3, 165–167).—Dosages should be expressed in terms of abs. alcohol either by wt. or by vol., followed by a statement of the dilution. Alcohol present in body-fluids or tissues should be expressed in mg. per ml. or g. P. C. W.

Effect of alcohol in experimental liver cirrhosis. J. V. Lowry, L. L. Ashburn, F. S. Daft, and W. H. Sebrell (*Quart. J. Stud. Alcohol*, 1942, 3, 168–175).—35 pairs of litter-mate rats were maintained on a low-protein, low-choline diet which leads to liver cirrhosis. One member of each pair was given water *ad lib.* and the other 20%

alcohol. The alcohol-fed rats had a greater degree of liver cirrhosis in 21 cases, and a smaller degree in only 2 cases. In a paired feeding experiment the liver wt. per unit of body wt. was 40% greater in alcohol-fed rats. P. C. W.

Alcohol and tuberculosis. E. Bogen (*Quart. J. Stud. Alcohol*, 1942, 3, 176–200).—An extensive review (200 references) with an analysis of the prognosis of 2000 sanatorium patients graded as immoderate, moderate, or non-drinkers. The prognosis was slightly better among the non-drinkers, the mortality rates being 18, 16, and 14%. The effects of 18% alcohol given intraperitoneally and 35% alcohol given by mouth were compared in tubercular and normal guinea-pigs, lethal doses, blood concns., and survival times being determined. The tubercular pigs were more susceptible to the toxic effects of alcohol. P. C. W.

Conditioned reflex treatment of chronic alcoholism. F. Lemere, W. L. Voegtlin, W. R. Broz, P. O'Hollaren, and W. E. Tupper (*J. Amer. Med. Assoc.*, 1942, 120, 269–271).—A review and discussion of the emetine treatment. C. A. K.

Ambulatory treatment of chronic alcoholism. M. M. Miller (*J. Amer. Med. Assoc.*, 1942, 120, 271–275).—513 chronic alcoholic addicts were treated by psychotherapy, social reorientation and rehabilitation, and by amphetamine sulphate (5–10 mg. after breakfast and lunch). After 4–14 months 81.5% were abstinent and other criteria of improvement were noted. C. A. K.

Metrazol complications as affected by use of curare. J. A. Cummins (*Canad. Med. Assoc. J.*, 1942, 47, 326–329).—When used in conjunction with curare the serious complication of compression fractures of the vertebrae by metrazol were reduced in frequency and severity from 14.8 to 3.4% in 118 patients. C. J. C. B.

Pharmacology of phenazine and its derivatives. C. J. Carr, D. L. Vivian, and J. C. Krantz, jun. (*J. Pharm. Exp. Ther.*, 1943, 77, 215–219).—Intraperitoneal or oral administration of phenazine (1–40 mg. per 100 g.) in rats or added to the diet in concns. of 0.1–1.0% produced no histological changes in viscera, lungs, liver, or kidney. Intraperitoneal injection of N-methylphenazonium metho- or etho-sulphate (1.5 mg. per 100 g.) produced death with convulsions. The compounds failed as antidotes in animals poisoned with L.D.₅₀ doses of barbiturate where picrotoxin was 100% effective, and had no stimulating effect on respiration in rabbits under paraldehyde anaesthesia. Pulmonary oedema was observed in some instances. Intravenous injection of 5 mg. into dogs under pentobarbitone or other anaesthesia raises the blood pressure; this pressor effect is not abolished by atropine or, in the ergotaminised cat, reversed. Equimol. amounts of dimethyl sulphate were without effect. Antimalarial and analgesic tests were negative. There were no changes of blood-sugar in rabbits. A. S.

Action of diphenyloxazolidinedione on brain respiration at varied temperature levels. F. A. Fuhrman and J. Field (*J. Pharm. Exp. Ther.*, 1943, 77, 229–337).—Intravenous and intraperitoneal injections of 5:5-diphenyl-2:4-oxazolidinedione (DPO) in doses of 20–100 mg. per kg. into rats and mice produced mild convulsions. DPO caused an increase, then—with larger concns.—a pronounced decrease in the O₂ uptake of rat cerebral cortex slices; augmentation of O₂ consumption was not observed with propazone and its inhibitory effect was less marked than with DPO. DPO and propazone decreased the O₂ consumption of cortex slices much more markedly in the presence of glucose than in the presence of succinate. The DPO inhibition of brain respiration was irreversible, that by propazone reversible to a large extent, the DPO effect became less marked with decrease in temp. A. S.

Prostigmine in delayed menstruation. D. Parrella (*Northw. Med.*, 1942, 41, 384–389).—2 c.c. of 1:2000 prostigmine methosulphate was given by injection on 3 consecutive days on 65 occasions in 60 cases of delayed menstruation. This produced a menstrual flow within a few days of the last injection in 36 of 37 non-pregnant women and in none of 21 cases of pregnancies. Two of the latter group had a negative Aschheim-Zondek test at the time (6 weeks and 3 months pregnant). E. M. J.

Effect of ergot alkaloids on involution of postpartum uterus. C. Moir and C. S. Russell (*J. Obstet. Gynaec.*, 1943, 50, 94–104).—Administration of ergometrine (0.5 mg. thrice daily for the first 3 or 7 days postpartum) or ergotamine tartrate (1 mg. thrice daily for the same periods) did not affect the rate of involution of the uterus as measured by the height of the fundus above the symphysis on the 2nd, 4th, 6th, and 8th days postpartum. Fullness of the rectum may produce an apparent retardation of involution due to displacement of the uterus. No const. effects were produced on the amount and character of the lochia which shows considerable variation in normal cases. P. C. W.

Actarsonone in treatment of congenital syphilis. J. M. Arena (*Sth. Med. J.*, 1943, 36, 201–203).—Daily doses of 5–20 mg. were given by mouth in 136 cases. 12–24 months' treatment was given to 53 infants under 1 year and in 35 of 1–5 years of age with reversal of the Wassermann reaction in 88 and 70% respectively. Of 21 and 27 cases in these age groups, treated for 6–12 months only,

the reversal rates were 76 and 50%. Of 68 patients with original serological reversal who were seen in subsequent years 7 returned to a positive Wassermann reaction. Side effects were seen in 10 cases: gastrointestinal in 5, dermatitis in 3, and nephritis in 2 cases.

E. M. J.

Bismarsen in treatment of syphilis. H. Beerman, B. Shaffer, and C. S. Livingood (*J. Amer. Med. Assoc.*, 1942, **120**, 333).—The treatment of 823 patients with all stages of syphilis with bismarsen (Bisarsphenaminesulphonate) is described. Its action in early syphilis is slower than that of other arsenicals but it is clinically effective in all stages of the disease. It is relatively non-toxic and there were only 5 cases of dermatitis and 5 of hæmorrhagic purpura in the whole series.

C. A. K.

Bismuth compounds in syphilotherapy. D. Kahn and S. W. Becker (*J. Amer. Med. Assoc.*, 1942, **120**, 338—342).—200 patients with latent syphilis were given several courses of treatment with intramuscular Bi subalicylate in oil and neoarsphenamine was also given with 3 of the Bi courses. The clinical and serological results were satisfactory in 67—85% of cases according to duration of observation. Combined Bi and As therapy is considered superior to alternating courses of the same drugs. Toxic effects were slight and easily controlled by reducing dosage.

C. A. K.

Bismuth hepatitis. G. V. Kulchar and W. J. Reynolds (*J. Amer. Med. Assoc.*, 1942, **120**, 343—348).—In 121 cases of syphilis, hepatitis developed while Bi was being given. Previous arsphenamine, diet, alcohol, and intercurrent infections are predisposing factors. Discussion.

C. A. K.

Sodium thiosulphate. Council on Pharmacy and Chemistry (*J. Amer. Med. Assoc.*, 1942, **120**, 124—125).—There is no evidence that $\text{Na}_2\text{S}_2\text{O}_3$ is of any val. in the treatment of As or other heavy metal poisoning. It is omitted from N.N.R.

C. A. K.

Bactericidal effect of tin and its application to treatment of typhoid fever. R. Reitler and K. Marberg (*Trans. R. Soc. trop. Med. Hyg.*, 1943, **36**, 305—318).—Metallic Sn has a slow bactericidal effect on *E. typhosa*. A mixture containing Sn stearate and colloidal Sn had a favourable effect in typhoid fever, decreasing the death rate to 3% in 100 selected severe cases; the death rate of a control group of 428 patients including the mild cases was 8.2%. 2 healthy typhoid carriers were treated with the same drug and lost their bacilli after taking it, with intermissions, for 3 weeks and 5 months respectively.

C. J. C. B.

Mercury diethyl poisoning. W. H. Hill (*Canad. Publ. Health J.*, 1943, **34**, 158—160).—Two deaths from mercurial poisoning occurred from inhalation of fumes of Hg diethyl in a concn. in air of 1.1 mg. per cu.m. One subject showed symptoms after 3 months' exposure, and the other after 4 months. These cases confirmed an earlier opinion that exposure to a concn. of 1.04 mg. of this vapour per cu.m. of air would produce symptoms after daily exposure for a period of 3 months.

C. G. W.

Oligodynamic action of metals. J. R. E. Jones (*J. Exp. Biol.*, 1941, **18**, 153—161).—The actions of CuSO_4 , AgNO_3 , and HgCl_2 on *Polycelis nigra* and of CuSO_4 on *Gammarus pulex* are discussed. The metals depress O_2 consumption; this is a symptom, not the cause, of the toxic process.

G. P. W.

Outbreak of acute fluoride poisoning. H. S. Ingraham and A. J. Flood (*N.Y. Sta. J. Med.*, 1943, **43**, 41—44).—69 of 96 persons who had partaken of a chocolate pudding to which roach powder (NaF) had been added became violently sick with epigastric cramp, weakness, and sweating within the next 2½ hr. and recovered on an average 3 hr. later. Remaining samples of the pudding contained 0.1—0.3% of NaF, giving 0.2—0.6 g. in a 200-g. portion. The powder was apparently not mixed evenly and the 27 symptomless persons probably had less than 0.2 g.

E. M. J.

Toxicity of anions. J. R. E. Jones (*J. Exp. Biol.*, 1941, **18**, 170—181).—A study, and discussion, of the relative toxicity of 27 anions to *Polycelis nigra*.

G. P. W.

Adsorption in relation to constitution. Adsorption of alkaloids by silica gel.—See A., 1943, I, 199.

Toxicity of dinitrophenols to the American dog tick, *Dermacentor variabilis* (Say). O. E. Tauber, A. H. Tauber, C. R. Joyce, and W. N. Bruce (*J. Washington Acad. Sci.*, 1943, **33**, 97—105).—Laboratory tests indicate that dinitro-*o*-cresol and similar compounds, preferably mixed with S and dusted on vegetation, are toxic to the ticks especially when these are unfed. The resistance of the adult ticks and especially of the eggs is high so that high concns. (e.g., 65—75 lb. per acre) of insecticide are required.

W. McC.

Toxicity of tannic acid. H. J. Robinson and O. E. Graessle (*J. Pharm. Exp. Ther.*, 1943, **77**, 63—69).—Toxic effects of tannic acid were determined in animal experiments resembling as closely as possible the clinical conditions under which this drug is employed. Aq. solution or dry powdered tannic acid was used, and it was applied to surgically denuded areas in mice, rats, and rabbits. Acute toxicity experiments were also performed in which the drug was administered intravenously, subcutaneously, or orally. Subcutaneously or intravenously it was toxic for mice and rats, and,

after surgical removal of skin, was lethal for mice, but not for rats or rabbits. Tannic acid or its degradation products were found in the urine of these animals. Rabbits developed liver damage after subcutaneous injection, but not after surface application. Water diuresis in rats was depressed after intraperitoneal injection, but not when drug was given by other routes.

H. C. S.

Diet and toxicology of some azo compounds. M. I. Smith, R. D. Lillie, and E. F. Stohman (*U.S. Publ. Health Repts.*, 1943, **58**, 304—317).—The toxic effects of azo-, *p*-aminoazo-, and *p*-dimethylaminoazo-benzene were studied in rats, and the influence of dietary protein thereon was investigated. Azo- and *p*-aminoazo-benzene produce centrilobular hyaline degeneration of the liver with marked impairment of liver function as measured by retention of intravenously injected rose-Bengal. *p*-Aminoazobenzene also produces anæmia. Both the hyaline degeneration and anæmia are preventable by high dietary protein. The structural and functional liver damage produced by *p*-dimethylaminoazobenzene is favourably influenced by the inclusion of a high % of casein in the diet, but not by yeast-protein or gelatin.

C. G. W.

Toxicity and potential dangers of aliphatic and aromatic hydrocarbons. W. F. von Oettingen (*Yale J. Biol. Med.*, 1942, **15**, 167—184).—A review.

F. S.

Prevention of cinchophen toxicity by use of vitamin-K. W. B. Rawls (*N.Y. Sta. J. Med.*, 1942, **42**, 2021—2023).—7.5 grains of cinchophen three times daily was given by itself in 200 cases of rheumatism, with vitamin-K (3000 units daily) in 50 cases, and with -K + bile salts in another 50 cases. Skin manifestations of cinchophen toxicity was 4 times, central nervous system disturbances 4—8 times, nausea and vomiting twice as common in the first group; abdominal pain and diarrhoea were less common. There were 2 cases of jaundice in this group and one of agranulocytopenia in a case which had synthetic -K.

E. M. J.

Toxicity of rotenone and derris extract administered orally to birds. L. K. Cutkomp (*J. Pharm. Exp. Ther.*, 1943, **77**, 238—246).—The LD-50 of orally administered rotenone for the Eastern robin and English sparrow nestling were 0.195 and 0.199 mg. respectively; the dose is higher in older individuals of the same species. Pigeon and Eastern mourning dove nestlings are as susceptible to rotenone as the Passerine birds. Derris extract containing 25% of rotenone was more toxic than cryst. rotenone in 5-day-old chicken. Ground derris root containing 0.75% of rotenone was 25 times as toxic as pure rotenone.

A. S.

Excretion of nicotine in milk and urine. H. H. Perlman, A. M. Dannenberg, and N. Sokoloff (*J. Amer. Med. Assoc.*, 1942, **120**, 1003—1009).—55 cigarette-smoking lactating women and their babies were studied. Much larger quantities of nicotine were excreted in the urine than in the milk. Lactation was apparently unaffected, and no harmful effects were noted in the infants.

C. A. K.

Two cases of quinine-sensitivity. W. M. Rose (*Med. J. Austral.*, 1943, I, 71).—Both had a local sensitisation to the drug, apparently following the use by the wives of contraceptive pessaries containing quinine. Atebrin was a suitable substitute for quinine for malarial treatment in both cases.

F. S.

Quinine in treatment of subtertian malaria. A. D. Cust (*Med. J. Austral.*, 1943, I, 119—120).—When no reasonable prophylaxis has been employed the ingestion of quinine may prove dangerous in precipitating blackwater fever in patients suffering from subtertian malaria. In these cases an antimalarial drug of the atebrin type should be used.

F. S.

Clinical and experimental histological studies on effects of salicylate and quinine on ear.—See A., 1943, III, 475.

Carbon tetrachloride poisoning. W. S. Hagen, H. A. Alexander, and T. A. Peppard (*Minnesota Med.*, 1940, **23**, 717—718).—Report of a case with oliguria and multiple ecchymoses and bleeding into sclerae and conjunctivæ.

E. M. J.

Liver injury, liver protection, and sulphur metabolism.—See A., 1943, III, 485.

[Pharmacological] action of calycanthine. A. L. Chen, C. E. Powell, and K. K. Chen (*J. Amer. Pharm. Assoc.*, 1942, **31**, 513—516).—Calycanthine hydrochloride has a median lethal dose (intravenous injection) of 43.8 in mice and 17.2 mg. per kg. in rats; 10—40 mg. per kg. is invariably a fatal dose in rabbits, in which hyperglycæmia is produced but not a change in blood picture. The alkaloid reduces blood pressure and cardiac contraction in anæsthetised cats; it stimulates the isolated intestine and uterus of rabbits but has only a slight effect on the isolated uterus of guinea-pigs.

F. O. H.

Acetanilide and amidopyrine poisoning. V. T. Austin (*J. Amer. Med. Assoc.*, 1942, **120**, 911—913).—A patient with signs of chronic acetanilide poisoning also had neutropenia attributed to amidopyrine.

C. A. K.

Use of hexene-ol in burns of limited areas. B. Levine (*Amer. J. med. Sci.*, 1943, **205**, 125—130).—238 burns treated with hexene-ol

are reported (including 14 cases of sunburn, 6 chemical burns, 8 CO₂ ice burns, and 1 burn from a short-wave cautery). If hexene-ol was applied early, vesiculation was prevented; relief from pain was prompt and lasting, although the drug does not produce a local anaesthesia; healing was rapid and secondary infection prevented. The incidence of irritation was less than 1%. C. J. C. B.

Sulphonated hydrogenated castor oil as detergent and ointment base. S. Quinby and G. W. Fiero (*N.Y. Sta. J. Med.*, 1943, 43, 157—159).—Sulphonated hydrogenated castor oil was well tolerated when used in detergents and ointments in 300 cases. There was only one case of sensitivity in this series and one case in 100 patch-tested persons. Mixed with petrolatum it forms a hydrophilic ointment base which is compatible with practically all medicaments. E. M. J.

Chemotherapy of burns and shock. S. M. Rosenthal (*U.S. Publ. Health Repts.*, 1943, 58, 513—522).—Employing a standard procedure for the production of burns fatal to mice within 48 hr., the effects of systemic therapy were studied. No benefit was observed from adrenaline, posterior pituitary extract, adrenal cortical extract, or deoxycorticosterone acetate injected subcutaneously following the burns. NaCl by mouth or intraperitoneally reduced mortality; intravenous administration was less effective; isotonic NaCl by mouth was superior to hypertonic solutions. KCl accelerated the time of death, and when administered with NaCl it antagonised the effects of the latter. Ca gluconate orally was without action. Isotonic glucose orally had slight therapeutic action. Administration of hypertonic glucose or water by mouth hastened death. Na acetate, succinate, bicarbonate, and lactate were as effective as NaCl. Mouse serum intravenously was slightly less active than equiv. vols. of 0.9% NaCl orally. Little effect was observed from the intravenous administration of a hypertonic solution of human serum-albumin. C. G. W.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Physiological basis of endurance. E. H. Cluver, C. Goedvolk, and E. Jokl (*S. Afr. J. Sci.*, 1942, 38, 203—210).—Anthropometric measurements and respiratory and circulatory functional tests were carried out on 32 untrained recruits, many of whom were of low physical standard. The 10 best and the 10 worst 3-mile runners of this group were especially carefully tested. The good performers were superior in body wt. and height and practically every other anthropometric test. They had a lower resting pulse rate, a less marked increase of the pulse rate in response to exercise, and a higher systolic blood pressure rise after expiratory effort. A. S.

Growth of physical efficiency. E. H. Cluver, E. Jokl, E. Jooste, and T. W. de Jongh (*S. Afr. J. Sci.*, 1942, 38, 198—202).—The performance of 7333 South African children of different age groups was tested in running 100 and 600 yards and putting the shot. There is a continuous significant improvement of performances from each age group to the next higher one; in the running tests the rate of performance progress is slower at puberty than before and afterwards. The variability in performance in running 100 yards and putting the shot decreases with age progress. Strength develops at a faster rate than skill and endurance in boys and girls; endurance declines in girls after puberty. Boys are superior to girls in strength, skill, and endurance; at puberty, the rate of increase in strength is slowed down. A. S.

Physiological sub-determinators of reaction of man to physical training. Analysis of measurements of 171 South African Police recruits. E. H. Cluver, T. W. De Jongh, and E. Jokl (*S. Afr. J. Sci.*, 1942, 38, 211—226).—The men were divided into 2 groups; the group of men weighing less than 150 lb. increased, those above 150 lb. diminished, their body wt. during training. Both groups showed identical increases in chest circumference. Abdominal measurements and thighs increased in the first and diminished in the second group. Those who received 30 hr. physical training within 4 months showed no physical improvement; those with 80 hr. instruction gained considerably. A. S.

Test of physical fitness for strenuous exertion. R. E. Johnson, L. Brouha, and R. C. Darling (*Rev. Canad. Biol.*, 1942, 1, 491—503).—The index of fitness for hard work is defined as duration of a standard exhausting exercise in sec. $\times 100/2 \times$ sum of pulse rates at 1—1½, 2—2½, and 4—4½ min. after discontinuing the exercise. Curves of pulse rates for the first 10 min. of recovery follow an exponential equation; pulse rate at any instant in recovery = $ae^{-kt} + b$, where a and b are consts., t is the time after stopping work, and k a velocity coeff. k is larger and b smaller the fitter is the subject. The first formula gives very satisfactory results. An index of 100 is very good, the dividing line between poor and fair is 40. The exercise should be of such intensity that ½ of all subjects stop from exhaustion within 5 min. and should not require any unusual skill for successful performance. Standard exercises are running uphill on a treadmill, pulling a "stoneboat" loaded so that

the subject pulls horizontally ½ of his body wt. over a flat smooth course at 1 yard per sec. for 5 min., rowing against a heavy load, or pedalling on a bicycle ergometer against a load proportional to the body wt. A. S.

Step test. Simple method of measuring physical fitness for hard muscular work in adult man. L. Brouha, A. Graybiel, and C. W. Heath (*Rev. Canad. Biol.*, 1943, 2, 86—91).—The test was used in over 700 students. The initial heart rate is not important for the purposes of the test and has no relationship to an individual's physical fitness. A. S.

Fatigue following highly skilled work. F. C. Bartlett (*Proc. Roy. Soc.*, 1943, B, 131, 247—257).—A lecture. The routine repetition of simple actions previously used in experimentation is not characteristic of highly skilled work in practice, which consists of complex co-ordinated and accurately timed activities. More realistic experiments show that as fatigue develops the errors regarded as significant by the operator have increasingly wide limits. Right actions will be performed at the wrong time rather than the performance of wrong actions. If accurate timing is compelled grossly wrong actions may appear. Objective and subjective changes in the behaviour problem are discussed. P. C. W.

Sport and fatigue. A. Jung (*Schweiz. med. Wschr.*, 1942, 72, 890—895).—A review. A. S.

Nervous system and fatigue. M. Monnier (*Schweiz. med. Wschr.*, 1942, 72, 887—890).—A review. A. S.

Physiology of muscular exercise and fatigue in disease. E. Simonson and N. Enzer (*Medicine*, 1942, 21, 345—419).—A review. E. M. J.

Fatigue and disease. R. Staehelin (*Schweiz. med. Wschr.*, 1942, 72, 753—754).—A lecture. A. S.

Medical service plans for larger industrial plants. A. R. Smith (*Ind. Hyg. Bull.*, N.Y. State, 1942, 21, 369—372, 428—431; 1943, 22, 1—3).—Plans for comprehensive programme are outlined. Aspects dealt with include medical examination, attention to nutrition, the control of the industrial environment, accident prevention, the prevention of undue fatigue by the satisfactory arrangement of shifts and rest pauses, and the study of occupational diseases. The need for a systematic, simple, and efficient method of record-keeping is stressed. C. G. W.

Urban air pollution and respiratory diseases. C. A. Mills (*Amer. J. Hyg.*, 1943, 37, 131—141).—Census and death statistics for 1930—31 and 1939—41 showed that a significant relationship existed between atm. pollution (sootfall) and death rates from respiratory disease in 19 districts of Cincinnati and 96 of Pittsburgh. Pneumonia, tuberculosis, and lung cancer were all more prevalent among people living in the most polluted areas of industrial cities. Male rates were 2—3 times those for females in industrial districts as opposed to suburban areas. B. C. H.

Silicosis survey [in Cœur d'Alene mining district of Idaho]. P. M. Ellis, M. T. Smith, H. E. Bonebrake, and L. B. Hunter (*Northw. Med.*, 1942, 41, 406—412).—7542 cases were examined with negative findings in 1299 who had not been exposed. There were 1933 cases among the exposed without silicosis with an average of 3.5 years service, 1967 cases of first degree silicosis of grade 1 (6.3 years), and 1811 of grade 2 (10.9 years), 311 second degree cases (17.1 years), 61 third degree cases (19.5 years). 145 cases had both tuberculosis and silicosis. E. M. J.

Pneumonitis due to gasoline [aspiration]. A. Sachs and R. L. Egan (*Nebraska Sta. Med. J.*, 1943, 28, 114—115).—A 16-year-old male while siphoning gasoline through a rubber tube suddenly found his mouth filled with gasoline and immediately had a seizure of coughing which lasted 30 min., followed by pain in one side of the lower chest and a sense of smothering. 16 hr. after the accident his temp. was 103.5° F., the pulse rate 112, and the respiration rate 32 per min. Treatment consisted of gastric lavage, administration of caffeine and coramine, and intermittent administration of O₂. He recovered fully within 6 days. E. M. J.

Hydrogen sulphide gas poisoning [in workers in oolithic limestone in Florida]. L. F. Robinson, M. N. Camp, and E. C. Chamberlain (*Sth. Med. J.*, 1942, 35, 621—623).—Report of 11 cases. E. M. J.

Toxicity of metallic silver. H. Heiman (*Ind. Hyg. Bull.*, N.Y. State, 1943, 22, 81—83).—Toxicity of Ag is reviewed. Ag may enter the body through abrasions of the integument or through the respiratory or gastro-intestinal tracts, causing localised argyria. Local therapy to deal with the skin discoloration is indicated. The injection into the skin of a solution of 1% K₂Fe(CN)₆ and 6% Na₂S₂O₃ reduces the discoloration, leaving the injected areas almost of normal colour. C. G. W.

Dermatitis from airplane engine covers. L. Schwartz (*U.S. Publ. Health Repts.*, 1943, 58, 625—631).—An outbreak of dermatitis was observed among workers manufacturing airplane engine covers made from a special pliofilm. This pliofilm (rubber hydrochloride) is made from natural rubber by dissolution in benzole, treating the

solution with HCl gas, and neutralising with an alkali. The outbreak of dermatitis was noted soon after the addition of a special chemical (coded R.M.F.) to prevent the pliofilm deteriorating on exposure to light. In order to prevent further attacks of dermatitis, it is suggested that workers handling pliofilm containing R.M.F. should wear protective sleeves and aprons made of ordinary pliofilm, vinylite, koroseal, or laminated Cellophane. The hands may be protected by wearing gloves made of washable leather or finely knitted cotton. Persons on the job of heat-sealing can protect their faces from the irritant fumes by the use of a protective ointment of the invisible glove type. Workers who continue to have dermatitis after observing the precautions recommended for all should be removed from further exposure to the material. C. G. W.

Hazards in use of chlorinated naphthalene and diphenyl. E. C. Riley (*Ind. Hyg. Bull.*, N.Y. State, 1943, 22, 80—81).—A recent increase in cases of occupational dermatitis, chloracne, and acute or subacute yellow atrophy of the liver has been attributed to compounds in the chlorinated naphthalene and diphenyl group. A brief resumé of the uses and potential health hazards of this group is presented together with a description of control measures necessary. C. G. W.

Industrial illness due to tetryl.—See A., 1943, III, 424.

XXII.—RADIATIONS.

Time intensity factor in radiobiology. U. Fano and L. D. Marinelli (*Proc. Nat. Acad. Sci.*, 1943, 29, 59—66).—X-Ray treatments of *Tradescantia* microspores consisting of two irradiations, delivered at various intervals within the time of restitution of chromosomal breaks, were more suitable than single or more than two irradiations for investigating those recovery processes that express themselves through the time-intensity factor. From data thus obtained, an index of recovery can be calc. and tests are suggested for determining the complexity of the process. F. S.

Experiments with X-rays on rôle of lymphocytes and body temperatures in resistance of chicks to *Salmonella pullorum*. J. C. Scholes (*Poultry Sci.*, 1942, 21, 561—565).—Body temp. of 6-day-old chicks exposed to 360 r. of X-rays was subnormal on the 2nd, 3rd, and 4th days after the exposure when the chicks were brooded at 28°. There was little effect on chicks brooded at 35°. Lesions of the intestinal mucosa and liver were observed, and are correlated with the lowered resistance to *S. pullorum* found after X-irradiation. Resistance to infection is dependent on body temp. rather than on the no. of circulating lymphocytes. P. C. W.

Effect of roentgen therapy in primary cancer of breast. W. Harris (*J. Mt. Sinai Hosp.*, 1942, 8, 606—611).—Histological report on 75 cases after irradiation. E. M. J.

Induction of leukæmia in mice by methylcholanthrene and X-rays.—See A., 1943, III, 401.

Röntgenographic visualisation of thoracic duct and cisterna chyli. Cerebral arteriography.—See A., 1943, III, 378.

Influence of medium on radiation injury of *Arbacia* sperm. T. C. Evans, J. C. Slaughter, E. P. Little, and G. Failla (*Radiology*, 1942, 39, 663—680).—The sperm of *Arbacia punctata* was irradiated at 182 kv. peak, 25 ma., a filtration equiv. to 0.2 mm. of Cu, and 5600 r. per min., added to a suspension of the eggs, and the fertilised eggs were counted after 1—2 divisions. The vol. of sperm suspension used in each experiment was such as would fertilise all the eggs in a control of the same concn. 10,000 r. given to a 0.1% and 10% sperm suspension in sea-water reduced fertilisation to 4 and 95% respectively. The mean or 50% effective dose (M.E.D.) was proportional to the sperm concn. Addition of *Nereis* sperm in equal vol. to give a 0.1% total suspension caused a great drop in sensitivity, which was more marked still when *Nereis* eggs were used. Seminal fluid added to sperm collected by centrifuging from sea-water produced a M.E.D. ratio against sea-water suspension of 7.8, 0.1% egg-albumin of 7.0, 0.1% gelatin of 7.4, 0.1% gum arabic of 2, 0.1% glycyglycine (pH 8.2) of 4.2, 0.1% glycine (pH 8.2) of 2; borate buffer (pH 8.2) had no such protecting effect. "Egg-water" from *Arbacia* eggs gave rising protection with increased concn. up to a M.E.D. ratio of 34 at 100%. Egg-water irradiated by 151,600 r. gave only 66% of this protection. The effect of irradiation on cleavage delay was independent of the medium. Lapse of time after irradiation with 76,500 r. and before insemination had no effect on dry sperm or a 20% suspension but in a 2.5% suspension in sea-water fertilisation fell from 31% at 75 min. to 1.5% at 310 min.; after 8400 r. in a 0.1% sea-water suspension from 50% at 10 min. to 0% at 93 min., and in a 0.1% egg-water suspension from 100% at 10 min. to 18% at 123 min. Lapse of time had no effect if dilution was postponed after irradiation of "dry" sperm. O₂ consumption of non-irradiated sperm in 1:1000 of sea-water, 25, 50, and 90% egg-water fell from 4.4—7.2 cu. mm. per hr. at 40 min. to 0.7—2.8 cu. mm. per hr. at 240 min. with fertilisation of 0.5, 25, 38, and 61% of eggs at 260 min. Egg-albumin added immediately after irradiation in sea-water had no protecting effect. Addition to non-

irradiated sperm in sea-water of H₂O₂ to make a 0.0001% solution of H₂O₂ killed all sperm within 50 min. but showed quite a different lapse of time and % fertilisation relationship to irradiation, and the presence of 0.1% egg-albumin did not protect sperm from this effect. The nature of the radiation effect is discussed and a "poison production" hypothesis formulated, the poison envisaged being "activated water mols." which have a surface effect on the sperm, making fertilisation impossible without necessarily "killing" the sperm as such. E. M. J.

Differential sensitivity of prophase pollen tube chromosomes to X-rays and ultra-violet radiation. C. P. Swanson (*J. Gen. Physiol.*, 1943, 26, 485—494).—The sensitivity of prophase stages to X-rays and ultra-violet light is determined by the pollen tube technique, and the varying sensitivity is correlated with changes in the generative nucleus of *Tradescantia paludosa*. Sensitivity to ultra-violet light decreases from the 2-hr. stage until at 11 hr. after germination there is no more production of breaks. The 0- and 1-hr. stages show less sensitivity than the 2-hr. stage but this may be due to shielding by the pollen tube. Sensitivity to X-rays reaches a max. at the 4-hr. stage, and then decreases until no breaks occur after the 10-hr. stage. Each type of X-ray break shows its own individual trend. Correlation of X-ray breaks with changes in the generative nucleus shows that the uptake of water at the time of germination and the movement involved in spirallisation are the important factors which determine sensitivity of the chromosomes to breakage. The changing sensitivity to ultra-violet light may depend on one or all of the three factors: the nucleic acid cycle, changes in the matrix, and the no. of subdivisions in the chromosomes. Their relative importance is unknown. J. N. A.

Therapeutic value of ultra-violet radiation. Council on Physical Therapy (*J. Amer. Med. Assoc.*, 1942, 120, 620—623).—A review. C. A. K.

Treatment of infected wounds in hamster by contact application of ultra-violet rays. R. Herz (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 164—165).—Irradiation through a cold quartz applicator was of benefit when used either before or after infection of wounds with *Staph. aureus*. V. J. W.

Influence of ultra-violet light on equine encephalomyelitis virus protein (Eastern strain).—See A., 1943, III, 440.

Hyperthermia in management of tetanus. P. H. Heersemma (*Minnesota Med.*, 1940, 23, 636—641).—Case report. E. M. J.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Pacemakers in *Nitella*. III. Electrical alternans. W. J. V. Osterhout (*J. Gen. Physiol.*, 1943, 26, 457—465; cf. A., 1938, III, 964).—"Alternans" denotes alternation of strong and weak heart beats. When an electrical impulse travels along a *Nitella* cell it may produce a complete or partial response, and both kinds of response may occur in regular alternation. The partial response varies greatly and may be reduced to such an extent that it appears only as a local thickening in the upstroke of the action curve, usually accompanied by a more or less pronounced hump. As a result of this a considerable variety of action curves is produced. Different regions of the cell, not widely separated, may react differently. J. N. A.

Solubility and electrophoretic studies of serum-globulins.—See A., 1943, I, 200.

Criteria of purity of proteins. T. Shedlovsky (*Ann. New York Acad. Sci.*, 1943, 43, 259—272).—A review. P. C. W.

Comparison of protein derivatives of *Vicia faba* and of casein. J. Labarre and P. David (*Rev. Canad. Biol.*, 1943, 2, 72—85).—The total amount of Cl taken up by casein is more than half that taken up by *Vicia faba* proteins. I is taken up equally by both proteins at room temp.; at higher temp. casein takes up much more I than *V. faba* proteins. Formaldehyde, N₂O, and acetic acid have similar effects on both proteins. A. S.

Progressive denaturation of proteins of *Vicia faba* seeds. J. Labarre and R. Dostert (*Rev. Canad. Biol.*, 1942, 1, 504—522).—The action of many inorg. and org. acids, of diethyl and dibutyl phthalate, and of formaldehyde on the proteins of *Vicia faba* seeds was studied. The denatured proteins were digested with pepsin, pancreatin, and weak acids and the rate of formation of amino-N was compared with that from other proteins and casein. Formaldehyde treatment produces a resinous plastic-like substance that completely resists hydrolysis by digestive enzymes and, partly, by weak acids. A. S.

Problems in chromatography and in colloid chemistry illustrated by leaf pigments.—See A., 1943, III, 447.

XXIV.—ENZYMES.

Chemical interpretation of the mechanism of oxidation by dehydrogenase enzymes. W. A. Waters (*Trans. Faraday Soc.*, 1943, 39, 140—151).—A theory of biochemical oxidation catalysed by de-

hydrogenase enzymes is put forward, in which the enzyme is regarded as a source of active free radicals, whereby a chain reaction involving a substrate and a co-enzyme, and ultimately O or an oxidising agent, is set up. A no. of biochemical systems are discussed with reference to the theory. F. L. U.

Mechanism of hydrogen transport in animal tissues. VII. Inhibition by ribonuclease. V. R. Potter and H. G. Albaum (*J. Gen. Physiol.*, 1943, 26, 443—455; cf. A., 1943, III, 518).—In an attempt to determine whether various enzyme systems are present in the macromols. of ribonucleoprotein nature in protoplasm, the effect of ribonuclease on these systems is determined. Ribonuclease inhibits co-enzyme I—cytochrome *c* reductase, succinic dehydrogenase, and cytochrome oxidase. All of these enzymes require cytochrome *c* in order to function, but ribonuclease has no effect on this. Urease, xanthine oxidase, catalase, alkaline phosphatase, and adenosine triphosphate are unaffected by ribonuclease. It is suggested that this enzyme acts sterically by preventing contact between cytochrome *c* and its activating centres, that the enzymes which are inhibited may be contained in a ribonucleoprotein of macromol. size, but that those which are not inhibited are not excluded from such a complex. Additional evidence against the theory of H transport of Szent-Györgyi is given and discussed. J. N. A.

Unsaturated fat oxidase: distribution, function, and histochemical identification in plant tissues. D. S. Van Fleet (*J. Amer. Chem. Soc.*, 1943, 65, 740).—Enzymic oxidation of unsaturated fats is demonstrated *in vivo* by use of the leuco-forms of suitable microscopic stains (four named). The oxidases are activated in alkaline or neutral plant tissues, which are losing water, beneath wound surfaces, and where antioxidants are absent or inhibited. 0.0012–0.00028% Na₂SeO₃ represses the oxidation and confines it to tissues in which unsaturated fats have accumulated. This and other alkaline salts or alkaline buffers repress oxidation of non-fatty materials, these being activated at pH 4.8–5.8; the salts activate oxidation of unsaturated fat by freeing the fats and oxidase systems from alkali-labile antioxidants and additive compounds. Root and stem tissues from six crop plants grown in media buffered at pH 7.2–7.6 have a high oxidase activity in the seedling stage but a low activity after 5 weeks when the fats are exhausted and degradation products have accumulated. Plants grown at pH 4.8–5.6 have a low oxidase activity and accumulate fats; subsequent treatment with alkali then activates the fat-oxidase. R. S. C.

Fatty acid oxidation by liver enzymes. J. M. Muñoz and L. F. Leloir (*J. Biol. Chem.*, 1943, 147, 355–362).—The enzyme system of liver which oxidises lower saturated fatty acids is prepared by repeated pptn. by MgCl₂ from a suspension of the ruptured cells of guinea-pig liver. It is rapidly inactivated by suspension in water but is preserved by the addition of salts; at 0° it is stable for 2–4 hr. and freezing produces complete inactivation. The enzyme alone is inactive, necessary components of the system being inorg. PO₄^{'''}, fumarate, cytochrome *c*, adenylic acid (or adenylyl pyrophosphate), and Mg^{'''} or Mn^{'''}. The activity is inhibited by F^{'''}, iodoacetate, AsO₄^{'''}, and malonate. The addition of methylene-blue does not enable it to oxidise higher fatty acids nor does it reactivate the enzyme after keeping overnight at 0°. The oxidation is connected with a phosphorylation though the changes which occur in the distribution of P have not been explained. H. G. R.

Non-oxidase nature of kidney "laccase." D. L. Baker and J. M. Nelson (*J. Biol. Chem.*, 1943, 147, 341–343).—The enzyme is probably an active protein and should not be classed as a true oxidase. The method of prep. indicates its probable protein nature and the crude material contains N 15.6% and Cu 0.03%. H₂O₂ is formed when the enzyme catalyses the oxidation of quinol. Aerobic oxidation of pyrocatechol, homocatechol, and adrenaline is catalysed to smaller extents and no activity is shown towards ascorbic acid. It is heat-stable but rapidly inactivated by acid. The activity is inhibited by KCN and to a smaller extent by NaN₃; ascorbic acid causes a time lag in the reaction. H. G. R.

p-Aminobenzoic acid and dopa reaction. G. J. Martin, W. A. Wisansky, and S. Ansbacher (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 26–28).—If p-aminobenzoic acid or sulphanilamide is present in a tyrosine-tyrosinase mixture, the usual red stage and melanin ppt. are not produced. The end product is brown. Ca pantothenate has no such action. V. J. W.

Tyrosinase and plant respiration.—See A., 1943, III, 444.

Carboxylase-cocarboxylase system of *Fusaria*.—See A., 1943, III, 429.

Enzyme studies in oedema of pancreas and acute pancreatitis.—See A., 1943, III, 396.

Occurrence of aldolase and isomerase equilibria in bacterial metabolism.—See A., 1943, III, 433.

Natural and synthetic inhibitors of choline-esterase. [Effect of products of adrenaline oxidation.] H. Waelsch and H. Rackow (*Science*, 1942, 96, 386).—N-Methylindole was twice as active as indole in inhibiting choline-esterase in serum. Oxidation of adrenaline with iodate or pyrocatechol oxidase at acid reaction gives no inhibition,

but does so at alkaline reaction; oxidation with Br gives inhibiting material. The activity of adrenaline is decreased on exposure to air, and the lower is the activity the greater is the inhibiting effect it has on choline-esterase. E. R. S.

Effect of chloroform and ether on activity of choline-esterase. C. Torda (*J. Pharm. Exp. Ther.*, 1943, 77, 50–53).—The activity of choline-esterase *in vitro* is inhibited by both CHCl₃ and ether, the former being about 40 times as effective as the latter. H. C. S.

Protein thiol groups and the reversible inactivation of urease. Reducing groups of ovalbumin and of urease. L. Hellerman, F. P. Chinard, and V. R. Deitz (*J. Biol. Chem.*, 1943, 147, 443–462).—Treatment of a urease prep. with p-chloromercuribenzoic acid corresponding to 2 mols. to 21,300 g. of the enzyme results in complete inactivation which is reversed by cysteine. The addition of the first mol. causes no inactivation and it may be replaced by iodoacetamide, porphyrindin, or o-iodosobenzoate, the subsequent addition of 1 mol. of the mercuribenzoic acid causing inactivation. This suggests two types of SH groups: (a) surface-substituted and immediately available to the action of nitroprusside, mercaptide-forming metallic compounds, iodoacetamide, and certain oxidising agents, and (b) groups capable of fairly rapid interaction with p- or o-mercuribenzoic acid but less available to the action of certain other reagents and more directly concerned with the enzymic activity and also attacked by conc. solutions of iodobenzoate and iodoacetamide. SH groups in considerable excess of the above have been estimated by porphyrindin and o-iodosobenzoate in urease denatured by guanidine hydrochloride. Titration of recryst. and dialysed ovalbumin after denaturation with guanidine hydrochloride with standard o-iodosobenzoate indicates 5 SH groups in 45,000 g., which corresponds to 1.29% of cystine. Titration with iodosobenzoate may be employed for the estimation of reduced glutathione and under the conditions used fails to oxidise certain amino-acids, notably tyrosine, tryptophan, serine, and methionine. H. G. R.

Autolysis of invertebrate tissues. S. Belfer, P. Koran, H. Eder, and H. C. Bradley (*J. Biol. Chem.*, 1943, 147, 345–354).—Cleavage in the autolytic system of invertebrates is initiated by a proteinase (max. activity at pH 3) and in some tissues there is an additional proteinase acting at neutral or slightly alkaline reaction. The amount of enzyme present in the tissues varies considerably but the functional activity of the contractile mechanism in molluscs is correlated with the autolytic activity. The enzyme is inhibited by KIO₃ and generally is activated by cysteine. A catheptic type of proteinase is widely distributed in invertebrates, the optimum being slightly more acid than that of vertebrates, and this autolytic mechanism also functions as a digestive proteinase in cases where true proteolytic secretion into the gut is doubtful. H. G. R.

Crystalline trypsin-inhibitor and blood clotting.—See A., 1943, III, 372.

Influence of amino-acids on reactivation of yeast-invertase. H. Wagreich, W. Halpert, and A. Hirschman (*J. Gen. Physiol.*, 1943, 26, 479–483; cf. A., 1942, III, 173).—d-Alanine, glycine, valine, d-glutamic acid, hydroxyvaline, l-leucine, l-tyrosine, phenylalanine, dl-methionine, l-tryptophan, S-benzylhomocysteine, glycylglycine, dl-alanylglycine, diglycylglycine, alanyl-leucylglycine, and glycyl-dl-leucyl-dl-alanine are without effect on the reactivation of yeast-invertase which has been inactivated by acid, whilst cysteine, reduced glutathione, homocysteine, thiophenol, and thioglycollic acid accelerate reactivation. Cystine, oxidised glutathione, and homocystine inhibit reactivation, and those S compounds which either accelerate or inhibit reactivation have no effect on native invertase. The longer the time that cysteine remains in contact with the inactive enzyme before reactivation the greater is the rate of reactivation, and the % acceleration by cysteine is inversely proportional to the control rate. J. N. A.

Rôle of myokinase in transphosphorylations. I. Enzymic phosphorylation of hexoses by adenylyl pyrophosphate. S. P. Colowick and H. M. Kalckar (*J. Biol. Chem.*, 1943, 148, 117–126).—Hexokinase from baker's yeast in presence of glucose or fructose degrades adenosine triphosphate to adenosine diphosphate, which has been isolated from the enzyme system, and hexose monophosphate (in both cases this consists of a 2:1 mixture of glucose and fructose 6-phosphate); no phosphorylation of hexose occurs with adenosine diphosphate. Myokinase has been prepared from rabbit skeletal muscle by extraction with hot HCl, neutralisation, and pptn. by addition of (NH₄)₂SO₄ to 80% saturation. It is a protein stable to boiling with mineral acids and to pptn. with trichloroacetic acid. It is inactivated by H₂O₂ and the activity is completely restored by reduction with cysteine or glutathione. It is present in traces in the heart and brain but absent from liver and kidney. The addition of myokinase to the hexokinase system results in phosphorylation of hexose to hexose monophosphate and adenylic acid. Adenylic acid, but not hexose monophosphate, inosic acid, or adenosine, inhibits phosphorylation by adenosine diphosphate but this is counterbalanced by excess of myokinase. Phosphorylation by adenosine triphosphate is inhibited by neither the diphosphate nor adenylic acid. H. G. R.

Rôle of myokinase in transphosphorylations. II. Enzymic action of myokinase on adenine nucleotides. H. M. Kalckar (*J. Biol. Chem.*, 1943, **148**, 127—137; cf. preceding abstract).—Myokinase from rabbit muscle which has been conc. 4-fold undergoes further 10-fold concn. by adsorbing inactive proteins on $\text{Al}(\text{OH})_3$ and pptg. fractionally with trichloroacetic acid. In presence of adenylic acid-deaminase, myokinase liberates NH_3 from adenosine diphosphate. Added separately, these enzymes liberate no NH_3 . When the diphosphate is incubated with myokinase in presence of MgCl_2 and glutathione, labile PO_4''' is transferred from one mol. of the diphosphate to another so that 1 mol. each of the mono- and triphosphate are produced. Approx. 60% of the diphosphate is thus converted in a reversible reaction ("phosphate dismutation"), simple equilibrium being attained. The activation of hexose phosphorylation in a system containing yeast-hexokinase as catalyst and adenosine diphosphate as source of PO_4''' is probably due to such dismutation, the triphosphate produced being the donor proper. W. McC.

Hexose diphosphatase. G. Gomori (*J. Biol. Chem.*, 1943, **148**, 139—149).—Extracts obtained from kidney and liver by grinding with sand, treating with lactate buffer at pH 3.5 and 0° , and dialysing contain an enzyme, hexose diphosphatase, which, in presence of Mg^{++} , readily hydrolyses hexose diphosphate but has little or no action on β -glycero- or phenyl-phosphoric acid. The enzyme is activated by Mg^{++} and CN^- and inactivated by alcohol, acetone, and F^- . There is a linear relationship between the concn. of the enzyme and the rate of hydrolysis. The optimal substrate concn. is approx. 0.004M. Advantage is taken of the difference in the behaviour of non-sp. phosphatase and hexose diphosphatase towards Mg^{++} , CN^- , and F^- to determine these enzymes simultaneously in the same sample. W. McC.

Phosphorolysis and synthesis of sucrose with a bacterial preparation. M. Doudoroff, N. Kaplan, and W. Z. Hassid (*J. Biol. Chem.*, 1943, **148**, 67—75).—A dry prep. of *Pseudomonas saccharophila* will rapidly phosphorolyse sucrose into glucose 1-phosphate and fructose, but no esterification is observed with glucose, fructose, or a mixture of the two sugars or with preps. of bacteria grown with glucose as sole source of C. The reaction proceeds under aerobic or anaerobic conditions and is not inhibited by 0.05M- F^- or 0.01M-iodoacetate. The prep. also exhibits a strong invertase activity. It has little action on glucose 1-phosphate under conditions favouring phosphorolysis but, in presence of fructose, sucrose is formed. The latter reaction is depressed by M./70-sucrose but is unaffected by iodoacetate, F^- , M./60- PO_4''' buffer, or yeast-invertase. No phosphorolysis of trehalose or maltose occurs with preps. obtained from cultures with these sugars. Dry-cell preps. from bacteria grown with trehalose hydrolyse this sugar rapidly; intact cells have little activity and they exhibit neither hydrolysis nor phosphorolysis of sucrose. H. G. R.

Determination and concentration of phosphorylase of potato. K. H. Meyer and C. de Traz (*Arch. Sci. phys. nat.*, 1942, [v], **24**, Suppl., 233—239).—A solution of the Cori ester is incubated with a solution of Zulkowsky's starch for 15 min. at 35° , the phosphorylase solution is then added, and after 20 min. mineral P is determined colorimetrically in a portion of the solution. The enzyme is conc. by dialysis of potato juice against running water and subsequent partial freezing of the solution. The liquid thus obtained is fractionally pptd. by $(\text{NH}_4)_2\text{SO}_4$. The enzyme is deactivated by acidification at pH 4.6, when heated at 60° for 30—40 min., and by alcohol or acetone. It is unaffected by protracted dialysis but does not withstand electrodialysis. Reactivation does not appear to be caused by Fe^{++} , Co^{++} , Mg^{++} , Mn^{++} , or Zn^{++} . H. W.

Cozymase in amphibian development. P. E. Lindahl and A. Lennerstrand (*Arkiv Kemi, Min., Geol.*, 1942, **15**, B, No. 13, 6 pp.).—Eggs of *Rana temporaria* and *Bufo vulgaris* contain cozymase. The content first increases (max. attained during gastrulation) and then decreases as the eggs grow into tadpoles. W. McC.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Fermentation with Lebedev's yeast extract. Loss of activity and action of phosphate. R. Marcuse (*Arkiv Kemi, Min., Geol.*, 1942, **15**, A, No. 12, 59 pp.).—The initial stage of rapid fermentation of glucose by Lebedev's yeast extract is prolonged by addition of PO_4''' in proportions exceeding those required for fermentation of half of the substrate according to Harden's scheme. The max. rate of fermentation and the amount of CO_2 produced are diminished by the additional PO_4''' and also by hexose diphosphate which, however, shortens the initial stage. As the concn. of extract is increased the duration of this stage diminishes and the production of CO_2 and max. rate of fermentation increase. The concn. of glucose does not affect the duration of the initial stage or the max. rate of fermentation. The spontaneous reaction in the extract which results in loss of activity and development of turbidity after a period of const. activity is not unimol. The length of this period

depends on temp., inactivation proceeding very rapidly as temp. rises to approx. 40° . As activity decreases, the inhibitory effect of PO_4''' (but not those of F^- and iodoacetate) increases (not if acetaldehyde is added). F^- increases the effect of PO_4''' . The effect of PO_4''' is decreased if fermentation proceeds for some time before addition and loss of activity of the extract is retarded if PO_4''' is added some time before fermentation begins. Pretreatment of the extract with glucose has no such effect and pretreatment with hexose diphosphate increases the rapidity of the first stage of fermentation but diminishes that of subsequent stages. PO_4''' added soon after fermentation begins shortens the first stage of fermentation; if it is added later it diminishes the max. rate of fermentation. Added acetaldehyde greatly shortens or abolishes the first stage of fermentation and, in proportion to its concn., diminishes production of CO_2 and max. rate of fermentation even when the concn. of PO_4''' is high. The amount of acetaldehyde which normally accumulates during fermentation decreases disproportionately greatly when inhibition by PO_4''' occurs. Added pyocyanine and cytochrome *c* + cytochrome oxidase (but not methylene-blue and safranin) shorten the first stage of fermentation, increase the max. rate, diminish the inhibitory effect of PO_4''' , and cause uptake of O_2 . Fermentation diminished by addition of PO_4''' is not appreciably affected by adding cozymase or cocarboxylase. PO_4''' slightly stimulates decarboxylation of pyruvic acid and conversion of glyceraldehydophosphoric into phosphoglyceric acid but restricts production of phosphoglyceric acid (if acetaldehyde is not added) by diminishing that of acetaldehyde, and, in particular, interferes with conversion of phosphoglyceric into phosphopyruvic and pyruvic acid. W. McC.

"Unknown factor" in growth of *Saccharomyces cerevisiae*. L. H. Leonian and V. G. Lilly (*J. Bact.*, 1943, **45**, 191—192).—The beneficial effect of yeast extract when added to a basal medium was not due to some unknown substance but to raising the level of inositol, pantothenic acid, and biotin. F. S.

Relation between structure and action of xanthenes on dehydrogenations by *Fusaria*. L. J. Sciarini, R. P. Mull, J. C. Wirth, and F. F. Nord (*Proc. Nat. Acad. Sci.*, 1943, **29**, 121—126).—*Rubrofusarin*, $\text{C}_{15}\text{H}_{12}\text{O}_6$, the reddish-orange pigment of *Fusarium graminearum*, was extracted by light petroleum and purified. It is probably a dihydroxymethoxymethylxanthone. The effect of the pigment and xanthenes on the dehydrogenation of isopropyl alcohol in cultures of *F. lini* was as follows. Xanthone increased the rate of dehydrogenation by 12.84%, the intermediates 1-hydroxy-3-methyl-, 4-hydroxy-, and 1:6-dihydroxy-xanthone increased dehydrogenation by 11.34%, 10.66%, and 5.33% respectively, and the natural pigment retarded (—3.01%), in accordance with the increasing no. of OH groups and complexity of the mol. F. S.

Growth factor requirements of *Rhizopus suinus* in an ammonium tartrate medium. W. Schopfer (*Arch. Sci. phys. nat.*, 1942, [v], **24**, Suppl., 194—197).—The addition of aneurin caused increased growth for 2 days, then diminished growth for 8 days, followed by a slight increase in growth. The inhibitory phase was accompanied by an increase in acid titre over the control cultures to 50% on the 5th day. The second phase of stimulation was accompanied by decreased acidity. Aneurin also inhibited cultures buffered at pH 4. Hence, org. acids produced either by the organism or by dissociation of NH_4 tartrate were inhibitory as well as the titratable acid. F. S.

Strain-specificity and production of antibiotic substances. S. A. Waksman and A. Schatz (*Proc. Nat. Acad. Sci.*, 1943, **29**, 74—79).—The production of the antibacterial substance clavacin by *Aspergillus clavatus* corresponded with the max. growth, as measured by the complete consumption of the sugar in the medium and by max. N utilisation. After max. antibacterial activity was reached in the medium clavacin was rapidly inactivated. Only 6 of 15 strains of *A. clavatus* produced considerable amounts of clavacin. Clavacin produced by different strains had the same biological and chemical behaviour. F. S.

Antibacterial substances produced by moulds. II. Antibacterial substances produced by some common *Penicillia*. N. Atkinson (*Austral. J. Exp. Biol.*, 1943, **21**, 15—16; cf. A., 1943, III, 275).—Of 68 *Penicillia*, 18 produced antibacterial substances. The active moulds were divided in two groups: group 1, producing penicillin or citrinin, mainly active against Gram-positive bacteria, and group 2, producing penicillic acid or penicidin, acting on both Gram-positive and Gram-negative bacteria. With neutral 1% KMnO_4 the metabolism solutions of group 1 produced only slight decolorisation whereas those of group 2 produced immediate decolorisation. F. S.

Mechanism of fungicidal action.—See B., 1943, III, 145.

Respiratory and carbohydrate metabolism of malaria parasites (*Plasmodium knowlesi*). W. B. Wendel (*J. Biol. Chem.*, 1943, **148**, 21—34).—Blood from monkeys infected with *P. knowlesi* utilises O_2 and metabolises glucose *in vitro* at a considerably greater rate than does blood from normal monkeys. This increase is due to

parasitised erythrocytes. Approx. 50% of the glucose is converted into lactic acid, whilst the remainder is only partly oxidised. Under anaerobic conditions, glycolysis by infected erythrocytes is accelerated, whilst there is no effect on normal erythrocytes. Under comparable conditions of pH, lactate is as effective as glucose as substrate, and like the latter is incompletely oxidised. Infected blood to which nothing is added consumes O_2 for many hr., although if heavily infected, the glucose is used up within 30–60 min. Addition of 0.5% of glucose rapidly decreases pH, consumption of O_2 , and glycolysis. Both metabolic reactions cease at pH 5.5. Addition of PO_4^{4-} , CN^- , and oxalate, hypertonic aqueous solutions, replacement of serum by physiological salt solutions, and spontaneous clumping of erythrocytes are unfavourable for preservation of active metabolism *in vitro*, whilst low degrees of infection, dilution with serum, and neutralisation of accumulated acid favour prolongation of active parasite metabolism. Brief centrifugation, moderate dilution of blood with physiological salt solutions, and addition of heparin, citrate, malonate, sulphamylamide, and methylene-blue have no significant effect on respiration or glycolysis. The bearing of the results on attempts to cultivate *P. knowlesi* *in vitro* is discussed. J. N. A.

Diagnostic and epidemiologic significance of complement-fixation test in human malaria. I. J. Kligler and M. Yoeli (*Amer. J. trop. Med.*, 1941, 21, 531–543).—Dried blood from monkeys infected with *Plasmodium knowlesi* was a suitable antigen for complement-fixation tests in 309 sera from human cases of malaria. The reaction became positive during the 3rd week, provided that the patient had two or more attacks, and disappeared during the 4th month after the last attack. F. S.

Pigment formed by *Plasmodium gallinaceum*. Brumpt, 1935, in domestic fowl. J. Devine and J. D. Fulton (*Ann. trop. Med. Parasit.*, 1942, 36, 167–170).—The pigment was identified as haematin by chemical and spectroscopical methods. F. S.

Problems encountered in growth of *Endameba histolytica* in cultures developed by micro-isolation. C. W. Rees, L. V. Reardon, L. Jacobs, and F. Jones (*Amer. J. trop. Med.*, 1941, 21, 567–578).—*E. histolytica* was cultivated successfully in symbiosis with a variety of organisms but not in bacteria-free media. F. S.

Physiology of *Trichomonas vaginalis*. III. Fermentation of carbohydrates and related compounds. R. E. Trussell and G. Johnson (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 176–178).—Out of 32 compounds examined, only glucose, maltose, sol. starch, glycogen, and dextrin were utilised. No stimulation of growth is caused by lactose. V. J. W.

Effect of *Trichomonas vaginalis* on tissue-culture cells. M. J. Hogue (*Amer. J. Hyg.*, 1943, 37, 142–152).—*T. vaginalis* was grown in tissue cultures from human fetal material and chick embryos. The organisms collected around the cut edges of the tissue; the epithelial cells and later the connective tissue fibroblasts showed signs of degeneration. The effect was not due to mechanical injury but to a toxic substance given off by the flagellates which was partly destroyed by heat and was present in old culture filtrates. The protozoan was never seen inside a tissue-culture cell. B. C. H.

Simple technique for cultivation of organisms from single cells. K. I. Johnstone (*J. Path. Bact.*, 1943, 55, 159–163).—A simple method is described of marking the position of individual organisms on the surface of an agar medium by an electrically heated Pt needle but without a micro-manipulator. The growth of colonies from the selected organisms is followed and sub-cultures are made from them with the needle, under direct observation. Report of 2 cases and a review. C. J. C. B.

Bacteriological examination of meat. G. Schmid (*Schweiz. Z. Path. Bakt.*, 1943, 6, 95–111).—A review. E. M. J.

Use of basic dyes for demonstration of hydrolysis of fat [by bacteria]. G. Knaysi (*J. Bact.*, 1941, 42, 587–589).—The use of Nile-blue, neutral-red, methylene-blue, and malachite-green for the detection of the hydrolysis of fat by bacteria is reviewed. Neutral fats assume the colour of the base and free fatty acids combine with the base to form soaps having the colour of the salt. The base is liberated by adding NaOH until pptn. is complete. The ppt. is washed, dried, and stored or dissolved in the fat and sterilised for use. 1 ml. of the stained fat is added to 100 ml. of the agar medium for plating. F. S.

Agar from *S. African* seaweeds. W. E. Isaac, M. H. Finlayson, and M. G. Simon (*Nature*, 1943, 151, 532).—Agar suitable for bacteriological purposes has been extracted from *Gelidium cartilagineum*, L., Gaillon, *Gracilaria confervoides*, L., Grev., and *Suhria vittata*, L., J. Ag. A. A. E.

Bactericidal effect of ultra-violet rays on non-spore-forming bacteria and mould spores. F. W. Tanner and J. W. Appling (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 47–51).—Resistance of suspensions decreases in the order *Staph. aureus*, *E. coli*, and *Serratia marcescens*, and for moulds in the order *Aspergillus glaucus*, *A. niger*,

Penicillium, and *Mucor*. Infected cardboard is much less easily sterilised. Dil. suspensions are much more affected than conc. ones. V. J. W.

Action of inhibitors on hydrogenase in *Azotobacter*.—See A., 1943, III, 426.

Hydrogenase and symbiotic nitrogen fixation. P. W. Wilson, R. H. Burris, and W. B. Coffee (*J. Biol. Chem.*, 1943, 147, 475–481).—Three procedures designed to improve the sensitivity of methods for detecting hydrogenase in bacteria are described and applied to N-fixing organisms. In the first the rate of reduction of methylene-blue is measured in a spectrophotometer, using special precautions to exclude all traces of O_2 . The second method involves measurement of the H_2 which disappears in the reduction of methylene-blue, combining the standard Thunberg process with the Warburg manometric method. In the third method (cf. Wilson *et al.*, A., 1942, III, 1780) the disappearance of gas in a H_2 - O_2 mixture is measured and the use of differential inhibitors (iodoacetate and NH_2OH) which selectively reduce respiratory activity is employed. Root nodule bacteria, either in pure culture or in association with the plant, probably do not contain hydrogenase. There is probably a significant difference in the symbiotic N fixation system and in free-living *Azotobacter*, the latter possessing a powerful hydrogenase which appears to be associated with its N-fixing activity. H. G. R.

Growth requirements of *Acetobacter suboxydans*. L. A. Underkoffler, A. C. Bantz, and W. H. Peterson (*J. Bact.*, 1943, 45, 183–190).—Riboflavin was not required in the medium but was synthesised by the organism. Pantothenic acid, or one of its components, α -hydroxy- β - γ -dimethyl- γ -butyrolactone, *p*-aminobenzoic acid, and nicotinic acid were essential factors for growth. Hydrolysed casein alone furnished adequate org. N for nutrition and excellent growth was obtained by replacing hydrolysed casein with a known mixture of amino-acids. F. S.

Phosphorylated carbohydrate esters in autotrophic bacteria. G. A. LePage and W. W. Umbreit (*J. Biol. Chem.*, 1943, 147, 263–271).—The P compounds of *Thiobacillus thiooxidans* consist of acid-insol. P 18.7, inorg. P 12.3, and acid-sol. org. P 69.0%. The last-named fraction consists of adenosine triphosphate 21.1, hexose diphosphate 0.2, phosphoglyceric acids 2.1, glucose 1-phosphate 8.7, glucose 6-phosphate 28.9, fructose 6-phosphate 8.7, co-enzyme I 27.0%. Since a large proportion of the acid-sol. P is composed of phosphorylated carbohydrate esters identical with those of yeast and muscle, the internal metabolism of the autotrophic cell is very similar to heterotrophic tissues. H. G. R.

Production of acids from glucose by dental plaque material. J. A. Muntz (*J. Biol. Chem.*, 1943, 148, 225–236).—Lactic acid formed from glucose by bacteria on the surface of the teeth is broken down at a rate dependent on the no. of bacteria present, and most rapidly under aerobic conditions at neutral pH. Acetic, probably propionic, traces of formic, and an unidentified non-volatile acid are formed. R. L. E.

Rôle of colon organisms and their toxins in epidemic diarrhoea of newborn infant. W. B. McClure (*J. Pediatr.*, 1943, 22, 60–69).—Haemolytic colon organisms show a greater incidence in infants with epidemic diarrhoea than in healthy infants in the same nursery. These organisms, grown in milk and fed to cats, occasionally produce diarrhoea. Colon and paracolon organisms grown under partial CO_2 tension produce toxins which can be demonstrated by intraperitoneal injections into cats which produce vomiting and diarrhoea. Death occurs with the more toxic strains. Boiled toxins also produce symptoms. There is a wide variation in the susceptibility of cats to these toxins and some cats are refractory. Susceptible cats do not develop immunity from at least 8 injections of the same toxin given at weekly intervals. The colon toxins do not produce any haemolytic titre for rabbit or sheep blood cells. C. J. C. B.

Mechanism of deamination of serine by *B. coli*. E. Chargaff and D. B. Sprinson (*J. Biol. Chem.*, 1943, 148, 249–250).—*B. coli* deaminates serine under aerobic and anaerobic conditions, alanine only aerobically, and does not attack phosphatidylserine. Pyruvic acid was isolated as a deamination product of serine. A possible mechanism is suggested. R. L. E.

Experiments with collodion sacs on inhibition of bacterial growth *in vitro*. A. H. Harris (*J. Bact.*, 1943, 45, 147–154).—The initiation of growth of *Bact. coli* suspended in a synthetic medium in a collodion sac was delayed or prevented when synthetic medium surrounding the sac was changed every 50 min. Growth commenced promptly when the initial medium surrounding the sac contained 1:20,000 thioglycollic acid or was replaced by a filtrate of a 16-hr. culture of the same organism. Thus, growth was inhibited by preventing the organisms from establishing in the medium conditions requisite for the initiation of growth. F. S.

Antigenic relationships of *Escherichia (Bact.) coli* isolated from one individual. H. Wallick and C. A. Stuart (*J. Bact.*, 1943, 45, 121–126). F. S.

Biochemical and antigenic relationships of paracolon bacteria. C. A. Stuart, K. M. Wheeler, R. Rustigian, and A. Zimmerman (*J. Bact.*, 1943, **45**, 101—119). F. S.

Metabolism of pathogenic clostridia in complex carbohydrate-rich culture media. T. E. Friedemann and T. C. Kmiecik (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 84—87).—Organisms were grown for 10–24 hr. in a medium containing 0.9% of glucose. A large part of the glucose was converted either into lactic acid, or into 2 mols. of formic acid and 1 mol. each of acetic acid and ethyl alcohol.

V. J. W.

Bacteriological studies of severe *Cl. welchii* infections following abortion. H. M. Butler (*J. Obstet. Gynec.*, 1943, **50**, 105—119).—All strains of *Cl. welchii* causing severe generalised infections had the properties of highly invasive variants of the strains causing localised infections or cultured from the blood of patients without the symptoms of the severe infection. The characteristic symptoms of the severe infection were correlated with the properties of the infecting strain. The rarity of the severe infections is explained by the relative rarity of the highly invasive strains in the strains cultivated from the genital tract. All the highly invasive strains and some of the control strains produced a fatal infection in guinea-pigs when washed agar cultures were injected intramuscularly. This property was sometimes lost rapidly under artificial cultivation.

P. C. W.

ϵ -Toxin of *Cl. welchii* type D. I. Proteolytic conversion of ϵ -prototoxin into ϵ -toxin by trypsin and other proteases. II. Mechanism of its development in cultures through the action of extracellular proteinases on ϵ -prototoxin. A. W. Turner and A. W. Rodwell (*Austral. J. Exp. Biol.*, 1943, **21**, 17—25, 27—35).—I. Cultures of most strains of *Cl. welchii*, type D, contain, in addition to ϵ -toxin, an almost atoxic, relatively thermostable, ϵ -prototoxin with the same combining power as toxin, the relative proportions varying with the strain. Prototoxin can be converted into toxin by many extrinsic proteases, including trypsin and papain-cysteine but not pepsin. This may indicate the presence of arginine or lysine residues as side groups and the absence of tyrosine or phenylalanine residues (Bergmann, "Advances in Enzymology," 1942, **2**, 49).

II. ϵ -Prototoxin is excreted by the organisms during the growth phase together with extracellular proteinases corresponding to the anaerobase and collagenase of Maschmann (A., 1938, III, 153, 440, 760; 1939, III, 198). On continued incubation ϵ -prototoxin is converted into ϵ -toxin by the proteinases to an extent which varies exponentially as their concn., if conditions are optimal, and is a fairly const. character of the strain. The intrinsic proteinases are rarely excreted in sufficient concn. to complete this transformation; hence most toxins may be further activated by trypsin and certain other proteinases.

F. S.

Types mitis, intermedium, and gravis of *Corynebacterium diphtheriae*. J. W. McLeod (*Bact. Rev.*, 1943, **7**, 1—41). F. S.

Failure to demonstrate synergism between diphtheria toxin and extracts of *C. diphtheriae* gravis. M. Frobisher and E. A. Mauss (*Amer. J. Hyg.*, 1943, **37**, 225—233).—Saline extracts from virulent and avirulent strains of *gravis*, *mitis*, and indeterminate diphtheria bacilli were non-toxic when injected intradermally or subcutaneously into guinea-pigs in doses up to 5 ml. Experiments failed to reveal the existence of any substance in the extracts which would enhance the spread or toxicity of the exotoxin of *C. diphtheriae*.

B. C. H.

Antigenicity of diphtheria toxoid in chicks, mice, and rats. E. A. Mauss and M. Frobisher (*Amer. J. Hyg.*, 1943, **37**, 234—238).—Commercial toxoids were injected subcutaneously into chicks, rats, and mice in amounts varying from 0.5 to 0.06 ml. Heart blood was taken from the experimental animals and controls 4 weeks after inoculation and kept at 3° until tested for antitoxin. Chicks, although highly susceptible to diphtheria toxin, produced little antitoxin. Mice and rats were relatively insensitive to the toxic properties but responded to small doses of toxoid. Rats produce a unit or more of antitoxin per ml. of serum in a reasonably short time. Rats and possibly mice might be substituted for guinea-pigs for measuring the antigenicity of diphtheria toxoid.

B. C. H.

Acceptance of diphtheria and smallpox immunisation. L. Breslow, P. R. Shalit, and G. W. Anderson (*U.S. Publ. Health Repts.*, 1943, **58**, 384—396).—The relations of certain educational and social influences on the vaccination and immunisation status of 3684 children in 1534 families were studied. Of children over 6 months of age, 66% were vaccinated and 64% immunised. This tendency for a larger proportion to be vaccinated than to be immunised held quite generally for separate age groups, except for children 6 years of age. Half the vaccinations and immunisations had been performed before the age of 3.

C. G. W.

Simple "chocolate" starch medium for rapid type differentiation of *C. diphtheriae*. R. Hodgson, R. M. Heggie, and P. L. Sutherland (*J. Path. Bact.*, 1943, **55**, 199—204).—On this medium *gravis*, *mitis*, and intermedium types of *C. diphtheriae* are easily and rapidly distinguished, the intermedium type giving a greenish colour. If a solution of I and KI is placed on the plate, the *gravis* gives a halo due

to the breakdown of the starch around the colony, while the *mitis* does not. Subcultures can still be made after the addition of I. The medium is not selective and a primary medium must be employed to exclude *C. hofmannii*.

C. J. C. B.

Substitution of heated asparagine-glutamate mixture for nicotinamide as growth-factor for *Bacterium dysenteriae* and other micro-organisms. M. R. Bovarnick (*J. Biol. Chem.*, 1943, **148**, 151—161).—Relatively large equimol. proportions of natural and synthetic glutamic acid and asparagine if heated together at 100° at pH approx. 7 for 24 hr. or longer replace nicotinamide as growth factor for *Bact. dysenteriae*, *Staph. aureus*, and *Lactobacillus arabinosus*. The growth-promoting power is less if heating occurs at pH 9 and absent if at pH 2.5. If the compounds are heated separately, the mixture has little or no growth-promoting power. Heated glutamine also replaces nicotinamide. Glutamic acid is replaced by several other amino-acids and asparagine by isoasparagine. Pyrrolidonecarboxylic acid does not replace glutamic acid. *dl*-Aspartic acid in aq. NaOH, shaken with *p*-toluenesulphonyl chloride in ether, gives *p*-toluenesulphonylaspartic acid, m.p. 159—160°, which with boiling acetic anhydride yields the corresponding anhydride, m.p. 158.5—160°. When boiled with benzyl alcohol, the anhydride gives two isomeric benzyl esters, m.p. 135.5—137° and 108.5—109°, of the acid. The esters are separated by repeated fractional crystallisation from ether-light petroleum. Aq. NH₃ converts them into *p*-toluenesulphonyl-asparagine, m.p. 174.5—175.5°, and -isoasparagine, m.p. 177.5—178°, respectively. By suspending these compounds in liquid NH₃ and gradually adding Na, they are converted into asparagine and isoasparagine, respectively.

W. McC.

Sulphathiazole in epidemic Sonne dysentery. H. Yannet, A. Leibovitz, and J. V. Deutsch (*J. Amer. Med. Assoc.*, 1942, **120**, 184—188).—27 of 44 cases of Sonne dysentery were treated with sulphathiazole. As compared with 17 untreated controls the drug-treated cases showed more rapid clinical recovery, but rectal cultures remained positive for longer and relapses were more frequent.

C. A. K.

Typing enterococci. A. Grumbach (*Schweiz. Z. Path. Bakt.*, 1943, **6**, 66—74; cf. A., 1939, III, 103).—468 of 599 strains of human material fell into 21 serological types. Pptn. as well as agglutination was type-sp. It was thought that the C-fraction was being used.

E. M. J.

Morphology of *Leptospira icterohaemorrhagiae* and *L. canicola* as revealed by the electron microscope. H. E. Morton and T. F. Anderson (*J. Bact.*, 1943, **45**, 143—146).—Flagella-like structures, internal structure, or extruding granules were not observed. (4 electron micrographs.)

F. S.

Epidemiology of meningococcus meningitis. R. M. Clyne (*Arch. Pediat.*, 1943, **60**, 24—45).—A review.

C. J. C. B.

Rabbit serum for meningococcus infections. S. E. Branham (*U.S. Publ. Health Repts.*, 1943, **58**, 478—483).—Horse and rabbit anti-meningococcal sera, both whole serum and refined and conc., were studied by means of a mouse protection test. Refined and conc. sera were better than whole sera in protecting mice. Rabbit sera, refined and conc., were superior to horse sera, some samples being 10 times as potent as the official control serum. The length of time needed for immunisation of rabbits was less than for horses. Anti-meningococcal serum can be prepared more quickly and conveniently in rabbits than in horses. When refined and conc. it has a higher protective val., in the laboratory, than similar serum from horses.

C. G. W.

Effect of bactericidal agents on Gram-negative cocci. C. M. Downs (*J. Bact.*, 1943, **45**, 137—142).—5 μ g. per ml. of gramicidin killed meningococci within 3 hr. at 37° and 1 μ g. per ml. killed gonococci. 1 μ g. per ml. of tyrocidine killed both pneumococci and meningococci and 0.01 μ g. per ml. killed gonococci. Gastric mucin inhibited the bactericidal effect of tyrothricin.

F. S.

Nasopharyngeal culture in whooping cough. A. N. Brooks, W. L. Bradford, and G. P. Berry (*J. Amer. Med. Assoc.*, 1942, **120**, 883—885).—Nasopharyngeal culture is superior to cough plate culture in the diagnosis of whooping cough.

C. A. K.

Pertussis immunity with toxin and antitoxin. J. G. M. Bullowa, J. Alterman, N. Katona, M. Scannell, and A. Robinson (*J. Amer. Med. Assoc.*, 1942, **120**, 886—890).—Pertussis antitoxin can prevent whooping cough when given early in incubation period even though exposure continues. It is of little val. in established cases with cough paroxysms. Vaccine and toxoid can increase antitoxic titre in the blood of normal children.

C. A. K.

Lederle's pertussis antigen in treatment of whooping cough. R. S. W. Baker (*Brit. Med. J.*, 1943, **1**, 562—563).—Twenty cases of pertussis were treated with an antigen without effect.

I. C.

In vivo neutralisation of pertussis toxin with pertussis antitoxin. D. H. Sprunt and D. S. Martin (*Amer. J. Path.*, 1943, **19**, 255—261).—A heat-labile toxin obtained from cultures of the intermediate phase of the Bordet-Gengou bacillus can produce an interstitial mono-nuclear reaction similar to that caused by the Bordet-Gengou bacillus. An antitoxin prepared from this toxin, when injected

prior to either the toxin or the Bordet-Gengou organisms, can greatly modify the extent of the lesion produced in rabbits. (6 photomicrographs.) C. J. C. B.

Relation of pertussis endotoxin to pertussis immunity in the mouse. G. Anderson and E. A. North (*Austral. J. Exp. Biol.*, 1943, 21, 1—8).—The injection of formalised pertussis toxin produced antitoxin in rabbits but not in mice. Pertussis antitoxic serum afforded limited protection to mice infected intranasally with *Hæmophilus pertussis*. This protection was due to antibacterial antibody present in the serum. Antitoxin fully protected mice against intraperitoneal inoculation of *H. pertussis* where the lethal effect is produced by the release of toxin and not by infection. F. S.

Nation-wide co-operative study of pneumonia ætiology. A. S. Rumreich, H. J. Shaughnessy, J. V. Mulcahy, J. C. Willett, W. H. Kellogg, and W. C. Mitchell (*U.S. Publ. Health Repts.*, 1943, 58, 121—135).—A study was made over a 2-year period of the prevalence of pneumococci and other pneumoniogenic organisms in 3 States of very high pneumonia and influenza mortality, and in 3 States of relatively low pneumonia and influenza mortality. The results of the examination of 37,782 laboratory specimens from 30,455 patients are tabulated and described. C. G. W.

Prevalence of pneumococci in throats of homeless men. W. G. Smillie, F. A. Calderone, and J. M. Onslow (*Amer. J. Hyg.*, 1943, 37, 156—163).—Nasopharyngeal swabs were taken from 111 men living in a New York City Municipal Lodging House during the winter of 1940—41. Pneumococci were highly prevalent and 643 strains were obtained. All the standard types except I and XXXIII, and many unusual types, were found. Type III occurred most frequently in 15.3% of the men. Many carried the same type throughout, others showed a multiplicity of types, one man harbouring 7 during the period of observation. A type II pneumococcus epidemic at the time which invaded the community in February spread to 4 individuals only. No lobar pneumonia occurred during the investigation. B. C. H.

Specific polysaccharide content of pneumonic lungs. A. W. Frisch, J. T. Tripp, C. D. Barrett, jun., and B. E. Pidgeon (*J. Exp. Med.*, 1942, 76, 505—510).—The sp. polysaccharide content of type III pneumonic lungs was 60 times that in types I, II, VII, and VIII cases. The highest vals. were obtained from grey hepatized lobes. The yields obtained from sputa and lungs of fatal cases were comparable; they are increased by preliminary peptic digest of the lung exudates. A. S.

Specific polysaccharide content of pneumonic sputa. J. T. Tripp, A. W. Frisch, C. D. Barrett, jun., and B. E. Pidgeon (*J. Exp. Med.*, 1942, 76, 497—504).—The average sp. polysaccharide content of rusty sputa in type III pneumonia was 91 times that in types I, II, VII, and VIII infections. Reticulated type III sputa contained 170 times (1360 mg. per 100 c.c.), non-reticulated type III sputa 5.5 times (45 mg. per 100 c.c.), as much sp. polysaccharide as sputa of other types. A. S.

Heterophile antigen of pneumococcus. W. F. Goebel, T. Shedlovsky, G. I. Lavin, and M. H. Adams (*J. Biol. Chem.*, 1943, 148, 1—15).—Methods for the isolation and purification of the C and F polysaccharides of pneumococcus are given. The heterophile antigen, i.e., the F polysaccharide, is a lipocarbohydrate very closely related to the C or cellular polysaccharide. It is firmly bound to the detritus of autolysed pneumococci, but is separated by appropriate means as a water-sol., amorphous powder, which is essentially free from protein and nucleic acid. During electrophoresis, both polysaccharides behave as single components and migrate to the anode, the mobilities being 1.7×10^{-5} and 2.2×10^{-5} cm./sec./v./cm. for the F and C polysaccharides, respectively. The F polysaccharide is fully antigenic to rabbits and gives rise to antibodies that cause lysis of sheep erythrocytes. It consists of a carbohydrate, which is apparently identical with the C polysaccharide, firmly bound to a fatty acid, m.p. 39—41°, with equiv. 372 and comprising approx. 6% by wt. of the antigen. Neither the F nor C polysaccharide is pptd. by Ag^+ , Cu^{++} , Hg^{++} , or Ba^{++} , but both are pptd. by tannic and phosphotungstic acids. Both polysaccharides are pptd. by C antiserum, and the sp. precipitability of both is destroyed by HNO_3 . Both the C and F carbohydrates liberate reducing sugars, inorg. P, and hexosamine amino-N at approx. the same rate on acid hydrolysis. The high N content (6%) of the two polysaccharides cannot be accounted for on the basis of the hexosamine (20%) liberated on acid hydrolysis, but neither contains protein, purine nucleotides, nucleic acid, polypeptides, or aliphatic or aromatic amino-acids. Possibly another N compound, perhaps a pyrimidine, is also present; both polysaccharides show absorption in the ultra-violet, and a small % of total N is not accounted for as free hexosamine-N. Both contain free amino-groups, 1 out of every 5 or 6 N being free, and both contain approx. 13% of acetyl groups. A second unidentified saccharide is also present, which is detected by the Molisch reaction only after acid hydrolysis. The F polysaccharide is adsorbed on $\text{Al}(\text{OH})_3$ below pH 7.0 and is eluted at higher vals. by Na_2HPO_4 . The most striking difference between

the two polysaccharides is in their inhibition of hæmolysis, F being much more effective in the inhibition of lysis of sheep erythrocytes. It is impossible to remove from the F polysaccharide by acid or alkaline hydrolysis the grouping responsible for inhibition of hæmolysis and at the same time to retain the pptg. carbohydrate fraction intact. The immunological activity of the polysaccharide is unaffected by phosphatase, papain, pepsin, trypsin, chymotrypsin, ribonuclease, or the pneumococcus autolytic ferment. J. N. A.

Field study of ground squirrel (*Citellus beecheyi*) in relation to sylvatic plague. F. C. Evans and R. Holdenried (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 63—64).—The greatest distance moved in a season by any one of 433 marked squirrels in California was 1300 yards, so that migrations of this species probably play no part in the spread of plague. V. J. W.

Transmission studies of sylvatic plague. C. M. Wheeler and J. R. Douglas (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 65—66).—Various species of flea were compared as transmitters of plague, and it was found that the most effective transmission was not correlated with the greatest liability to infection. V. J. W.

Decomposition of urea by *Proteus*. R. Rustigian and C. A. Stuart (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 108—112).—Urea is decomposed by *P. morganii*, but not by *hydrophilus* or *ichthyosmus*. V. J. W.

Preparation of, and test for, bacterial pyrogen. H. Welch, H. O. Calvery, W. T. McClosky, and C. W. Price (*J. Amer. Pharm. Assoc.*, 1943, 32, 65—69).—Pyrogenic solutions were prepared from two strains of *Pseudomonas aeruginosa*, the final treatment of the culture media being centrifuging at 4000 r.p.m. followed by filtration through Berkefeld candles. The preps. were tested by intravenous injection of 10 c.c. into rabbits and examination of rectal temp.; the rabbits may be used repeatedly. In addition to the (non-antigenic) pyrogen, the preps. contained a precipitinogen, the two principles being separable by chemical means or by adsorption on pptg. sera produced with the stock pyrogen solution. F. O. H.

First U.S.P. collaborative study of pyrogens. W. T. McClosky, C. W. Price, W. van Winkle, jun., H. Welch, and H. O. Calvery (*J. Amer. Pharm. Assoc.*, 1943, 32, 69—73).—The properties of a pyrogenic solution (cf. preceding abstract) were examined (rectal temp. in rabbits) by 16 laboratories; 3300 tests on 253 rabbits were used. No sensitisation of the rabbits was observed. Whilst the application of a potent pyrogen prep. twice a week showed a definite trend towards a lower response, the response after an interval of 3 weeks was approx. equal to the initial. Conditions for testing pyrogens on rabbits are discussed. F. O. H.

***Pseudomonas aeruginosa*; its rôle as plant pathogen.**—See A., 1943, III, 445.

Outbreak of bullous impetigo neonatorum [rôle of staphylococcal infection]. T. H. C. Benians (*Brit. Med. J.*, 1943, I, 623—626).—An epidemic of bullous impetigo neonatorum due to staphylococcal infection and extending over some months was observed in maternity wards. The outbreak occurred at a period when staphylococcal infections in the district were more frequent and severe than usual, and coincided also with a considerable increase in the no. of cases of acute mastitis. The epidemic was preceded, accompanied, and followed by mild cases of papular impetigo and staphylococcal conjunctivitis. There were no deaths. Nasal carriers of *Staph. aureus* were found among doctors, nurses, infants, and mothers. It was thought that a folliculitis of the nares was a likely source of infection and that the organism was shaken into the air from handkerchiefs. I. C.

Staphylococcal enterotoxin—with special reference to kitten test. F. Fulton (*Brit. J. exp. Path.*, 1943, 24, 65—72).—The substance responsible for the vomiting reaction in kittens after intraperitoneal inoculation is not the enterotoxin, but is the β -lysin or some closely related toxin. Feeding experiments in human volunteers show that the enterotoxin is associated with the α -toxin. F. S.

Staphylococcal enterotoxin in relation to α -hæmolysin production in simple media. W. R. North, jun. (*Food Res.*, 1943, 8, 169—178).—A chopped ham medium is described for demonstrating the production of enterotoxin by staphylococci and is capable of demonstrating enterotoxic potency with certain strains which fail to produce enterotoxin on Dolman and Wilson medium. No correlation has been observed between the ability of a strain to produce enterotoxin and either hæmolysin production or the proteolytic activity. H. G. R.

Fermentation of glycerol by streptococci. I. C. Gunsalus and J. M. Sherman (*J. Bact.*, 1943, 45, 155—162).— O_2 was necessary for acid production from glycerol by the majority of lactic acid bacteria; only one strain of lactobacillus and 2 strains of enterococci produced acid from glycerol anaerobically. Glycerol was fermented by human group C and groups B and D but not by animal group C and group A streptococci. F. S.

Effect of humidity on β -streptococci (group C) atomised into air. W. F. Wells and P. Zappasodi (*Science*, 1942, 96, 277—278).—High humidity neutralised and low humidity masked the disinfecting action of propylene glycol vapour. Disinfection was most apparent at intermediate humidities. E. R. S.

Streptococcal and pneumococcal infections of nose and throat in young adults. P. S. Rhoads and M. E. Afremow (*Arch. intern. Med.*, 1943, 71, 443—453).—20% of normal young adults (chiefly medical students) harboured haemolytic streptococci. Those whose cultures contained large nos. of haemolytic streptococci often had inflammation of the throat or nose, slight fever, and leucocytosis; others were convalescent from recent infections. In no instances did normal-appearing mucous membranes contain many haemolytic streptococci. Haemolytic streptococci were responsible for 2/3 of the attacks of tonsillitis, pharyngitis, laryngitis, and sinusitis in 1034 young adults. Persons who harbour many haemolytic streptococci in their throats and those who harbour these organisms or green-forming cocci in their noses usually have, or are convalescent from, an active infection. C. J. C. B.

Some interrelationships of pyridoxine, alanine, and glycine in their effect on certain lactic acid bacteria. E. E. Snell and B. M. Guirard (*Proc. Nat. Acad. Sci.*, 1943, 29, 66—73).—Alanine in sufficient concn. completely replaced pyridoxine for *Streptococcus lactis*. No other amino-acid tested did this. Glycine inhibited growth; threonine, serine, and β -alanine were inhibitory at higher levels. Inhibition by each of these substances was counteracted by addition of more pyridoxine to the medium. No other vitamin had this action. Such inhibition was also counteracted by alanine, but by no other amino-acid. Alanine may serve as a direct precursor of pyridoxine. F. S.

Nutrients and growth factors for lactic acid bacteria. E. F. Miller (*Angew. Chem.*, 1940, 53, 204—209).—A review.

Comparative study of the nutritional requirements of *Salmonella typhosa*, *S. pullorum*, and *S. gallinarum*. E. A. Johnson and L. F. Rettger (*J. Bact.*, 1943, 45, 127—135).—Two of 45 strains of *Bact. pullorum* required nicotinic acid or its amide while the remainder did not require any vitamins for growth in a basal medium of 16 amino-acids and thioglycolic acid. Most strains failed to grow without glucose, which stimulated the growth of all. All of 22 strains of *Bact. gallinarum* required vitamin-B₁. Glucose had no effect. 8 strains required an atm. of 10% CO₂ whereas *Bact. pullorum* and *Bact. typhosum* required no added CO₂. Tryptophan, necessary for *Bact. typhosum*, was not required by *Bact. pullorum* or *Bact. gallinarum*. F. S.

Use of synthetic medium in study of antibacterial effect of sulphathiazole. R. D. Muir, V. J. Shamleffer, and L. R. Jones (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 77—79).—Sulphathiazole is 10 times as effective as a bacteriostatic against *Salmonella enteritidis* in the previously described (*J. Bact.*, 1941, 41, 84) synthetic medium as in peptone broth. V. J. W.

Typhoid vaccine studies. VIII. Relationship between V forms of *Bact. typhosum* and *Bact. ballerup*. D. Longfellow and G. F. Luipold (*Amer. J. Hyg.*, 1943, 37, 206—210).—Groups of 8—16 mice were immunised actively by inoculation with formalised vaccines prepared from V (Vi) and W ("O") variants of *Bact. typhosum* and *Bact. ballerup*. Similar groups were immunised passively with antisera against the same vaccines prepared in rabbits. Degrees of immunity were tested by graded intraperitoneal inoculations of live heterologous and homologous V-form organisms. Similar experiments were made with the V forms of *Bact. typhosum* and a coliform organism (*Bact. coli* 5396/38) containing Vi antigen. A high degree of cross-protection was demonstrated between the V but not the W forms of *Bact. typhosum* and *Bact. ballerup* and between *Bact. typhosum* and the coliform organism by both active and passive immunisation. Cross-protection was attributed to the single antigen Vi which the organisms possessed in common. B. C. H.

Effect of exercise on production of typhoid agglutins. S. E. Wedberg (*Yale J. Biol. Med.*, 1942, 15, 263—270).—There were no differences in antibody production by exercised and non-exercised rabbits. F. S.

Conservation of Vi antigen of dead typhoid bacilli and of Vi type anti-typhoid serum. M. Armanqu  (*Schweiz. Z. Path. Bakt.*, 1943, 6, 81—94).—The use of diethylmercuric borate is described. E. M. J.

Significance of Vi antigen. L. Almon (*Bact. Rev.*, 1943, 7, 43—56). F. S.

Spontaneous tetanus antitoxin in [Swiss] cattle. H. Seem ller (*Schweiz. Z. Path. Bakt.*, 1943, 6, 120—124).—Spontaneous tetanus antitoxin was found in sucking calves when the mother animal contained it; very rarely in 1—2-year old cattle; more often after the 3rd year, in 50% of the 3—6-year-olds, and in still more 6—15-year-olds. No antitoxin was found in the serum of 50 bulls (1- to 6-year-olds); it was found up to   antitoxin units in 8 of 25 3—6-

year-old oxen, in 12 of 25 1—3-year-old, in 17 of 25 3—6-year-old, and up to 1 unit in 19 of 25 6—15-year-old cows. It was absent in the milk of 2 castrated and in 2 non-carrying cows, and present in that of 8 carrying cows with max. concn. just before calving. E. M. J.

Trends in preventive and social aspects of tuberculosis. C. Clayson (*Edinb. Med. J.*, 1943, 50, 208—225).—A discussion of the present general requirements of a country in combating tuberculosis with an account of probable future developments. H. S.

Incidence of pulmonary tuberculosis of adult type in the R.A.F. A. G. Evans (*Brit. Med. J.*, 1943, 1, 565—566).—Results of mass-radiography of 75,000 cases are recorded. I. C.

Destruction of acid-fastness of tubercle bacillus by autolytic process. L. Baisden and D. Yegian (*J. Bact.*, 1943, 45, 163—166).—Human tubercle bacilli, after alcohol and ether extraction for 2 days, were autolysed for 2 days in water. Max. autolysis was at 37° and at pH 5.2—7.0. Autolysis was inhibited by heating at 90° for 10 min. or by dil. aq. I and formaldehyde. The autolytic agent was not liberated during autolysis. F. S.

Antigenic treatment of leprosy with non-acid-fast variety of tubercle bacillus (N.A.C.). E. Grasset and A. R. Davison (*S. Afr. J. Med. Sci.*, 1942, 7, 236—244).—20 cases of the neural group with positive smears treated with N.A.C. antigen responded better than to any other medicament. P. C. W.

Mantoux test versus patch test. M. Crago (*Brit. Med. J.*, 1943, 1, 603).—Intradermal Mantoux test was positive in 8 cases out of 116, in which the tuberculin patch test was negative. I. C.

New technique for counting colonies of bacteriophage. J. Steinmann (*Schweiz. Z. Path. Bakt.*, 1943, 6, 77—80). E. M. J.

Mechanism of virus multiplication. J. Spizizen (*Proc. Nat. Acad. Sci.*, 1943, 29, 109—114).—Glycine, 5×10^{-4} — 5×10^{-3} M., and glycine anhydride ($2:4$ -diketopiperazine), 2×10^{-4} — 3×10^{-3} M., were insufficient to support growth of *Bact. coli* but supported considerable multiplication of *Bact. coli* bacteriophage P₁. Na arsenite, 1.5×10^{-5} — 2.5×10^{-3} M., completely inhibited multiplication of bacteriophage γ , but supported the normal growth of the sensitive organism, *Bact. coli*. Certain sp. metabolic poisons (CN⁻, iodoacetate, arsenite, dinitrophenol, β -aminophenol) inhibited and substances known to be intermediates or co-enzymes in intermediary carbohydrate metabolism enhanced independent bacteriophage multiplication. F. S.

Virus of spontaneous encephalomyelitis found in intestine of normal wild grey mice. P. K. Olitsky and R. W. Schlesinger (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 101—103).—Virus was found in 5 out of 6 mice trapped in the institution. V. J. W.

Susceptibility of Syrian hamster to viruses of St. Louis and Japanese-B encephalitis. E. H. Lennette (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 178—181).—This animal is highly susceptible to intracerebral but not to intra-abdominal or subcutaneous inoculation. V. J. W.

Virus of Western equine encephalitis in spinal fluid. B. Chown and M. Norris (*J. Amer. Med. Assoc.*, 1942, 120, 116—117).—Case report. C. A. K.

Pathology and pathogenesis of human poliomyelitis. A. B. Sabin (*J. Amer. Med. Assoc.*, 1942, 120, 506—511).—A lecture. C. A. K.

Mouse-adapted Lansing strain of poliomyelitis virus. III. Comparison with strain of mouse encephalomyelitis virus isolated from intestines of normal mice. L. E. Young and M. C. Cumberland (*Amer. J. Hyg.*, 1943, 37, 216—224; cf. A., 1943, III, 529).—The clinical picture produced in mice by intracerebral inoculation of the intestinal virus differed from that produced by the Lansing virus. Results of intracerebral inoculation of the Lansing virus in mice previously inoculated intracerebrally with the intestinal virus, intracerebral inoculation of the Lansing or intestinal virus in mice previously vaccinated intraperitoneally with either agent, and neutralisation tests showed no evidence of immunological relationship between the two viruses. B. C. H.

Pathway of invasion in a cynomolgus monkey after oral application of poliomyelitis virus. H. K. Faber and R. J. Silverberg (*Science*, 1942, 96, 473—475).—The locations of the lesions found in a monkey after oral application of 15% poliomyelitis virus suspension showed that the virus had penetrated mainly through fibres of the 5th, 9th, and 10th nerves, and to a smaller extent through the sympathetics. The Gasserian ganglia were heavily involved but their central connexions contained no lesions. E. R. S.

Specific neutralisation of cotton rat strains of poliomyelitis virus. J. A. Toomey and W. S. Takacs (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 123—125).—The Jungeblut and Sanders strain was not neutralised by sp. convalescent sera as were other strains, and produced different symptoms from Trask's strain, adapted to rats. V. J. W.

[Results of] treatment of acute poliomyelitis with antistreptococcal serum. E. C. Rosenow (*Minnesota Med.*, 1940, 23, 161—164).—The serum used consisted of one part of the centrifuged eglobulin fraction of the antiserum of horses hyperimmunised for 1—5 years with the heat-killed poliomyelitic streptococcus obtained from the nasopharynx, c.s.f., brain, or spinal cord of human beings or monkeys who had succumbed to poliomyelitis, and nine parts of physiological saline with 0.2% of phenol. 5—20 c.c. were injected intramuscularly once or twice daily in 221 patients, 4.5% of whom died and 3.3% of whom had severe residual paralysis. In 116 patients seen during the same period and not given the serum 19.8% died, and 34.4% had severe residual paralysis. E. M. J.

Crystallisation of a protein from poliomyelitis-infected mouse brain. E. Racker (*Science*, 1942, 96, 364—365).—A fraction which was essentially protein in nature was obtained from brains of mice infected with poliomyelitis virus. It was birefringent and the washed material was infective, producing typical symptoms of poliomyelitis in mice. The fractionation is described. E. R. S.

Vesicular test: diagnostic method of infection by poradenic (lymphogranuloma inguinale) virus. C. Ottolina (*Amer. J. trop. Med.*, 1941, 21, 597—602).—The intradermal injection of 0.3 c.c. of a five-fold vac. concentrate of c.s.f. of Frei-positive patients produced a sp. vesicular reaction in Frei-positive individuals. F. S.

Inactivation of virus of lymphocytic choriomeningitis by soaps. C. C. Stock and T. Francis, jun. (*J. Exp. Med.*, 1943, 77, 323—336).—The virus of lymphocytic choriomeningitis is inactivated at pH 7.3—7.5 by chaulmoogric, linoleic, linolenic, myristic, oleic, and ricinoleic acids and by the detergents Zephiran, Duponol LS, and Aerosol OT. The virus inactivation may be due to a more or less sp. absorption of the soap by the virus. Oxidation processes were negligible in the reaction. Infectious virus was not recovered from oleate-inactivated mixtures. Neither oleate- nor ether-inactivated virus was capable of producing immunity in mice under conditions in which untreated virus produced a moderate immunity. A. S.

Inactivation of virus of infectious myxomatosis by heat. L. H. Bronson and R. F. Parker (*J. Bact.*, 1943, 45, 177—181).—The inactivation of this virus was not accomplished abruptly, but at any given temp. the rate of destruction was const. It increased in linear fashion with increase of temp. F. S.

Present status of influenza problem. F. L. Horsfall (*J. Amer. Med. Assoc.*, 1942, 120, 284—287).—Clinical lecture. C. A. K.

Control of epidemic influenza. J. Stokes and W. Henle (*J. Amer. Med. Assoc.*, 1942, 120, 16—20).—Ultra-violet irradiation and propylene glycol vapour were equally effective in preventing airborne infection of mice by influenza A virus. 1 out of 44 boys injected with inactivated allantoic fluid vaccine, and 10 out of 28 controls, developed clinical influenza after inhalation of active influenza virus. Also literature and discussion by others. C. A. K.

Simplified procedure for concentration and purification of influenza virus. T. Francis, jun., and J. E. Sulk (*Science*, 1942, 96, 499—500).—Tenfold concn. of PR8 and Lee strains of virus were obtained by bleeding the embryo into the extra-embryonic fluid of infected eggs, centrifuging of the red cells in the cold, and eluting the virus with saline at 37°. E. R. S.

Air-borne virus infections. I. Experimental technique and preliminary observations on influenza and infectious ectromelia. D. G. ff. Edward, W. J. Elford, and P. P. Laidlaw. II. Killing of virus aerosols by ultra-violet radiation. D. G. ff. Edward, D. Lush, and R. B. Bourdillion (*J. Hygiene*, 1943, 43, 1—10, 11—15).—I. A simple apparatus for the production of aerosols from virus suspensions and their utilisation for the infection of mice are described. The effective life of such aerosols was less in moist than in dry air, probably as a result of the settlement of the larger particles which persist in the presence of water vapour. The size of particles in aerosols prepared from unwashed virus suspensions is governed by the size of the particles of tissue present. Mice exposed to aerosols of the viruses contracted influenza and ectromelia. The characteristics of the diseases resulting from such infection were studied. Probably less than 1% of the virus inhaled actually reaches the lungs.

II. Aerosols of influenza, vaccinia, and herpes simplex viruses were passed through a SiO₂ spiral and exposed to ultra-violet radiation from a source 2 cm. distant. 99% of the influenza virus was killed by 6 sec. exposure; 90% of the vaccinia virus was killed in 1 sec. The results with herpes were less definite, but were similar to those with vaccinia. D. D.

Results following inoculation of children with egg-passage measles virus. J. Stokes, jun., G. C. O'Neil, M. F. Shaffer, D. P. G. Rake, and E. P. Maris (*J. Pediat.*, 1943, 22, 1—16).—Measles virus, grown on the chorioallantois of the developing chick embryo for 3—66 serial passages, was inoculated by intranasal drip, inhalation, intradermal injection, and subcutaneous injection into 255 children, most of whom were susceptible. Typical reactions of extremely mild

measles occurred in the large majority of inoculated children with Koplik spots, rash, fever, conjunctivitis, and coryza but rarely with cough or malaise. In view of the nature of the reactions, the measles virus as inoculated was considered to be modified and to produce in the children an attenuated disease. C. J. C. B.

Results of chance and planned exposure to unmodified measles virus in children previously inoculated with egg-passage measles virus. E. P. Maris, G. Rake, J. Stokes, jun., M. F. Shaffer, and G. C. O'Neil (*J. Pediat.*, 1943, 22, 17—29).—22 children who had been previously inoculated with egg-passage measles virus were exposed by chance at various intervals up to 1 year from the time of their inoculations to children with active cases of measles under field conditions. 3 of these children developed typical measles, 1 developed mild measles, 3 developed an extremely mild disease distinguishable with difficulty as measles, and 15 developed no disease. 24 children who had been previously inoculated with egg-passage measles virus were exposed by challenging injections of blood from active cases of measles at various intervals from the time of their original inoculations. 3 of these children developed typical measles, 2 mild measles, 5 an extremely mild disease, and 13 no disease. Suitable control children and monkeys were injected with portions of the challenge material used and developed measles typical for the species injected. C. J. C. B.

Virus obtained from pneumonia of cats and its possible relation to cause of atypical pneumonia in man. J. A. Baker (*Science*, 1942, 96, 475—476).—A respiratory disease in cats is described. It is due to a virus which forms elementary bodies, and is the same as or closely related to the one which causes some of the so-called atypical pneumonias in man. E. R. S.

Infectious agent from cases of atypical pneumonia apparently transmissible to cotton rats. M. D. Eaton, G. Meiklejohn, W. Van-Herick, and J. C. Talbot (*Science*, 1942, 96, 518—519).—In 17 out of 78 cases the infectious agent was transmissible by intranasal inoculation with cotton rats, but not mice, ferrets, or hamsters. In 2 out of 6 experiments the agent was passed through Berkefeld N candles. E. R. S.

Methods of immunisation against typhus fever. H. Mooser (*Schweiz. Z. Path. Bakt.*, 1943, 6, 47—65).—A review. E. M. J.

Bivalent typhus vaccine of high immunising value. M. R. Castaneda (*Science*, 1942, 96, 304).—A Mexican epidemic strain of rickettsia was grown on mouse lung. A bivalent vaccine was prepared using this epidemic strain and the ordinary murine strain. The effect of this vaccine on man was not evaluated but it gives a high degree of protection to guinea-pigs. E. R. S.

Aqueous-base yellow fever vaccine. M. V. Hargett, H. W. Burruss, and A. Donovan (*U.S. Publ. Health Repts.*, 1943, 58, 505—512).—The prep. of aq.-base living yellow fever vaccine was undertaken by the U.S. Public Health Service in 1941. This vaccine is an aq. extract of 10- to 11-day-old chick embryos infected with the attenuated 17D strain of yellow fever virus. It differs from the 17D serum-base vaccine extensively used in recent years in that it contains 75% rather than 10—40% embryo extract and no serum diluent. The extract is preserved by desiccation under high vac. from the frozen state, with storage at subfreezing temp. in an atm. of dry N₂. For administration the dried prep. is rehydrated and diluted 1:10 with physiological saline, with each recipient receiving 0.5 ml. subcutaneously. The increased virus content of the aq. product as contrasted with the serum-containing prep. insures that a greater quantity of virus is inoculated per individual vaccinated. This favours host immunisation. C. G. W.

Comparison of high and low subcultures of yellow fever vaccine (17D) in human groups. H. H. Smith, H. Calderón-Cuervo, and J. P. Leyva (*Amer. J. trop. Med.*, 1941, 21, 579—587).—There was no difference in the immunising efficiency of high (450th passage) and low (212th passage) tissue subculture material of yellow fever virus 17D. F. S.

Sulphur distribution in rib-grass strain of tobacco mosaic virus. C. A. Knight (*J. Biol. Chem.*, 1943, 147, 663—666).—The rib-grass strain of tobacco mosaic virus contains 0.62% of S, i.e., approx. 3 times the S content of the ordinary strain. The former has 2% of methionine, whilst 7 other strains examined contained no methionine. Both strains contain approx. 0.68% of cysteine. R. L. E.

Intranuclear inclusions in infancy. T. D. Kinney (*Amer. J. Path.*, 1942, 18, 799—807).—Intranuclear inclusions similar to those of herpes are described in the brain of a child of 3 years. A case of so-called "inclusion disease" of infants is reported. 6 cases are described in which intranuclear inclusions were found in the lungs or salivary glands of infants dying of pertussis. (8 photomicrographs.) C. J. C. B.

Density of viruses and proteins by comparative ultracentrifuging in heavy water.—See A., 1943, III, 426.

Serological properties of simple substances. V. Precipitation of polyhaptenic simple substances and anti-serum homologous to the

p-p'-diazophenylazophenylarsonic acid group and its inhibition by haptens. D. Pressman, J. T. Maynard, A. L. Grossberg, and L. Pauling (*J. Amer. Chem. Soc.*, 1939, **65**, 728—732; cf. A., 1943, III, 442).—Quant. data are reported for the pptn. reactions of simple polyhaptens and antisera prepared by inoculating rabbits with azo-proteins containing *p-p'*-diazophenylazophenylarsonic acid. The inhibitory effect of haptens is used to calculate hapten-antibody bond-strength consts. These are not related to second ionisation consts. but are in general in the same order as in previous results (*loc. cit.*), but the position of substituents is without effect, probably owing to the larger size of the hapten group. Steric reasons are adduced also for a few other anomalous results. R. S. C.

Widened reactivity of antibody produced by prolonged immunisation. S. B. Hooker and W. C. Boyd (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 187—190).—Early in course of immunisation of rabbits by *p*-aminobenzoic acid-azohæmocyannin sp. pptn. by antibody was not inhibited by hexahydrobenzoic acid. Later in the course such inhibition was marked. V. J. W.

Non-specific precipitation of sulphathiazole azo-conjugates by immune sera; inhibition and complement fixation. S. C. Bukantz and T. J. Abernethy (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 94—97).—Pptn. reactions of antisera with sulphathiazoleazoresorcinol did not differ from those with sulphathiazoleazoproteins, and depended on the proportion in which serum and sulphathiazoleazoresorcinol were mixed. V. J. W.

Detection of minute amounts of serum antibody by agglutination of antigen-coated bacterial cells. E. C. Roberts and L. R. Jones (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 11—14).—Cells of *Serratia marcescens* in suspension are treated with horse or ox serum as antigen, and the cells so coated are agglutinated by addition of the serum to be tested (cf. Jones, *J. Exp. Med.*, 1927, **46**, 303). V. J. W.

Agglutination of encephalitis virus-coated bacteria by virus antisera. E. C. Roberts and L. B. Jones (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 75—76).—The method described in the preceding abstract was applied to suspensions of infected mouse brain in place of serum. The coated cells were agglutinated by rabbit antiserum, but results with normal and convalescent human serum could not be correlated with antiviral content. V. J. W.

Antigenic properties of horse serum fractions isolated by electrophoresis and by ultracentrifugation.—See A., 1943, III, 373.

Antigens and malignant tumours.—See A., 1943, III, 402.

Effect of diet on anaphylaxis in rat. J. T. Weld and L. C. Mitchell (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 168—170).—Addition to a bread diet of yeast, vitamin-A, casein, CaCO_3 , or KH_2PO_4 does not modify anaphylactic reaction to horse or sheep serum. Rats must be at least 10 weeks old before anaphylaxis can be produced. V. J. W.

Histaminase in treatment of urticaria of pregnancy. J. S. Blumen-thal (*Minnesota Med.*, 1940, **23**, 797, 824).—10 units of histaminase were given 4 times a day by mouth in a case of severe urticaria unrelieved by other measures in an 8-months pregnant woman with almost complete relief. This treatment was continued until delivery by Cæsarean section of twins, a placenta prævia being present. The urticaria and itching did not disappear entirely until after delivery. E. M. J.

Contamination of antigens with traces of other antigens as cause of false positive reactions in intradermal testing. W. S. Small, R. C. Hawes, H. Miller, and G. Piness (*J. Allergy*, 1942, **13**, 380—384).—Intradermal skin reactions in sensitive persons to a control solution handled in syringes, needles, or bottles which had been deliberately contaminated with selected allergens and then rinsed and sterilised were compared with reactions to dilutions of the same allergens to give a measure of each as a source of contamination. In most cases reactions as large as or larger than those with 1 in 10^6 solutions were obtained. Many allergens form stable films on glass or metal equipment which are not removed by rinsing or destroyed by sterilisation. Cleansing methods should be proved adequate by skin tests on sensitive persons. C. J. C. B.

Hypersensitivity to thiamin. W. S. Eisenstadt (*Minnesota Med.*, 1942, **25**, 861—863).—Report of 2 cases who after prolonged subcutaneous administration of thiamin showed reactions, one local at the site of injection, the other general with angioneurotic oedema of tongue, lips, and eyes, and generalised urticaria. Intradermal tests were positive in both cases. E. M. J.

Non-hypoglycæmic (allergic) insulin reactions. E. M. Watson (*Canad. Med. Assoc. J.*, 1942, **47**, 336—339).—A review with description of 3 cases. C. J. C. B.

Case of drug allergy of both types: fixed and generalised eruption. F. Goldschlag (*Med. J. Austral.*, 1942, II, 501—502).—Allergy was produced by quinidine and there was sensitivity to phenobarbital as well. F. S.

Allergic myocarditis and nephritis and hilus tuberculosis. J. Flagg and M. Froehner (*Schweiz. med. Wschr.*, 1942, **72**, 922—924).—Report of a case. A. S.

Bacterial allergy due to chronic infections in upper respiratory tract. W. W. Eagle (*Sth. Med. J.*, 1942, **35**, 908—912).—Report of 7 cases. E. M. J.

Allergy in rheumatic disease. B. Schick (*J. Mt. Sinai Hosp.*, 1942, **8**, 991—994). E. M. J.

Occupational seasonal hay fever and asthma due to narcissus bulbs. V. J. Derbes (*Sth. Med. J.*, 1942, **35**, 912—913).—Report of a case with a 2 years sensitisation time. E. M. J.

Air-borne pollen [in Minneapolis, Minn.] and incidence of hay fever. C. O. Rosendahl, R. V. Ellis, and O. A. Dahl (*Minnesota Med.*, 1940, **23**, 619—635).—A count of air-borne pollens of 17 groups of plants during 4 seasons. E. M. J.

Natural transmission of immunity against *Trichinella spiralis* from mother rats to their offspring. J. T. Culbertson (*J. Parasit.*, 1943, **29**, 114—116).—Immunity is transferred largely, if not entirely, through the milk. The young of a normal rat suckled by an immune rat become immune whereas the young of an immune rat suckled by a normal rat are not immunised. F. S.

Number of larvae and time required to produce active immunity in rats against *Trichinella spiralis*. J. H. Fischthal (*J. Parasit.*, 1943, **29**, 123—126). F. S.

XXVI.—PLANT PHYSIOLOGY.

Rest period required for blueberries. G. M. Darrow (*Proc. Amer. Soc. Hort. Sci.*, 1942, **41**, 189—194).—Most varieties of blueberry require a winter chilling. In its absence satisfactory spring growth does not occur and the plants die without producing fruit. Winter chilling requirements vary with different varieties. L. G. G. W.

Freezing out of colloids and colloid mixtures with reference to the plasmatic resistance of plants to frost.—See A., 1943, III, 426.

Effect of temperature and photoperiod on seedstalk development in carrots. E. S. Sakr and H. C. Thompson (*Proc. Amer. Soc. Hort. Sci.*, 1942, **41**, 343—346).—Mature roots harvested and planted in the greenhouse after storage for 15 to 60 days at varying temp. produced no flower primordia when grown at 21.1—26.7°. At lower temp. all plants produced flower stalks. Length of day had relatively little effect on flower initiation in the carrot but plants given continuous light produced slightly fewer flower stalks than those under "normal day" conditions. L. G. G. W.

Influence of excess water in the soil on the transpiration and apparent photosynthesis of young apple trees. N. F. Childers, D. G. White, and F. W. Southwick (*Proc. Amer. Soc. Hort. Sci.*, 1941, **38**, 163—164).—With temp. 85° or 80° F., R.H. 50%, and light 2000 to 5000 ft.-candles at the leaf surface, excessive watering of the soil caused a reduction of 10—40% in both the transpiration and apparent photosynthesis of young Stayman Winesap apples in 6—9 days. Reductions up to 95% were obtained after flooding for 30 days. When excessive water was drained away recovery commenced in 4—6 days. No difference in stomatal aperture due to flooding could be detected. Leaf injury appeared first in the lower leaves and consisted of the development of light green areas between the veins and wilting, and the injury progressed acropetally. L. G. G. W.

Photosynthesis, transpiration, and growth of apples as influenced by various concentrations of oxygen and carbon dioxide in the soil atmosphere. W. H. Childs (*Proc. Amer. Soc. Hort. Sci.*, 1941, **38**, 179—180).—Fresh wt., dry wt., ash, leaf area, and terminal growth of McIntosh and Delicious apple trees grown in sandy loam soils in glazed pots were not decreased by lowering the O_2 content of the soil atm. to 12%. A decrease below this val. caused a slight reduction in growth but no abrupt drop occurred until the $[\text{O}_2]$ was reduced to 1.5—2.0%. At levels of O_2 below 1.5% any growth occurring was at the expense of stored food material; photosynthesis and transpiration of healthy leaves did not decrease until the $[\text{O}_2]$ in the soil atm. was 2% or less. The $[\text{CO}_2]$ studied (not stated) had little effect on transpiration, photosynthesis, or growth. With more than 12% of O_2 in the soil air, trees were large, with fibrous roots with no lenticular proliferations. At lower $[\text{O}_2]$ (2%) the roots were smaller and with lenticular proliferations on the tap root. At 1.5—2% O_2 the lower roots showed little lignification and many lenticular proliferations, whilst below 1.5% O_2 the fibrous roots were dead and there were no new roots. L. G. G. W.

Influence of saline substances on the absorption of nutrient by the bean plant. H. G. Gauch and C. H. Wadleigh (*Proc. Amer. Soc. Hort. Sci.*, 1942, **41**, 365—369).—Bean (*Phaseolus vulgaris*?) plants in nutrient solution of 1.5 to 4.5 atm. osmotic pressure, all (except 0.5 atm.) due to NaCl or CaCl_2 , showed marked differences

according to whether NaCl or CaCl₂ was the main constituent of the nutrient medium. In both series the [Ca⁺⁺] exceeded the [Na⁺] in leaves and stem but more N, P, and K was absorbed by the NaCl than by the CaCl₂ series. L. G. G. W.

Assimilation in bean plants of nitrogen from saline solutions. C. H. Wadleigh and H. G. Gauch (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 360—364).—Kidney beans (*Phaseolus vulgaris*?) in culture show decreased growth when the osmotic concn. of the nutrient solution increases. When the high osmotic concn. is due to CaCl₂, growth is more depressed (due mainly to poor root growth) than when it is due to NaCl. As the salt concn. of the substrate increases the NO₃-N in the plant decreases. Salt concn. does not affect the sol. N content of the plants but this was higher in the NaCl than in the CaCl₂ series. The protein content decreases as the salt concn. of nutrient increases. L. G. G. W.

Nitrogen content of dormant pecan twigs. G. H. Blackmon (*Proc. Amer. Soc. Hort. Sci.*, 1941, 38, 211—212).—Pecan trees grown under 8 fertiliser and cover crop treatments, namely, N-P-K (applied in spring), N-P-K and legume (vetch), N-P-K (spring) supplemented with summer application of N, P, K, and legume, N application in spring, N application in spring and summer, N and P applied in spring and N in summer, showed in the dormant twigs just as high a N content whether N was supplied in the fertiliser, as a leguminous crop ploughed in, or as in a combination of these two sources of N. L. G. G. W.

Relative carbohydrate and nitrogen concentration in new tissue produced on ringed branches. A. E. Murneek (*Proc. Amer. Soc. Hort. Sci.*, 1941, 38, 133—136).—Branch ringing may interrupt the basipetal movement of growth-substances so that their concn. above the ring is increased. Ringing causes an increase in the carbohydrate and a decrease in the N content of spurs (in apple). When ringing is performed later than usual (Apr. 30th instead of Apr. 14th) the difference between ringed and control disappears with the variety Rome but the late ringing augments fruit setting just as much as early ringing. Ringing besides increasing fruit setting augments the carbohydrate content of spurs despite the increased usage of carbohydrate in fruit development. L. G. G. W.

Chlorosis and necrosis of tung leaves associated with low potassium content. M. Drosdoff and J. H. Painter (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 45—51).—Interveneal chlorosis and necrosis of tung leaves is associated with a low K content. Affected leaves are generally but not invariably low in N. Generally, older leaves show the most severe symptoms, the whole margin of the leaf becoming chlorotic in some cases, whilst in others interveneal necrosis develops first near the margin and then extends inwards between the main lateral veins. Later the leaf margin curls, and the leaf becomes brittle and is shed prematurely. L. G. G. W.

Phosphate nutrition of fruit trees. IV. Phosphate content of peach leaves from 130 orchards in California, and some factors which may influence it. O. Lilleland and J. G. Brown (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 1—10).—The PO₄^{'''} content of peach leaves decreases rapidly during spring (April—June) and then remains const. or decreases slightly until leaf-fall. The mean content of P in the dry matter of peach leaves was 0.185% (range 0.14—0.27%) and poor growth often occurred when the P content was high. High N was correlated with a low P content. Irrigation increased the P content of the leaves. L. G. G. W.

Use of metaphosphate in nutrient solutions. L. J. Edgerton (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 237—239).—Apple seedlings in water culture containing no PO₄^{'''} and at high pH (7.5) showed restricted growth and developed Fe chlorosis although the Fe content of the leaves (90 p.p.m. of dry matter) was not much less than at lower pH. Addition of 0.10% PO₃['] as KPO₃ prevented the Fe chlorosis at high pH levels and increased the Fe content of the leaves to 120 p.p.m. of dry matter. L. G. G. W.

Nitrate content of grape leaf petioles as an indicator of the nitrogen status of the plant. A. Ulrich (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 213—218).—In a series of experimental plots where the yield was related to N application, the NO₃['] content of the petiole gave a better measure of the N status of the plant than did the NO₃['] content of the leaf blade or the sol., insol., and total N content of leaf blade or petiole. L. G. G. W.

Starch cycle in the Hachiya persimmon. C. J. Archer (*Proc. Amer. Soc. Hort. Sci.*, 1941, 38, 187—190).—The starch content of previous season's shoots and 2nd and 3rd year branches of Hachiya persimmon trees in California drops to a low point in mid-February, rises rapidly but irregularly to a max. in late March or early April, drops to a low val. in 2 weeks in 3rd year branches and in 10 weeks in previous season's shoots, and rises slowly and irregularly to a max. in early Dec. and then declines till mid-February. Generally only traces of starch are present in the bark except during the spring max., and little or no starch occurs in the phloem except at this

period. Starch accumulation is suppressed by the presence of developing fruit. L. G. G. W.

Carotene and protein in oats and barley at different stages of growth. A. M. Smith and W. Robb (*J. Agric. Sci.*, 1943, 33, 119—121).—The contents of total N (calc. as % of dry matter) and β-carotene (p.p.m.) were closely correlated and decreased steadily during plant growth. Both were markedly increased by an additional dressing of N but showed a similar decline. R. H. H.

Pollen germination in avocado. C. A. Schroeder (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 181—182).—Avocado pollen does not germinate in sugar solution even when yeast extract, vitamin-B₁, or crushed stigmas are added. It will germinate on stigmas of avocado and other plants at 4.5° and over and retains its viability when stored over CaCl₂ for 32 days at 4.5° (var. Leucadia) or 153 days at 15° (var. Fuerte). L. G. G. W.

Metabolism of starving leaves. I. Presentation of data; nature of respiration rate/time curves in air and in nitrogen and relation to carbohydrates. II. Changes in amounts of total and chloroplast proteins, chlorophyll, ascorbic acids, and soluble nitrogen compounds. III. Changes in malic and citric acid contents and inter-relations of these with soluble nitrogen compounds. J. G. Wood, D. H. Cruickshank, and R. H. Ruchel (*Austral. J. Exp. Biol.*, 1943, 21, 37—53).—Leaves of Sudan grass (*Andropogon sudanensis*) and Kikuyu grass (*Pennisetum clandestinum*) were placed in black containers at 24.5° in streams of air or N₂. In air chloroplast-protein was broken down to sol. products more rapidly than cytoplasmic protein in Sudan grass and at the same rate in Kikuyu grass. Decrease in chloroplast-protein was associated with decreases in chlorophyll, ascorbic acid, and dehydroascorbic acid. In leaves rich in carbohydrate protein hydrolysis was delayed. Residual amino-acids, glutamine, asparagine, and NH₃ successively attained max. vals. In N₂ protein hydrolysis was much less than in air, and amino-acids, but not amides and NH₃, accumulated. The respiration rate in air initially decreased with falling sucrose content and then had a climacteric rise between the times of max. amino-acid and max. asparagine vals. In N₂ there was no climacteric rise in respiration rate. The sucrose content decreased more rapidly than in air and respiration rate/time curve was similar to the sucrose content/time curve. Malic and citric acid vals. altered little in N₂. In air citric acid at first increased then remained steady or fell, and malic acid at first remained const., then increased greatly with increase in asparagine, and then decreased. F. S.

Some nutrient deficiency symptoms of the pecan. A. O. Alben, H. E. Hammar, and B. G. Sitton (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 53—60).—Pecan trees in sand cultures treated with complete nutrient solutions and with solutions deficient in P, K, Mg, Ca, B, S, N, Cu, Fe, Mn, or Zn developed characteristic deficiency symptoms which are described. L. G. G. W.

Relation between chlorosis of Macadamia seedlings and certain chemical constituents. P. Guest (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 61—64).—Intensity of chlorosis in seedlings of *Macadamia ternifolia*, var. *integrifolia*, is negatively correlated with the Fe content but is unrelated to the Mn and P content of the seed. L. G. G. W.

Vegetable crops affected by boron deficiency.—See B., 1943, III, 142.

Effect of growth-substances on flowering of the pineapple under Florida conditions. W. C. Cooper (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 93—98).—Pineapple plants sprayed in July with naphthylacetic acid (0.001, 0.005, and 0.01%) showed with the two highest concns. some stem constriction and a reduced amount of growth but flowered at the same time as the controls. A 0.01% solution applied in October induced in 58% of the plants a 4 weeks' acceleration of flowering. Naphthylacetamide applied in October had a similar effect but there was no response to applications of indolylacetic acid. Ethylene applied at any season accelerates flowering; the natures of the ethylene and growth-substance effects on the plant are not identical. L. G. G. W.

Comparison of rooting induced by acid- and amide growth-substances. V. T. Stoutemeyer (*Proc. Amer. Soc. Hort. Sci.*, 1941, 39, 253—258).—Of 12 species tested with indolylacetic acid and indolylacetamide, cuttings of 4 species rooted best with the acid and of 4 best with the amide. The amide, if the concn. is too high, may inhibit root formation without damaging the cuttings. L. G. G. W.

Conversion of tryptophan into a plant growth-substance by conditions of mild alkalinity. S. A. Gordon and S. G. Wildman (*J. Biol. Chem.*, 1943, 147, 389—398).—Readily detected quantities of auxin are formed by heating tryptophan for 7 hr. in either water or aq. NaOH (0.0025—0.25N.) at 100°. Auxin is also formed from tryptophan treated with 0.25N-NaOH for 15 min. at room temp., the quantity increasing with rise of temp. to a max. at 80°, above which auxin formation rapidly decreases. It may also be pro-

duced in small amounts during the weak alkaline hydrolysis of gelatin and, in much greater amounts, from casein. Tryptophan is rapidly converted into auxin under comparatively mild conditions, e.g., at pH 10.5 and 37°, in presence of hot agar, and in cold KH_2PO_4 buffer at pH 4.6. H. G. R.

Bacteria which cause disease in plants.—See B., 1943, III, 145.

XXVII.—PLANT CONSTITUENTS.

Rapid method for determination of nitrogen in plant tissue.—See A., 1943, III, 448.

Jasmine perfumes. II. Synthesis of lactones with jasmine-like structure.—See A., 1943, II, 182.

Insecticidal principle in the fruit of the Amur corktree. M. S. Schechter and H. L. Haller (*J. Org. Chem.*, 1943, 8, 194—197).—Attempts are described to isolate the insecticidal principle from the fruit of the Amur corktree (*Phellodendron amurense*, Rupr.). The unsaponifiable fraction of the oil is very toxic to houseflies in acetone but not in kerosene of high b.p. The toxic principle does not react with phthalic anhydride and cryst. derivatives of it could not be obtained. Potent concentrates may be secured by mol. distillation. H. W.

Carotenoids from the blossoms of the chrysanthemum. Chrysanthemoxanthin. P. Karrer and E. Jucker (*Helv. Chim. Acta*, 1943, 26, 626—630).—The red and yellow chrysanthemum flowers are poor in carotenoids, which are present as esters. The phytoanthin mixture obtained after hydrolysis consists principally of xanthophyll. Minor amounts of (probably) taraxanthin and chrysanthemoxanthin are also present. The last-named compound strongly resembles flavoxanthin, from which it is distinguished by its behaviour towards conc. aq. HCl; its position in the chromatogram suggests that it contains four or more O atoms. H. W.

Problems in chromatography and in colloid chemistry illustrated by leaf pigments.—See A., 1943, III, 447.

Kryptogenin, a new type of sapogenin from *Beth* root.—See A., 1943, II, 239.

Starches from roots and other sources.—See B., 1943, III, 148.

Action of macerans enzyme on a component of maize starch.—See A., 1943, III, 427.

Comparative hydrolysis of proteins from food grains. New proteases from *Bromella pinguin* and *Pileus mexicanus*.—See A., 1943, III, 427.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Animal board for rabbits, monkeys, and other laboratory animals. A. Packchianian (*J. Bact.*, 1943, 45, 167—176).—The board is adjustable to animals of different sizes which are held securely in various positions. F. S.

Simple method for rapid tube feeding of rats. L. Levin (*Science*, 1942, 96, 477—478).—The rat's mouth is held open by string looped around the upper and the lower incisors attached to the finger and thumb of the operator. The free hand inserts the tube, which is connected to a fixed syringe, and injects the liquid food. 30—40 animals were treated per hr. E. R. S.

Convenient single-unit perfusion apparatus. A. K. Reynolds (*Rev. Canad. Biol.*, 1942, 1, 646—650). A. S.

Chemical investigation of hairs from the medico-legal standpoint. S. N. Chakravarti and S. N. Roy (*Current Sci.*, 1943, 12, 58).— HNO_3 and 5% $\text{K}_2\text{Cr}_2\text{O}_7$ are better agents for clearing hairs than H_2O_2 . Hairs from different animals are decolorised by $\text{K}_2\text{Cr}_2\text{O}_7$, disintegrated by ClSO_3H , and gelatinised by 20% KOH at differing rates, thus aiding diagnosis. F. R. G.

Nylon as suture material. H. M. Nichols and A. W. Diack (*West. J. Surg. Obstet. Gynec.*, 1940, 48, 42—46).—Openings into the peritoneal cavity in dogs were closed with catgut, silk, and nylon. The tensile strength and other physical characteristics of silk and nylon were compared after autoclaving. Nylon compares favourably with silk as a suture material. P. C. W.

Inexpensive apparatus for high-vacuum desiccation and its laboratory uses. A. H. Wells (*Amer. J. clin. Path. Tech. Sect.*, 1943, 7, 3—6). C. J. C. B.

Determination of LD_{50} and its sampling error in bio-assay. I, II. E. B. Wilson and J. Worcester (*Proc. Nat. Acad. Sci.*, 1943, 29, 79—85, 114—120).—A statistical treatment. F. S.

Determination of small amounts of carbon monoxide in air and blood. H. F. Holden (*Austral. J. Exp. Biol.*, 1943, 21, 9—13).—Two methods are described for the determination of CO in samples of air less than 25 c.c. They are based on the combination of CO with hæmoglobin and are sensitive to 1 part of CO in 100,000 vols. One apparatus is also suitable for determining CO in blood. F. S.

Rapid method for determining carbon in plant extracts. E. M. Emmert and C. S. Waltman (*Proc. Amer. Soc. Hort. Sci.*, 1942, 41, 245—250).—The method consists of adding oleum to the plant extract and comparing the colour with that obtained by adding oleum to standard sugar solutions. As a standard 1 c.c. of 0.03125% aq. sucrose is treated, with shaking, with 2 c.c. of oleum (15% SO_3), and later the mixture is diluted to 20 c.c. with 50% H_2SO_4 and a colorimeter reading taken at least 3 hr. after dilution. Plant extracts are treated in an exactly similar manner but finally diluted to bring the colour approx. to that of the standard. In plant extracts coloration is not exactly proportional to concn. as there is relatively more oxidation in the dil. solutions. This difficulty may be overcome by graphing the relation between [C] in various sugar solutions and the colorimetric readings and using the graph as standard. L. G. G. W.

Pyruvic acid. II. Determination of keto-acids in blood and urine. T. E. Friedemann and G. E. Haugen (*J. Biol. Chem.*, 1943, 147, 415—442).—The method of Lu (A., 1939, III, 540) has been modified and simplified, the no. of solvent extractions being decreased and the specificity for pyruvic acid increased. An alternative procedure for determinations of total keto-acids and the estimation of the approx. content of the various keto-acids is described. Absorption curves in the visible spectrum are shown for the 2-nitro-, 4-nitro-, and 2:4-dinitro-phenylhydrazones of pyruvic, α -ketoglutaric, and oxaloacetic acids. H. G. R.

Colorimetric test for small concentrations of urea. I. Abelin (*Verh. Ver. Schweiz. Physiol.*, 1940, 17, 3).—5 drops of a 5% solution of diacetyl monoxime are added to 1 c.c. of filtrate of 2 c.c. of serum or blood and 2 c.c. of 20% trichloroacetic acid, and the mixture is placed in a boiling water-bath for 5 min. A yellow colour develops. The reaction does not occur with other N-containing components of the blood filtrate. A. S.

Colorimetric determination of choline. A. D. Marenzi and C. E. Cardini (*J. Biol. Chem.*, 1943, 147, 363—370).—A photometric study of the Beattie method (A., 1936, 1235) using a specially purified sample of choline reineckate indicates that 500 μg . of choline can be determined in a vol. of 10 c.c. but that it is difficult to determine concns. below 100 μg . The method proposed depends on pptn. of choline as the reineckate, followed by oxidation of the Cr to Cr^{+++} by alkaline H_2O_2 . CrO_4^{--} is then determined by means of the colour produced in acid solution with diphenylcarbazine (Cazeneuve's reaction) using a Pulfrich photometer. The method will determine 15 μg . of choline. H. G. R.

Isolation by differential ultracentrifugation, identification, and properties of glycogen from *Macrosiphum pisi* and *Aphis brassicae*. H. S. Loring and J. G. Pierce (*J. Biol. Chem.*, 1943, 148, 35—40).—The isolation of glycogen from extracts of aphids or rabbit's liver by differential ultracentrifugation is described. Approx. 0.5 g. of glycogen is obtained from 50 g. of insects. The glycogen from both sources contains only approx. 0.0015% of P. J. N. A.

Modified antimony trichloride reagent for determination of certain sterols and vitamin- D_2 and - D_3 . A. Zimmerli, C. H. Nield, and W. C. Russell (*J. Biol. Chem.*, 1943, 148, 245—246).—Addition of Zn, Sn, or Sb to the SbCl_3 -acetyl chloride reagent to reduce quinquevalent Sb gives consistent stable colours with vitamin- D_2 and - D_3 and sterols. Extinction coeffs. are: for sterols with one double bond 2.2 at 500 μm ., with two double bonds 7.0 at 515 μm ., and for vitamin- D_2 and - D_3 1800 at 500 μm . R. L. E.

Determination of hæmoglobin in tissue extracts or other turbid solutions. W. E. Cohn [with A. L. Nutt] (*J. Biol. Chem.*, 1943, 148, 219—223).—Hæmoglobin is determined in turbid solutions or in presence of methæmoglobin by measuring the changes in absorption at 540, 565, and 635 μm . on conversion of oxy- into met-hæmoglobin, and then into cyanomethæmoglobin. R. L. E.

Titrimetric micro-determination of cholesterol based on hæmolysis of blood corpuscles.—See A., 1943, III, 375.

Determination of urinary phenols.—See A., 1943, III, 399.

Determination of calcium by precipitation with picrolonic acid and polarographic measurement of residual picrolonic acid.—See A., 1943, I, 208.

Carbon arc in oxygen for the spectrochemical determination of potassium [in blood serum].—See A., 1943, I, 210.

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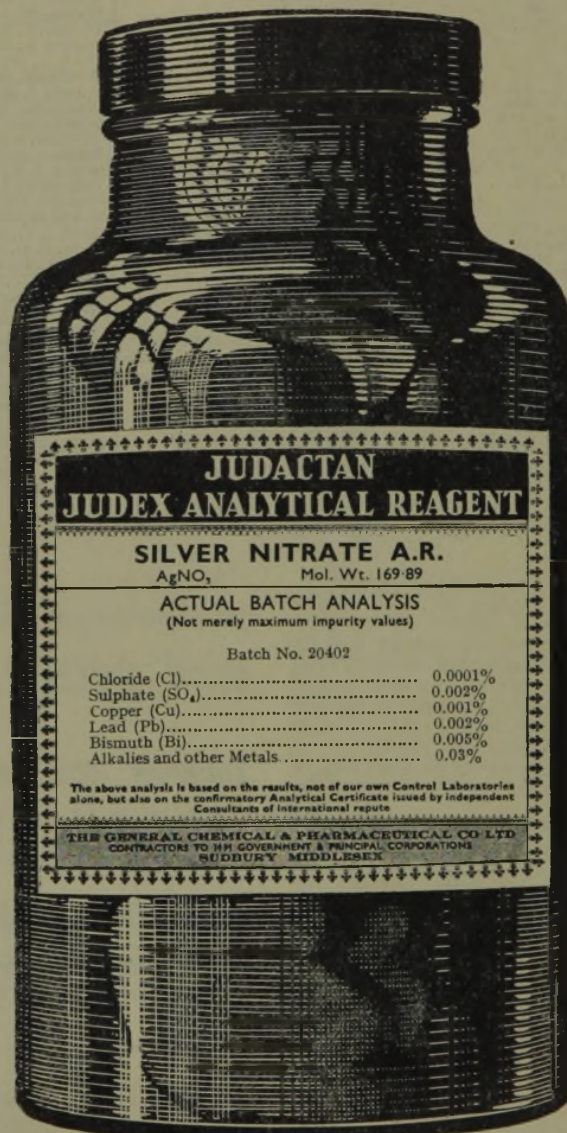
Abstracts A., III, 1943.

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319	61-62	For "directional nystagmus" read "directional preponderance of nystagmus."
"	72	For "Bárang" read "Bárany."
"	74	For "the flow of endolymph of the human external canal" read "the sensitivity of the human external canal to the flow of endolymph."

JUDACTAN

ANALYTICAL REAGENTS WITH ACTUAL BATCH ANALYSIS

ACTUAL
BATCH
ANALYSIS



Each Batch
subjected
to
INDEPENDENT
ANALYSIS
before
label is printed

You are invited to compare the above
actual batch analysis with the purities

guaranteed by the specifications of any
competing maker in this Country or abroad

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