BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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JANUARY, 1943

A., III.—PHYSIOLOGY & BIOCHEMISTRY

(INCLUDING ANATOMY)

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gastrulæ of *D. pictus*, retained their original potentialities for gastrulation movements, in both magnitude and direction. These movements were such that only very incomplete mingling of regions was brought about which may account for the absence of any definite inductive interactions between different regions. The host regulated to form a complete embryo within which the graft lay as a more or less independent mass of tissue. J. D. B.

Time–temperature relation in development. F. J. Ryan (*Biol. Bull.*, 1941, **81**, 431—440; cf. A., 1942, III, 727).—Eggs of *Rana pipiens* were allowed to develop at different temp. varying from 8·5° to 30°. All cleavage stages have substantially the same time–temp. relationships but different from those of post-cleavage embryo formation; the relationships are also consistent throughout these post-cleavage stages. D. M. SA.

Analogy between the actions of vital stains and sodium thiocyanate on embryonic development. S. Ranzi (*Naturwiss.*, 1942, **30**, 329—330).—NaCNS and pyocyanine have the same action on three embryonic processes: (1) they determine induction in ventral explants of young Amphibian gastrulæ; (2) they organise sea-urchin eggs; (3) they stimulate over-development of the chorda in Amphibian embryos. Methylene-blue and *p*-nitrophenol produce (1) and (2) but were not tested for (3). J. D. B.

Distribution of ascorbic acid in developing chick. S. A. Barnett and G. Bourne (*Quart. J. Micr. Sci.*, 1942, **83**, 299—316; cf. A., 1941, III, 156).—Using the acid $AgNO_3$ method, the distribution of ascorbic acid was studied in the cells and tissues of chick embryos from the 4th day of incubation to 2 days after hatching. Details are given for different tissues and organs. The relation of the ascorbic acid to intra-cellular organelles and the possible rôle of ascorbic acid in development are discussed. J. D. B.

Facet mutants of *Drosophila*. R. W. Pilkington (*Proc. Zool. Soc. London*, 1941, **111**, **A**, 233—253).—An account of the structure and development of the compound eye in normal and facet-mutant varieties of *D. melanogaster*. J. D. B.

III.—PHYSICAL ANTHROPOLOGY.

Peoples of Soviet Union. A. Hrdlička (*Smithsonian Inst. War Background Studies No.* 3, 1942, 1—29).—An account of the prehistory, movements and physical standards of the peoples in European Russia. W. F. H.

Anthropology of Iraq. H. Field (*Field Museum of Nat. Hist., Chicago*, 1940, **30**, 1—124).—The anthropology of the tribes and sub-tribes of the upper Euphrates is described. Anthropometric data and notes on the health of the tribes are included. W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Mitotic proliferation in ovary of normal mature guinea-pig treated with colchicine. I. G. Schmidt (*Amer. J. Anat.*, 1942, **71**, 245—270).—Proliferation is described in immature follicles, during the development of mature follicles, during formation, development, and retrogression of the corpus luteum, and during atresia. The work indicates that colchicine reveals an average of about nine times as many mitoses as are found in its absence. W. F. H.

Some effects of colchicine on cell division. J. G. Hawkes (*J. Genet.*, 1942, **44**, 11—22).—Concns. of 0·001M. (0·04%) to 0·01M (0·4%) were most effective for producing chromosome doubling in *Allium cepa* seedlings. The spindle mechanism is inhibited during mitosis but recovers its normal function after treatment. The division cycle is lengthened to about 33 hr., the longest phases being the blocked *c*-metaphase and early restitution phase. Subterminal root swellings are due to a lack of polarity in the diploid cells behind the root tip. W. F. H.

Mitotic poisoning by narcotine. H. Lettré and M. Albrecht (*Naturwiss.*, 1942, **30**, 184—185).—Narcotine has only 0·04% of the activity of colchicine and approx. 20% of that of α-phenyl-β-(*p*-anisyl)ethylamine. Trypaflavin and, to a greater extent, Na cacodylate are less active than is colchicine. The bearing of the structures of narcotine and colchicine on their mitotic effects is discussed. C. S.

Morphology and cytology of branchiæ of *Carcinus maenas*. J. D. Smyth (*Proc. Roy. Irish Acad.*, 1942, **48**, **B**, 105—118).—The gills are of the phyllobranchiate type and there is a complex canal system in the cuticle. It is suggested that the canal system and the tubes in the epithelium form a mechanism whereby water is enabled to come in close contact with epithelial cells, and so assist in the oxygenation of the blood. Golgi bodies are in the form of closed rings and small spheres, and in some cells they exhibit marked polarity. Mitochondria are granular and a large centrosphere occurs in many cells. W. F. H.

Relationship of cells and fibrils of the connective tissue in tissue cultures grown on collagenic medium. J. Lengyel (*Magyar Orv. Arch.*, 1940, **41**, 103—107).—The argyrophil fibrillar systems formed in a culture medium containing the fluid collagenic substance from the tendons of rats' tail were populated with cells of chicken tissue. The cells of the connective tissue fused closely to the foreign fibrillar network without any visible boundary of their protoplasmic extensions. Single fibrils were occasionally surrounded by cells which gave the impression of being intracellular. A. W. M.

Tissue cultures and infection. J. Wirth (*Arch. Sci. phys. nat.*, 1942, [v], **24**, *Suppl.*, 176—181).—The presence of numerous colonies of bacteria does not affect tissue cultures. Accidental contamination by *Staph. aureus* and *Sarcina* is to be avoided, because these have a marked proteolytic action. Cultures of chick embryo spleen, under certain conditions, are very suitable for the study of phagocytosis. J. N. A.

V.—BLOOD AND LYMPH.

Normal hæmatologic values. C. J. Hambre and M. H. Au (*J. Lab. clin. Med.*, 1942, **27**, 1231—1243).—Vals. are given for 137 healthy young men living in Hawaii. C. J. C. B.

Comparison of needle and trephine in study of human sternal marrow. R. M. Mulligan (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 43—44).—The sternal marrow of 25 autopsies was analysed by both the trephine and puncture techniques. Close resemblance was found between the 2 methods with regard to cellularity, cytology, and architecture. C. J. C. B.

Effect of thyroxine on bone marrow of cats.—See A., 1942, III, 887.

Surface area of the human erythrocyte. M. Bernstein and H. M. Chesluk (*J. Lab. clin. Med.*, 1942, **27**, 1280—1283).—A practicable technique for determining the mean surface area of the human erythrocyte with the normal val. and range is described. The average total surface area of the normal human erythrocyte is $135{\cdot}44 \pm 3{\cdot}517$ sq. μ. C. J. C. B.

Method for measuring red blood cells. B. A. Rhorer (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 50).—A small drop of balsam of gum dammar is placed on the rim on the inside of the ocular and 2 short hairs are placed parallel, less than 1 mm. apart, and extending a like distance into the lumen. A normal blood smear is examined with oil immersion and an average cell is brought to the periphery of the field to be enclosed by the parallel hairs. The hairs are brought together until they just enclose a normal blood cell, about 7 μ., and then the balsam is allowed to dry. Thereafter whenever an abnormal appearing cell is encountered it is likewise brought to the periphery of the field to be measured. C. J. C. B.

Osmotic properties of erythrocytes. R. R. Roepke and E. J. Baldes (*J. Cell. Comp. Physiol.*, 1942, **20**, 71—93).—Addition of a solute to hæmolysed cells causes a greater change in osmotic activity (A., 1939, I, 42) than does a similar addition to an isotonic saline solution, so that the cells contain water which is non-solvent to the solute. Addition of a penetrating solute to intact and hæmolysed cells causes the same increase in osmotic activity, but a non-penetrating solute causes a greater increase in intact than in the hæmolysed cells. Hæmolysed cells of horse, dog, rat, sheep, rabbit, and hen often have less osmotic activity than serum or intact cells. With human blood the reverse is the case, but if cell vol. is diminished by adding a non-penetrating solute, or by washing with isotonic sucrose, such cells may have after hæmolysis less osmotic activity than the intact cells. The temp. coeff. (0—25°) of osmotic activity is the same for red cells, serum, isotonic saline, or sucrose. V. J. W.

Effect of liver therapy on erythropoiesis as observed by serial sternal punctures in twelve cases of pernicious anæmia. L. S. P. Davidson, L. J. Davis, and J. Innes (*Quart. J. Med.*, 1942, **11**, 19—27).—All were cases of typical pernicious anæmia, and films were made from sternal punctures before treatment, and once or twice at intervals of 6 hr.—10 days after intramuscular injection of anahæmin 4 c.c. or reticulogen 2 c.c. An erythroblast is defined as any precursor of an erythrocyte, and 4 types are described: (I) with pale nucleus and basophil cytoplasm, (II) with dense reticular nucleus and cytoplasm usually basophil but sometimes polychrome, (III) with very dense "clock face" nucleus and cytoplasm usually polychrome but sometimes orthochrome, and (IV) with pyknotic nucleus and orthochrome cytoplasm. Type I is predominant in the fœtus and untreated pernicious anæmia, type II in macrocytic hæmolytic anæmia, and types III and IV in health and other anæmias. 6 hr. after injection the predominant cell is type II, and 32 hr. after type III. No sign of amitotic division was found, and mitoses were few, suggesting maturation without division. The rapid change of the predominant cell from type I (megaloblast) to types III and IV (normoblast) by way of type II is in favour of these cells belonging to one developmental series. Additional evidence is found in severe cases of Fe deficiency and hæmolytic anæmias in which the marrow picture shows a megaloblastic trend indistinguishable from that found in this series 3 days after liver injection. R. K.

Anæmia as cause of death in bird malaria. C. M. Hill (*Amer. J. Hyg.*, 1942, **36**, 143—146).—Daily blood counts of no. of parasites, total erythrocytes, young cells, and uninfected cells were made on 12 pigeons experimentally infected with *P. relectum*. 8 birds died and 4 recovered. The lowest red cell count obtained at time of death was 1,200,000, of which only 160,000 cells were free from parasites. In those birds which recovered the lowest red cell count was 1,800,000, of which 26,000 cells were infected. As infection progresses immature red cells increase in the blood stream and mature parasites are found in immature erythrocytes. Anæmia resulting from reduction of erythrocytes is regarded as sufficient to cause death. B. C. H.

Refractory hæmolytic anæmia. J. C. Sharpe and J. P. Tollman (*Arch. intern. Med.*, 1942, **70**, 11—32).—5 cases of refractory hæmolytic anæmia are discussed. Splenectomy had no effect in each case, and in 2 cases blood transfusion produced severe reactions. Post mortem observations in 3 cases are discussed. C. A. K.

Pallor and anæmia in adolescents. J. Schwartzman (*Arch. Pediat.*, 1942, **59**, 466—468).—In 943 children examined, of 106 cases of pallor, only 22 had true anæmia while 84 cases had true anæmia but no clinical pallor. C. J. C. B.

Changes in copper and iron retention in chronic diseases accompanied by secondary anæmia. H. Gross, M. Sandberg, and O. M. Holly (*Amer. J. med. Sci.*, 1942, **204**, 201—205).—There is a large accumulation of Fe and Cu in the liver and spleen in many cases of anæmia. Extreme storage was found especially in malignancies, but was dependent on some factor other than the anæmia. Tumour tissue showed a high Cu %. C. J. C. B.

Iron exchanges on white and brown bread diets.—See A., 1942, III, 906.

Nature of iron in fish tissue. Nature of non-hæmin iron in fish.—See A., 1942, III, 901.

Transfusion of conditioned universal blood. N. C. Klendshoj, C. McNeil, P. Swanson, and E. Witebsky (*Arch. intern. Med.*, 1942, **70**, 1—10).—The addition of *A* and *B* sp. substances to group *O* blood reduces the isoantibody titre to very low vals. Such conditioned blood was successfully used in 176 transfusions, and can be safely given without grouping of the patient. C. A. K.

Blood conservation. R. Wurmser, S. Filitti-Wurmser, and R. Briault (*Rev. Canad. Biol.*, 1942, **1**, 372—376).—Blood can be preserved for 25 days in a transfusable state if the pH of the blood is adjusted to 6·0. If 500 c.c. of blood at pH 6·0 are transfused, alkali reserve and blood-pH of the recipient show no changes. A. S.

Biological tests of dried and conserved liquid citrate plasma. L. Bucher (*Schweiz. med. Wschr.*, 1942, **72**, 104—105).—Optical homogeneity of dissolved dried plasma and of liquid citrate plasma was tested. Dissolved plasma is filtered (Schott G II); 1 c.c. of a 10% $CaCl_2$ solution is added to 2 c.c. of filtrate; if no coagulation occurs within 30 min. at 37° fibrinogen has been retained in the filter and the prep. is discarded. Donor's red cells are suspended in dissolved dried or liquid citrate plasma and the sedimentation rate is determined; vals. of up to 7 mm. (men) and 11 mm. (women) are considered satisfactory. A. S.

Quantitative urobilinogen excretion following transfusions of stored and fresh blood. L. R. Wasserman, M. Volterra, and N. Rosenthal (*Amer. J. med. Sci.*, 1942, **204**, 356—364).—The excretion of urobilinogen in fæces and urine after transfusion with stored blood is directly proportional to the length of time of blood storage. C. J. C. B.

[Rise in platelet count as] early effect of small amounts of radiophosphorus. B. V. A. Low-Beer and A. de G. Treadwell (*J. Lab. clin. Med.*, 1942, **27**, 1294—1305).—The chief effect was an immediate rise in platelet count followed by a fall to below the original val. in 3 hr. and then a gradual increase to above normal over 24 hr. The dose given intravenously was 0·006—0·009 μc. per g. body wt. C. J. C. B.

Changes in adhesiveness of blood platelets following parturition and surgical operations. H. P. Wright (*J. Path. Bact.*, 1942, **54**, 461—468).—An increase in platelet stickiness as well as in platelet count was observed in 13 obstetrical and 11 general surgical cases, beginning on the 4th day and becoming max. on the 10th day. The red cell sedimentation rate reached a max. on the 4th day, and declined considerably by the 10th day. This increase in stickiness is attributed to the rapid liberation of young platelets into the blood stream. C. J. C. B.

Statistical study of number of white blood cells in blood of rabbit. A Haynes and R. H. Rigdon (*Anat. Rec.*, 1942, **83**, 587—594).—The mean leucocyte count is 10,700 per cu. mm. There is a significant increase in the no. of circulating leucocytes at 1 p.m. and 3 p.m. compared with the count at 9 a.m. Fluctuation in the no. of white blood cells is large and variations are marked even when counts are made at short intervals. W. F. H.

Cultivation of human leukæmic leucocytes on chorioallantoic membrane of chicken egg. M. Pierce (*Arch. Path.*, 1942, **34**, 538—545).—Normal blood leucocytes produced within the membrane a cellular reaction of lymphocytes, polyblasts, and polymorphonuclear granulocytes, which migrated from the blood vessels to the region of the explant. Polyblasts removed the cellular debris and carried the disintegrating cells into the circulation of the embryo. Leukæmic blood leucocytes similarly explanted either died promptly and were removed by inflammatory cells of the membrane or survived for a short period, in which instance gross enlargement of the explant was apparent. Multiplication of the cells occurred, and enlarged amœboid forms migrated into the mesenchyme of the membrane, where they induced an intense myelocytic reaction among cells of membrane origin. (4 photomicrographs.) C. J. C. B.

Metabolism of lymph nodes in lymphoid leukæmia.—See A., 1943, III, 39.

Frequency of iso-agglutinin α_1 in serum of subgroups A_1 and A_2B. G. L. Taylor, R. R. Race, A. M. Prior, and E. W. Ikin (*J. Path. Bact.*, 1942, **54**, 514—516).—Of 42,330 persons drawn from all parts of the United Kingdom 1288 were of group *AB* and 17,635 of group *A*. In the 1288 *AB* cases evidence of α_1 in the serum was found in 74 and in the *A* cases only in 62. C. J. C. B.

Determination of prothrombin time. D. V. S. Reddy (*Current Sci.*, 1942, **11**, 111).—The use of thrombokinase directly prepared in aq. $CaCl_2$ solution, in place of 2 separate solutions, has no advantage in the determination of prothrombin time (cf. Iyengar *et al.*, A., 1942, III, 90). F. O. H.

One-minute bed-side prothrombin method. B. A. Rhorer (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 51).—The lobe of the ear is punctured with a quick deep stab and a large drop of blood allowed to fall into the depression of a slide. The balled end of the glass rod which is in a tube of thromboplastin is withdrawn and with it a few short circles are rapidly described in the drop of blood and timing is commenced at the moment the two are mixed. Within a few sec. of the normal clotting time (27—33 sec.), the pointed end of the rod is run tangentially through the drop and repeated until the clot feels firm enough to be picked up. C. J. C. B.

Prothrombin test for liver efficiency.—See A., 1942, III, 896.

Effect of 2-methyl-1 : 4-naphthaquinone on clotting factors of blood of jaundiced patients with hypoprothrombinæmia. H. B. Stein (*S. Afr. J. Med. Sci.*, 1942, **7**, 72—84).—The effects were examined in 23 patients. 1—4 intramuscular injections of 5 mg. of the substance were given daily or every 2 days. Prompt or delayed return of the plasma-prothrombin to normal was found in cases of obstructive jaundice; partial ineffective or negative responses were found in cases of extra-hepatic jaundice. The plasma-fibrinogen, serum-Ca, and sedimentation rate were unaffected. P. C. W.

Reactions of 2-methyl-1 : 4-naphthaquinone with whole blood and plasma.—See A., 1942, III, 914.

Method for measuring tensile strength and stretch of plasma clots. I. M. Tarlov, A. I. Goldfarb, and B. Benjamin (*J. Lab. clin. Med.*, 1942, **27**, 1333—1335).—The tensile strength of plasma clots from 8 healthy adult human males averaged 44 g. The vals. obtained from ill persons were frequently higher. C. J. C. B.

Fibrinogen and prothrombin time. L. J. Witts (*J. Path. Bact.*, 1942, **54**, 516—517).—By using varying quantities of blood from a girl with congenital fibrinopenia, the fibrinogen of the plasma could be reduced below 30% of the normal before the accelerated clotting reaction (prothrombin time) is significantly prolonged. C. J. C. B.

Micro-method for determining prothrombin time on fresh capillary blood. O. D. Hoffman and R. P. Custer (*Amer. J. med. Sci.*, 1942, **204**, 420—429).—By dilution curves and by simultaneously estimating the prothrombin content of normal and pathological bloods, the micro-capillary method shows a parallelism with the Quick vals. (within 5%). C. J. C. B.

Inhibition of blood coagulation by rare earths. E. Vincke (*Z. physiol. Chem.*, 1941, **272**, 65—80; cf. A., 1940, III, 558).—The coagulation time of rabbits' whole blood and oxalated plasma is greatly increased by intravenous injection of aq. $NdCl_3$ and $PrCl_3$ which also, when the dose is high, decrease the fibrinogen content. The effect is counteracted by adding thrombin but not by adding fibrinogen. $NdCl_3$ and $PrCl_3$ are anti-prothrombins; heparin is an antithrombin but not an anti-prothrombin. Heparin increases the coagulation time of oxalated plasma only slightly or not at all. W. McC.

Hæmorrhagic sweet clover disease. VIII. Effect of 2-methyl-1 : 4-naphthaquinone and *l*-ascorbic acid on action of 3 : 3′-methylenebis-(4-hydroxycoumarin) on prothrombin time of rabbits. R. S. Overman, M. A. Stahmann, and K. P. Link (*J. Biol. Chem.*, 1942, **145**, 155—162; cf. A., 1942, III, 573).—In susceptible rabbits, a diet of grain mixture and lucerne hay diminishes the anticoagulant action of single doses of 3 : 3′-methylenebis-(4-hydroxycoumarin). This action is also greatly diminished or entirely prevented by simultaneous oral administration of large proportions of 2-methyl-1 : 4-naphthaquinone + *l*-ascorbic acid, although the acid alone

sometimes has no preventive action and the quinone alone is effective only when the dose is high and that of the anticoagulant is low. W. McC.

Effect of 3 : 3′-methylenebis-(4-hydroxycoumarin) in prolonging coagulation and prothrombin time in man. S. R. Towsend and E. S. Mills (*Canad. Med. Assoc. J.*, 1942, **46**, 214—218).—6 case reports are given. The most effective dosage of the hæmorrhagic agent is 200—300 mg. given in repeated dosage daily. C. J. C. B.

Dissolution of blood stains during examination of their microcrystalline characteristics. H. Vieira de Campos (*Anais Assoc. Quim. Brasil*, 1942, **1**, 120—125).—A review. F. R. G.

New fraction of cold-susceptible protein in blood of dogs infected with kala-azar. L. Stein and E. Wertheimer (*Ann. trop. Med. Parasitol.*, 1942, **36**, 17—27).—Sp. cold-susceptible proteins of the euglobulin group are regularly present in the blood of dogs infected with kala-azar. The proteins are pptd. on cooling below 37°, dissolve on warming to 37° except one fraction, and are irreversibly coagulated at 70°. Two further groups of labile euglobulins appearing in such dogs are one that is pptd. by 11% Na_2SO_4 and another that is pptd. by lowering the salt concn. by dilution. Hamsters infected with kala-azar show no hyperproteinæmia and no abnormal proteins in the serum. F. S.

Nephelometric determination of serum heat-denaturation, compared with results of Takata–Ara reaction. F. Wuhrmann and C. Wunderly (*Schweiz. med. Wschr.*, 1942, **72**, 90—94).—The turbidity of heat-denatured diluted serum is the greater, the more positive is the Takata–Ara reaction (modification of Jezler). Turbidity vals. above 0·0120—0·0125 were observed with a positive Jezler reaction; vals. between 0·0020 and 0·0120 have pathological significance but do not give a positive Jezler reaction. The nephelometric vals. are independent of total protein concn., red cell sedimentation rate, serum-bilirubin and -non-protein-N levels. 0·1 c.c. of serum is required for the determination. A. S.

Interaction of blood-proteins of rat with dietary nitrogen.—See A., 1942, III, 914.

Serum-proteins of healthy Bantu males. M. H. Quinton and H. D. Barnes (*S. Afr. J. Med. Sci.*, 1942, **7**, 42—46).—The serum-proteins of 68 healthy Bantu male adults were determined by the biuret method, and the following average vals. were found: total protein 7·3 g.-% (5·6—9·1); albumin 4·5 g.-% (2·8—6·0); globulin 2·8 g.-% (1·6—4·9). P. C. W.

Plasma-protein replacement after hæmorrhage in dogs with or without shock. R. V. Ebert, E. A. Stear, jun., J. V. Warren, and W. E. Watts (*Amer. J. Physiol.*, 1942, **136**, 299—305).—In unanæsthetised fasting dogs 1 hr. after acute hæmorrhage (not severe enough to produce shock), little protein was added to the plasma; after 12 hr. 6—15 g. entered the blood (10—30% of total initial amount). No reserve of preformed plasma-protein entered the blood stream in the 1st few min. after hæmorrhage. If shock is produced and maintained by hæmorrhage, plasma-protein replacement is retarded owing to failure of the circulation. M. W. G.

Plasma volume changes and "available (thiocyanate) fluid" in experimental dehydration.—See A., 1942, III, 916.

Diagnostic value of plasma-proteins. A. T. Cameron, F. D. White, M. Ferguson, and C. Gibson (*Canad. Med. Assoc. J.*, 1942, **46**, 255—261).—Albumin and globulin vals. for plasma and serum from the same blood are not identical. Albumin vals of 3·5—5·0%, globulin vals. of 1·5—3·5%, and fibrinogen vals. of 0·15—0·40% are normal. C. J. C. B.

Intracellular and extracellular blood-phosphorus. H. Behrendt (*Amer. J. Dis. Child.*, 1942, **64**, 55—69).—The technique of determining inorg. and org. P in whole blood by Lohmann and Nissen's method (*Z. Kinderheilk.*, 1936, **57**, 289) is described and normal vals. given for children and adults. Concn. of inorg. P in the erythrocytes is higher than in the plasma. C. J. C. B.

Acute experimental hypochloræmia and glycæmia. I. Canessa Ibarra (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 109—126).—In dogs (chloralose anæsthesia) histamine was repeatedly injected and the gastric juice was withdrawn with a stomach tube; the result was a marked fall of blood-chlorides. Hyperglycæmia followed, its degree being proportional to the fall of blood-chlorides. I. C.

Electrolyte and water exchange between skeletal muscle and plasma following extracellular electrolyte loss.—See A., 1942, III, 916.

Rate of disappearance of blood-sugar in heart–lung–thyroid and heart–lung–liver preparations. J. Luco Valenzuela (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 69—79).—The rate of disappearance of blood-glucose in heart–lung preps. of dogs is 1·16 mg. per g. heart per hr.; in heart–lung–thyroid preps. 0·7 mg. per g. heart per hr. In the heart–lung–liver preps. there is an initial hypoglycæmia; the blood-sugar then falls at a lower rate than in the heart–lung prep. (sometimes a rise of blood-sugar occurs). I. C.

Blood findings in cyclotron workers. S. Warren (*Radiology*, 1942, **39**, 194—199).—Only 4 of 85 workers in 2 cyclotron centres observed for 3—30 months showed minor variations in white cell counts. There was transient depression followed by an elevation of the count after single undue exposures to radiation. 2 of these had total counts of 15,000—30,000 with normal polymorph–lymphocyte ratios over a period of many months. E. M. J.

Serum-electrolytes in dogs before and during acute alkalosis induced by sodium bicarbonate. J. B. Kirsner (*J. Biol. Chem.*, 1942, **145**, 219—221).—Intravenous injection of $NaHCO_3$ readily induces severe alkalosis. The acid–base disturbance is characterised by a marked increase in total base, due entirely to an increase in Na, and by a similar increase in HCO_3' in the blood. Serum-Ca, -Cl, and -P decrease slightly, probably due to accompanying hydræmia. Added NaCl does not prevent or decrease the severity of alkalosis. There is no evidence of tetany, probably because the CO_2 tension of the blood is not decreased. J. N. A.

VI.—VASCULAR SYSTEM.

Closure of foramen ovale and postnatal changes of ventricles in human heart. J. A. Keen (*J. Anat., London*, 1942, **77**, 104—109).—Dissections of the foramen ovale were made of the hearts of full-term fœtuses and newborn infants. The anatomical relations of the inferior vena cava to the foramen ovale support the physiological view that the two caval currents do not mix in the right atrium. The thickness of the right and left ventricular walls before and after birth is described. W. J. H.

Effect of muscle extractives on perfused heart. N. Pace and R. J. Main (*J. Pharm. Exp. Ther.*, 1942, **75**, 283—288).—Valentine's Meat Juice has a markedly positive inotropic effect on the isolated perfused frog heart and the guinea-pig atrium. The perfusate was diluted with normal or K-free Ringer's solution and the pH adjusted. This was necessary owing to the high K-ion content of the more conc. meat extract dilutions. The active substance is water- and 70% alcohol-sol., insol. in ether, and thermostable at 95°. At pH 5·6 it was negatively charged, but this was not reversed when electrophoresis was carried out at pH 2, the substance not appearing at either pole. Several known substances in this extract were tested, and creatine reproduced most closely the results that had been obtained. A latent period of 30 min. was frequently noted before the creatine effect was apparent, which was never present when the meat extract was used. H. C. S.

Action of *l*-ascorbic acid on uterus and heart.—See A., 1942, III, 911.

New system of perfusion using the heart–lung preparation. J. Luco Valenzuela (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 37—52).—Perfusion of thyroid, parathyroid, isolated head, liver, adrenal, kidney, spleen, pancreas, duodenum, and hind legs may be performed using the heart–lung prep. as pump and ventilating device. I. C.

Experimental bundle branch block after ablation of one or both ventricles. R. C. Robb and J. S. Robb (*Amer. J. med. Sci.*, 1942, **204**, 313—319).—In dogs, cats, and rabbits, when the right side of the heart is anatomically and functionally absent, there is a deep wide S_1 and a tall wide *QRS*. The reverse is true for anatomical and functional absence of the whole left ventricle. For a *QRST* complex, the presence of the "free" (*i.e.*, non-septal) walls of either (or both) right or left ventricles is unnecessary. C. J. C. B.

Aortic size, status lymphaticus, and accidental death. W. G. Millar and T. F. Ross (*J. Path. Bact.*, 1942, **54**, 455—460).—The circumference of 300 aortas was studied in relation to age, body wt., height, and sex. The mean size, corr. for these 4 variables, in patients dying from accident is smaller than in those dying from disease. This difference is due to developmental hypoplasia of the arterial system in the fatal accident group, connected perhaps with liability to accident. Arterial hypoplasia is the most reliable guide to the existence of "status lymphaticus." C. J. C. B.

Heart injury from non-penetrating chest injuries. H. D. Leinoff (*Arch. intern. Med.*, 1942, **70**, 33—52).—Non-penetrating injuries of the chest can produce non-fatal disabling heart damage with a clinical and e.c.g. picture closely resembling that of coronary occlusion. C. A. K.

Diseases of heart. A. Graybiel and P. D. White (*Arch. intern. Med.*, 1942, **70**, 303—342).—Review of literature for 1941. C. A. K.

Atrio-ventricular nodal paroxysmal tachycardia in infant treated with acetyl-β-methylcholine. H. N. Segall and A. Goldbloom (*Canad. Med. Assoc. J.*, 1942, **46**, 233—237).—5 mg. given during the second hr. of the attack failed to restore normal rhythm but caused changes in amplitude of *QRS* and depression of *S–T* interval. A 4th dose of 8 mg., 12 hr. later, produced bradycardia (rate 20—56) by slowing abnormal rhythm for about 5 min., then normal rhythm was restored, but there were no changes in *QRST*. C. J. C. B.

Acute bacterial endocarditis of tricuspid valve. H. L. Goldburgh, S. Baer, and M. M. Lieber (*Amer. J. med. Sci.*, 1942, **204**, 319—324).—In 26,007 necropsies there were 646 cases of acute bacterial endo-

carditis. The mitral valve, singly, was most frequently involved (47·6%), followed by the aortic valve, singly (25·4%), mitral and aortic (18·7%), and tricuspid, singly (3·1%). Lesions involved the tricuspid valve alone in 9 of the 62 cases of pneumococcal bacterial endocarditis (14·5%). C. J. C. B.

Incidence of acute and subacute bacterial endocarditis in congenital heart disease. R. Gelfman and S. A. Levine (*Amer. J. med. Sci.*, 1942, **204**, 324—332).—In 34,023 autopsies, 453 (1·3%) contained significant congenital cardiac defects, 181 of which (40% of the 453) were in patients over the age of 2 years. Evidence of bacterial endocarditis was present in 6·5% of the 453 cases and in 16·5% of the 181 cases over 2 years of age. 25 of the 181 hearts with congenital defects were further complicated by rheumatic infection. Congenital bicuspid aortic valve and interauricular septal defects were the most frequent underlying cardiac anomalies; subacute bacterial endocarditis was present in 8 of these 25 rheumatic hearts. C. J. C. B.

Accuracy of thermostromuhr. D. E. Gregg, W. H. Pritchard, R. W. Eckstein, R. E. Shipley, A. Rotta, J. Dingle, T. W. Steege, and J. T. Wearn (*Amer. J. Physiol.*, 1942, **136**, 250—262).—D.c. thermostromuhrs were applied to the arteries of dogs. In chronic experiments blood flow vals. as read from *in vivo* or *in vitro* calibration are very inaccurate. The relation of the galvanometric deflexion to flow varies with artery used; its degree of stretch; position and degree of angulation of the unit with respect to its contained artery; presence or absence of near zero, zero, or back flow in the flow pattern of the metered fluid; composition of immediate environment; movements of extra- and intra-vascular fluid in the environment; viscosity of the metered fluid. For the same reasons in acute experiments, application of *in vitro* calibrations is not justified; *in vivo* calibrations may allow a semiquant. measure of flow if environmental influences are eliminated, and if flow is at all times forward. Interpretation of galvanometric deflexions with thermostromuhr in acute or chronic experiments in terms of abs. blood flow or change in flow is open to question. M. W. G.

Physiological reactions of ductus arteriosus. J. A. Kennedy and S. L. Clarke (*Amer. J. Physiol.*, 1942, **136**, 140—147).—Ductus arteriosus (pregnant guinea-pigs, and fœtuses) can actively close in response to certain stimuli, especially breathing; inflation of the lungs with pure N_2 will not cause closure; O_2 is a necessary component of the gas mixture; O_2 by vein without accompanying inflation of the lungs will cause closure. No noticeable changes in the ductus was observed after stimulation with low-voltage electrical current of the right or left vagus nerve, or left cervical sympathetic, phrenic, stellate ganglion, or splanchnic nerve. M. W. G.

Circulatory apparatus in myxœdema.—See A., 1942, III, 887.

Arterial and cerebral venous blood. Changes produced by altering arterial carbon dioxide. L. F. Nims, E. L. Gibbs, and W. G. Lennox (*J. Biol. Chem.*, 1942, **145**, 189—195).—Effective mechanisms exist which protect the brain from alterations of its acid–base balance when rapid increases or decreases of CO_2 are produced in arterial blood. This is partly accomplished by alteration of blood flow. A direct relation exists between inorg. P and CO_2 levels in the blood and an inverse relation between CO_2 and lactic acid levels during changes in concn. of CO_2 of arterial blood produced by breathing air enriched with CO_2 or by pulmonary overventilation. J. N. A.

Arterio-venous anastomoses in sympathetic chain ganglia of dog. J. F. Nonidez (*Anat. Rec.*, 1942, **82**, 593—607).—Simple and multiple arterio-venous anastomoses in the stellate and thoracic sympathetic ganglia are reported. Multiple anastomoses are enclosed in a framework of connective tissue fibres which form "baskets" around the epithelioid cells of the arterial segments. Epithelioid cells are modified smooth muscle fibres. Nerve fibres branch among the anastomoses and their afferent nature is shown by their disappearance after section of the ventral roots and extirpation of the corresponding dorsal root ganglia. Recent views in regard to the arterio-venous anastomoses and the chemoreceptors (carotid, aortic, and supracardial bodies) are discussed. It is concluded that these two sets of structures are essentially different. W. F. H.

Hypertension from stimulation of abdominal vagus. F. G. Huidobro Toro (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 3—11).—Stimulation of abdominal vagus at the level of the œsophagus causes a rise of blood pressure of 20—30 mm. Hg in dog, cat, and rabbit. The rise is not due to liberation of adrenaline or to mobilisation of blood from the liver and spleen. I. C.

Rôle of sympathetic in hypertension from vagal stimulation. F. G. Huidobro Toro (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 13—20).—Section or removal of thoracic and abdominal splanchnic, or removal of the thoracic sympathetic chain, does not affect the rise of blood pressure following stimulation of abdominal vagus. Intravenous injection of ergotamine (1—2 mg. per kg.) is equally ineffective. The denervated nictitating membrane relaxes during the hypertension. I. C.

Abdominal vagal endings liberate a substance different from acetylcholine. F. G. Huidobro Toro (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 21—31).—In rabbits the rise of blood pressure following stimulation of abdominal vagus occurs also, though less markedly, after section of the vagus in the neck. Eserine does not potentiate nor atropine inhibit the rise of blood pressure. In dogs cross-circulation experiments show that the rise of blood pressure in the donor is followed by a rise of blood pressure in the receptor animal. The substance liberated at the abdominal vagal endings is not therefore acetylcholine; it acts first by constricting the splanchnic vessels, and later, having passed into the general circulation, by a diffuse constrictor action. I. C.

Vagal hypotension. M. Badilla, H. Croxatto, and F. G. Huidobro Toro (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 33—36).—In cats and rabbits, in which all thoracic branches of the vagus have been cut, stimulation of the vagus in the neck causes a rise of blood pressure. The common hypotension caused by vagal stimulation is only due therefore to the inhibitory action of the vagus on the heart. I. C.

Vagal hypotension before and after section of abdominal vagus. H. Croxatto and F. G. Huidobro Toro (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 53—58).—In rabbits under urethane, stimulation of vagus in the neck causes a fall of blood pressure which is more marked after section of the abdominal vagus than before in 72% of cases. After section of the abdominal vagus stimulation of the vagus in the neck does not always cause slowing of the heart, in spite of the greater fall of blood pressure. I. C.

Properties of "vagus hypertensin." H. Croxatto and F. G. Huidobro Toro (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 59—68).—The rise of blood pressure which follows stimulation of abdominal vagus is inhibited by nicotine (0·5—1 mg.). Abdominal vagus stimulation increases the strength of the heart beat; it increases the amplitude and diminishes the frequency of respiratory movements. The vol. of the hind legs is increased during stimulation. I. C.

Intramuscular pressure. I. During postoperative depression. II. Venopressor mechanism in shock-like condition and effects of various drugs. L. Gunther, H. Engelberg, and L. Strauss (*Amer. J. med. Sci.*, 1942, **204**, 266—283).—Using the technique previously described (Hellebrandt *et al.*, A., 1940, III, 107), a rapid drop of intramuscular pressure occurred in the biceps following major surgical procedures under ether and spinal anæsthesia, reaching the low level of 20 mm. H_2O 6—12 hr. after operation. The intramuscular pressure gradually returned to its preoperative level by the 4th day. In the collapse following severe hæmorrhage, depression of severe infection, and postoperative shock, a lowered intramuscular and venous pressure was const. Morphine, atropine, strychnine, paredrine, and CO_2 did not alter a lowered intramuscular pressure. Although paredrine constricts veins and increases venous pressure, it did not prevent the fall in intramuscular pressure following surgery under spinal anæsthesia, or raise a lowered intramuscular pressure. Intravenous infusion of fluid, glucose, saline, or blood did not alter a lowered intramuscular pressure. Pyridine-3-carboxyldiethylamide (Coramine-Ciba) was the only drug that increased intramuscular and venous pressures simultaneously. C. J. C. B.

Action of drugs on patients with normal intramuscular and venous pressure. Venopressor mechanism during the course of surgical procedures. L. Gunther, L. Strauss, H. H. Henstell, and H. Engelberg (*Amer. J. med. Sci.*, 1942, **204**, 387—400).—Pressor drugs do not alter intramuscular pressure; inhalations of CO_2, the tetanic state, and coramine intravenously raise the pressure. An increase in intramuscular pressure is accompanied by an increase in venous pressure; the reverse was not observed. In 4 patients during operations under inhalational anæsthesia, intramuscular and venous pressures dropped after 50 min. of surgery. 50 min.—12 hr. after the initial fall, the max. decrease occurred in both pressures. In 1 patient with congestive heart failure undergoing pericardial thoracentesis, the fall in intramuscular preceded the drop in venous pressure by 20 min. and occurred within 5 min. after the pericardium was pierced, after which time the patient became shocked. 2 patients observed within 9 hr. after nephropexy whose intramuscular pressure change was 10 mm. H_2O showed no alteration in venous pressure. C. J. C. B.

Apparatus for simultaneous measurement of intramuscular and venous pressure. L. Gunther and H. H. Henstell (*J. Lab. clin. Med.*, 1942, **27**, 1339—1342). C. J. C. B.

Capillary permeability and inflammation in skin of rabbits: experimental studies following sectioning of the spinal cord. H. Wilson and R. H. Rigdon (*Arch. Surg., Chicago*, 1942, **45**, 416—423).—Sectioning of the cervical spinal cord in rabbits had no effect on the development of local inflammation provided shock was absent. If shock is present such rabbits fail to show hyperæmia and œdema following the local application of xylene; trypan-blue fails to localise and concentrate in the xylene-treated areas of the skin and polymorphonuclear leucocytes do not concentrate in areas of skin injected with either staphylococci or aleuronat. F. S.

Shock. H. Devine (*Med. J. Austral.*, 1942, **II**, 19—26).—Review of recent work. F. S.

Changes in body-water partition and extracellular electrolytes in shock. C. T. Ashworth and L. A. Kregel (*Arch. Surg., Chicago*, 1942, **44**, 829—839).—In shock from the intraperitoneal injection of 25 c.c. of 25% NaCl per kg. body wt. in dogs, excess Na ions in the extracellular fluids raised the osmotic pressure of this phase, causing a transit of fluid from the cells to the interstitial fluid. In hæmorrhagic shock, probably owing to increased osmotic pressure within the cells resulting from anoxia, there was a passage of water from the extracellular to the intracellular phase. In traumatic shock, for an unexplained reason, the cell-water decreased and the interstitial water increased. During shock from trauma or hæmorrhage there was a reduction in glomerular filtration. After hæmorrhagic shock tubular reabsorption of water and especially of Na was increased, while K reabsorption was decreased. In traumatic shock, tubular reabsorption of water and Na was not increased, while K reabsorption was increased. These renal functional changes may be related to the function of the adrenal cortex or other water and electrolyte regulators. F. S.

Arteriosclerosis and hypothyroidism: possible interrelationship M. Bruger and J. A. Rosenkrantz (*J. Clin. Endocrinol.*, 1942, **2**, 176—180).—The basal metabolic rates in 293 patients over 55 years of age were analysed; 223 had arteriosclerosis and 70 did not. The incidence of hypometabolism was higher in the cases with arteriosclerosis. The possible relations between the thyroid glands and ageing are discussed. (61 refs.) P. C. W.

Site of renin formation in kidney. Its formation in tubules of mesonephros and metanephros of hog fœtus. A. Kaplan, M. Friedman, and E. Williams (*J. Exp. Med.*, 1942, **76**, 307—316).—Renin was found in mesonephric and metanephric kidneys of pig fœtus of 17—24 mm. and 25—49 mm. length. No evidence was found that juxtaglomerular cells are sites of renin formation. The renin content of meso- and meta-nephros was independent of its arteriologlomerular components but dependent on size, no., and functional state of the tubular component. It increased with increasing tubular proliferation during embryonic development and diminished with progressive tubular atrophy and degeneration of later developmental stages. It is suggested that the convoluted tubules are sites of renin formation. A. S.

Pyelonephritis and hypertension. N. M. Shure (*Arch. intern. Med.*, 1942, **70**, 284—292).—In 290 patients with pyelonephritis who were studied post mortem the incidence of hypertension was 45%, the val. being higher with bilateral involvement. 35% of 331 controls had hypertension. In small groups of patients with polycystic kidney, horseshoe kidney, or uncomplicated nephrolithiasis the incidence of hypertension was 46%, 65%, and 53%, respectively. C. A. K.

Mechanism of arterial hypertension in experimental hydronephrosis. R. S. Megivow, L. N. Katz, and S. Rodbard (*Amer. J. med. Sci.*, 1942, **204**, 340—349).—Complete unilateral ureteral occlusion in uni-nephrectomised dogs and complete bilateral ureteral occlusion are followed by a rise in the systemic arterial blood pressure which persists until the animals die in uremia. Partial bilateral and complete or partial unilateral ureteral occlusion are followed by a transient elevation of the arterial blood pressure. The addition of unilateral hydronephrosis to contralateral renal ischæmia intensifies any tendency to hypertension. This indicates that the hydronephrotic kidney is actively concerned in the genesis and maintenance of arterial hypertension. Ischæmia and destruction of normal renal tissue probably proceed simultaneously in the same kidney, the initiating factor being a rise in ureteral and intratubular pressure. C. J. C. B.

Effect of pregnancy on experimental renal hypertension in rats. P. P. Foa, N. L. Foa, and M. M. Peet (*Amer. J. med. Sci.*, 1942, **204**, 350—356).—The normal systolic blood pressure of the young adult albino rat was 85 mm. Hg (range 60—130). It is lower in summer and was not affected by ether anæsthesia or normal pregnancy. The systolic blood pressure of rats with hypertension due to constriction of one renal artery is sharply reduced during pregnancy (from 175 to 105 mm. Hg). After delivery, the systolic blood pressure again rises to hypertensive levels. Constriction of one renal artery in pregnant rats is followed by rapid decline and death; hypertension may or may not occur. C. J. C. B.

Homeostatic rôle of renal humoral mechanism in hæmorrhage and shock.—See A., 1942, III, 898.

VII.—RESPIRATION AND BLOOD GASES.

Changes in lung structure during aspiration of amniotic fluid and during air-breathing at birth. W. H. Whitehead, W. F. Windle, and R. F. Becker (*Anat. Rec.*, 1942, **83**, 255—265).—In the guinea-pig intrauterine respiratory movements are not of sufficient strength to cause aspiration of amniotic fluid as a normal physiological phenomenon. Initial atelectasis of fœtal lung persists until birth. Asphyxia inducing intrauterine respiration of sufficient strength to cause aspiration of amniotic fluid produces partial and uneven expansion of the lung, the alveolar space being increased to approx. 16% of the entire pulmonary mass. The small amount of fluid in the fœtal trachea and bronchi is not of amniotic origin but is a transudate from the lungs which flows outwards to the amniotic space serving to prevent mucous, vernix, etc. from settling in the respiratory passages. With the advent of air-breathing the lungs expand gradually; 1—9 hr. after birth small regions of initial atelectasis still persist. W. F. H.

Central stimulation of respiration during hypoxia. C. A. Moyer and H. K. Beecher (*Amer. J. Physiol.*, 1942, **136**, 13—21).—O_2 lack in inspired air results in sustained respiratory stimulation in lightly anæsthetised (Na evipal, pentothal intravenously, *cyclo*-propane by inhalation) dogs acutely deprived of known chemoreceptors and vagi. Respiratory stimulation is preceded by a long depression of breathing and vasomotor pressor activity. Hyperpnœa is characterised by periodicity and rapid rate. Postanoxic hyperpnœa always follows. A slight increase in anæsthetic depth reduces or abolishes hypoxic response but only diminishes postanoxic hyperpnœa; a further increase results in progressive respiratory and circulatory depression occasionally associated with transient inadequate increase in breathing. M. W. G.

Work performance of normal rats under anoxia. S. S. Dorrance, G. W. Thorn, F. H. Tyler, and B. Katzin (*Endocrinol.*, 1942, **31**, 209—216).—Treatment with adrenal cortex extract, deoxycorticosterone acetate, or benzedrine sulphate had no effect on work performance of rats in an atm. of 6·8% O_2. V. J. W.

Reaction of adrenal cortex to low atmospheric pressure.—See A., 1942, III, 887.

Variability of Hering-Breuer reflexes in dogs under sodium evipal anæsthesia. C. A. Moyer and H. K. Beecher (*Amer. J. Physiol.*, 1942, **136**, 7—12).—Dogs lightly anæsthetised (Na evipal) show a great variability in respiratory reactions to pulmonary inflation and deflation (carried out with chest wall intact, by increasing and decreasing air pressure within the respiration system to which the animals were attached). In deeply anæsthetised animals the reactions were almost invariably qualitatively similar (inflation slows and deflation speeds breathing). The change is attributed to the more powerful depression effected by evipal on the central chemical respiratory drive than on reflex drives, and to the greater depressant action on the extravagal proprioceptive than on vago-pulmonary reflexes. M. W. G.

Simplified oxygen analyser for oxygen tents. A. H. Andrews, jun., and L. W. Roth (*J. Lab. clin. Med.*, 1942, **27**, 1346—1348).—The analyser can be used by nurses at the bedside. C. J. C. B.

Gasometric determination of carbon monoxide in blood. S. M. Horvath and F. J. W. Roughton (*J. Biol. Chem.*, 1942, **144**, 747—755; cf. A., 1941, III, 969).—In Roughton's method difficulties due to inadequate alkalinity and buffering power of the solutions and to variations in the purity of reagents are overcome by modifications which increase simplicity and probably trustworthiness of the results. In a rapid modification $O_2 + CO_2$ liberated together with CO by the action of $K_3Fe(CN)_6$ are absorbed in alkaline aq. pyrogallol and $Na_2S_2O_4$ is not used. In another, glycine is replaced by K_3PO_4–K_2HPO_4 buffer. W. McC.

Gas content of swim bladder of rock bass. H. H. Rostorfer (*Biol. Bull.*, 1942, **82**, 138—153).—Fish were subjected to increased pressures; gas taken from the swim bladders showed that the adjustment to higher pressures was achieved by O_2 secretion with an increase of CO_2 pressure. As CO_2 diffused outwards a further O_2 secretion maintained the equilibrium. D. M. Sa.

Respiration of *Eustrongylides*. T. von Brand (*Biol. Bull.*, 1942, **82**, 1—13).—In an aërobic period following anaërobiosis of 18 hr. 30% of the incurred O_2 debt was repaid and considerable CO_2 retained. Worms freshly isolated from cysts in the mesenteries of *Fundulus heteroclitus* show no CO_2 absorption and so probably have been able to live aërobically. O_2 intake was 140 cu. mm. per g. per hr. and is more const. in relation to wt. than to surface area. D. M. Sa.

VIII.—MUSCLE.

Innervation of stapedius muscle of rat. A. E. Müller (*Arch. Sci. phys. nat.*, 1942, [v], **24**, *Suppl.*, 174—176).—An account, based on Ag material, of the innervation of the stapedius muscle in the rat. There is a rich motor supply with most of the motor endings in the periphery of the muscle. Muscle spindles are completely absent but proprioceptive fibres are represented by sensory corpuscles situated around the origin of the tendon and in the periosteum at the tendon insertion. No evidence for the sympathetic innervation of the muscle fibres was found. J. D. B.

Impedance changes in frog's muscle associated with electrotonic and "end-plate" potentials. B. Katz (*J. Neurophysiol.*, 1942, **5**, 169—184).—Transverse impedance measurements are made, during direct and nerve stimulation, on the isolated sartorius muscle of the frog. Subthreshold and threshold currents are used. Impedance

changes which occur during the building up of the end-plate potential are discussed in relation to neuromuscular transmission. S. Cr.

Responses during refractory period at myoneural junction in isolated nerve-muscle fibre preparations. S. W. Kuffler (*J. Neurophysiol.*, 1942, **5**, 199—209).—Single nerve-muscle fibre preps. of the M. adductor longus of the frog (*Hyla aurea*) were used and there were recorded during refractoriness an end-plate potential, " abortive " impulses, or fully propagated impulses. S. Cr.

Effect of eserine on neuromuscular transmission. J. C. Eccles, B. Katz, and S. W. Kuffler (*J. Neurophysiol.*, 1942, **5**, 211—230).—Both in cat's or frog's muscles eserine increases and lengthens the end-plate potential set up by one or more nerve volleys at the myoneural junction, and in addition repetitive nerve volleys produce a delayed " slow wave " at the junctional region of the muscle. Curare antagonises the eserine effect. The results are correlated with the hypothesis that acetylcholine is responsible for all local potential changes set up by nerve impulses. S. Cr.

Transmission in an isolated nerve-muscle fibre preparation. S. W. Kuffler (*J. Neurophysiol.*, 1942, **5**, 309—322).—The transmitter action, *i.e.*, the action of the depolarising agent producing the end-plate potential, was investigated in the normal and curarised M adductor longus of the frog. In normal muscle the intensity of the " active " depolarisation decreases rapidly after about 2·5 m-sec., and has disappeared at about 5 m-sec. During the greater part of the rising and falling phase of a propagating muscle impulse the membrane cannot be further depolarised and it is concluded that the polarisability of the muscle membrane is abolished during activity. S. Cr.

Adenosine- and inosine-nucleotides in phosphorus metabolism of muscle. A. Kleinzeller (*Biochem. J.*, 1942, **36**, 729—736).—Inosine triphosphate (ITP) is prepared from adenosine triphosphate (ATP) by deamination with HNO_2 in acetate buffer at pH 4. The rate of liberation of PO_4''' by myosin solution from ITP is 3 times that from ATP. Inosine diphosphate (IDP) is prepared from the fission of one PO_4 radical from ITP by myosin solution and pptn. with excess of Ba acetate and 50% alcohol at pH 7. Phosphagen formation is 5—8 times as fast in adenosine- as in inosine-nucleotides. Dephosphorylation of ITP in muscle extracts stops at the IDP stage, myokinase being sp. for adenosine diphosphate. Phosphorylation of glucose by yeast hexokinase is 5 times as fast in ATP as in ITP. No evidence of transfer of P from ITP to hexose monophosphate is obtained. H. G. R.

Origin of muscle-creatine. III. F. Menne (*Z. physiol. Chem.*, 1942, **273**, 269—276).—Frog muscle pulp produces creatine aërobically from added glycocyamine and choline but not from adenine. Production from arginine is not increased by excluding O_2, but is diminished by passing a current of O_2 through the pulp. W. McC.

α-Tocopherol requirement of rat for prevention of muscular dystrophy in young.—See A., 1942, III, 913.

Effect of amino-acids on phosphate transfer in muscle extract.—See A., 1942, III, 915.

IX.—NERVOUS SYSTEM.

Effects evoked in an axon by activity of a contiguous one. A. Arvanitaki (*J. Neurophysiol.*, 1942, **5**, 89—108).—The current spread from an active isolated *Sepia* axon serves as a polyphasic electrical stimulus to a contiguous axon. The conditions of stimulation are worked out and the phenomena are discussed in relation to synaptic and other interaction phenomena. [B.] S. Cr.

Localisation of enzymes in nerves. I. Succinic dehydrogenase and vitamin-B_1. D. Nachmansohn and H. B. Steinbach (*J. Neurophysiol.*, 1942, **5**, 109—120).—The distribution of these enzymes has been studied in the head ganglion, and in the sheath and axoplasm of the giant fibre in squids and compared with the distribution of choline-esterase. S. Cr.

Effects of polarisation on nerve action potentials. H. T. Graham (*J. Neurophysiol.*, 1942, **5**, 137—152).—If a const. current is applied to various frog and cat nerves the negative after-potential is increased in amplitude at the anode and decreased at the cathode; the positive after-potentials are affected by polarisation in a similar way. S. Cr.

Stimulation of peripheral nerve terminations by active muscle. D. P. C. Lloyd (*J. Neurophysiol.*, 1942, **5**, 153—165).—When a muscle is activated indirectly by a motor nerve volley from the ventral root, centripetal volleys ensue and can be recorded in the stimulated and in neighbouring roots. Neuromuscular transmission and muscle action take part in the events leading to these discharges. S. Cr.

Synapses on Mauthner's cells in goldfish. M. Barbey (*Arch. Sci. phys. nat.*, 1942, [v], **24**, *Suppl.*, 90—91).—An account of the nerve terminations on these cells in Ag-stained material. A fine reticulum is described lying between the synaptic endings and the surface of the cell but this reticulum could not be followed through the cytoplasmic wall. The findings are discussed in relation to Bodian's and Boeke's investigations. J. D. B.

Effects of presynaptic volleys on spread of impulses over soma of the motoneurone. B. Renshaw (*J. Neurophysiol.*, 1942, **5**, 235—243).—A centripetal volley of impulses which arrives at the spinal cord over ventral root fibres of cats and rabbits produces a series of potential changes in the ventral horn; these and their modification caused by dorsal root volleys are described. S. Cr.

Deficiency in phrenic respiratory discharges parallel to retrograde degeneration. G. H. Acheson, E. S. Lee, and R. S. Morison (*J. Neurophysiol.*, 1942, **5**, 269—273).—After section of the phrenic nerve the respiratory discharges recorded central to the cut undergo a temporary deficiency with a time course parallel to that described for retrograde degeneration in other neurones. The phrenic cell bodies may show little or no anatomical change. S. Cr.

Peripheral nerves in chronic atrophic arthritis. H. A. Freund, G. Steiner, B. Leichtentritt, and A. E. Price (*J. Lab. clin. Med.*, 1942, **27**, 1256—1258).—2 of 11 cases showed perineuritis in peripheral nerves. (3 photomicrographs.) C. J. C. B.

Spinal cord in case of congenital absence of the right limb below the knee. G. J. Romanes (*J. Anat., London*, 1942, **77**, 1—5).—The spinal cord of a newborn child, in whom there was congenital absence of the lower limb distal to the knee joint and also ectopia vesicæ, showed a marked reduction in size in the lumbo-sacral region on the side of the limb deformity. The posterior column, and the anterior and posterior grey matter opposite the sacral plexus, were affected. W. J. H.

Origin, conduction, and termination of impulses in dorsal spino-cerebellar tracts of cats. H. Grundfest and B. Campbell (*J. Neurophysiol.*, 1942, **5**, 275—294).—By following the electrical responses set up in the dorsal spino-cerebellar tract of the cat, information has been obtained on the anatomy and physiology of the tract, on the synaptology of their cells of origin, presumably lying in Clarke's column, and on the activity which is initiated within the cerebellar cortex by impulses afferent to it in Flechsig's tract. S. Cr.

Alterations in pericellular synapses in human brain in neighbourhood of brain tumour. A. Weber (*Arch. Sci. phys. nat.*, 1942, [v], **24**, *Suppl.*, 168—171).—The changes in the brain adjacent to a frontal lobe tumour are described in Ag-stained material fixed immediately after operative removal. Details are given of the changes in the nerve cells and fibres and in the synapses. The almost complete absence of alteration in pericellular synapses on the periphery of neurones undergoing degeneration is taken as evidence that there is only contact, and no continuity, between the fibre terminations and the cells on which they end. J. D. B.

Cerebellar action potentials in response to stimulation of cerebral cortex in monkeys and cats. R. S. Dow (*J. Neurophysiol.*, 1942, **5**, 121—136).—A detailed study was made with an oscillograph of the responses in the cerebellum of the cat and monkey to single shock stimulation of different areas of the cerebrum. S. Cr.

Excitability of cerebral cortex in infant *Macaca mulatta*. M. A. Kennard and W. S. McCulloch (*J. Neurophysiol.*, 1942, **5**, 231—234).—In a 3-week-old animal electrical stimulation of area 4 produced contralateral movement. Area 6 and the postcentral convolution gave no response. There is evidence either of an undeveloped cortex or of inadequate corticospinal conduction. S. Cr.

Interference factor in delayed response in monkeys after removal of frontal lobes. R. B. Malmo (*J. Neurophysiol.*, 1942, **5**, 295—308).—After bilateral removal of the frontal association areas, monkeys succeeded in delayed response performance when darkness was maintained during the delay interval; a bright light during the delay interval caused failure. S. Cr.

New device for the application of scalp electrodes in electro-encephalography. R. Cohn (*J. Lab. clin. Med.*, 1942, **27**, 1344—1345).—The device consists of a spring air valve seated in a brass or plastic casing. C. J. C. B.

Effect of alkalosis and acidosis on cortical electrical activity and blood flow. A. J. Lubin and J. C. Price (*J. Neurophysiol.*, 1942, **5**, 261—268).—Changes in the electrical activity of the cortex of the cat following acidosis or alkalosis occur only if near-fatal amounts are injected. Acid tends to cause dilatation of the pial arteries and alkali constriction. S. Cr.

Electroencephalogram in anoxia and disturbances of carbohydrate metabolism. G. L. Engel and S. G. Margolin (*Arch. intern. Med.*, 1942, **70**, 236—259).—The electroencephalogram in acute cerebral anæmia (patients with hypersensitive carotid sinus reflex), acute cerebral anoxia (case of congenital heart disease on exertion), and in chronic cerebral anoxia (chronic bronchitis with emphysema) showed delta waves, of frequency 3—6 per sec., when anoxic symptoms occurred. Similar changes were seen in cases of Addison's disease with disturbed carbohydrate metabolism, in whom hyperventilation readily produced abnormally slow waves. C. A. K.

Physiological aspects of audiogenic seizures in rats. D. B. Lindsey, F. W. Finger, and C. E. Henry (*J. Neurophysiol.*, 1942, **5**,

185—198).—Electroencephalographic (e.e.g.) and heart rate changes have been studied in rats during stimulation with high-pitched tones which produced seizures and other abnormal behavioral manifestations. Seizures were not seen in restrained, curarised, or vagotomised animals, but occurred in about half the unrestrained ones and there were changes in the e.e.g. similar to those seen in epileptics. S. Cr.

Pathological changes in brains of dogs given repeated electrical shocks. K. T. Neubuerger, R. W. Whitehead, E. K. Rutledge, and F. G. Ebaugh (*Amer. J. med. Sci.*, 1942, **204**, 381—387).—Histological changes induced by electrical shock in the brains of dogs are less severe than those found following metrazol (A., 1940, III, 442). (3 photomicrographs.) C.J. C. B.

Effects of parvitin in schizophrenia. W. Belart (*Schweiz. med. Wschr.*, 1942, **72**, 41—43).—The results of the use of parvitin in schizophrenia were disappointing. A. S.

Acetylcholine in brain and cerebrospinal fluid during rest and stimulation of optic nerve. E. Egaña Baraona (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 183—211).—Acetylcholine concn. in trichloroacetic extracts of brain of eserinised rabbits is the same in resting animals and in animals whose optic nerve has been electrically stimulated. In eserinised dogs the acetylcholine content of c.s.f. increases after stimulation of the optic nerve, the increase not being proportional to the period of stimulation. In the c.s.f. of dogs whose optic nerve has been stimulated an unidentified substance is present, which causes a delayed and powerful contraction of the rectum of Chilean frogs. I. C.

Subarachnoid injection of thiamin in cats: unmasking of brain lesions by thiamin deficiency.—See A., 1942, III, 909.

Action of vitamins on nervous centres.—See A., 1942, III, 907.

Parathyroid insufficiency in Wilson's disease. R. Altschul and J. S. Brown (*Canad. Med. Assoc. J.*, 1942, **46**, 237—240).—4 cases of hepato-lenticular degeneration (Wilson's disease) involving all 4 brothers in a family of 4 boys and 1 girl are described. In 2 of the cases there was also evidence of parathyroid insufficiency and in 1, there was a marked endarteritis obliterans, providing a possible explanation of the diminished function of the gland. C. J. C. B.

Quantitative study of paraventricular nucleus and its alteration in hypophysectomy. H. M. Frykman (*Endocrinol.*, 1942, **31**, 23—29).—The dark cells of this nucleus, with peripheral Nissl granules, were counted in controls and in hypophysectomised rats in which the median eminence of the tuber cinereum was intact. In controls these cells numbered 2430—3714, and in operated 1662—2320 on each side. The loss seemed due to a retrograde degeneration caused by section of nerve fibres. V. J. W.

Hypothalamic stimulation yielding adrenaline reversal effects. M. B. Bender and E. A. Weinstein (*Amer. J. Physiol.*, 1942, **136**, 376—380).—Hypothalamic stimulation in the cat (not monkey) produces simultaneously delayed depressor and mydriatic effects due to liberated adrenaline, which, in small doses, may produce a fall in blood pressure. Adrenalectomy abolishes, and intravenous injection of adrenaline reproduces, the dilatation of the pupil in the denervated iris and some of the delayed blood pressure falls thus obtained. T. F. D.

"Neurogenic fever." S. Wolf and H. G. Wolf (*Arch. intern. Med.*, 1942, **70**, 293—302).—A man aged 43 had had periodic sick headache and recurrent bouts of fever up to 40° (104° F.) for 13 years. Careful studies revealed no infectious, neoplastic, or metabolic cause for pyrexia and the patient's physical condition between the attacks was good. A personality study revealed many disorders and psychotherapy produced a remission for 1 year, which was broken by a renewal of tension and anxiety. It is suggested that the temp.-regulating centres were easily upset by psychological stimuli. C. A. K.

[Multiple areas of] intracerebral calcification. C. A. McKendree, S. B. Wortis, and S. E. Soltz (*N. Y. Sta. J. Med.*, 1939, **39**, 495—502).—Report of 3 female cases, 2 of which showed atrophic chorioretinitis with optic atrophy. All 3, aged 12, 13, and 39 years, had low basal metabolic rates and were subject to fits. E. M. J.

Treatment of trigeminal neuralgia. W. Ryffel (*Schweiz. med. Wschr.*, 1942, **72**, 61—64, 85—86).—29 out of 33 patients suffering from trigeminal neuralgia were treated with electro-coagulation of the Gasserian ganglion; 25 were free of pain after the operation, 18 were cured, 7 patients had recurrences within ½—5 years, 5 were cured after a second operation. The sensitivity of the cornea was retained in 20 patients. There was no damage to the motor component of the trigeminal nerve. There were temporary pareses of the trochlear and abducens nerves. A. S.

Effect of insulin shock on learning in white rat. L. Berman and B. Riess (*Science*, 1942, **95**, 511—512).—Insulin shock impairs the learning of a recently acquired maze habit, but not the learning of older habits. This supports the view that insulin shock treatment produces a cerebral anoxia which breaks up recently formed habits of response, the psychopathological symptoms. E. R. S.

Stimulation of cœliac plexus in dog. I. Cardiovascular and respiratory effects. II. Factors influencing cardiovascular and respiratory responses. S. J. Martin, C. L. Burstein, and E. A. Rovenstine (*Arch. Surg., Chicago*, 1942, **44**, 943—952, 1111—1116).—Mechanical and faradic stimulation of the cœliac plexus, the intact and cut left splanchnic nerve, or the right abdominal vagal nerve in dogs anæsthetised with ether or *cyclo*propane was followed by a rise in mean arterial pressure, decreased pulse pressure, sinus tachycardia and other e.c.g. changes, and inspiratory apnœa followed by polypnœa or a gradual return to normal respiration. These changes were increased by pre-anæsthetic atropine sulphate; morphine had no influence. The changes were increased during light anæsthesia and were sometimes eliminated during deep anæsthesia. Curarisation of etherised dogs up to the point of intercostal paralysis diminished but did not eliminate the response. The application of procaine hydrochloride to the cœliac plexus, spinal anæsthesia, or high section of the cord eliminated the response. The characteristic response to stimulation of the cœliac plexus depends on an afferent reflex stimulation of the sympathetic system augmented by the respiratory changes or by the secretion of adrenaline resulting from that stimulation. F. S.

Skin tests and passive transfer studies in neurological conditions. M. Zeller (*J. Allergy*, 1942, **13**, 307—311).—Allergic patients with hemianæsthesia gave increased reactions to scratch and intradermal tests and histamine on the affected side. Hemiparalysis did not influence the skin responses to these tests. Passive transfer in 16 types of neurological conditions was as effective as in the normal. Local infiltration anæsthesia and nerve block did not alter passive transfer and histamine responses. Spinal anæsthesia reduced passive transfer and histamine responses in proportion to the degree of anæsthesia. C. J. C. B.

Errors in cerebrospinal fluid protein estimation with sulphosalicylic acid reagent. T. U. Marron (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 37—42).—This method is liable to considerable reading error. C. J. C. B.

Nerve terminations in choroid plexus of gold fish. L. Burtin (*Arch. Sci. phys. nat.*, 1942, [v], **24**, *Suppl.*, 171—173).—In material stained by a modified Bielschowsky technique nerve fibres were found terminating in the epithelium of the choroid plexus of the IVth ventricle. They may be afferent, concerned with the regulation of the intra-ventricular pressure, and efferent to the secretory cells of the plexus. J. D. B.

Ciliary movement and circulation of cerebrospinal fluid within brain ventricles in larval and adult anurans. Hsiang-Yao Chu (*Amer. J. Physiol.*, 1942, **136**, 223—228).—Observations were made on the movements of dark particles in the brain ventricles of living anuran larvæ (*Microhyla peulchra*); the dark particles originate in the pigmented cells of the ependyma covering the inner wall of the neural tube, persist throughout larval life, and are absent in adults. These movements are due to local currents in c.s.f. generated by the cilia on cells lining the ventricles. M. W. G.

X.—SENSE ORGANS.

Mechanism of sensitivity changes of sense organs. K. Kekcheev (*Nature*, 1942, **150**, 491—492).—The sensitivity of the dark-adapted eye is altered by taste, temp., and tactile stimuli. The implications of this observation are discussed. E. R. S.

Functions and performance of the eye. W. D. Wright (*J. Sci. Instr.*, 1942, **19**, 161—165).—A general summary for physicists of the mechanism of vision and functions and limitations of the eye in comparison with photocells etc. developed to meet special requirements; the great versatility of the eye is stressed. K. J. W. C.

Diseases of visual apparatus: ancient and modern. M. A. Nair (*J. Indian Med. Assoc.*, 1942, **11**, 175—177).—An interpretation of Ayurvedic ophthalmology (Vagbhata's Uttarasthanam). H. L.

Lifelong care of eyes. L. T. Post (*J. Amer. Med. Assoc.*, 1942, **119**, 921—923).—A lecture. H. L.

Eye in industry (*Nature*, 1942, **150**, 80—81).—A summary of a discussion at the London Branch of the Institute of Physics. E. W. H. Selwyn discussed the problems arising in the photographic industry in connexion with the illumination of dark-rooms. Under red illumination, vision is mediated largely through the cone mechanism, the cones acquiring their max. sensitivity after only a few min. In rooms illuminated by green light, vision is obtained by the rods, which take at least 30 min. to acquire max. sensitivity. When working in a dark-room he required lenses of −2 D for clear focussing of distant objects, possibly due to spherical aberration in the lens, since at low intensities the iris is expanded and the marginal zones of the system come into action. The part played by light in aiding vision was discussed by W. R. Stevens, who urged the greater use of colour as means of improving contrasts and of brightening workshops. The low brightness of the fluorescent tube results in a reduction of hard shadows and the absence of glare; by using daylight fluorescent lamps artificial light can be mixed with daylight

without introducing a disturbing æsthetic appearance. Close attention to refractive errors was emphasised by G. H. Gills: correction of defects with spectacles leads to about 20—30% increase in production. Eye training for special activities was discussed by H. Lowery. H. L.

Eyes of the worker. E. C. Black (*Med. J. Austral.*, 1942, **29**, I, 706).—Mass-testing of visual acuity and for visual defects is urged. For fine precision engineering work bilateral acuity of 6/6, if not 6/5, should be obligatory. H. L.

Illumination and visual range under water. H. H. Poole (*Nature*, 1942, **150**, 337—339).—Recent work is critically discussed. Pending progress in knowledge of the angular distribution of scattered light and of the resultant distribution of field brightness it is difficult to estimate with certainty the visibility of a given object from measurements of light penetration alone. H. L.

Experimental transposition of extraocular muscles in monkeys. P. J. Leinfelder and N. M. Black (*Amer. J. Ophthalmol.*, 1942, **25**, 974—976).—Tenotomy and resection of the superior oblique tendon was performed 14 days before or after other transposition operations. Coordinated rotations were not disturbed so long as 2 muscles retained their normal relationships. Recovery of rotation also occurred in 2 animals when this muscle was tenotomised following recovery from 4 muscle transpositions. Transposition of the 4 recti following superior oblique tenotomy was followed by recovery in one case where the interval between the operations was 3 months and in another, with 2 weeks' interval, the animal being kept in total darkness for 2 weeks. It is concluded that the superior oblique has no special coordinating function that cannot be ascribed to any other muscle; if proprioception plays a part in recovery, the impulses must originate in tissues other than the extraocular muscles, possibly in Tenon's capsule. H. L.

Orthoptic treatment of alternating squint. J. E. Lancaster (*Amer. J. Ophthalmol.*, 1942, **25**, 866—870). H. L.

Direct measurement of total refractive power of living human eye. H. Goldmann and R. Hagen (*Ophthalmologica*, 1942, **104**, 15—22).—A method is described for determining directly the total refractive power and the length of the bulb by means of *X*-rays. H. L.

Cornea. III. Hydration properties of excised corneal pieces. V. E. Kinsey and D. G. Cogan (*Arch. Ophthalmol.*, 1942, **28**, 272—287).—Swelling of pieces of cat cornea was measured in salt solutions of 0—2M. concn. for periods up to 10,000 min., in various non-electrolyte solutions of 0—2M. concn. for 1050 min., in solutions of various pH vals. (1·0—14·0), and in distilled water, 1% salt solution, and HCl (pH 3·1) when subjected to mechanical pressures of 13—1280 g. per sq. cm. The corneas swelled in practically all the aq. solutions tested. The degree of swelling was not correlated with the osmotic pressure of the solutions, valency of the electrolyte, or nature of the ions; each salt appeared to have a sp. effect on rate and degree of corneal turgescence. Solutions of non-electrolytes had the same effect as distilled water. The isoelectric point as determined by the min. amount of swelling was at pH 4·3. Normal hydration was just maintained by a mechanical pressure of about 140 g. per sq. cm. in distilled water and of 40 g. per sq. cm. both in 1% NaCl and in HCl of pH 3·1. H. L.

Effect of urethane of β-methylcholine chloride on parasympathectomised cat's eye. F. C. Keil, jun., and W. S. Root (*Amer. J. Physiol.*, 1942, **136**, 173—176).—The normally innervated cat's pupil constricts if 1 mg. or more per kg. body wt. of the urethane of β-methylcholine chloride (Ubm.) is injected intravenously; 100—200 μg. constricts the parasympathetically denervated pupil, little change occurring on the normal side. The min. effective dose to produce constriction of the denervated sphincter is 90—125 μg. The contraction of the denervated sphincter in response to Ubm. can be produced with undiminished intensity when its response to intravenous acetylcholine (5 mg. per kg. body wt.) has decreased. M. W. G.

Choline-esterase in amphibian sphincter pupillæ. P. B. Armstrong (*J. Cell. Comp. Physiol.*, 1942, **20**, 47—53).—The anterior half of the eye of a salamander was mounted in Ringer's solution and the pupil measured under a microscope. When the cornea was intact, the stimulation threshold of the sphincter was 2 in 10^6 of acetylcholine, and contraction was markedly increased by eserine. If the cornea was removed the threshold was 1 in 10^9 of acetylcholine and eserine had no potentiating effect. It is suggested that esterase is present in the cornea but not in the iris. V. J. W.

Action of yohimbine and ergotamine on dilator iridis.—See A., 1942, III, 840.

Homatropine cyclopegia and paredrine, with special reference to rate of accommodation recovery. W. F. Moncreiff and K. J. Scheribel (*Amer. J. Ophthalmol.*, 1942, **25**, 839—843).—Paredrine does not hasten recovery from, nor does it enhance efficiency of, homatropine cyclopegia. 2 drops of 5% homatropine is not superior to 6 drops of 2% homatropine from the point of view of efficiency of cyclopegia and rate of recovery. H. L.

Anomalous processes of ciliary type on posterior surface of iris. S. Gartner (*Amer. J. Ophthalmol.*, 1942, **25**, 854—857).—26 cases are reported. The processes are fœtal remains. H. L.

Displacement of ciliary processes to posterior surface of iris. S. Gartner (*Amer. J. Ophthalmol.*, 1942, **25**, 858—860).—The condition is a common variation; its importance in iridectomy is discussed. H. L.

Prostigmine in treatment of glaucoma. J. Kull (*Ophthalmologica*, 1942, **104**, 23—31).—In the normal rabbit eye prostigmine causes a transient rise in pressure, followed by a fall. In glaucoma it reduced intraocular pressure even in cases where pilocarpine had no effect. The effects are best in simple chronic glaucoma. A 3% solution is usually tolerated whilst a 5% solution sometimes produces irritation. H. L.

Effect of glaucoma operations, especially of diathermy treatment of the ciliary body. L. Weekers and R. Weekers (*Ophthalmologica*, 1942, **104**, 1—14).—The various surgical methods act as a trauma inducing more or less permanent changes in intraocular circulation and establishing a new equilibrium between blood and aqueous. Reduction of the operative trauma to the strictest min. is best obtained by surgical methods utilising diathermy which may also produce the desired circulatory changes in the uveal tract without incision of the eye. H. L.

Theory of effects of light intensity and duration in determining visual responses. N. R. Bartlett and G. E. Hudson (*Proc. Nat. Acad. Sci.*, 1942, **28**, 289—292).—Some phenomena of brightness discrimination and measurements of the abs. visual threshold are analysed in terms of Hecht's "stationary state" equation. D. M. S.

Energy, quanta, and vision. S. Hecht, S. Shlaer, and N. H. Pirenne (*J. Gen. Physiol.*, 1942, **25**, 819—840).—The min. energy required to elicit a visual sensation was measured for 7 subjects with flashes of 1/1000 sec. duration of monochromatic light (510 mμ. max.), on a retinal field of 10′ visual angle, fixated 20° temporally from the fovea. They yielded vals. between 2·1 and $5{\cdot}7 \times 10^{-10}$ erg at the cornea, which corresponds to between 54 and 148 quanta of light. Corrections for corneal reflexion (4%), absorption by the ocular media (50%), and transmission by the retina (80%) gave vals. between 5 and 14 quanta absorbed by the retinal rods. Since the retinal field stimulated contained about 500 rods, the chances that a single rod will absorb 2 quanta are negligible, and therefore to produce a visual effect, 1 quantum must be absorbed by 5—14 rods. This was confirmed by statistical analysis of the relation between the intensity of a flash of light and the frequency with which it is seen. At the threshold of vision 5—8 crit. events must occur in the retina. The data show that fluctuations of response at the threshold are determined by variations in the no. of quanta of the stimulus. D. M. S.

Visual system and vitamins-*A* of sea lamprey. G. Wald (*J. Gen. Physiol.*, 1942, **25**, 331—336).—The retina and other eye tissues of the anadromous sea lamprey (*Petromyzon marinus*) contain both vitamin-A_1 and -A_2, but predominantly the latter. The species apears to possess both the rhodopsin and prophryopsin visual systems. The livers of adult and larval lampreys, however, contain -A_1 only. D. M. S.

Respiratory effects on visual threshold. G. Wald, P. V. Harper, jun., H. C. Goodman, and H. P. Krieger (*J. Gen. Physiol.*, 1942, **25**, 891—903).—Breathing room air or air containing 32—36% of O_2 at double the normal rate causes the visual threshold to fall to about half its normal level in 5 to 10 min. This effect can be abolished or reversed by adding CO_2 to the inspired mixture. 5% CO_2 or 10% O_2 approx. doubles the threshold, although in the latter case this can be partly compensated by rapid breathing. These effects are considered to be controlled by nervous imbalance, which is brought about by the acidosis or alkalosis, produced by the composition of the inspired air and the subject's breathing patterns. Acidosis causes a deterioration of visual threshold, alkalosis improves it. D. M. S.

Dark adaptation of children in relation to dietary levels of vitamin-*A*. H. Oldham, L. J. Roberts, K. McLennan, and F. W. Schlutz (*J. Pediat.*, 1942, **20**, 740—752).—The mean rod thresholds of 3 groups of children (168 in all) known to have had widely different vitamin-*A* intakes were almost identical; the same % of the subjects in each group had subnormal dark adaptation. There was no correlation between adaptometer reading and daily -*A* intakes although some children were apparently receiving less than 20 i.u. per kg. per day in their diets. C. J. C. B.

Development of trichromatic theory of colour vision. W. Peddie (*Phil. Mag.*, 1942, [vii], **33**, 559—575). K. J. W. C.

Response to colour in birds. S. G. Smith (*Nature*, 1942, **150**, 376—377).—Detection of and reaction to light of widely differing λ was tested in wild nesting meadow pipits (*Anthus pratensis*) and yellow wagtails (*Motacilla flava flavissima*) by placing artificial fæces, made from plasticine, of various colours on the rim of the nest in a position similar to that used by the nestlings. Observation

of the order of removal showed no correlation with the brightness factor. To the former bird, green seemed to appear as a very bright colour since it was taken as first choice in 4 out of 5 trials; yellow occupied an intermediate position while red and purple were last choices. With the latter bird, the female refused all the artificial fæces except the white ones while the male removed them all with yellow as first choice in 3, and purple in 1, out of 4 trials; green was the penultimate and red the last choice. H. L.

Wave-length sensitivity function for zebra finch. W. J. Crozier and E. Wolf (*J. Gen. Physiol.*, 1942, **25**, 381—390).—Flicker response curves of *Taeniopygia castanotis* exhibit the same general relationship between flicker excitation and λ as is found in photopic (cone) data of man. The flicker contours are simplex in form; the species is diurnal, and the photoreceptors of the retina are all of cone type. Visual efficiency, expressed in terms of relative energy, was greatest for green and least for red light. Corresponding to this, the no. of red oil globules in the retina was relatively small, while the yellow-green ones were most numerous. D. M. S.

Theory and measurement of visual mechanisms. VIII. Form of flicker contour. W. J. Crozier and E. Wolf (*J. Gen. Physiol.*, 1942, **25**, 369—379).—Foveal flicker response curves of man exhibit the properties of normal probability integrals, similar to those obtained from lower animals, and show a simplex function only, due to the action of a single set of photoreceptors (cones). By modifications of the experimental procedure, the rod part of the typical duplex function curve can be obtained free from the cone portion. It then has the probability integral form, which it does not show when combined with effects due to the cones. D. M. S.

Learning simultaneous binocular vision. C. Burri (*Arch. Ophthalmol.*, 1942, **28**, 235—244).—Learning curves (synoptophore tests) of individuals during fusion and stereopsis training have the same shape as curves showing the progress of any voluntary motor or mental activity. Simultaneous binocular vision is the result of integrated cortical activity and its failure should not be attributed to over- or under-acting muscles; it can be taught by the same methods as are used in the teaching of other physical or mental activities. H. L.

Parallactic angle in binocular depth perception. J. I. Pascal (*Arch. Ophthalmol.*, 1942, **28**, 258—262).—Diagrams are given illustrating the composite and dynamic character of the parallactic angle; its numerical val. equals the difference between the binocular parallax at the 2 points of fixation. It can be defined as the composite angle (*i.e.*, the numerical sum or difference respectively of the angles) through which the 2 visual axes turn, actually or potentially, when changing fixation from one point to another. In a dynamic sense the parallactic angle is the motor expression of the vergence innervation. It varies slightly with the interpupillary distance, a large distance being of advantage in depth perception. H. L.

Shape of subjective space. S. M. Cox (*Nature*, 1942, **150**, 349).—If a stereoscopic photograph is examined, first so that the relief stands out, and then by inverting so that, although the 2 halves fuse, there is no stereoscopic effect, the objects in the picture appear to increase in size. If one eye is then closed, the original sizes return. Reversing the procedure gives opposite effects. When mirrors were set up so that the right eye would see from the point of view of the left eye, and the left eye from that of the right, estimates of the length of slips of paper held successively in the field of view, and judged first with one eye only and then with both eyes, were in the ratio of 3 : 4; *i.e.*, there is an apparent magnification in area of almost 2. Binocular fusion without stereoscopic effect seems therefore equiv. to doubling the no. of active sense-cells and consequently the subjective size, while when stereoscopic vision is concerned some unification of corresponding sense-cells in the 2 eyes takes place so that they behave as one—a possible explanation also of Fechner's paradox. H. L.

Entoptic phenomena. B. Friedman (*Arch. Ophthalmol.*, 1942, **28**, 285—312).—The eye can be made entoptically conscious of many of its structural details by defocusing it by means of strong − or + lenses placed in front of the cornea. Under normal optical conditions, emmetropic subjects may be aware of vitreous opacities, the position of the umbra in respect of the retina being determined by the size of the opacity and its distance from the retina. Corneal entoptic phenomena (epithelial folds, channels in the corneal stroma) are best studied by viewing a small bright light source at 10 ft. distance through a clear +20 D lens held 1—2 cm. from the eye or through 6× or 10× loupes. Stroma channels appear as relatively fixed vertical lines after vigorous blinking of the lids while horizontal channels are brought out by horizontal rubbing of the cornea; they seem to rest on Descemet's membrane. They may be observed objectively in a patient's eye by focusing the ophthalmoscope, set with a +20 D lens, on the dilated pupil. Regarding pulsation of retinal arterial vessels after physical exercise, 2 phases are distinguishable: a sharp and rapid expansion synchronous with cardiac systole and a slower contractile movement along the same path, beginning at the 10° zone and sweeping towards the macula. Of the luminous circles seen on extreme horizontal rotation of the eye, the circle of the nasally turned eye is brighter than that in the fellow eye; they are possibly due to mechanical stimulation of the peripapillary retinal structures by the taut optic nerve. They are inhibited by slight pressure over the globe during rotation probably owing to the easing of tension on the nerve during backward displacement of the eye. In positions of extreme rotation there are a no. of bright striæ of a blue more vivid than the pale background crossing the circles; when the eye is turned nasally they assume the form of 5—6 arcuate lines occupying the lower third of the circle. They perhaps represent retinal folds induced by extrascleral pressure. A picture of the choroidal pigment against a red background can be seen when the ophthalmoscope bulb is held against the closed eye and attention directed to the region of the light source. It is possible to determine whether an opacity lies in front of or behind the pupillary plane by Listing's parallax method. H. L.

Further contributions to the mathematical biophysics of visual æsthetics. N. Rashevsky (*Bull. Math. Biophysics*, 1942, **4**, 117—120).—By an extension of the author's theory of visual perception so as to take into account the finite thresholds of the inhibiting fibres, a theory of æsthetic ratings of pattern consisting of a very large no. of elements is outlined. This type of theory is applicable to natural patterns such as landscapes. H. L.

Amaurotic familial idiocy in identical twins. L. H. Klinger and S. A. Blauner (*Amer. J. Dis. Child.*, 1942, **64**, 492—496).—Case reports. C. J. C. B.

Laurence-Moon-Biedl syndrome. A. C. Snell (*Arch. Ophthalmol.*, 1942, **28**, 12—16).—A case is reported (negro female) also showing nystagmus and macular degeneration; related ocular and skeletal defects were present in 1, possibly 2, out of 7 siblings. H. L.

Total alopecia associated with ocular disorders. J. E. Pisetsky and P. J. Kozinn (*Amer. J. Dis. Child.*, 1942, **64**, 80—86).—A case is reported of total alopecia in a 10-year-old white girl associated with pigmentary disturbances of the retina, central scotoma, and atrophy of the optic nerve. C. J. C. B.

Allocation of electrical responses from compound eye of grasshoppers. T. L. Jahn and V. J. Wulff (*J. Gen. Physiol.*, 1942, **26**, 75—88).—Extirpation of the optic ganglion prevents occurrence of oscillations, suggesting that they originate there; the electroretinogram is also changed in such a way as to suggest that the electro-retinogram from the whole eye is the algebraic sum of opposite potentials in the compound eye and ganglion. K. J. W. C.

Model of visual pathways. S. D. Liebman (*Arch. Opthalmol.*, 1942, **27**, 1122—1125).—Instructions are given for a 3-dimensional model. H. L.

Primary endings of optic nerve in man and animals. O. Marburg (*Arch. Ophthalmol.*, 1942, **28**, 61—78).—A crit. discussion of recent and older morphological work. H. L.

Corpus callosum. V. Homonymous defects for colour, object, and letter recognition (homonymous hemiamblyopia) before and after section of corpus callosum. A. J. Akeleitis (*Arch. Neurol. Psychiat.*, 1942, **48**, 108—118).—3 cases of homonymous hemiamblyopia in epileptic patients with a history of head trauma are reported. The localising val. of this defect is limited. Complete or partial section of the corpus callosum produced no changes in the hemiamblyopic visual field. H. L.

Vestibular kinetovisual function and kinetic vision. E. R. Arellano (*Arch. Otolaryngol.*, 1942, **36**, 95—107).—The kinetovisual function of the vestibular apparatus is the mechanism permitting vision during movement of the head; it is based on a relationship between the well-known reflexes of counter-rotation of the eyes and perrotatory nystagmus which serve to immobilise the optical image on the retinæ during inclination or rotation of the head respectively, vision being accomplished in the same manner as during vision of still objects. Vision during movements of the body or of the objects is attributed to retinal reflexes leading to fixation of the eye and movements of the head, thereby holding the visual field stationary on the retinæ. Kinetic vision permits vision of actually or apparently moving objects; it cooperates with the vestibular kinetovisual mechanism when the displacement of external objects from in front of the eyes is caused by movement of the head and with the retinal reflexes when the external objects move on their own accord; it is thus based on the principles used in cinematography, *i.e.*, vision of moving objects by means of a series of still pictures. H. L.

Positional nystagmus in cerebellar lesions. E. A. Spiegel and N. P. Scala (*J. Neurophysiol.*, 1942, **5**, 247—260).—In cats with experimental lesions of the cerebellum, especially of the lobus posterior medianus or of the nucleus tecti, nystagmus was observed in abnormal positions of the head, particularly in supine position with the vertex downward. A weak nystagmus in normal head position was increased and its direction sometimes changed when the head was put in an abnormal position. The phenomenon is transient and is not due to neck or retinal reflexes. The positional effect was abolished by bilateral labyrinthectomy, but a weak spontaneous

nystagmus could persist. Since it is associated with increase of the experimental postrotatory nystagmus the phenomenon is attributed to a release of parts of the vestibulo-ocular reflex arcs. Routine tests for positional nystagmus are recommended in suspected cerebellar lesions. H. L.

Compression and aspiration nystagmus. G. W. Mackenzie (*Dis. Eye, Ear, Nose, Throat*, 1942, **2**, 228—231).—A discussion of the fistula test. H. L.

Nutritional deficiencies in otolaryngology. S. E. Roberts (*Ann. Otol., etc., St. Louis*, 1942, **51**, 358—369). H. L.

Otolaryngological problems of aviation in World War II. P. A. Campbell (*Ann. Otol., etc., St. Louis*, 1942, **51**, 293—300).—Selection of pilots, effect of flight and anoxia on hearing, aero-otitis media, air sickness, aero-sinusitis, and effect of altitude on voice are discussed. Excursion of the drum during flight may enhance spread of an external otitis through the outer layer of the drum; a diffuse layer of pus may later form between the outer and middle layers. H. L.

Quantitative olfactory tests for localisation of supratentorial disease. C. A. Elsberg and H. Spotnitz (*Arch. Neurol. Psychiat.*, 1942, **48**, 1—13).—The results of quant. olfactory tests (blast injection and stream injection of odorous substances) in 1000 neurological cases are analysed. Combination of tests for the val. of the minimal identifiable odour and for the duration of olfactory fatigue allowed correct localisation in 120 out of 193 cases of supratentorial tumour (including 103 out of 120 cases of frontal or temporal lobe tumour). Unilateral or bilateral elevation of the val. for the former alone occurred in 38% of cases with lesions in or around the frontal or temporal lobes, and in 21 out of 54 cases of pituitary tumour. The tests had no val. for localisation of posterior fossa lesions. H. L.

Development of olfactory nerve, nervus terminalis, and vomeronasal nerve in man. A. A. Pearson (*Ann. Otol., etc., St. Louis*, 1942, **51**, 317—332; cf. A., 1942, III, 683).—In embryos of about 26 somites, the olfactory placodes can be recognised as slight thickenings of the ectoderm on either side of the closed anterior neuropore. Bipolar neuroblasts have begun to develop in the olfactory epithelium of embryos of about 8—9 mm.; their central processes grow towards the brain and reach it by the 6th week of development. Only after these fibres have entered the brain does the olfactory bulb begin to develop, forming later as an outgrowth of the brain and undergoing a rotation. The nervus terminalis and the ganglion terminals are formed by the growth of fibres and migration cells from the region of the anlage of the vomeronasal organ. These elements coalesce along the medial side of the olfactory nerve, one end of the ganglion becoming attached to the ventromedial wall of the forebrain. During later development the ganglion becomes separated from the brain but retains some connexion with it by fibre bundles which constitute the ventral roots of the nervous terminalis, entering the brain just caudal to the olfactory bulb. The central roots of the nervus terminalis sink deep into the brain and some of their fibres reach the septal nuclei. The peripheral branches of the nervus terminalis are distributed to the mucous membrane of the nasal septum, either along the course, or in front, of the vomeronasal nerve. An accessory olfactory bulb, comparable with that described in lower mammals, is present in the human fœtus, receiving fibres from the vomeronasal nerve. H. L.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Normal endocrine gland weights of female rats of Sprague–Dawley strain throughout growth period and adult life. H. D. Lauson, J. B. Golden, and E. L. Sevringhaus (*Endocrinol.*, 1942, **31**, 46—52).—These wts. are tabulated and curves relating them to body wt. given. V. J. W.

Sesamé oil as vehicle for fat-soluble hormones. R. C. Crafts (*Endocrinol.*, 1942, **31**, 142—145).—In immature male mice, sesamé oil (0·5 c.c.) causes a reduction in wts. of prostate and seminal vesicles, and 1 c.c. of oil neutralises the action of 10 mg. of androsterone on these organs. Adult mice are not affected. V. J. W.

Goitre, iodine, and military strength. II. J. F. McClendon and W. C. Foster (*J. Clin. Endocrinol.*, 1942, **2**, 193—194).—The I and Cl content of mineral and drinking waters has been determined in various localities in Kansas over the site of the prehistoric Permian sea. Both vals. are higher than in surrounding areas in which the incidence of goitre is higher. P. C. W.

Exophthalmos and goitre. M. H. Soley (*Arch. intern. Med.*, 1942, **10**, 206—220).—The Hertel exophthalmometer was used to measure the distance from the deepest part of the lateral wall of the bony orbit to the point of greatest convexity of the cornea. Patients with non-toxic nodular goitre have no more prominent eyes than normal people, but the eyes of patients with toxic diffuse goitre are significantly more prominent than normal, patients with toxic nodular goitre being intermediate. 50% of cases of toxic diffuse goitre show greater prominence of the eyes after subtotal thyroidectomy, but this does not occur after *X*-ray therapy. C. A. K.

Results of *X*-ray therapy in thyrotoxicosis. L. Martin (*Quart. J. Med.*, 1942, **11**, 1—17).—6 fortnightly doses of 215 r. to each of two lateral fields were given, and, in severe cases, repeated after 2 months' rest. None of 4 cases of non-toxic goitre improved, and only 1 of 7 cases of secondary thyrotoxicosis (nodular goitre, or goitre preceding symptoms by more than two years); 4 of these died and 1 became bedridden. 28 of 31 cases of primary thyrotoxicosis were improved, but only 19 had returned to normal life after a year. Surgery is indicated for economic urgency, secondary thyrotoxicosis, heart failure, auricular fibrillation, pressure symptoms, and severe primary thyrotoxicosis. *X*-Rays are indicated in primary cases of moderate severity, in childhood and adolescence, if surgery has been inadequate, and in very nervous patients. The element of nervous instability, a major factor in later disability, is unaffected by either treatment. The risk of scarring is negligible, and no case occurred since improvement in technique. Myxœdema is unlikely in the absence of scarring. R. K.

Entry and loss of iodine in thyroid. C. P. Leblond (*Rev. Canad. Biol.*, 1942, **1**, 402—453).—I metabolism following injection of small and large doses (0·5 mg. I per 100 g. body-wt.) of radioactive I was studied. I′ is treated outside the thyroid like other halogens; it is found in the extracellular spaces and a small fraction enters the cells, especially in the liver. HI is excreted in gastric juice and I′ is treated by the kidney as is Cl′. The thyroid fixes 50% of the available I if small amounts of I were given; after administration of very large doses of I the gland retains $<1\%$. Small doses of I are transformed into di-iodotyrosine, then into thyroxine. After administration of large doses most of the I is stored as iodide in the colloid and gradual change into di-iodotyrosine and thyroxine takes place. In case of I deficiency, the hyperplastic thyroid has an increased ability to fix I and to form thyroxine more quickly. A. S.

Maintenance and restoration of growth in thyroidectomised rats I. W. Rowlands (*J. Endocrinol., Lond.*, 1942, **3**, 203—210).—The retardation of body-growth that follows thyroidectomy in rats can be overcome by the injection of desiccated thyroid gland, thyroxine (2·5 μg. per day), or by the implantation of a 40-mg. tablet of cryst. thyroxine. The rate of absorption from this last is about 1 mg. per annum. Injections of rat pituitary gland or of various thyrotrophic or gonadotrophic extracts were ineffective in maintaining body-growth in the doses used. P. C. W.

Influence of weight, diet, and dosage on response of thyroid and parathyroid glands of male guinea-pig to potassium iodide; effect of this substance on adrenal. H. T. Blumenthal (*Endocrinol.*, 1942, **31**, 226—236).—Traces of KI in the diet increase mitoses in thyroids and parathyroids at 2—6 weeks, but not in older (3—4 months) animals. Larger daily doses (0·01—0·05 g.) cause at all ages a max. response in both glands at about the 15th day of dosage, followed by retrogression. This response increases with age, and is accompanied by some increased mitotic activity in the adrenals. V. J. W.

Mammary growth in male mice fed desiccated thyroid. W. U. Gardner (*Endocrinol.*, 1942, **31**, 124—127).—Thyroid feeding (1·5 mg. per kg. of food) caused proliferation of mammary ducts and end buds in normal but not in castrated male mice. It caused marked adrenal growth in both. V. J. W.

Bioassay on tadpoles of thyroxine and similar preparations. N. K. Dutt and B. Mukerji (*Current Sci.*, 1942, **11**, 104—106).—The application of the Gaddum–Wokes tadpole method (A., 1939, III, 40) to thyroxine and iodinated casein is described. The activity of the preps. appeared to be more related to total I than to thyroxine-I. F. O. H.

Significance of the parathyroid glands and their diseases. W. Beyer (*Naturwiss.*, 1942, **30**, 503—505).—A brief review.

Relation of low blood-calcium to parathyroid secretion. H. M. Patt and A. B. Luckhardt (*Endocrinol.*, 1942, **31**, 384—392).—There is no difference in blood-Ca between normal and thyroid–parathyroidectomised dogs within 90 min. after bleeding and transfusion of decalcified blood. After injection of 40 mg. per kg. of Na oxalate, blood-Ca of normal dogs rose (sometimes to normal) in 1·5—3·5 hr., but there was hardly any such recovery in the operated dogs. Decalcified blood perfused through a thyroid–parathyroid prep. and injected into normal dogs caused an increase in blood-Ca and -P, but normal blood so perfused and injected had no such effect. V. J. W.

Determination of alkaline-earth minerals in thymus nuclei. M. B. Williamson and A. Gulick (*J. Cell. Comp. Physiol.*, 1942, **20**, 116—118).—Nuclei were isolated by a process of dry grinding in the cold and centrifuging in mixtures of benzene and CCl_4 giving sp. gr. desired. Nuclei were then ashed and Ca was determined by titration of oxalate with $KMnO_4$, Mg colorimetrically with titan-yellow, and P as phosphomolybdate. Vals. for nuclei and whole cells respectively are Ca 1·35 and 0·74%; Mg 0·09 and 0·03%. V. J. W.

Tropical neurasthenia [relation to adrenal insufficiency]. A. C. Reed (*Amer. J. trop. Med.*, 1942, **22**, 127—130).—Tropical neuras-

thenia is similar to adrenal deficiency. 18 cases had low blood-NaCl, increased blood-K, hypotension, and low blood-sugar in most. Improvement followed increased ingestion of NaCl, restriction of K in diet, and especially the administration of adrenal cortical extracts. F. S.

Abnormal adrenal discharges in angina pectoris and their control by *X*-ray therapy. W. Raab (*J. Clin. Endocrinol.*, 1941, **1**, 977—982).—Adreno-cortical compounds, consisting of adrenaline combined with cortical sterols, were estimated in the circulating blood by a chemical method (A., 1941, III, 348). The concn. in angina patients was normal at rest but showed abnormally sharp increases after exercise; the compounds at this time were particularly rich in adrenaline. *X*-Irradiation of the adrenals when successful caused disappearance of the rises after exercise and also of subjective anginal symptoms for several months. P. C. W.

Circulation and respiration in patient with anasarca following administration of cortin and sodium chloride. M. D. Altschule and N. Zamcheck (*J. Clin. Endocrinol.*, 1942, **2**, 269—271).—A 43-year-old man with asthma, eczema, and eosinophilia was given a total of 48 g. of NaCl and 7 ml. of cortin during 12 days. He developed severe hypertension, generalised œdema with effusions into the body-cavities, dyspnœa, albuminuria, and lowering of serum-protein. There was no evidence of congestive failure, the cardiovascular and respiratory findings being typical of pleural effusion. P. C. W.

Effect of hormones on degeneration of *X*-zone in mouse adrenal. H. Waring (*J. Endocrinol., Lond.*, 1942, **3**, 123—131).—Injections of œstrone, progesterone, or of progesterone following œstrone did not cause degeneration of the *X*-zone in intact or ovariectomised mice. Injections of 200—900 i.u. of chorionic gonadotropin during 7—10 days following 3 daily injections of 20 μg. of œstrone caused the *X*-zone to degenerate in castrated male mice. Implantation of 4 adult female rat pituitaries (2 implantations at a 2-day interval) caused degeneration in gonadectomised male and female mice. Degeneration was also caused by injections of vasopressin into males and females; the dose (10 units daily for 3—5 days) was considered too high to be of physiological significance. P. C. W.

Nutritional achromotrichia in rats.—See A., 1942, III, 911.

Antithyrotrophic substance in sera of dogs injected with thyrotrophic hormone. O. Sotomayor Moreno (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 233—247).—Injection of thyrotrophic pituitary hormone (4 c.c. daily for 60 days) in dogs causes the production of an anti-thyrotrophic substance in the blood of the animal. Antithyrotrophic serum of dog injected into guinea-pigs together with thyrotrophic hormone prevents the appearance of the histological changes observed in control animals. I. C.

Precocious developmental changes produced by adrenal cortical hormones. M. G. Mulinos and L. Pomerantz (*Science*, 1942, **95**, 484—485).—0·25—0·50 mg. of deoxycorticosterone acetate and adrenal cortical extracts injected into day-old rats daily produced precocious (3-day) development of teeth and separation of eyelids. E. R. S.

Urine dilution and concentration tests in adrenalectomised dogs. F. J. Kottke, C. F. Code, and E. H. Wood (*Amer. J. Physiol.*, 1942, **136**, 229—243).—Adrenalectomised dogs well sustained on high-Na low-K diet, without cortical hormone, can pass as dil. a urine as intact animals; their power to concentrate urine is reduced. Max. Cl concn. in these adrenalectomised dogs was limited to levels less than 11·6 g. per l. of urine, *i.e.*, considerably less than normal. M. W. G.

Redistribution of body fluids after glucose injections in rats with adrenocortical transplants. L. C. Wyman and C. tum Suden (*Endocrinol.*, 1942, **31**, 295—299).—Injections of 10% body wt. of isotonic glucose solution are known to cause greater hæmoconcn. in adrenalectomised than in normal rats. In rats which have received an autogenous cortical graft the hæmoconcn. so produced is intermediate, and lasts longer than in normal rats. Adjustment is more rapid in females than in males. V. J. W.

Effect of adrenal factors on plasma-proteins. F. A. Hartman, L. A. Lewis, J. S. Thatcher, and H. R. Street (*Endocrinol.*, 1942, **31**, 287—294).—Adrenalectomy in 5 dogs caused a decrease in blood vol. and an increase in plasma-protein of 23—56%. This increase was due to increased globulin, albumin being decreased. There was no albuminuria. All cortical preps. tried reduced plasma-protein %, but it was reduced below normal in only 2 dogs by deoxycorticosterone. Whole adrenal extract maintained albumin level but did not prevent the rise in globulin. V. J. W.

Survival of adrenalectomised rats. J. Gillman and L. Goldberg (*Endocrinol.*, 1942, **31**, 201—208).—For purposes of assay, rats of 30—60 g. have the most const. survival time (5·7—6·3 days) and are most responsive to treatment. Younger and older rats have shorter and longer survival times with greater individual differences. V. J. W.

Effects of lactogen on normal and adrenalectomised female rats. C. E. Tobin (*Endocrinol.*, 1942, **31**, 197—200).—Average survival time of adrenalectomised rats was increased from 13·2 days to 14·3 days by daily injections of 20 i.u. of Schering prolactin and to 16·3 days by similar doses of Difco prolactin. Only the second result is regarded as significant. V. J. W.

Influence of some steroid hormones on lactation in adrenalectomised rats. R. Gaunt, W. J. Eversole, and E. C. Kendall (*Endocrinol.*, 1942, **31**, 84—88).—In rats adrenalectomised 24 hr. after parturition all substances which relieve adrenal insufficiency aided wt. increase in the litter, but the only ones giving normal lactation for the 17 days of the experiment were "compound *E*" (17-hydroxy-11-dehydrocorticosterone) and whole cortical extract. Œstradiol and testosterone inhibited lactation. V. J. W.

Effects of pseudohypophysectomy (underfeeding), starvation, hormones, and ageing on ascorbic acid content of adrenal glands and liver of rat. M. G. Mulinos, L. Pomerantz, and M. E. Lojkin (*Endocrinol.*, 1942, **31**, 276—281).—Chronic underfeeding caused adrenal cortical atrophy with a fall in ascorbic acid concn. Both were restored by pituitary implants. Concn. in liver was unchanged but the liver lost wt. Complete starvation caused increased wt. and ascorbic acid content of the adrenals, more marked in females. No changes were produced by daily injections of 0·25—1 mg. of deoxycorticosterone acetate. Ascorbic acid concn. of adrenals gradually decreases from the 5th to the 27th month. V. J. W.

Adrenal cortex and alkaline phosphatase.—See A., 1942, III, 936.

Treatment of underweight with insulin. J. B. Greco, A. O. Lima, and J. R. Cancado (*Amer. J. med. Sci.*, 1942, **204**, 258—261).—All the 30 cases submitted to treatment gained 1—27 lb. in 12—40 days using progressive doses of insulin. C. J. C. B.

Response of fasted and non-fasted chicks to insulin. D. F. Opdyke (*Endocrinol.*, 1942, **31**, 363—370).—Fall in blood-sugar is a function of log dose up to 2 units per kg., but with 1·5—2 units there is an over-compensation which causes slight hyperglycæmia after 5 hr. Accurate assay is possible by determinations of blood-sugar 90 min. after injection. 24 hr. after injection blood-sugar and liver-glycogen are increased, and fasted chicks receiving heavy doses (120 units per kg.) show higher liver-glycogen and blood-glucose than controls. V. J. W.

Immunological identity of insulin from various species. P. Wasserman and I. A. Mirsky (*Endocrinol.*, 1942, **31**, 115—118).—Insulin from ox, pig, and sheep can be used indiscriminately to cause anaphylactic reactions in the guinea-pig, and that from ox, pig, sheep, bison, dog, and man gives the same complement fixation. V. J. W.

Action of enzymes, fish pancreatic islets, and fœtal calf pancreas on insulin. R. E. Banner, S. N. Dereniuk, and L. E. Thomas (*Endocrinol.*, 1942, **31**, 271—275).—Insulin was incubated with pancreatin, papain, macerated islets of the sculpin, or macerated fœtal calf pancreas for 4—5 hr. and filtered through collodion impermeable to insulin. The filtrates had no effect on blood-sugar of the rabbit, so that there is no evidence for the existence of a fraction of the insulin mol. having a blood-sugar-lowering effect. V. J. W.

Structure of neurohypophysis (horse) with special reference to nerve endings.—See A., 1942, III, 868.

Precautions for pituitary and thyroid medication: three case reports. J. H. Hutton (*J. Clin. Endocrinol.*, 1942, **2**, 272—273).—Hypertension, hyperglycæmia, and diabetes mellitus developed in 3 patients given various forms of endocrine therapy. P. C. W.

Pituitary weight in growing New Zealand white rabbits in relation to live weight. H. H. Kibler, A. J. Bergman, and C. W. Turner (*Endocrinol.*, 1942, **31**, 59—62).—Wts. and ratios are tabulated for both sexes and relating equations are given. The ratio pituitary wt. : body wt. decreases with growth and is greater in females than in males. V. J. W.

Pituitary weight of growing male rat related to body weight. J. P. Mixner and C. W. Turner (*Endocrinol.*, 1942, **31**, 261—263).—Equations and tables are given for predicting pituitary wt. on basis of body wt. It is suggested that pituitary hormone injections should be proportional to calc. pituitary wt. V. J. W.

Action of testosterone on female rat hypophysis. G. L. Laqueur and C. F. Fluhmann (*Endocrinol.*, 1942, **31**, 300—302).—Pituitaries of female rats which received 40 mg. of testosterone propionate during 16—21 days were less effective when inoculated into immature mice than controls, and the ovaries of such mice contained no corpora lutea. V. J. W.

Effect of testosterone propionate on hypophysis of normal young adult male rat. P. Wainman, J. D. Reese, and A. A. Koneff (*Endocrinol.*, 1942, **31**, 303—308).—Daily injections of 0·2 or 0·5 mg. were given for 35 days. There resulted an increase in no. and size of the acidophil cells of the pituitary and injury to the testis. Both effects were more marked at the lower dosage. The basophil cells were reduced in size and more vacuolated and degranulated forms were present. These effects were more marked at the higher dosage. V. J. W.

Effect of early hypophysectomy on hypothalamic obesity. A. W. Hetherington and S. W. Ranson (*Endocrinol.*, 1942, **31**, 30—34).—

Onset and course of obesity following hypothalamic lesions (A., 1941, III, 342) is not modified by hypophysectomy 6—10 days after the first operation. V. J. W.

Balance studies on hypophysectomised and normal rats fed on equicaloric high-carbohydrate and high-fat diets. L. T. Samuels, R. M. Reinecke, and H. A. Ball (*Endocrinol.*, 1942, **31**, 35—41; cf. A., 1941, III, 869).—All the rats, on either diet, had the same metabolic rate and the same utilisation of each foodstuff, except that the metabolic rate of the hypophysectomised carbohydrate-fed rats was 18% below that of the others. The hypophysectomised rats had less body-water and liver-fat and more peripheral fat than controls. V. J. W.

Total iodine and thyroxine of thyroid after hypophysectomy. E. J. Baumann, N. Metzger, and D. Marine (*Endocrinol.*, 1942, **31**, 359—362).—Thyroids of dogs which had been hypophysectomised 1—20 months previously contained more I and thyroxine-I than those of normal or incompletely hypophysectomised dogs, and showed more activity in accelerating metamorphosis in tadpoles. V. J. W.

Thyrotropic hormone assay in tadpole. S. E. D'Angelo, A. S. Gordon, and H. A. Charipper (*Endocrinol.*, 1942, **31**, 217—225).—The tadpole is 60—120 times as sensitive to this hormone as the guinea-pig. A unit is the min. amount which, given in 5 intro-peritoneal injections to the unfed non-metamorphosing tadpole, causes thyroid stimulation, hind limb growth, and wt. loss 50% greater than in water-injected controls. V. J. W.

Action on thyroid of thyrotrophic pituitary hormone. O. Sotomayor Moreno (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 167—182).—Thyrotrophic hormone stimulates the activity of the thyroid of guinea-pigs as evidenced by the increase in gland wt. and by the histological changes. Following repeated injections of the hormone the activity of the thyroid gradually diminishes. I. C.

Reaction of chick thyroid to frog and mouse anterior pituitaries. A. E. Adams and E. A. Beeman (*Endocrinol.*, 1942, **31**, 128—141).—Subcutaneous implantation of frog or mouse pituitary in 1-day-old chicks causes an increase in thyroid cell height of over 100%. Such increase is more const. and sensitive than changes in thyroid wt., and a suggested unit is the amount which will cause 100% increase in cell height in 24 hr. V. J. W.

Growth in silver dwarf mice, with and without injections of anterior pituitary extracts. R. W. Bates, T. Laanes, E. C. MacDowell, and O. Riddle (*Endocrinol.*, 1942, **31**, 53—58).—Previous results, showing the potentiating effect of another pituitary factor on prolactin in promoting growth, are confirmed, and the opposed results of Boettiger and Osborn are explained as due to impurity of strain and different experimental conditions. V. J. W.

Ketogenic activity of anterior pituitary extracts. C. H. Gray (*J. Endocrinol., Lond.*, 1942, **3**, 132—140).—An investigation of the relationship between ketonuria and ketonæmia in fasting rats injected with anterior pituitary extracts confirms the existence of a renal threshold for ketonic compounds in this species. Injections of this extract may lower this threshold in the rat. Fractionation of saline extracts of the anterior pituitary showed that the ketogenic activity was distributed fairly evenly among the albumin, globulin, and pseudoglobulin fractions, but pH 5·5-sol. fractions of saline extracts were nearly as active as the saline extracts from which they were obtained. The ketogenic activity parallels the glycotropic activity, but the heat-stability of the latter indicates that the two factors may be separable. P. C. W.

Lactogenic hormone content of mouse pituitary compared with other species. V. Hurst and C. W. Turner (*Endocrinol.*, 1942, **31**, 334—339).—Lactogen content of pituitary is higher during pregnancy and has a lower max. level after parturition than in other species (rat, guinea-pig, rabbit) examined. V. J. W.

Initiation of lactation at parturition. IV. Influence of suckling on lactogen content of pituitary of post-partum rabbits. J. Meites and C. W. Turner (*Endocrinol.*, 1942, **31**, 340—344).—In rabbits which have respectively been deprived of their litters at birth or allowed to suckle them lactogen content of the pituitary is the same on the 2nd day post partum, but by the 5th day is much less in the non-suckling group, in which it returns to control level by the 20th day, when the milk secretion has practically ceased. V. J. W.

Effects of lactogenic and gonadotropic hormones on hypophysectomised pregnant rats. E. Cutuly (*Endocrinol.*, 1942, **31**, 13—22).—In rats hypophysectomised 1—9 days after mating, injections of pituitary gonadotropin or lactogen maintained pregnancy, but pregnant mare serum did not. Duration of such pregnancies varied from a few to 28 days. Fœtal development was always accompanied by milk secretion. In the gonadotropin-treated rats corpora lutea were formed and apparently secreted progesterone. V. J. W.

Endocrine factors influencing tumour development. Administration of gonadotropins at early cancer age to mice. F. Bischoff, J. J. Rupp, and G. J. Clarke (*Endocrinol.*, 1942, **31**, 329—333).—Administration to Marsh-Buffalo mice from 7th to 10th month of sufficient pregnant mare serum or sheep pituitary to cause marked mammary growth had no effect on onset or development of mammary tumours. V. J. W.

Pituitary of perch. T. Kerr (*Quart. J. Micr. Sci.*, 1942, **83**, 299—316).—A detailed account of the anatomy and histology of the pituitary in *Perca fluviatilis*. J. D. B.

Comparative study of teleost pituitaries. T. Kerr (*Proc. Zool. Soc. London*, 1942, **112**, **A**, 37—56).—A description of the pituitary in a no. of teleost orders and a discussion of the homology of its main sub-divisions with those of higher vertebrate types. J. D. B.

Effect of sheep anterior pituitary extract on rabbit ovaries and uterus. M.-D. F. Nutting (*Endocrinol.*, 1942, **31**, 146).—Removal of one ovary in the rabbit decreases the endometrial proliferation produced by sheep pituitary in controls. V. J. W.

Comparative gonadotropin assays, and use of calcium phosphate as adsorbent in concentration of follicle-stimulating activity from pituitary gland. J. J. Ceithaml and F. C. Koch (*Endocrinol.*, 1942, **31**, 249—260).—The hormones were assayed by uterus-wt. of immature mouse, which was found much more sensitive than that of the rat. Acetone-dried sheep pituitary was compared with its alcohol-pptd. aq. NH_3 extract, and with a further extract prepared by adsorption of this concentrate on $Ca_3(PO_4)_2$ and elution at pH 9—9·5. This prep. was 200 times as potent as the dried pituitary, luteinising activity was doubtful, and adreno- and thyro-tropic activities absent. It contained protein but no glycuronic acid. V. J. W.

Assay of pituitary gonadotropins using augmentation reaction. R. W. Bates and J. P. Schooley (*Endocrinol.*, 1942, **31**, 309—317).—Dried pituitary, chorionic gonadotropin, purified sheep follicle-stimulating hormone, or mixtures of the last two were given to immature female rats and ovarian wts. determined and plotted against log dose. Below 1 and above 8 i.u. of chorionic hormone the curves are straight lines with a slope which is a function of relative proportions of follicle-stimulating to chorionic hormone. Ovarian wt. does not change with chorionic dosages between these levels if follicle-stimulating hormone is const., and in this region (*e.g.*, 3 i.u.) accurate assay of follicle-stimulating hormone is possible. Dried pituitary or pregnancy serum is greatly augmented by follicle-stimulating but not by chorionic hormones. V. J. W.

XII.—REPRODUCTION.

Effect of *X*-ray stimulation on bio-electric potentials of avian egg. A. L. Romanoff and A. A. Bless (*Proc. Nat. Acad. Sci.*, 1942, **28**, 306—311; cf. A., 1940, III, 465).—Moderate (250 r.) irradiation with *X*-rays increases the bio-electric potential and stimulates vital activity. Larger doses inhibit activity and reduce the potential. R. L. E.

Nucleic acid storage in toad's egg. T. S. Painter and A. N. Taylor (*Proc. Nat. Acad. Sci.*, 1942, **28**, 311—317).—Examination of developing toad's eggs before and after decomp. of ribonucleic acid by ribonuclease shows that ribonucleic acid can be formed in the nucleus, but is formed mostly at the nuclear surface. "Lampbrush" chromosomes are typical in meiosis. R. L. E.

Chemical embryology. Lipin syntheses in chick embryo. K. Bernhard (*Helv. Chim. Acta*, 1941, **24**, 1094—1098).—Injection of D_2O into the fertilised hen's egg causes enrichment of the egg content with D. Cholesterol and fatty acids of the chick developed in such a medium contain stably united D showing that these compounds are synthesised by the embryo. D is not present in the fatty acids of the egg content after removal of the embryo. H. W.

Cytochrome oxidase content of centrifugally separated fractions of unfertilised *Arbacia* eggs. J. O. Hutchens, M. J. Kopac, and M. E. Krahl (*J. Cell. Comp. Physiol.*, 1942, **20**, 113—116).—Disintegrated eggs were centrifuged and oxidase activities of different fractions determined by the Cartesian diver of Boell *et al.* (A., 1940, III, 55). 67% is in the cytoplasmic matrix, 12% in the yolk granules, 1% in the mitochondria, and none in the pigment vacuoles. V. J. W.

Gametogenesis and factors affecting it in adult minnow (*Phoxinus laevis*, L.). W. S. Bullough (*J. Endocrinol., Lond.*, 1942, **3**, 211—219).—A short account is given of gametogenesis in the adult minnow and it is shown that new stocks of oogonia appear annually during late spring and early summer due to the mitotic activity of the germinal epithelium. Groups of exhausted post-spawning fish in the late summer were injected every 3 days for 3—9 weeks with 2 μg. of œstrone in the case of females and 0·1 mg. of testosterone propionate in the case of males; groups of 50 experimental and control fish were used. The œstrone injections cause the breakdown of primary oocytes in the secondary growth phase and stimulate mitotic activity of the germinal epithelium cells so that abnormally large nos. of new oogonia are produced. In the males the testosterone causes active spermatogenesis with the development of many spermatozoa. Œstrone stimulates at least one of the divisions of oogenesis and testosterone all the divisions of spermatogenesis. The growth of the primary oocyte, like that of the mammalian

ovarian follicle, is under the control of extra-ovarian influence, presumably hypophyseal except that some of the hypophyseal stimulation of gametogenesis is exerted indirectly through the production of œstrogen or androgen. P. C. W.

Oogenesis and its relation to œstrous cycle in adult mouse. W. S. Bullough (*J. Endrocrinol., Lond.*, 1942, **3**, 141—149).—40 mice were killed after colchicine injections in the various phases of the œstrous cycle. The mitotic activity of the germinal epithelium of the ovary was least in diœstrus, rising slowly in pro-œstrus and pre-ovulation œstrus to a sudden high level in the short post-ovulation œstrous period. Mitoses were few in metœstrus. Most cell divisions were in the immediate neighbourhood of large follicles or undeveloped corpora lutea, and in mice producing either less follicles or less follicles that burst than normal, less mitoses were evident. The mitosis of the germinal epithelial cell, the meiosis of the primary oocyte, and the mitosis of the secondary oocyte all tend to take place in the same short post-ovulation œstrous period, and the possibility is discussed that their occurrence at this time is connected with the presence of high local concns. of œstrogen. P. C. W.

Method of growth of follicle and corpus luteum in mouse ovary. W. S. Bullough (*J. Endocrinol., Lond.*, 1942, **3**, 150—156).—Following colchicine injection in mice the mitoses in the cells of the growing follicles and young corpora lutea of the ovary were counted. Mitosis was most frequent in those follicular cells nearest the oocyte and the reservoir of follicular fluid in the antrum of the follicle, and diminished through the thickness of the membrana granulosa and was least frequent in the theca externa. In the developing corpus luteum mitoses are commonest in the old membrana granulosa cells nearest the extruded follicular fluid, but later become frequent among cells close to the reservoir of tertiary follicular fluid. Œstrogen in the follicular fluid thus induces mitosis in the ovarian cells. P. C. W.

Life history of corpus luteum of menstruation in *Elephantulus*. C. J. van der Horst and J. Gillman (*S. Afr. J. Med. Sci.*, 1942, **7**, 21—41).—The histology of the menstrual corpus luteum in *Elephantulus* is described. It begins to form before the ovum is discharged from the follicle. At ovulation the follicular cavity is not preserved and the young lutein cells project into the periovarian space to form an everted corpus luteum attached to the ovary by a localised thickening of the theca interna (thecal cushion). The germinal epithelium grows rapidly over the free surface of the corpus luteum. The theca interna reaches max. development at ovulation and is restricted to the internal surface of the corpus luteum. The thecal cells do not metamorphose to true lutein cells. The lutein cells are largest and best defined immediately after ovulation. They decrease in size as the corpus luteum sinks into the ovary and in the prepolyp stage of the endometrium show first signs of degeneration. These changes become more marked and the corpus diminishes in size during menstruation. There was no hæmorrhage into the corpus at menstruation. Owing to the luteinisation of granulosa cells before ovulation it is difficult to determine the structure of the endometrium under max. œstrogenic stimulation. It is generally possible to recognise 2 generations of menstrual corpora; the pregnancy corpus luteum persists after parturition for a longer period than the menstrual corpus luteum normally persists. P. C. W.

Pre-implantation phenomena in uterus of *Elephantulus*. C. J. van der Horst and J. Gillman (*S. Afr. J. Med. Sci.*, 1942, **7**, 47—71).—The uterine reactions in *Elephantulus* between fertilisation and implantation are described. The embryo does not develop beyond the 4-celled stage before implantation but then develops rapidly. Before the arrival of the embryo at the implantation site the general œdema of the endometrium produced at ovulation disappears and is replaced by dense stroma. Up to this time there is no detectable difference from the menstrual uterus. The first reaction to the presence of the embryo is the formation of œdema in the mesometrial side of the uterus immediately under the uterine epithelium; the œdema spreads towards the muscularis and antimesometrially. A niche then forms in the uterine wall, the glands enlarge and become coiled, and the embryo emplants itself. Underneath the embryo chamber stromal cells enlarge to form decidual cells which differentiate into a decidua compacta and a decidua spongiosa. The former is at first thin but gradually occupies $\frac{1}{3}$—$\frac{1}{2}$ of the endometrium. The reactions of the epithelium of the embryo chamber at the time of implantation until its erosion are described. The blood vessels do not dilate until the chamber epithelium is being eroded by the embryo. Both menstruation and implantation are restricted to a small area of the uterus. The uterine reactions, except those of the blood vessels, are precocious as compared with other mammals. The exceptionally swollen nature of the glands suggests that they play an important rôle in the pre-implantation processes. P. C. W.

Transport of tubal ova. H. O. Burdick, R. Whitney, and B. Emerson (*Endocrinol.*, 1942, **31**, 100—108).—The oviduct of a mouse was partly straightened and observed on a slide by transmitted light. In the ampulla, at the ovarian end, transport is largely due to cilia, but in the rest of the duct is caused by peristaltic contractions of oviduct muscle. V. J. W.

Changes in plasma-inorganic phosphate associated with endrocrine activity in *Xenopus laevis*. VI. Effect of gonadectomy, progesterone and œstradiol benzoate injections in normal and hypophysectomised animals and of injections of anterior pituitary extracts in ovariectomised animals. VII. Captivity and normal reproductive cycle. V. Schrire (*S. Afr. J. Med. Sci.*, 1942, **7**, 1—7, 8—15; cf. A., 1942, III, 306).—VI. Gonadectomy produces no changes. Injections of progesterone (500 μg.) or œstradiol benzoate (250 μg.) lowered plasma-inorg. PO_4''' in normal and hypophysectomised animals. Injections of sheep anterior pituitary extract (≡0·3 g. of fresh gland) in castrated animals produced a preliminary rise (6th—12th hr.) and subsequent fall below pre-injection level of plasma-inorg. PO_4'''.

VII. Serum-Ca is higher in females than in males throughout the normal reproductive cycle; plasma-inorg. PO_4''' is only higher during anœstrus. Serum-Ca of male frogs is const. throughout. The fall in plasma-inorg. PO_4''' during the breeding season is greater in females than in males. Captivity causes a fall in plasma-inorg. PO_4''' followed by a maintained rise; serum-Ca rises and subsequently declines. Seasonal changes in solar radiation and inadequate illumination during captivity are suggested causes. P. C. W.

Dermovascular changes during menstrual cycle: failure to find cyclic variation in contractile or dilating capacity of skin capillaries. S. R. M. Reynolds and J. R. di Palma (*J. Clin. Endocrinol.*, 1942, **2**, 226—227). P. C. W.

Skin reactivity during menstrual cycle. O. C. Hansen-Pruss and R. Raymond (*J. Clin. Endocrinol.*, 1942, **2**, 161—166).—10 allergic and 20 non-allergic women were injected intradermally with a series of potent allergens at various intervals during the menstrual cycle. The reactions were measured with a planimeter in sq. cm. The reactions were larger in the allergic than in the non-allergic women. The largest reactions were obtained on the last day of menstruation and the smallest on the last pre-menstrual day. Large reactions were obtained in the mid-period but not as large as on the last day of menstruation. Largest reactions therefore coincided with periods of œstrogenic deprivation and with ovulation. No significant blood changes were observed during the menstrual cycle. P. C. W.

Action of *l*-ascorbic acid on uterus and heart.—See A., 1942, III, 911.

Ascorbic acid content of human Fallopian tube during menstrual cycle and pregnancy.—See A., 1942, III, 912.

Curative effect of tocopherol acetate on degenerative uterine changes in *E*-avitaminotic rats.—See A., 1942, III, 914.

Histochemical vitamin-*C* test in uterine mucous membrane.—See A., 1942, III, 913.

Six-hour pregnancy test. U. J. Salmon, S. H. Geist, A. A. Salmon, and I. L. Frank (*J. Clin. Endocrinol.*, 1942, **2**, 167—170).—Injection of 2 ml. of night urine from a pregnant woman into an immature mouse produces hyperæmia of the ovaries 6 hr. later. 77 of 78 samples of urine from pregnant women gave positive responses by this test and all of 31 samples from non-pregnant women gave negative responses. 24 hr. after the injection of pregnancy urine the vaginal muscularis and epithelium are thickened and proliferated owing to the œstrogen present in the urine: this may be used as a confirmatory test until the assessment of ovarian hyperæmia becomes familiar. P. C. W.

Induction of pregnancy in golden hamster during breeding pause. O. Peczenik (*Proc. Roy. Soc. Edin.*, 1942, **61**, **B**, 297—315).—Pregnancy was induced during the breeding pause by treatment of the female with anterior pituitary gonadotrophin or by combination of the latter with chorionic gonadotrophin. By this method also litters were obtained from sterile and senile females but only during the normal breeding time. Single injections of a moderate amount of œstrogen, which induced fertility in sterile females during the breeding time, did not influence them during the breeding pause. W. F. H.

Physiology of egg extrusion in *Xenopus* frog test for pregnancy. A. I. Weisman, A. F. Snyder, and C. W. Coates (*Endocrinol.*, 1942, **31**, 323—325).—Human pregnancy urine extract is much more potent than pregnant mare serum extract in causing egg extrusion. It is suggested that this effect is due to luteinising hormone in which the urine extract is much the richer. V. J. W.

Failure of vertebrate sex hormones to affect insects. P. Joly (*Compt. rend.*, 1942, **214**, 133—135).—Gonadostimulin-*A* and -*B*, testosterone propionate, œstradiol benzoate, and progesterone administered orally and by injection to male and female *Macrodytes marginalis*, *M. circumflexus*, and *M. dimidiatus* had no effect on the reproductive system. W. McC.

Influence of ovary on blood-cholesterol *in vitro*. H. Croxatto and R. Croxatto (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 213—231).—Ovaries of cow and rabbit are incubated at 37° with defibrinated blood or serum and cholesterol levels determined in these fluids. After 6 hr. of incubation the combined and esterified cholesterol is diminished by 20—25%; free cholesterol is not altered. Prolan

and anterior hypophysis hormone facilitate the phenomenon, and progesterone more than œstrone. Kidneys, liver, and spleen do not affect blood-cholesterol *in vitro*. I. C.

Steroid hormone excretion by normal and pathological individuals. K. Dobriner, E. Gordon, C. P. Rhoads, S. Liebermann, and L. F. Fieser (*Science*, 1942, **95**, 534—536).—Total ketosteroid excretion was 15 mg. per day for normals (6), 10 mg. for cancer patients (6), and 50 mg. for cases of adrenal hyperplasia (4). After acid hydrolysis individual urines were separated, by ether extraction and Giraud's reagent, into ketonic and non-ketonic fractions and these treated with digitonin. The proportion of digitonin ppt. [3(β)-hydroxysteroids] to total ketosteroids was 0·6—2·2% for normals, 0·3—6·0% for cancer, 3·7—11·4% for hyperplasia urines. The filtrate from the digitonin ppt. [3(α)-hydroxyketosteroids and 17-ketosteroids] was adsorbed on Al_2O_3 from ligroin and separated by fractional elution. $\Delta^{3:5}$-Androstadien-17-one was isolated from 4 of 6 normal and all hyperplasia urines, not from cancer urines. Androsten-17-one was isolated from 2 normal and 3 hyperplasia urines. Androsterone and 3(α)-hydroxyætiocholan-17-one were isolated from all but 2 cancer urines. 4 unidentified cryst. compounds were isolated. In the normals androsterone and 3(α)-hydroxyætiocholan-one accounted for 70—90% of the ketosteroids, but the ratio of the fractions varied considerably from one patient to another. E. R. S.

Œstrogens and pro-œstrogens related to stilbene and triphenylethylene. C. W. Emmens (*J. Endocrinol., Lond.*, 1942, **3**, 168—173).—A series of compounds related to stilbene and triphenylethylene have been examined for their œstrogenic or pro-œstrogenic activity. True œstrogenic activity does not necessarily imply a structure closely resembling that of the natural œstrogens, though within the limits of the compounds examined a phenanthrene or phenanthrene-like structure appears to be a common feature. Compounds of the stilbœstrol series are pro-œstrogens unless they have hydroxyl groups in the 4 : 4′-positions and 2 side-chains of 2 or more C atom length. Compounds of the triphenylethylene series may possess true œstrogenic activity in the presence of 0, 1, or 2 hydroxyl groups [triphenylchloroethylene, α-(*p*-hydroxyphenyl)-β-ethylstilbene, or α-phenyl-β-ethylstilbœstrol]. P. C. W.

Effect of single injections of œstradiol benzoate on normal human menstrual cycle with reference to œstrogen sensitivity. J. Gillman (*J. Clin. Endrocrinol.*, 1942, **2**, 146—156).—31 normal unmarried women were injected with 0·01—5 mg. of œstradiol benzoate in a single dose on the 8th day of the menstrual cycle; 3 types of response were observed: reduction in the length of the cycle by 8—11 days, lengthening of the cycle by 3—8 days, or lengthening by 16—20 days. One case exhibited intracyclic bleeding after the injection of 1 mg. There was no relation between the type of response and the dose injected and considerable individual variation. The responses are similar to those in the baboon and are attributed to atresia of the ovarian follicles, which is produced by this treatment in baboons. The shortened cycle is attributed to œstrogen withdrawal bleeding; in the greatly lengthened cycle the ovary is assumed to recover from its inhibition before such bleeding sets in so that a normal cycle follows. The somewhat lengthened cycle is due to partial ovarian inhibition. If the cycle is shortened or greatly lengthened it means that the œstrogen production of the ovary under normal conditions is less than the amount of exogenous œstradiol that has to be injected to produce these effects. A method is thus available for assessing normal œstrogen production of the ovary. It is possible to grade the women into œstrogen-sensitive and œstrogen-resistant classes on the basis of their responses. The results are discussed. P. C. W.

Effect of diethylstilbœstrol on plasma-phospholipins of cock. E. V. Flock and J. L. Bollman (*J. Biol. Chem.*, 1942, **144**, 571—577).—The production of plasma-phospholipins by subcutaneous administration of diethylstilbœstrol has been studied; the concns. produced over a period of a week approached those in the liver, but returned to normal when œstrogen was discontinued. Both kephalin- and choline-phospholipins were produced so that the kephalin : choline ratio was not altered. The kephalin fraction decreased more rapidly than the choline phospholipins during the recovery period. J. L. E.

Distribution of œstrogens between immiscible solvents. A. Mather (*J. Biol. Chem.*, 1942, **144**, 617—623).—Distribution coeffs. for œstriol, œstrone, and α-œstradiol between various immiscible solvents were determined and their applications to extraction problems are discussed. For extraction of total œstrogen, the best solvents are diethyl and di*iso*propyl ethers. To separate œstriol from œstrogen fractions, the partitions between benzene and aq. 0·3M-Na_2CO_3 may be used; to separate œstrogens from androgen and other interfering steroid, the partitions between light petroleum and aq. 0·1M-NaOH are the most suitable. J. L. E.

Source of ovarian androgen in mouse. C. A. Pfeiffer and C. W. Hooker (*Anat. Rec.*, 1942, **83**, 543—571).—Cells which secrete the androgen are thought to be vacuolated, epithelioid cells with eosinophilic granules having the same origin as ordinary interstitial cells, *i.e.*, they are derived from cells of the old corpora lutea and become dispersed throughout the stroma by ingrowth of the theca externa. The possibility that there are two factors involved in the development of these cells, one controlling growth and maturation (formation of granules) and the other governing the secretory phase (vacuolation), is discussed. W. F. H.

Morphogenetic actions of œstradiol. S. Albert and H. Selye (*J. Pharm. Exp. Ther.*, 1942, **75**, 308—315).—The effects of various pharmacological agents, mainly steroids, on the morphological changes induced by œstradiol were studied in the rat. Androstenediol was the most potent in preventing loss of body wt. caused by œstradiol. It had also the greatest preputial gland-stimulating effect, but was inferior to testosterone and methyltestosterone in its ability to cause enlargement of the seminal vesicles, prostate, and coagulating glands. Œstradiol overdosage produced hypertrophy of the pituitary and adrenal glands, the former effect being inhibited best by high doses of testosterone and methyltestosterone, while the latter effect was not only inhibited, but even reversed, by deoxycorticosterone acetate. The protection of the testis against œstradiol atrophy by steroids is independent of their "male hormone" or testoid activity. Decrease in kidney wt. after œstradiol is effectively prevented by testosterone and methyltestosterone. H. C. S.

Actions of sex hormones on œstrous cycle and reproduction in golden hamster. O. Peczenik (*J. Endocrinol., Lond.*, 1942, **3**, 157—167).—A colony of golden hamsters in which there was a high proportion of sterility was examined during the breeding season. Stages in the œstrous cycle could be distinguished by vaginal smears: in non-castrated females the œstrus produced naturally or by injected œstrogen or gonadotrophin resembles that in rats or mice in proœstrus; in castrated females this type of smear produced by the same œstrogen injections only lasted several hr. and was followed by the appearance of cornified cells in the vaginal smear. Daily injections of large doses of pituitary gonadotrophin or of chorionic gonadotrophin (200 i.u.) for 12 days in non-castrated females produced vaginal smears characterised by the presence of columnar epithelial cells typical of pregnancy or progesterone injections; there was a prolonged period of anœstrus following the pituitary gonadotrophin injections. There was no lasting anœstrus following large œstrogen injections but an apparent production of sterility. A single injection of 40 μg. of stilbœstrol or of 16—24 i.u. of chorionic gonadotrophin produced pregnancy in 11 of 18 sterile females; the litters were viable in those mothers less than 10 months old but died within 4 days in those older than this. P. C. W.

Synthetic, highly active œstrogens.—See A., 1943, II, 8.

Calorigenic action of stilbœstrol in rat. R. G. Janes (*Endocrinol.*, 1942, **31**, 354—358).—Daily subcutaneous injections of 50—100 μg. of stilbœstrol caused a slight increase in basal metabolic rate in both sexes after a latent period of 6 weeks. V. J. W.

Œstrus-producing activity of stilbœstrol in subthreshold to maximal doses. C. S. Matthews, E. L. Schwabe, and F. E. Emery (*Endocrinol.*, 1942, **31**, 371—374).—Œstrus was produced in 50% of adult spayed rats by 0·05 μg. of stilbœstrol in sesame oil, by 0·01 μg. in aq. alkaline solution, or by 0·03 μg. of theelin. Dosage range for aq. stilbœstrol was 0·001—0·03 μg., and for a solution in oil 0·01—0·15 μg. V. J. W.

Action of steroid compounds on vaginal epithelium of rat. E. Clarke and H. Selye (*Amer. J. med. Sci.*, 1942, **204**, 401—409).—All of 49 hormonally active steroids (folliculoids, luteoids, corticoids, testoids) stimulate the vaginal epithelium in ovariectomised or immature rats to undergo stratification, cornification, and mucification. Cornification is most common; mucification is more frequently seen after androstane and 17-substituted androstane derivatives. All ætiocholane and 17-substituted ætiocholane derivatives proved inactive unless the H at $C_{(5)}$ was removed by the presence of a Δ^4 or Δ^5 double bond. C. J. C. B.

Clinical comparison of three commercial œstrogenic preparations. F. J. Stoddard and I. Metzger (*J. Clin. Endocrinol.*, 1942, **2**, 209—212).—In a group of post-menopausal women equiv. effects were produced in vaginal smears by the daily intramuscular injection of 1 mg. of œstrone or 0·42 mg. of α-œstradiol benzoate or the daily oral administration of 0·5 mg. of diethylstilbœstrol for 10 days. No differences were noted in the promptness or duration of response. Diethylstilbœstrol was the cheapest form of therapy. P. C. W.

Œstrogenic substances in treatment of pigmented areas. F. Rocca (*J. Clin. Endocrinol.*, 1942, **2**, 217—218).—Pigmented patches on the face of a menopausal patient disappeared when œstradiol was injected twice weekly in a dose of 5000 i.u. or applied locally as an ointment containing 250,000 i.u. per 50 g. P. C. W.

Assay in human female of synthetic œstrogen 118*B*. S. C. Freed, W. M. Eisin, and J. P. Greenhill (*J. Clin. Endocrinol.*, 1942, **2**, 213—214).—Satisfactory relief of menopausal symptoms was produced in

the majority of a group of 35 post-menopausal women given 1—5 mg. of 118*B* daily by mouth for 3 weeks. Only 3 patients complained of nausea or vomiting. 118*B* is a synthetic œstrogen (Schieffelin & Co., N.Y.) unrelated chemically to stilbene or the natural œstrogens. P. C. W.

Cyclical endometrial response to prolonged administration of œstradiol in castrate women. G. di Paola and E. B. del Castillo (*J. Clin. Endocrinol.*, 1942, **2**, 215—216).—A castrated woman was injected daily for 5 months with 400 i.b.u. of œstradiol benzoate. Uterine bleeding occurred 4 times during the course of treatment at intervals of 60, 32, and 29 days. P. C. W.

Bleeding threshold and optimum œstrogen requirement in baboon. J. Gillman (*Endocrinol.*, 1942, **31**, 172—178).—Min. daily dose of œstradiol benzoate, given to the spayed baboon for 15 days, necessary to cause withdrawal bleeding ranged from 0·01 to 0·06 mg. Min. daily dose necessary to cause a perineal response similar to that occurring before castration ranged from 0·01 to 0·04 mg. V. J. W.

Spayed-rat œstrogen assay method, and its application to pure œstrogens and urine extract. F. C. Koch (*Endocrinol.*, 1942, **31**, 162—166).—Rats which have received 1 μg. of theelin respond accurately to very small doses of œstrogens 48—52 hr. later. Weekly assays are possible of many œstrogen preps. but not of esters of α-œstradiol on account of their prolonged action. V. J. W.

Effect of vitamin-*B* complex deficiency on inactivation of œstrone in liver. M. S. Biskind and G. R. Biskind (*Endocrinol.*, 1942, **31**, 109—114).—In spayed rats on a normal diet, pellets of œstrone implanted in the spleen do not cause œstrus, but when the diet is free from vitamin-*B* protracted œstrus occurs, and ceases on feeding with yeast. V. J. W.

Effects of crystalline œstrin implants on tibiæ of young hypophysectomised female rats. E. A. Kibrick, M. E. Simpson, H. Becks, and H. M. Evans (*Endocrinol.*, 1942, **31**, 93—96).—The hyperossification which occurs in normal rats (A., 1942, III, 525) does not take place in hypophysectomised. V. J. W.

Œstrogens, blood-sugar, and liver-glycogen in normal and hypophysectomised guinea-pigs. R. T. Hill and W. W. Stalker (*Endocrinol.*, 1942, **31**, 89—92).—Daily injections of 5 i.u. of œstrone or 10 i.u. of œstradiol benzoate to guinea-pigs caused hypoglycæmia which was sometimes fatal. Liver-glycogen was not affected. V. J. W.

"Ghost" formation in subcutaneously implanted tablets of synthetic œstrogens. S. J. Folley (*Nature*, 1942, **150**, 403—404).—When tablets of hexœstrol or diethylstilbœstrol were removed from bovines and extracted with ether and alcohol there remained an insol. shell consisting of scleroprotein. The presence of the shell affects the rate of absorption of œstrogen *in vivo*, and leads to errors in the wt. of residual œstrogen unless this is first extracted. E. R. S.

Differentiation of œstrogens from pro-œstrogens by use of spayed mice with two separate vaginal sacs. C. W. Emmens (*J. Endocrinol., Lond.*, 1942, **3**, 174—177).—In spayed mice in which the vagina has been separated by operation into 2 sacs pro-œstrogens cause cornification in both sacs when given in min. effective dose into one sac. Œstrogens do not produce cornification in the 2nd sac even when many times the min. effective dose is given into the one sac. A presumed demonstration of the conversion of a pro-œstrogen into an œstrogen (diphenylhexadiene converted into γδ-di-*p*-hydroxyphenyl-βδ-hexadiene; Stroud, A., 1941, III, 194) is discussed. P. C. W.

Effects of stilbœstrol on sperm production of adult rams. M-C. Chang (*J. Endocrinol., Lond.*, 1942, **3**, 192—202).—The sperm of 2 adult rams was collected in an artificial vagina twice daily for 3 months. Implantation of stilbœstrol tablets (total dose 0·235—1·973 g.) caused an increase in the no. of sperm 7—9 days later which lasted for about 5 days; the effect was proportional to the dose. There was no effect on sex drive, sperm morphology, or fertilising capacity. Sperm from the treated rams tended to agglutinate. The effects are attributed to hypophyseal stimulation. P. C. W.

New procedure for staining vaginal smears. G. N. Papanicolaou (*Science*, 1942, **95**, 438—439).—Human vaginal smears were stained with hæmatoxylin and in 95% alcohol with orange G and a mixture of light-green SF, Bismarck-brown, and eosin. Epithelial cells and erythrocytes were transparent; acidophil cells were coloured from red to orange, and basophil cells green; tissue penetrated by blood colours a characteristic orange and permits easy recognition of blood; dried smears can be stained. E. R. S.

Effect of progesterone and deoxycorticosterone on accessory sex organs of castrate male guinea-pig. H. J. Clausen (*Endocrinol.*, 1942, **31**, 187—191).—Daily injections of 1 mg. of progesterone for 12 days caused regeneration of accessory sex organs and secretion in guinea-pigs castrated 10 days—5 months previously. Daily injections of 3 mg. of deoxycorticosterone had no such effect. V. J. W.

Antagonism of œstrogen and progesterone in castrate rabbit. J. Gillman and H. B. Stein (*Endocrinol.*, 1942, **31**, 167—171).—Results o Robson (*Physiol. Abs.*, 1936, **21**, 875) are confirmed for dosages of 1·5 mg. of progesterone. When doses are greatly increased the progestational response is inhibited although hormone ratio is the same as for the smaller dose, so that the antagonism does not follow a law of direct proportion. V. J. W.

Micro-determination of a Δ^4-3-ketosteroid (progesterone) obtained from small volumes of serum. S. R. M. Reynolds and N. Ginsburg (*Endocrinol.*, 1942, **31**, 147—161).—By successive extractions an alcoholic solution is prepared of substances sol. in alcohol, ether-acetone, and cold methyl alcohol. By spectrophotometric methods (max. absorption at 280 mμ.) it is possible to determine progesterone from 0·008 mg.-% and œstrogens (220—230 and 250 mμ.) from 0·004 mg.-% upwards. V. J. W.

Effect of repeated injections of sheep anterior pituitary extract on the weight of the ovaries of *Xenopus lævis*. G. Gitlin (*S. Afr. J. Med. Sci.*, 1942, **7**, 16—20).—6 injections of sheep anterior pituitary extract during 12 days produced an increase in the wt. of the ovaries during æstivation. Similar injections during the breeding season caused a decrease in ovarian wt.; the decrease is due to tissue lost by ovulation; when the wt. of the shed ova is added to that of the ovaries the total wt. is greater than that of control ovaries. P. C. W.

Influence of normal male urine gonadotropin on spermatogenesis in hypophysectomised mature and immature rats. J. H. Leathem and E. J. Mills, jun. (*Endocrinol.*, 1942, **31**, 318—322).—Tannic acid pptn. extracts restore and maintain spermatogenesis in mature and cause an increase in testis wt. in immature rats. In some cases seminal vesicle wt. was also increased. V. J. W.

Gonadotropic hormone: modification of alcohol-precipitation assay method. C. G. Heller and R. E. Chandler (*J. Clin. Endocrinol.*, 1942, **2**, 252—253).—Details are given of the routine methods adopted for the pptn. and assay of urinary gonadotropin. P. C. W.

Effect of pregnant mare serum hormone on case of primary hypo-ovarianism. R. G. Bonime (*J. Clin. Endocrinol.*, 1942, **2**, 254—256).—A girl of 15¾ years who had not yet menstruated was considered as a case of arrested ovarian development and was injected with 400 i.u. of pregnant mare serum gonadotropin daily for 12 days at 28-day intervals. 1 grain of thyroid extract was given daily. There was marked mammary development, increased pubic hair, retardation of excessive linear growth, closure of metacarpal and phalangeal ephiphyses, and production of normal and regular menses which still persisted 16 months after stopping treatment. P. C. W.

Effect of equine gonadotropin on testes of hypophysectomised monkeys. P. E. Smith (*Endocrinol.*, 1942, **31**, 1—12).—Only temporary repair was produced, lasting about 20 days. This failure was probably due to formation of an antigonadotropin which attained a high titre in 20 days and persisted for several months. V. J. W.

Significance of some plant characteristics in relation to yield of gonadotropic material. J. W. Mitchell, R. Borasky, and J. T. Bradbury (*Endocrinol.*, 1942, **31**, 283—286).—Ovulation was sometimes induced in rabbits by maize or oat juice during spring and summer but never at other seasons. The effect could not be correlated with pH, or with age, succulence, or environment of plants. V. J. W.

Association of short stature, retarded sexual development, and high urinary gonadotropin titres in women. R. T. Varney, A. T. Kenyon, and F. C. Koch (*J. Clin. Endocrinol.*, 1942, **2**, 137—145).—The gonadotropins in the urine were assayed by the increase in uterine wt. produced in mice injected with an alcohol ppt. Normal women excrete 10—50 m.u., menopausal women excrete 100—550 m.u. per day. 4 girls, 4 ft. 6 in.—4 ft. 10½ in. in height, with retarded sexual development excreted 200—500 m.u. per day. Hypophysectomised rats injected with moderate doses of the urine of one of these cases showed follicular stimulation or growth of the seminiferous tubules. The accessory genitalia of the girls were hypoplastic, their menses infrequent, and epiphyseal fusion at the wrists was retarded. P. C. W.

Intrauterine amputations and constriction bands. L. H. Barenberg and B. Greenberg (*Amer. J. Dis. Child.*, 1942, **64**, 87—92).—Report of a case with anæsthesia below the constriction. C. J. C. B.

Association of uterine fibromyomas with other clinical conditions. R. C. Moehlig (*J. Clin. Endocrinol.*, 1942, **2**, 219—222).—The association of other clinical conditions among 410 Caucasian women with uterine fibromyomata was analysed and discussed. P. C. W.

Intersexuality associated with malignant intra-abdominal teratoma of seminoma type. R. C. Moehlig (*J. Clin. Endocrinol.*, 1942, **2**, 257—261).—A case is reported. P. C. W.

Influence of antagonism phenomenon on mammary gland development. F. Bischoff and L. P. Ingraham (*Endocrinol.*, 1942, **31**

326—328).—Sheep pituitary extracts given to mice under conditions varied to cause different rates of absorption caused alveolar growth in the mammary gland only when absorption was slow (cf. A., 1941, III, 579). V. J. W.

Influence of thyroxine on mammary lobule-alveolar growth. J. P. Mixner and C. W. Turner (*Endocrinol.*, 1942, **31**, 345—348).—Administration of thyroxine totalling 1·5 mg. to castrate female mice increased % showing mammary growth after min. doses of progesterone and œstrone. Thyroidectomy caused a decrease in this %. V. J. W.

Selection of nipples by suckling rats and its effect on mammary system. C. K. Weichert (*Endocrinol.*, 1942, **31**, 349—353).—Suckling rats choose anterior nipples, and with small litters the posterior nipples are neglected and the associated alveoli regress in spite of prolactin injections. V. J. W.

Non-effect of hysterectomy on mammary gland of monkey. H. Speert (*Endocrinol.*, 1942, **31**, 97—99).—Hysterectomy did not delay involution of corpus luteum and had no effect on mammary glands over 6 months or on mammary changes following castration. V. J. W.

Sex hormones in mammary cancer.—See A., 1942, III, 903.

Dietary requirements for fertility and lactation. XXVIII, XXIX.—See A., 1942, III, 904.

Lactational performance and body weight. S. Brody (*Science*, 1942, **95**, 485—486).—The relation of milk-energy (y) production to body wt. (w) is given by $y = aw^b$. b was found to be $0{\cdot}7 \pm 0{\cdot}1$. The implications are discussed. E. R. S.

Experiments on lactation in thyroidectomised rats: rôle of parathyroids. S. J. Folley, H. M. Scott-Watson, and E. C. Amoroso (*J. Endocrinol., Lond.*, 1942, **3**, 178—191).—Thyroidectomy during lactation in rats caused almost complete cessation of growth of the litters and therefore presumably of lactation. Thyroidectomised rats will mate and deliver young but fail to rear the litters; pregnancy is often prolonged. Lactation in thyroidectomised rats could be partially maintained by immediate autoplastic thyroid implants (containing parathyroid tissue) or by injections of parathyroid extract (10—20 Collip–Clark units per day). The failure of lactation following thyroidectomy is attributed, at least in part, to parathyroid deficiency. Rats thyroidectomised during lactation do not exhibit tetany. P. C. W.

Metabolism of bovine epididymal spermatozoa. G. Henle and C. A. Zittle (*Amer. J. Physiol.*, 1942, **136**, 70—78).—Variations in O_2 uptake of bovine epididymal spermatozoa suspended in Ringer solution are due to (1) concn. of spermatozoa (max. in suspensions containing 400—800 million cells per ml.); (2) pH (highest O_2 consumption or pH 7·5—8·0); (3) differences in maturity of the cells. Seminal spermatozoa show a lower O_2 consumption than epididymal cells; in the latter a high aërobic glycolysis was found, amounting to 40—60% of anaërobic reaction. Decreased O_2 uptake in dil. suspensions of spermatozoa could be overcome by the addition of epididymal secretion to the medium; the agent present was heat-stable and not dialysable. The drop in respiration found in excessively conc. suspensions may be due to insufficient diffusion of O_2 into the medium or to a crowding effect. M. W. G.

Dermovascular actions of certain steroid hormones in castrate, eunuchoid, and normal men. S. R. M. Reynolds, J. B. Hamilton, J. R. di Palma, G. R. Hubert, and F. I. Foster (*J. Clin. Endocrinol.*, 1942, **2**, 228—236).—Cutaneous vascular and vasomotor adjustments were measured in 2 castrates, 2 eunuchoid and 2 normal men following the injection of various steroid hormones (20 mg. of testosterone propionate, 5 mg. of deoxycorticosterone acetate, 5 mg. of progesterone, or 2·5 mg. of œstradiol monopropionate) or of the vehicle in which they were dissolved. No differences were detected between the normal and hypogonad men in the following tests: contractile response of the vessels to chemical stimulation of the integument, vasomotor adjustments to postural changes, production of reactive hyperæmia by local ischæmia, effects of eserine applied by iontophoresis, capillary fragility. The excitability of the cutaneous vessels to graded mechanical stimulation was more variable in castrate than in normal men. Testosterone and progesterone rendered blood vessels less excitable in all subjects; the effects of deoxycorticosterone were inconst., and œstradiol increased excitability. In the individuals with testicular deficiency all the steroids tested (except œstradiol) increased the threshold of susceptibility of the blood vessels to O_2 lack more than in normals. Testosterone produced an increase in finger vol. in castrate men; œstradiol increased finger vol. in normal men; the other steroids produced no changes in any of the cases. P. C. W.

Effect of testosterone propionate on spermatogenesis in hypophysectomised rats following injection of gonadotropins. J. H. Leathem (*Anat. Rec.*, 1942, **83**, 579—585).—Spermatogenesis maintained or restored with gonadotropic hormones following hypophysectomy is maintained with testosterone propionate and fertile matings are maintained under the experimental conditions cited. W. F. H.

Deciduoma formation in rats during testosterone treatment. C. F. Fluhmann and G. L. Laqueur (*Endocrinol.*, 1942, **31**, 375—378).—Uterine traumata produce deciduomata in adult rats which have received 2 mg. daily of testosterone propionate begun during late œstrus, and resulting in the formation of large corpora lutea. The presence of these is essential to the reaction, which is attributed to their secretion and not to testosterone directly. It rarely occurs in immature rats. V. J. W.

Clinical use of testosterone in male climacteric. S. F. Goldman and M. J. Markham (*J. Clin. Endocrinol.*, 1942, **2**, 237—242).—Thrice-weekly injections of 25 mg. of testosterone propionate for 2—10 weeks markedly improved 6 of 7 cases of effort syndrome associated with symptoms of the male climacteric. P. C. W.

Effect of androgens on blood count of men. E. P. McCullagh and R. Jones (*J. Clin. Endocrinol.*, 1942, **2**, 243—251).—In 7 of 8 eunuchoids without evidence of pituitary disease treated with androgens there was a rise in erythrocyte, hæmoglobin, and hæmatocrit vals. and a fall when treatment was stopped; the changes in blood count were paralleled with changes in the basal metabolic rate. Similar treatment in two hypogonad cases with evidence of pituitary disorder and in 2 sexually mature men produced insignificant or no changes. P. C. W.

Effect of rat's liver on activity of testosterone and methyltestosterone. M. W. Burrill and R. R. Greene (*Endocrinol.*, 1942, **31**, 73—77).—Both hormones were implanted as pellets. Subcutaneously both had marked activity, testosterone being the more active. In the spleen methyltestosterone had slight activity and testosterone none. In the mesentery each had a slight effect. V. J. W.

Technique for androgen assay by chick comb method. R. T. Frank, E. Klempner, F. Hollander, and B. Kriss (*Endocrinol.*, 1942, **31**, 63—70).—The $CHCl_3$ extract of urine is dried, taken up in oil, and applied to the surface of the combs of 16 2-day-old chicks for 7 days. Androgen activity is given by an equation involving comb wts. and their squares, initial and final body wts., and nos. of male and female chicks. V. J. W.

Report on assays of known quantities of androsterone by chick method. E. Klempner, F. Hollander, R. T. Frank, and B. Kriss (*Endocrinol.*, 1942, **31**, 71—72).—In 24 assays by the preceding method in the range 20—40 μg. there was a mean error of 13%, and in 39 assays of 10—50 μg. mean error was 24·6%. Optimal accuracy is at 30 μg. per chick. V. J. W.

Effect of male hormone therapy on urinary gonadotropins in man. H. R. Catchpole, J. B. Hamilton, and G. R. Hubert (*J. Clin. Endocrinol.*, 1942, **2**, 181—186).—Urinary gonadotropin excretion was studied in 4 castrate men and in 2 men with primary gonadal insufficiency. The gonadotropins were assayed by their ability to increase the uterine wt. of immature mice: 1 m.u. is equiv. to 0·1 i.u. of chorionic gonadotropin. Individual and day-to-day variation was considerable but the patients excreted more (1—10 times as much) gonadotropin than did normals. Therapeutic doses of androgen diminished the gonadotropin excretion within 10—13 days of the start of treatment; the amount may become undetectable (less than 6 m.u. per day) and continues low as long as the treatment continues. Following stoppage of treatment gonadotropin excretion rose to normal within 13 days. Effective dose of androgen was usually 20 mg. of testosterone propionate per day. P. C. W.

Vasomotor reactions persisting for twenty years in man: treatment with androgens. M. S. Biskind (*J. Clin. Endocrinol.*, 1942, **2**, 187—188).—Rhythmically recurring flushes persisted for 20 years in a man with secondary hypogonadism. Adequate androgen therapy caused disappearance of the symptoms, which reappeared whenever the therapy was discontinued P. C. W.

Use of male sex hormone in endocrine disorders in children. I. Jaffe and G. Brockway (*J. Clin. Endocrinol.*, 1942, **2**, 189—192).—14 boys with various endocrine disorders were treated with androgens by inunction or oral route; these methods were more effective than intramuscular administration. No deleterious side effects were noted. 5 of 7 boys with infantile genitalia were improved sufficiently to be discharged; only 1 testicle descended in 5 cases of cryptorchidism. 4 of the boys showed an increased rate of growth. P. C. W.

Cholesterol content of normal and enlarged prostates.—See A., 1942, III, 903.

Effect of post-pubertal castration on thermo-regulatory function of rat scrotum. W. P. Tyrrell, F. N. Andrews, and M. R. Zelle (*Endocrinol.*, 1942, **31**, 379—383).—Scrotal contraction, produced by cooling the whole animal in a water-bath, was recorded; its extent decreases after castration *pari passu* with seminal vesicle and scrotal sac wts. V J. W.

Supposed influence of cock's head appendages on size of testis. W. Landauer (*Endocrinol.*, 1942, **31**, 78—83).—Removal of comb and wattles at 46 days is followed by a significant increase in testis wt. at 7 months in those cases only in which body wt. is increased. The increase is related to trauma by the operation. V. J. W.

Period of gonadal activity in Maryland muskrat. T. R. Forbes (*Science*, 1942, **95**, 382—383).—Spermatogenesis begins in the middle of December and ovulation in the middle of February. Seasonal gonadal activity terminates in both sexes during the latter part of October. E. R. S.

Infant and maternal mortality in relation to size of family and rapidity of breeding. C. M. Burns (*Monograph, Newcastle-on-Tyne*, 247 pp.).—Death-rates were studied among children at varying stage of family and with mothers of different ages in the different social classes in County Durham (the second largest administrative county for health purposes in U.K.). In all social classes, death-rates were lowest in families not exceeding three and slowly bred. Seventh and later children and rapidly bred families of all sizes showed high death-rates. High still-births, neo-natal deaths, and maternal deaths were found associated with all first births and rose rapidly with increase in maternal age. After the first month, death-rates among first children were extremely low. High death-rates, at all ages up to 5 years and high maternal death-rates, were found among the late children of large families. A modal rate of breeding with modal maternal ages for each stage of family is found at which families up to 7 may be bred with comparative safety. D. Bu.

XIII.—DIGESTIVE SYSTEM.

Rusting in desalivated rats. J. T. Ginn and J. F. Volker (*Endocrinol.*, 1942, **31**, 282—283).—Removal of the salivary glands in milk-fed rats caused rusting of the fur in 3—6 weeks. The condition was much more marked in females and it was benefited but not cured by addition to the diet of choline and pantothenic acid. V. J. W.

Physiological properties of specific gastric secretagogne of pyloric mucous membrane. S. A. Komarov (*Rev. Canad. Biol.*, 1942, **1**, 377—401).—A sp. non-toxic and vasodilator-free gastric secretagogue of a protein-like composition was extracted from the pyloric mucosa in the dog and pig. Intravenous or intramuscular injection of the purified prep. produced a highly acid gastric juice, devoid of peptic properties, but had no effect on blood pressure, pancreatic or bile secretion. The prep. is free from histamine. The observations were made in acute experiments on anæsthetised cats and dogs with vagi and splanchnic nerves cut, and on non-unanæsthetised animals with permanent gastric fistulæ; they were not abolished by atropine (up to 2 mg. per kg. body-wt.). The large yield of the secretagogue factor was obtained from the pyloric mucosa, much less from the duodenum; there was none in the fundic mucosa. Protein fractions were isolated from the pylorus and fundus having a secretin-like effect on pancreatic and bile secretion. It is suggested that the secretagogue factor of the pylorus, acting specifically on the parietal cells, is identical with gastrin. A. S.

Duodenal bulb acidity under fasting conditions in patients with duodenal ulcer. J. E. Berk, M. E. Rehfuss, and J. E. Thomas (*Arch. Surg. Chicago*, 1942, **45**, 406—415).—Under fasting conditions, the contents of the first part of the duodenum in 23 patients with duodenal ulcer were more acid than in normal subjects, having an average pH of 3·9. Free acid was also found more often and persisted longer. The ability of the contents of the duodenal bulb to neutralise, buffer, and dilute the gastric secretions is impaired probably largely because of gastric hypersecretion, but there may be also a defective neutralising capacity. F. S.

Enzymic titration of duodenal contents. W. C. Davidson (*Johns Hopkins Hosp. Bull.*, 1942, **70**, 504—516).—Reduction in viscosity was used to indicate enzymic activity. Time, amount and dilution of enzyme, freshness of specimens and of substrate, temp., and pH are all important. Accelerators ($CaCl_2$) and paralysers (heavy metals, light radiation) must be absent. Activity varies along the duodenum and with presence of gastric contents. Diarrhœa and malnutrition reduce the trypsin and amylase present. The calculation of enzymic units is discussed. T. F. D.

Absorption [from intestine] and deposition of glucose in the chick. W. R. C. Golden and C. N. H. Long (*Amer. J. Physiol.*, 1942, **136**, 244—249).—Rate of intestinal absorption of glucose in the fasted chick (Cori technique) was 400 mg. per 100 g. body wt. The rate remains const. over a 4-hr. period and is not affected by moderate differences in concn. of glucose. Liver-glycogen after 4 hr. absorption rose to 6%. Muscle-glycogen rose to 1300 mg.-%. Of the glucose absorbed in 4 hr. 12% could be accounted for as increased liver-glycogen; not more than 8% was deposited in the muscles. M. W. G.

Meconium ileus associated with stenosis of pancreatic ducts. E. S. Hurwitt and E. E. Arnheim (*Amer. J. Dis. Child.*, 1942, **64**, 443—454).—A clinical, pathological, and embryological study of a case. C. J. C. B.

XIV.—LIVER AND BILE.

Liver function in menstruation. R. Heilig and N. L. Kantiengar (*Ann. int. Med.*, 1942, **16**, 538—546).—Quick's test showed impairment of liver function during menstruation in 17 healthy women. A. S.

Effect of ether and starvation on liver-glycogen maintenance after various diets. M. A. Newburger and F. R. Brown (*Amer. J. Physiol.*, 1942, **136**, 746—749).—Ether anæsthesia produced considerable and equal diminution in liver-glycogen in rats fed high-carbohydrate or high-protein diets. Effects of ether and starvation were liver-glycogen losses of 91% in carbohydrate-fed animals and 81% in protein-fed animals, the resulting glycogen levels being close to min. M. W. G.

Effect of *B* vitamins on liver-glycogen of thyroid-fed rats. V. A. Drill, R. Overman, and C. B. Shaffer (*Endocrinol.*, 1942, **31**, 245—248).—Female rats on full diet + 200 mg. of yeast per day gained wt. and had normal liver-glycogen. If in addition they received 100 mg. of dried thyroid they lost wt. and had a low liver-glycogen. If they received a further 1 g. of yeast concentrate body wt. and liver-glycogen were maintained at starting levels. V. J. W.

Behaviour of oxalic acid during liver perfusion *in vitro*. VI. P. B. Müller (*Z. physiol. Chem.*, 1940, **266**, 149—157; cf. A., 1939, III, 120).—Oxalic acid, added to defibrinated rabbit's blood diluted with 4 vols. of Tyrode's solution, is not destroyed by rabbit's liver, the oxalic acid content of the perfused fluid being doubled in 4 hr. When large amounts of oxalic acid are added together with glucose, the carbohydrate metabolism of the fluid is disturbed and the oxalic and lactic acid contents increase greatly. The oxalic acid content is scarcely affected when creatine is added to the fluid before perfusion but is increased appreciably by addition of glucose, citric or butyric acid, or creatinine and greatly by addition of glucose or glycollic or succinic acid. Especially large increases result from addition of glycine + glycollic acid but glycine alone also decreases the oxalic acid content. Oxalic acid is also produced from glycogen and pyruvic acid. W. McC.

Urea formation in mammalian liver. H. A. Krebs (*Biochem. J.*, 1942, **36**, 758—767).—Urea is formed more rapidly by the liver of starved guinea-pigs from glutamine (or NH_4 glutamate) than from NH_4Cl. This accords with the theory that NH_4 glutamate is an intermediate in urea formation from glutamine. The stimulating effect of glutamate on urea formation in liver is not due to synthesis of arginine from citrulline and glutamate such as occurs in kidney cortex. α-Ketoglutarate and pyruvate do not increase the rate of urea formation from citrulline or ornithine. P. G. M.

Development of cutaneous arterial " spiders " and palmar erythema in persons with liver disease and their development following administration of œstrogens. W. B. Bean (*Amer. J. med. Sci.*, 1942, **204**, 251—253).—The development of cutaneous arterial " spiders " in 2 of 3 chronic alcohol addicts, and palmar erythema in 1, following therapy with potent œstrogens suggests that these stigmata of liver disease, pregnancy, and deficiency diseases may result from abnormal metabolism of the 17-ketosteroid hormones. C. J. C. B.

Correlation of clinical, laboratory, peritoneoscopic, and autopsy findings in portal cirrhosis. P. Gottardo and W. L. Winters (*Amer. J. med. Sci.*, 1942, **204**, 205—217).—Marked change in serum-albumin and -globulin were noted in all of 24 cases. There was a lowering of -albumin and a rise of -globulin with a consequent lowering of the albumin/globulin ratio in all cases; there was a reversal of the ratio in ⅔ of the cases. Jaundice was evident in 79% of the cases. Changes in the peripheral blood were marked in 96% of the cases. A macrocytic or hyperchromic anæmia was present in 67% while 25% exhibited microcytic or hypochromic anæmia. 1 case presented a typical severe sickle-cell anæmia. Deficiency of liver function (hippuric acid test, glucose tolerance, bromsulphalein test) was noted in 83%. C. J. C. B.

Hepatic (hepatorenal) factor in burns. F. F. Boyce (*Arch. Surg., Chicago*, 1942, **44**, 799—818).—The hepatic factor in the non-bacterial toxæmia of burns is reviewed from the experimental, clinical, laboratory, and pathological aspects. (3 photomicrographs.) F. S.

Distribution of vitamin-*A* in experimental liver damage.—See A., 1942, III, 908.

Liver cirrhosis and pernicious anæmia.—See A., 1942, III, 871.

Action of *Alcaligenes fæcalis* on cholic acid.—See A., 1942, III, 940.

XV.—KIDNEY AND URINE.

Effect of kidney position on renal blood flow and function. D. J. Gabriele (*Amer. J. med. Sci.*, 1942, **204**, 227—232).—Renal blood flow is greatly reduced in dogs when the piezometric angle of the renal artery is made relatively acute. [Piezometric angle is angle between tributary and mother artery.] C. J. C. B.

Nature of glucose reabsorptive process in frog renal tubule. Evidence for intermittency of glomerular function in intact animal. R. P. Forster (*J. Cell. Comp. Physiol.*, 1942, **20**, 55—69).—Reabsorption of glucose from tubules to blood increases with blood-glucose concn., reaching a max. when blood-glucose is 300 mg.-% or when glucose filters through the glomeruli at 100 mg. per kg. per hr. Further increase of blood-glucose does not cause decrease of reabsorption. Reabsorption rate is directly proportional to glomerular filtration rate (inulin), and this suggests that glomerular activity is intermittent and is probably an all-or-none phenomenon. Reabsorption of glucose per ml. of filtrate also varies with that of water, and increases with a low output of urine. V. J. W.

Parathyroids and renal clearance of inorganic phosphate. M. Fay, V. G. Behrmann, and D. M. Buck (*Amer. J. Physiol.*, 1942, **136**, 716—719).—A comparison was made of the renal clearance of PO_4''' and of creatinine in normal dogs, in dogs after parathyroid infections (200 units subcutaneously), and in parathyroidectomised dogs. A lack of an excess of parathyroid hormone produced no demonstrable effect on the capacity of the kidney to excrete PO_4'''. M. W. G.

Treatment of renal osteodystrophy with dihydrotachysterol (A.T.10) and iron. S. H. Liu and H. I. Chu (*Science*, 1942, **95**, 388—389).—3 ml. of A.T.10 daily for 20 days remedied the defects in Cu and P metabolism in 2 cases of renal osteodystrophy, whereas vitamin-*D* did not. 6 g. of Fe^{III} NH_4 citrate daily for 20—56 days was also effective. E. R. S.

Vascular phase of chronic diffuse glomerulonephritis. H. Horn, P. Klemperer, and M. F. Steinberg (*Arch. intern. Med.*, 1942, **70**, 260—283).—The arterial changes in viscera were studied in 49 cases of chronic diffuse glomerulonephritis and were correlated with clinical data. A slowly progressive and an accelerated phase are described, the latter, which shows arteriolar necrosis, being the anatomical equiv. of clinical malignant hypertension. This occurs more commonly than hitherto suspected in cases of chronic glomerulonephritis. C. A. K.

Hypertension in bilateral renal infarction.—See A., 1942, III, 878.

Fatal renal damage following use of sulphathiazole.—See A., 1942, III, 921.

Water excretion by crayfish. N. S. R. Maluf (*Biol. Bull.*, 1941, **81**, 127—133).—Animals in fresh water secrete urine hypotonic to the blood and the nephric tubule shows apical vacuoles in the cells of its distal coil. In saline the vacuoles decrease with rising salinity of the medium. It is suggested that water is normally secreted by these cells. D. M. Sa.

Oxytocic hormone (pituitary) and urine secretion. Effect of pitressin on renal circulation and urine secretion.—See A., 1942, III, 889.

Urinary suppression due to sulphathiazole.—See A., 1942, III, 921.

Absorption and excretion of zinc.—See A., 1942, III, 916.

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

Specific gravity of healthy men and athletes. A. R. Behnke, B. G. Feen, and W. C. Welham (*J. Amer. Med. Assoc.*, 1942, **118**, 495—501).—The sp. gr. of healthy naval men and athletes was determined by weighing the subjects in air and in water; vals. from 1·021 to 1·097 were obtained, the lower vals. being found in obese subjects, with 1·060 as an approx. dividing line between normal and obese individuals. Sp. gr. is a more useful figure than height–wt. vals. as an indication of obesity. C. A. K.

Electrical changes in wounds and inflamed tissues. I. Bioelectric potentials of cutaneous wounds in rats. H. Burrows, J. Iball, and E. M. F. Roe (*Brit. J. exp. Path.*, 1942, **23**, 253—264).—The immediate changes in potential which occurred on injuring the skin in Wistar rats, taking p.d. between a superficial cut and three earthed reference points, were compared with the normal drift of potential between these measuring points during small intervals of time comparable with the wounding period. In nearly all cases wounding caused an increase in potential, up to 42 mv., the wound being positive to the uninjured region when the direction of current in the external circuit was considered. F. S.

[Amount of] uranium in human thyroid gland, and dog testicle and pancreas. J. Hoffmann (*Naturwiss.*, 1942, **30**, 279—280).—The three organs contain $4·93 \times 10^{-4}$, $2·11 \times 10^{-4}$, and $3·96 \times 10^{-6}$% of U respectively. These vals. are compared with the amounts of U in organs of other animals. J. N. A.

Electrolytes of tissues and body fluids.—See A., 1942, III, 874.

Nucleoproteins of cell nuclei. A. E. Mirsky and A. W. Pollister (*Proc. Nat. Acad. Sci.*, 1942, **28**, 344—352).—A method for extraction of nucleoproteins from mammalian liver, kidney, pancreas, spleen, thymus, and brain, from dogfish liver, spleen, and erythrocytes, and from sperm of trout, shad, frog, and sea urchin is described. The nucleoproteins are extracted and separated from other cell constituents by various concn. of aq. NaCl. They are sol. in M-, insol. in 0·14M-, and sol. in 0·02M-NaCl. The amount of nucleoprotein which dissolves in 0·02M-NaCl varies considerably, and depends on the source. Practically all of the nucleoprotein from sheep spleen redissolves when the solution in M-NaCl is dialysed whilst none of that from trout sperm remains in solution after dialysis against water. The nucleoproteins are very viscous and show birefringence of flow in solution, and a fibrous nature when pptd. When the nucleoprotein is dissolved in water or 0·02M-NaCl it becomes less viscous, less birefringent, and much less fibrous when pptd. in 0·14M-NaCl, and these changes persist after dissolution in M-NaCl, and are probably not due to fractionation. *Arbacia* sperm nucleoprotein contains 3·05%, trout sperm 6·55%, nucleoproteins from mammalian organs 3·7—4·4% of P. All this P is in the form of deoxyribose-nucleic acid, and the nucleoproteins contain 31—66% of nucleic acid. The latter has physical properties similar to those of the nucleoproteins. The protein components of the latter are histones and protamines. They have a high N content, and contain no tryptophan. The nucleoproteins from mammalian organs spread at an air–water interface at pH 4 if a little heptyl alcohol is present, and the thickness of the film is 1·5—1·6 mμ. The union between protein and nucleic acid is loose. Evidence is given that these nucleoproteins are derived from cell nuclei. J. N. A.

Beckoning dances of bees and their cause. K. von Frisch (*Naturwiss.*, 1942, **30**, 269—277).—Partly a review. The round dance is due to the speed with which nectar can be collected, and to the taste and viscosity of the latter. The extent of filling of the honey-bags and the nutritive val. of the material collected are not the deciding factors. J. N. A.

Black spot disease of speckled trout. M. J. Miller (*Rev. Canad. Biol.*, 1942, **1**, 464—471).—Black spot disease in the trout is caused by the larval stage of a trematode worm which lives in adult form in the loon. The eggs of *Apophallus brevis*, passed with the bird's droppings into water, are swallowed by the snail *Amnicola limosa* where asexual development takes place. The cercaria penetrate the skin of the trout and become encysted. Blood pigment is deposited around the cyst. The disease is common in speckled trout and was transmitted experimentally to the brown trout. It does not occur in lake trout; rainbow trout were refractory to infection. Snail eradication by Cu salts stops spread of the disease. A. S.

Struvite in canned lobster. V. L. Ayres (*Amer. Min.*, 1942, **27**, 387—388).—An occurrence of struvite, $MgNH_4PO_4,6H_2O$, inside a lobster claw is described. L. S. T.

Sinus glands and gastrolith formation. D. L. Kyer (*Biol. Bull.*, 1942, **82**, 68—78).—Gastroliths, which normally precede ecdysis in crayfish, begin to be secreted within a few hr. of sinus gland removal. This abnormal secretion may be prevented either by low temp. or by transplanting eyestalks into the abdomen. D. M. Sa.

Colloidopexy in the snail. A. M. Du Bois (*Arch. Sci. phys. nat.*, 1942, [v], **24**, *Suppl.*, 41—45).—Colloids with smaller particles, such as trypan-blue, are removed by the Leydig cells whereas colloids of larger size are fixed by the reticular cells of the conjunctiva. The latter do not fix colloids of the former class though it is possible they might do so in the absence or after blockage of the Leydig cells. H. G. R.

Wing pigments of butterflies. Leucopterin.—See A., 1943, II, 20.

XVII.—TUMOURS.

Carcinogenesis in rabbits. I. Malignant tumours induced in cottontail rabbits by the injection of methylcholanthrene in tricaprylin. J. T. Syverton, G. P. Berry, and H. E. Dascomb (*Cancer Res.*, 1942, **2**, 436—444).—Methylcholanthrene injected in tricaprylin induced tumours in 6 cottontail rabbits which survived treatment for 175 days. 250 mg. was injected subcutaneously into 4 separate sites on a single occasion; tumours developed within 267 days. F. L. W.

Induction of tumours with extracts fron human livers and human cancers. P. E. Steiner (*Cancer Res.*, 1942, **2**, 425—435).—12 sarcomas were induced in 37 mice at the site of injection of unsaponifiable lipin fractions extracted from pooled non-cancerous livers of persons who died with cancer. The induction time was 182 days and the yield 32·4%. Extracts from livers of non-cancer-bearing persons had an induction time of 12 months and a yield of 14·3%. 5 sarcomas were induced in 35 mice. A benzene extract of cancer liver and fractions therefrom failed to induce tumours. Extracts of cancer tissues did not induce tumours. F. L. W.

Indeno-2′ : 3′ : 2 : 3-benzanthrone.—See A., 1943, II, 12.

Inhibition of autoxidation of aldehydes by carcinogenic chemicals and related compounds. W. L. Wasley and H. P. Rusch (*Cancer Res.*, 1942, **2**, 422—424).—The autoxidation of benzaldehyde and of heptaldehyde was inhibited by anthracene, 3 : 4-benzpyrene, 1 : 2 : 5 : 6-dibenzanthracene, 20-methylcholanthrene, dimethyl-

aminoazobenzene, and quinol. Absorption spectra indicated that the inhibition of the autoxidation of benzaldehyde by 3 : 4-benzpyrene involves the oxidation of the latter to one or more quinones. F. L. W.

Metabolic studies in mouse leukæmia. I. Metabolism of lymph nodes in lymphoid leukæmia. V. E. Hall and J. Furth (*Cancer Res.*, 1942, **2**, 411—421).—The O_2 consumption of the lymph nodes of mice with lymphoid leukæmia does not differ from that of normals. Aërobic glycolysis is often, but not invariably, increased, whereas anaërobic glycolysis is invariably increased. The Pasteur effect is greatly increased in the leukæmic tissue. In leukæmic hybrids between high and low stock the rate of O_2 consumption is higher and that of aërobic and anaërobic glycolysis lower than in high leukæmic stock. F. L. W.

Transamination in liver from rats fed butter-yellow. P. P. Cohen, G. L. Hekhuis, and E. K. Sober (*Cancer Res.*, 1942, **2**, 405—410).—The transaminase activity of liver from rats fed butter-yellow decreases to about ⅓ the initial val. in the resulting tumour tissue. There is high correlation between days of feeding and transaminase activity. Butter-yellow rats fed 15% yeast supplement show normal vals. Transaminase is inhibited by possible metabolites of butter-yellow, *e.g.*, benzoquinone, *N*-methyl-*p*-phenylenediamine, dimethyl-*p*-phenylenediamine, and *p*-phenylenediamine in that order. F. L. W.

Serum acid phosphatase activity in carcinoma of prostate. C. C. Herger and H. R. Sauer (*Cancer Res.*, 1942, **2**, 398—400).—Serum acid phosphatase determinations were made on 147 patients with carcinoma of the prostate and on 283 control patients. Levels up to 4·0 King–Armstrong units are normal. Vals. of 4·0—6·0 are only diagnostic for metastatic bone lesions from carcinoma of the prostate if further elevation takes place. A considerable rise in the val. is indicative of bone metastases. There was no relationship between the degree of elevation of the val. and the extent of bone involvement. F. L. W.

Antifibromatogenic action of a natural cortical hormone (dehydrocorticosterone of Kendall). A. Lipschütz and J. Zañartu (*Endocrinol.*, 1942, **31**, 192—196).—This hormone has the same effect as testosterone, progesterone, and deoxycorticosterone (A., 1941, III, 579; 1942, III, 465) in preventing the growth of uterine fibromata in guinea-pigs as a result of œstrogen treatment. V. J. W.

Milk-influence of breast tumours in mice. J. J. Bittner (*Science*, 1942, **95**, 462—463).—Females of the fostered C_3H strain and the BAF_1 hybrid generation, having a normal incidence of breast tumours of 1—2%, were given, by mouth or injection, Seitz filtrates or extracts of glycerin-treated tissue containing the active milk-influence for the development of spontaneous breast cancer. 63 experimental mice showed an incidence of 41% of tumours, and 36 mice receiving untreated material showed an incidence of 67%. After ultracentrifugation of tissue extracts traces of active influence appeared in the fat fraction and in the supernatant fluid. E. R. S.

Transformation of rabbit fibroma virus (Shope) into infectious myxomatosis (Sanarelli). R. E. Gardner and R. R. Hyde (*J. infect. Dis.*, 1942, **71**, 47—49).—The combination of heat-inactivated myxoma virus and living fibroma virus produced typical infectious myxomatosis in rabbits. It is suggested that the fibroma reactivates the heat-inactivated myxoma virus, perhaps by supplying an inactive component, rather than that the fibroma virus has been transformed into myxoma by the heated virus. F. S.

Blood cell factors in metastasis of Brown–Pearce tumour. A. E. Casey, L. Pearce, and P. D. Rosahn (*Cancer Res.*, 1942, **2**, 401—404).—The Brown–Pearce tumour was successfully inoculated intratesticularly in 90 of 108 rabbits. High eosinophile and low blood platelet pre-transplantation levels were each associated with fewer metastases and a lower mortality than low eosinophiles and high blood platelet vals. No significant correlation existed between pre-transplantation levels of hæmoglobin, total white cells, neutrophils, lymphocytes, or monocytes and (*a*) incidence of metastases, (*b*) mortality, or (*c*) no. of metastatic foci. F. L. W.

Action of bacterial toxins on tumours. I. Relationship of tumour-hæmorrhagic agent to endotoxin antigens of Gram-negative bacteria. P. A. Zahl, S. H. Hutner, S. Spitz, K. Sugiura, and F. S. Cooper (*Amer. J. Hyg.*, 1942, **36**, 224—242).—Suspensions and filtrates prepared from 100 strains of bacteria and a few fungi were injected intraperitoneally into mice 6—8 days following tumour implantation with mouse sarcoma 180. After 24 hr. the animals were examined for hæmorrhage at site of the tumour, followed usually by post-mortem examination of the tumour. A relationship exists between bacterial products producing hæmorrhage in animal tumours and endotoxin antigens of many Gram-negative bacteria. Relevant organisms are Gram-negative, contain complex endotoxin antigens, and resemble one another in showing similar pathogenic reactions (vascular damage, disturbed carbohydrate metabolism, and enteric irritation). The tumour-hæmorrhagic agents are probably identical with a polypeptide component of the complete endotoxin antigen. B. C. H.

Morphology of tumour cells. J. C. Mottram (*J. Path. Bact.*, 1942, **54**, 511—514).—In 2 cases free cancer cells were present in aspirated pleural exudates. The cells showed widely varying structure from cell to cell, but cells which had reproduced and remained attached to one another tended to be alike, confirming a previous finding for tar warts in mice that primary tumours are composed of islands or groups of cells of similar structure and growth rate, but that these may vary widely in structure and growth rate from group to group. C. J. C. B.

Storage of radioactive iodine in metastasis from thyroid carcinoma. A. S. Keston, R. P. Ball, V. K. Franz, and W. W. Palmer (*Science*, 1942, **95**, 362—363).—Radio-I was given by mouth to a patient with a metastatic thyroid carcinoma (adenoma malignum type). Radioactivity was detected in a femoral metastasis, but not others, and in the thyroid gland. 54 mg. of KI did not displace the radio-I. A therapeutic dose of 10 millicuries of radio-I (12·6-hr. period) was given and 30% of this taken up by the femoral metastasis and 6% by the thyroid. After 3 weeks the metastasis had lost 85% of its radio-I and the thyroid none. A further dose of radio-I was absorbed by the thyroid but not by the metastasis. E. R. S.

Relationship between dietary deficiency and occurrence of papillary atrophy of the tongue and oral leukoplakia. J. C. Abels, P. E. Rekers, H. Martin, and C. P. Rhoads (*Cancer Res.*, 1942, **2**, 381—393).—The incidence of dietary deficiency and the excessive use of tobacco was high in patients with papillary atrophy of the tongue and with oral leukoplakia. The pathological changes associated with these conditions were hepatic dysfunction, anatomical and functional abnormalities of the gastrointestinal tract, anæmia, nail deformities, cheiloses, and perleche. Administration of large quantities of brewer's yeast to patients with papillary atrophy or oral leukoplakia was occasionally followed by complete or partial remission of these lesions. F. L. W.

Mastopathia cystica and mammary carcinoma. J. W. Logie (*Cancer Res.*, 1942, **2**, 394—397).—In a series of 330 consecutive cases surgical specimens of breast tissue showed mastopathia cystica in 67 of a total of 118 with carcinoma. This degree of association is statistically significant and a causal relationship between mastopathia cystica and mammary carcinoma must be accepted. The highest incidence of mastopathia cystica occurs in the decade 40—50 years. F. L. W.

Giant follicular lymphoblastoma (giant lymph follicle hyperplasia). I. W. Held and J. Chasnoff (*Amer. J. med. Sci.*, 1942, **204**, 232—239).—The clinical course of the disease and 2 cases are described. The disease may terminate with the picture of lymphosarcoma, lymphatic leukæmia, or, rarely, Hodgkin's disease. C. J. C. B.

Metabolic studies in patients with cancer of gastrointestinal tract. Laënnec's liver cirrhosis.—See A., 1942, III, 896.

Epithelial tumours of limbus. Melanomas of choroid and ciliary body.—See A., 1942, III, 885.

Effect of injection of distilled water on growth of irradiated mouse sarcoma 180. "Contact" Rœntgen rays. Time–intensity factor for rat sarcoma 39 *in situ*.—See A., 1942, III, 931.

Steroid hormone excretion in normal and pathological individuals.—See A., 1943, III, 29.

XVIII.—NUTRITION AND VITAMINS.

Use of dried vegetables in feeding of children. R. A. Benson (*Arch. Pediat.*, 1942, **59**, 489—494).—84 newborns, 34 older infants, and 36 older children fed dehydrated vegetables gave similar results to controls. C. J. C. B.

Correction of certain milk deficiency symptoms. G. Leblond and C. P. Leblond (*Rev. Canad. Biol.*, 1942, **1**, 366—371).—Rats exclusively fed on boiled produce showed anæmia, diminished growth, and slight rickets. The disturbances were corr. by administration of a mixture of Fe^{III} pyrophosphate, $CuSO_4$, thiamin, and calciferol. In guinea-pigs, the diet produced in addition subscorbutic symptoms; its treatment is complicated by the oxidising effect of the Fe salt on ascorbic acid; a mixture containing 15 mg. of ascorbic acid and 25 mg. of the Fe salt was effective. A. S.

Behaviour of antibody proteins towards dietary nitrogen in active and passive immunity.—See A., 1942, III, 945.

Influence of acute infection on plasma-lipins and course of eczema. A. V. Stoesser (*J. Allergy*, 1942, **13**, 248—260).—Rats placed on a diet free from certain unsaturated fatty acids develop scaliness of the the skin and later necrosis of the tail. Adding the acids to the food leads to immediate improvement Infants with eczema given plenty of fats (corn or linseed oil) rich in unsaturated fatty acids show some improvement. In the rats with scaliness of the skin and the infants with eczema, the serum-unsaturated fatty acid level is lowered. C. J. C. B.

Mouth lesions in monkeys associated with deficient diet. H. F. Fraser and N. H. Topping (*U.S. Publ. Health Repts.*, 1942, **57**,

968—973).—*Macacus rhesus* monkeys maintained for 11 months on a stock diet of natural foods and on a control diet of processed foods showed little gingivitis or peridontal disease. Only 1 of 4 comparable animals on a Ca-deficient diet showed a tendency towards these diseases. Monkeys chronically depleted of vitamin-*C* or of both -*C* and Ca developed extensive lesions of the gums and peridontal tissues. C. C. W.

Rapid production of nutritional anæmia in rats. Blood of monkeys in nutritional deficiency states.—See A., 1942, III, 871.

Serine injury. W. H. Fishman and C. Artom (*J. Biol. Chem.*, 1942, **145**, 345—346).—*dl*-Serine given by stomach tube is toxic to male rats on a synthetic diet. There is no effect on females, or on either sex fed on a stock diet. The symptoms are anorexia, albuminuria, redness and hæmorrhages on the feet, with circulatory failure, and damage to the liver, lungs, and kidneys. R. L. E.

Utilisation of the calcium of carrots by adults. H. Breiter, R. Mills, E. Rutherford, W. Armstrong, and J. Outhouse (*J. Nutrition*, 1942, **23**, 1—9).—The % utilisation of carrot-Ca by 7 subjects (men and women) varied between 0 and 35% (average 13·4%). In 5 of the subjects carrot-Ca was less utilised than was milk-Ca. A. G. P.

Vanadium—its possible biological rôle. E. P. Daniel and E. M. Hewston (*Amer. J. Physiol.*, 1942, **136**, 772—775).—It was possible to detect spectrographically (high dispersion, quartz Littrow type spectrograph) as little as 5—1 p.p.m. of V in the ash of biological materials. All biological samples failed to show any V except $CaCO_3$ which showed a very slight trace. If V functions in the normal nutrition of the rat or developing chick embryo, it does so in concns. of less than 1—5 p.p.m. of the inorg. content. M. W. G.

Vitamins in nervous health and disease. H. Wortis (*N.Y. Sta. J. Med.*, 1939, **39**, 1178—1184).—A review. E. M. J.

Vitamins in infant nutrition. A. F. Abt (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1942, **16**, 81—99).—A review. A. S.

Vitamin requirement of American flour beetle *Tribolium confusum*, Duval. H. Rosenthal and T. Reichstein (*Nature*, 1942, **150**, 546—547).—Biotin, thiamin, nicotinamide, and at least one other factor, present in biotin preps. from liver, are sufficient. E. R. S.

Effect of incubation on vitamin content of eggs.—See A., 1942, III, 890.

Vitamins in relation to sensitisation of guinea-pigs to old arsphenamine.—See A., 1942, III, 925.

Physiological properties of vitamin-*A*. I. Specific effect on body weight and body composition in rats. J. M. Patterson, E. W. McHenry, and W. A. Crandall (*Biochem. J.*, 1942, **36**, 792—794).—52% of the difference in wt. between control and pair-fed groups of rats receiving vitamin-*A* is due to the effect of the vitamin on fat retention and 16% to increased protein retention. There is no effect on absorption of food. P. G. M.

Vitamin-*A* and -*C* in cow's milk; synthesis of vitamin-*C* in bovines. S. N. Ray, K. Chand, and K. G. Rau (*J. Dairy Res.*, 1941, **12**, 109—118).—Cows' milk in India contains more carotene and less vitamin-*A* than in Europe. For -*C* similar vals. were obtained (1·94 ± 0·35 mg.-%). The constancy of this figure indicates a synthesis in the mammary glands. The tissues of young calves maintained on a -*C*-free diet had normal -*C* content; bacteria isolated from the digestive tract were unable to synthesise -*C*, even in the presence of mannose. J. G. D.

Vitamin-*A* nutrition and dark adaptation.—See A., 1942, III, 886.

Influence of vitamin-*B* (complex) surplus on capacity for muscular and mental work. E. Simonson, N. Enzer, A. Baer, and R. Braun (*J. Ind. Hyg.*, 1942, **24**, 83—90).—8 tablets daily of Betolake (thiamin chloride 0·75 mg., nicotinamide 10·0 mg., riboflavin 1·0 mg., pyroxidine hydrochloride 0·03—0·04 mg., filtrate factor 10—15 Jukes–Lepkovsky units) were given to 12 subjects and their performance of tests of muscular and mental work was compared with that of 11 control subjects. No effect was observed in the tests of muscular work, but after 3 weeks' administration of vitamin-*B* the fusion frequency of flicker was increased in 8 subjects; the subjects taking -*B* felt more alert and 7 reported better sleep. It is concluded that surplus of -*B* exerts a favourable effect on the capacity for types of work characterised by fatigue of the central nervous system. E. M. K.

Effect of large amounts of single vitamins of the *B* group on rats deficient in other vitamins. K. Unna and J. D. Clark (*Amer. J. med. Sci.*, 1942, **204**, 364—371).—Prolonged administration of large amounts of individual vitamins of the *B* group to rats subsisting on diets either entirely free from or partly deficient in 1 or more factors of the vitamin-*B* complex did not aggravate the deficiency state. C. J. C. B.

Influence of single and multiple vitamin-*B* complex deficiencies on motility of the gastro-intestinal tract.—See A., 1942, III, 894.

Relation between increase in weight of rats during dosing period of vitamin-*A* and -B_1 determinations and standard deviation of increase. K. H. Coward (*Biochem. J.*, 1942, **36**, 795—796).—There is no correlation between increase in wt. of rats during the dosing period and the standard deviation in either vitamin-*A* or -B_1 determinations. The degree of accuracy obtainable does not vary with the magnitude of the increase in wt. P. G. M.

Synthesis of vitamin-B_1 by yeast. J. M. Van Lanen, H. P. Broquist, M. J. Johnson, I. L. Baldwin, and W. H. Peterson (*Ind. Eng. Chem.*, 1942, **34**, 1244—1247).—Vitamin-B_1 is adsorbed from solution by aërated, growing or resting, yeast cells. The max. content is usually 3 mg. of -B_1 per g. of yeast, but in presence of a large excess of -B_1 yeasts containing 6 mg. per g. may be obtained. -B_1 is synthesised by growing or resting yeast from the pyrimidine and thiazole portions providing it contains less than 0·2 mg. of -B_1 per g. The yield is 70—100% and is increased by aëration and presence of spent wort, baker's yeast having the greatest efficiency of the strains tested. Synthesis of -B_1 is more complete by resting cells and the time required is less. Resting cells synthesise some pyrimidine but are less capable of synthesising thiazole. H. G. R.

Microbiological processes in determination of aneurin. I. V. Mattoso and I. M. Chaves (*Anais Assoc. Quim. Brasil*, 1942, **1**, 207—215).—Schopfer's method (A., 1935, 544) is best carried out in media adjusted to pH 6 by KOH. It is the easiest microbiological technique. F. R. G.

Rœntgen diagnosis of vitamin [-B_1] deficiency cardiac conditions.—See A., 1942, III, 877.

Vitamin-B_1 and growth of gonococci.—See A., 1942, III, 940.

Riboflavin [and aneurin content] of fruits and vegetables. G. Mackinney and J. M. Sugihara (*J. Amer. Chem. Soc.*, 1942, **64**, 1980—1981).—Riboflavin is determined in fruits and vegetables by treatment with an enzyme prep. ("pectinol") at 45°, then with $KMnO_4$–acetic acid–buffer, decolorisation by C, and finally fluorometry. Results (4 cases) are approx. checked by biological assay. Riboflavin and aneurin contents are recorded for 13 fruits and vegetables. R. S. C.

Action of pyridine and thiazole derivatives on growth of *Staph. aureus*.—See A., 1942, III, 941.

Biochemical defect in nicotinic acid deficiency. P. Handler and W. J. Dann [with W. S. Branning, P. Gray, and B. M. Morrison] (*J. Biol. Chem.*, 1942, **145**, 145—153; cf. A., 1942, III, 471).—Dogs suffering from blacktongue exhibit dehydration and electrolyte imbalance. Their deficiency syndrome is alleviated and life is prolonged by administration of NaCl and, although death from nicotinic acid deficiency always occurs, the final condition does not resemble that of blacktongue. The alleviation is accompanied by substitution of normal vals. for the low glucose and Cl′ contents and low CO_2-combining power of the blood and its high plasma-protein and non-protein-N contents. Some of the alterations in the composition of the urine are likewise reversed by NaCl administration. No alleviation is produced by isotonic glucose solution and amino-acids. The effects of the deficiency on the diphosphopyridine nucleotide and bound and total nicotinic acid contents of the liver, muscle, and kidney are recorded and discussed. W. McC.

Nicotinic acid in blood cells.—See A., 1942, III, 875.

Green pigment-producing compound in urine of pyridoxine-deficient dogs.—See A., 1942, III, 899.

Diagnostic criteria and resistance to therapy in sprue syndrome. F. M. Hanes (*Amer. J. med. Sci.*, 1942, **204**, 436—443).—4 sprue patients are described, who did not respond to the usual anti-sprue treatment. 3 died. Autopsy findings in two did not explain the fatal outcome. C. J. C. B.

Pantothenic acid in nutrition of rat. L. M. Henderson, J. M. McIntyre, H. A. Waisman, and C. A. Elvehjem (*J. Nutrition*, 1942, **23**, 47—58).—A synthetic ration deficient in pantothenic acid caused rats to become grey in 4—6 weeks. Ca pantothenate (40 μg. daily) prevented or cured this condition. Growth rates of rats increased with the intake of pantothenic acid up to 80 μg. daily. Greying was induced by feeding a heated grain diet and cured by pantothenic acid. Cu deficiency also caused greying which did not respond to administration of pantothenic acid but was rapidly cured by feeding Cu. Greying was not produced by feeding quinol with a milk diet. *p*-Aminobenzoic acid failed to cure greying caused by pantothenic acid deficiency. A. G. P.

Feather depigmentation and pantothenic acid deficiency in chicks. T. C. Groody and M. E. Groody (*Science*, 1942, **95**, 655—656).—Black Minorca chicks reared on purified diets with vitamin supplements excluding pantothenic acid showed areas of partial depigmentation on their feathers. Chicks receiving Ca pantothenate (5 μg. per day) had normally pigmented feathers. E. R. S.

Metabolism of pyruvate by liver from pantothenic acid- and biotin-deficient rats. F. J. Pilgrim, A. E. Axelrod, and C. A. Elvehjem (*J. Biol. Chem.*, 1942, **145**, 237—240).—Pyruvate oxidation by liver tissue is retarded in deficiency of pantothenic acid and

biotin. These vitamins are probably components of the liver-enzymes. R. L. E.

Occurrence of free and bound biotin. J. O. Lampen, G. P. Bahler, and W. H. Peterson (*J. Nutrition*, 1942, **23**, 11—21).—In yeast and animal products biotin occurs in a combined water-insol. form. Vegetables and other green plants contain a water-sol. form, seeds and nuts a considerable proportion of bound biotin. Liberation of biotin from yeast etc. is effected by hydrolysis with 2N-H_2SO_4 for 2 hr. or with certain enzymes, *e.g.*, trypsin, and by autolysis. Biotin in yeast, maize, dried barley juice, and soya bean is gradually destroyed by 4N-H_2SO_4. A. G. P.

Abnormalities in distribution of biotin in certain tumours and embryo tissues.—See A., 1942, III, 903.

Protective action of *p*-aminobenzoic acid against inhibition by sulphanilamide of green algæ.—See A., 1942, III, 949.

Growth factor requirements for micro-organisms.—See A., 1942, III, 937.

Unidentified nutritional factor required by the chick for feather pigmentation. J. McGinnis, L. C. Norris, and G. F. Heuser (*J. Biol. Chem.*, 1942, **145**, 341—342).—Feather growth and pigmentation fail on a diet of maize, peanut meal, casein, soya-bean oil, cod-liver oil, and salts, with aneurin, riboflavin, pyridoxine, pantothenic acid, and glycine. R. L. E.

Relation of vitamin-*C* to scarlet fever, rheumatic infections, and diphtheria in children. A. F. Abt, L. M. Hardy, C. J. Farmer, and J. D. Maaske (*Amer. J. Dis. Child.*, 1942, **64**, 426—442).—76 patients with scarlet fever, 17 with acute rheumatic fever not involving the heart, 26 with chorea, and 8 with acute pharyngeal diphtheria were compared with 110 normal children. The initial blood-ascorbic acid vals. of the scarlet fever patients were lower than normal. The clinical course was not influenced by large oral doses of ascorbic acid. In the other groups of patients, ascorbic acid levels were normal. C. J. C. B.

Deficiency of calcium and vitamin-*C* in monkeys. H. F. Fraser (*U.S. Publ. Health Repts.*, 1942, **57**, 959—967).—Symptoms of Ca depletion appeared after 1 year on a diet containing 10·2 mg. of Ca per 100 g. of diet. They consisted of loss of wt., weakness, muscular atrophy, irritability, and decreased activity. Symptoms of chronic vitamin-*C* depletion were anorexia, loss of wt., loss of hair, hæmorrhage into the gums and other tissues, inability to walk because of extensive joint hæmorrhage, and finally ankylosis of knee joints. C. G. W.

Experimental scurvy and calcium deficiency in monkeys. T. H. Tomlinson (*U.S. Publ. Health Repts.*, 1942, **57**, 987—993).—Recurrent artificially induced scurvy produced in the rhesus monkey, *Macaca mulatta*, a hæmorrhagic and necrosing gingivitis, hæmorrhages into the joints, beneath the periosteum, into the muscles, and beneath the skin, epiphyseal separation in some of the long bones with necrosis of bone substance, and exophthalmos caused by subperiosteal hæmorrhage within the orbits. Chronic Ca deficiency produced osteoporosis and softening of all bones. C. G. W.

Action of intestinal micro-organisms on ascorbic acid. R. M. Young and L. H. James (*J. Bact.*, 1942, **44**, 75—84).—Several direct human fæcal cultures and isolated cultures of *Bact. coli* and *Aerobacter aerogenes* decomposed vitamin-*C* under both aërobic and anaërobic conditions. Organisms of the *proteus* and *alcaligenes* groups protected the vitamin from atm. oxidation but failed to protect it in the presence of -*C*-decomp. bacteria. Glucose or lactose in -*C* nutrient medium spared the vitamin from oxidation by fæcal cultures and pure cultures of *Bact. coli* both aërobically and anaërobically. The -*C* disappeared rapidly as soon as the sugar had been completely utilised. F. S.

Vitamin-*C* in vegetables. A. Mirimanoff (*Pharm. Acta Helv.*, 1941, **16**, 163—168).—A crit. examination of the current theories of the metabolism and rôle of the vitamin. E. H. S.

Vitamin-*C* and chromosome number in *Rosa*.—See A., 1942, III, 949.

Stability of ascorbic acid in whole blood, plasma, and plasma filtrates.—See A., 1942, III, 875.

Splitting of combined ascorbic acid in urine.—See A., 1942, III, 899.

Use of formaldehyde in the determination of ascorbic acid and dehydroascorbic acid. J. W. H. Lugg (*Nature*, 1942, **150**, 577).—"Condensation" with formaldehyde (conversion of reducing into non-reducing substances) is carried out under controlled conditions; ascorbic acid alone "condenses" readily at pH 3·5 but very slowly at pH 1·5. Titration is effected at pH 1·5 with a standard solution of 2 : 6-dichlorophenol-indophenol in drops of definite size and to a "persistence" of limited time. Dehydroascorbic acid is first reduced with H_2S. A. A. E.

7-Dehydrocampesterol, a new provitamin-*D*.—See A., 1943, II, 12.

Action of lead tetra-acetate on sterol derivatives.—See A., 1943, II, 13.

Distribution of vitamin-*E* in rat tissues. K. E. Mason (*J. Nutrition*, 1942, **23**, 71—81).—In rats receiving 4 times the min. daily requirement of vitamin-*E*, the heart, lungs, and spleen contained approx. twice the -*E* content (per g. of fresh tissue) of musculature, body-fat, and other visceral organs and four times that of liver. With 100 times the min. dose storage of -*E* is viscera, musculature, and body-fat is increased 3—4·5 times (heart, lungs, and spleen receiving more than other tissues) and that in liver 14 times. The mammary gland accumulated approx. twice as much -*E* as did the liver. With excessive feeding of -*E* (10,000 times min. dose) the musculature and liver store approx. 12 and 150 times respectively the amount of -*E* present at low levels (4 × min. dose) of intake. The total -*E* in the body represented only a fraction of that ingested. A. G. P.

***In-vitro* effect of α-tocopherol phosphate on oxygen consumption of muscle from vitamin-*E*-deficient animals.**—See A., 1942, III, 880.

Criteria of response in the bio-assay of vitamin-*E*. K. E. Mason (*J. Nutrition*, 1942, **23**, 59—70).—The presence of 2 or more fœtuses in the rat uterus at the 16th day of pregnancy affords a criterion of positive response to vitamin-*E* as effective as that based on the delivery of progeny at full term. The actual no. of live fœtuses and wt. of uterine contents at 16 days were not effective measures of response. A. G. P.

Hæmorrhagic sweet clover disease. VIII.—See A., 1943, III, 6.

Loss of prothrombin caused by rare earths and effect of vitamin-K_5.—See A., 1942, III, 873.

XIX.—METABOLISM, GENERAL AND SPECIAL.

H. Wieland's work on mechanism of biological oxidations. W. Franke (*Naturwiss.*, 1942, **30**, 342—351).—A review. F. O. H.

Oxidative decomposition of principal foods in the animal body. F. Knoop (*Z. physiol. Chem.*, 1942, **274**, 291—302).—A review. J. N. A.

Standard values for basal oxygen consumption in adolescents. N. W. Shock (*Amer. J. Dis. Child.*, 1942, **64**, 19—32).—In 50 boys and 50 girls the basal metabolism was estimated with an error of less than 4% (open-circuit method is used). Deviations of ±15% from the mean for a given chronological age are normal in adolescents. C. J. C. B.

Heat production of rabbit at 28° as affected by previous adaptation to temperatures between 10° and 31°. R. C. Lee (*J. Nutrition*, 1942, **23**, 83—90).—The basal metabolism of rabbits measured at 28° after 24 hr. fasting at that temp. depended on the environmental temp. prior to the test period and on the length of time during which they were maintained at the prior temp. When the basal metabolism is used as a measure of superimposed conditions the animal should be habituated at the temp. for 3 weeks before the metabolism test. A. G. P.

Biological methylation. VIII, VIIIa, VIIIb. Summary of recent work on biological methylation and some hypotheses regrading its mechanism. F. Challenger (*Chem. and Ind.*, 1942, 397—399, 413—415, 456—458; cf. A., 1939, II, 192).—A review. J. N. A.

Choline metabolism. II. H. Müller (*Z. physiol. Chem.*, 1940, **266**, 205—216).—Approx. 50% of trimethylamine hydrochloride, orally administered to dogs, is converted into NH_3, the remainder being excreted in the urine, partly unchanged and partly as trimethylamine oxide. The ratio of unchanged amine to oxide depends on the magnitude of the dose, the oxide only being produced when this is small. Since dimethylamine excretion is slightly increased, it is possible that demethylation of trimethylamine by stages occurs. The trimethylamine content of the urine is probably affected by the nature of the diet. Trimethylamine oxide, orally administered, is excreted unchanged, as trimethylamine, and as NH_3, the proportions being approx. 53, 13, and 33%. Excretion of mono- and di-methylamine is not affected and creatinine excretion, which increases, is probably not directly affected. When betaine is orally administered, approx. 50% of it appears unchanged in the urine, the remainder being converted into urea. No NH_3, choline, di- or tri-methylamine, trimethylamine oxide, creatine, or creatinine is produced, the small proportion of trimethylamine found being probably produced by intestinal bacteria. Trimethylamine found after administration of choline is derived directly from choline, not indirectly from betaine. A method of determining Cr in trimethylamine oxide reineckate, colours 220—225°, decomp. 247—249°, is described: the salt contains 1 mol. each of oxide and acid. Small amounts of reineckates are best regenerated by Ag_2SO_4 and $BaCl_2$, large amounts by $HgSO_4$. W. McC.

Choline metabolism. VIII. Relation of cystine and of methionine to choline requirement of young rats. D. J. Mulford and W. H. Griffith (*J. Nutrition*, 1942, **23**, 91—100; cf. A., 1941, III, 602).—In young rats receiving a diet containing 18% of casein supplementary feeding of cystine (0·1—0·2%) or methionine improves

growth and efficiency of food utilisation. Rats receiving a diet low in choline show increased liver-fat after feeding cystine. In a choline-free diet 30% of casein is necessary to prevent symptoms of choline and cystine deficiency. Methionine, which is needed and used as a source of labile methyl, is not utilisable as a source of cystine-S. A. G. P.

Relation of keto-acid excretion to amino-acid metabolism. H. Waelsch and H. K. Miller (*J. Biol. Chem.*, 1942, **145**, 1—9).—Rats which had reached the min. level of keto-acid excretion (below 1 mg. daily, as pyruvic acid) on a protein-free diet received one of 21 different amino-acids daily for 2 days and the urinary keto-acids were determined colorimetrically using a modified Neuberg–Case procedure. Of 12 *l*-amino-acids, only tyrosine and lysine increased the excretion, as did *dl*-phenylalanine, -valine, -methionine, -amino-butyric, -anilinobutyric, -*iso*leucine, -threonine, and -serine, the dinitrophenylhydrazones from the first 6 *dl*-acids having been isolated from the urine. Replacement of the stock diet by one containing 15% of caseinogen caused a drop to fasting level, whilst addition of gelatin or serum-albumin brought a return to that obtained on the stock diet. A. L.

Degradation of tyrosine and transamination in liver, kidney, and muscle. K. Zorn (*Z. physiol. Chem.*, 1940, **266**, 239—248; cf. A., 1939, III, 720).—No deamination or transamination occurs during the oxidative degradation of *l*(–)-tyrosine in pig's liver or kidney or in rabbit's muscle, and no glutamic acid is produced when equiv. amounts of *l*(–)-tyrosine and α-ketoglutaric acid are incubated at 37·5° in aq. $KHCO_3$ or PO_4''' buffer. Pptn. of glutamic acid with $Ba(OH)_2$ + alcohol yields untrustworthy results because other amino-acids are co-pptd. Partial isolation of the acid as hydrochloride from muscle pulp to which it or alanine + α-ketoglutaric has been added is achieved by successive treatment with Hg acetate, phosphotungstic acid, and 25% HCl. W. McC.

Availability of formylglycine, acetylglycine, and propionylglycine for synthesis of hippuric acid by the rabbit. L. D. Abbott, jun. (*J. Biol. Chem.*, 1942, **145**, 241—245).—*N*-Formyl-, *N*-acetyl-, and *N*-propionyl-glycine when given orally with benzoate increase the excretion of hippuric acid by rabbits, probably through intermediate formation of glycine. R. L. E.

Uric acid partition in gout and in liver disease. D. Adlersberg, E. Grishman, and H. Sobotka (*Arch. intern. Med.*, 1942, **70**, 101—119).—In normal subjects the non-ultrafilterable (bound) uric acid was 16% (average) of total uric acid of serum. In hepatic disease the total val. is usually normal but the bound uric acid is often increased. In gout the total val. is increased but the bound fraction is usually within normal limits. C. A. K.

Formation of urea in mammalian body without participation of arginase. S. J. Back and S. Williamson (*Nature*, 1942, **150**, 575—577).—Excess of ornithine inhibits arginase activity in liver slices and cell-free extracts, but more is required for slices. The action of arginine and ornithine is instantaneous on addition to the slices and extracts; the action of arginase is reversed by a great excess of ornithine; the inhibitory effect of ornithine on arginase in liver slices is reduced after 30—40 min., but not in extracts. The rate of urea production by liver slices with NH_4 lactate is the same with little or excess of added ornithine, but with arginine only it is greater and with excess of ornithine only it is less. Thus urea is produced in a system in which arginase is strongly inhibited. Urea is not produced from NH_3 in liver slices via arginine, but by some other mechanism which excludes arginase. E. R. S.

Nicotinic acid metabolism. I. Fate of nicotinic acid in man. H. P. Sarett, J. W. Huff, and W. A. Perlzweig [with M. Stenhouse and R. Forth]. **II. Fate of nicotinic acid in normal and black-tongue dogs.** H. P. Sarett [with M. Stenhouse] (*J. Nutrition*, 1942, **23**, 23—34, 35—45).—I. On a diet of low trigonelline content, *i.e.*, containing no coffee or legumes, human subjects excreted 9—13 mg. of trigonelline daily. During fasting 8—12·6 mg. of trigonelline and 0·7—2·2 mg. of acid-hydrolysable nicotinic acid derivatives were excreted daily. A const. urinary excretion of at least 10 mg. of nicotinic acid derivatives occurred daily irrespective of diet. Of 200 mg. of nicotinic acid given orally, 25—90 mg. was accounted for by increased urinary excretion of trigonelline and nicotinuric acid: simultaneous feeding of glycine and choline did not affect the proportions of trigonelline and nicotinuric acid excreted. Of 200-mg. doses of nicotinamide 36—60 mg. appeared as urinary trigonelline; excretion of acid-hydrolysable nicotinic acid derivatives in urine was unchanged. Trigonelline taken orally was excreted unchanged. 60% of ingested nicotinuric acid was excreted with increased urinary trigonelline. After 6 daily doses of 500 mg. of nicotinamide 27—42% was recovered as trigonelline and acid-hydrolysable nicotinic acid derivatives, 90% of the additional excretion being trigonelline and the remainder largely nicotinuric acid. The nutritional status in respect of nicotinic acid may be measured by additional excretion of trigonelline and acid-hydrolysable nicotinic acid derivatives.

II. Trigonelline and nicotinuric acid are the principal end products of metabolism of nicotinic acid in dogs. With diets low in nicotinic acid urinary trigonelline falls to 1·1—2·7 and in black-tongue to 0·1 mg. daily. Nicotinic acid-deficient and black-tongue dogs require several 25-mg. doses of nicotinic acid before the urinary excretion of end products commences. On high-nicotinic acid diets (1·1 mg. per kg.) dogs excrete approx. 50% of ingested nicotinic acid: of this 90% appears as trigonelline. After saturation with nicotinic acid 100-mg. doses of nicotinamide are completely excreted as trigonelline (75—94%) and nicotinuric acid (6—25%). Neither trigonelline nor nicotinuric acid is utilised by dogs. A. G. P.

Metabolism of sulphur. Cysteic acid. G. Medes and N. Floyd (*Biochem. J.*, 1942, **36**, 836—844).—An enzyme, present in kidney, anaërobically decarboxylates cysteic acid with formation of taurine. Under aërobic conditions further breakdown of the mol. occurs, with loss of the NH_2-group, and a similar aërobic decomp. takes place in presence of intestinal mucosa. Because of this activity of the intestinal wall the form in which ingested cysteic acid is excreted is different from that which appears after intravenous injection. The identity of the non-S fraction of the mol. is unknown. There is no evidence that sulphopyruvic acid, which is formed in transamination reactions, contributes to formation of SO_4'' in tissues. J. N. A.

Effect of anaërobic conditions and respiratory inhibitors on the *in vitro* phospholipin formation in liver and kidney with radioactive phosphorus as indicator. A. Taurog, I. L. Chaikoff, and I. Perlman (*J. Biol. Chem.*, 1942, **145**, 281—291).—Anaërobic conditions, and the presence of cyanide, azide, H_2S, and CO, inhibit phospholipin formation. Inhibition by CO is greatest in the dark. The mechanism of phosphorylation is discussed; the cytochrome oxidase system is involved, coupled with an energy-producing mechanism. R. L. E.

Fats containing fatty acids with odd numbers of carbon atoms. II. H. Appel, G. Berger, H. Böhm, W. Keil, and G. Schiller (*Z. physiol. Chem.*, 1940, **266**, 158—173; cf. A., 1939, III, 407).—The fatty acids of coconut oil are converted into the corresponding alcohols by hydrogenation and the alcohols are transformed, by way of the bromides and nitriles, into fatty acids and, after heating with glycerol in presence of Zn, into straight-chain, saturated glycerides containing only odd nos. (chiefly 11—19) of C atoms. Corresponding straight-chain, saturated glycerides containing only fatty acids having even nos. of C are obtained from the fat by saponification, esterification with glycerol in presence of Zn, and hydrogenation in presence of Ni on kieselguhr. Feeding experiments with rats show that both types of glyceride do not differ from natural coconut oil in respect to growth promotion, deposition of body-fat, and degradation of this fat during subsequent fasting. Both types of glyceride and the natural oil are equally well absorbed and all produce body-fats of the same I val. The R.Q. of rats is diminished by both types of glyceride. Men absorb both types to the same extent as they absorb the natural oil and no detrimental effects are observed. In dogs no accumulation of dicarboxylic acids in the urine results from administration of the first type of glyceride. W. McC.

Metabolism of natural coconut oil and of fat prepared from the oil containing fatty acids with odd numbers of carbon atoms. R. Emmrich and E. Nebe (*Z. physiol. Chem.*, 1940, **266**, 174—182).—In dogs and men, consumption of large amounts of coconut oil or of glycerides of fatty acids containing only odd nos. of C atoms results in urinary excretion of dicarboxylic acid (suberic, sebacic, azelaic, pimelic). W. McC.

Metabolism of higher saturated dicarboxylic acids having even numbers of carbon atoms. R. Emmrich and I. Emmrich-Glaser (*Z. physiol. Chem.*, 1940, **266**, 183—192; cf. Verkade *et al.*, A., 1938, III, 421).—In dogs and men, the readiness with which the acids (sebacic acid, decane-, tetradecane-, and hexadecane-dicarboxylic acid) are oxidised increases with increase in mol. wt. Sebacic and decanedicarboxylic acid are incompletely oxidised, appreciable amounts being found unchanged in the urine. The degradation products isolated from dog's urine are sebacic, suberic, and adipic acid. Adipic acid only is isolated from human urine. No storage or deposition of the dicarboxylic acids occurs and where excretion of lower dicarboxylic acid does not occur, rapid and almost complete oxidation takes place. W. McC.

Intravenous glucose tolerance curve. G. D. Greville (*Nature*, 1942, **150**, 522—523).—The blood-sugar (y), 5—90 min. after injection of glucose, is given by $y = y_0 + Be^{-kt}$, where t is measured from the mid-time of the injection and y_0, B, and k are consts. for any particular test. When this equation applies the glucose concns. in plasma and extravascular fluid are roughly equal, and, roughly, $V_G = G/(\eta - y_p)$, where V_G is vol. of body fluid, G is wt. of glucose injected, y_p is pre-injection blood-sugar, and $\eta = y$ when $t = 1$. V_G is correlated with surface area and body wt. and is of the same order as the thiocyanate distribution vol., 20 ml. for each 100 g. of body wt., not 70 ml. as for total body water. E. R. S.

Effect of diet on glucose tolerance and liver- and muscle-glycogen of hypophysectomised and normal rats. L. T. Samuels, R. M. Reinecke, and H. A. Ball (*Endocrinol.*, 1942, **31**, 42—45).—Glucose was given intravenously to hypophysectomised and normal rats on

high-fat or high-carbohydrate diets, and blood-sugar determined at intervals thereafter. In the hypophysectomised rats glucose removal was delayed for both diets, but the fat-fed rats maintained a higher blood-sugar during glycogenolysis, and final liver- and muscle-glycogen were higher. V. J. W.

Comparison of disposition of injected glucose in two strains of rats. J. M. Orten and G. Sayers (*J. Biol. Chem.*, 1942, **145**, 123—129; cf. A., 1940, III, 327).—The Yale strain of rats does not differ from the Wistar strain in respect of peritoneal absorption and renal excretion of injected glucose but the Yale stain stores less glycogen and more "free fermentable" sugar in the liver and remaining carcass than does the Wistar strain. The Yale strain disposes of more glucose by oxidation or transformation or both than does the Wistar strain. Possibly the low tolerance of the Yale strain to injected glucose is related to impairment in the mechanism of deposition or retention of glycogen in the liver and other parts of the body. W. McC.

Pregnancy and diabetes. R. D. Lawrence and W. Oakley (*Quart. J. Med.*, 1942, **11**, 45—75).—Insulin has increased the fertility of diabetic women and reduced the maternal mortality to negligible figures, but the fœtal mortality remains high. 57 babies from 54 pregnancies in 44 diabetics are analysed. 1 mother died from pulmonary embolism after Caesarean section. The general fœtal mortality was 37%, with complete diabetic control 23%, partial control 50%, and no control 70%. Ketosis was common especially after the 5th month, and was mainly due to the low renal threshold for sugar. The fœtal mortality was 6 of 18 with severe ketosis, and 2 of 11 with mild ketosis. Toxæmia, viz., œdema with albuminuria and hypertension, occurred in 5 cases, with 6 live births and no deaths. 4 of 5 cases with gross hydramnios had fœtal deaths. There was no correlation between fœtal size and mortality, but the unsupervised pregnancies gave significantly heavier babies, average 10 lb. unsupervised and 6½ lb. supervised. Of 27 pregnancies terminated by Caesarean section there were 5 dead babies and 23 living, of 19 spontaneous deliveries, 8 dead and 11 living, and of 3 inductions 1 dead and 2 living. Among the completely supervised the deaths were 2 of 25 Caesarean, and 2 of 8 spontaneous. After the 5th month the daily carbohydrate was increased to 200 or 250 g. to control the loss from the low renal threshold, and with this intake breast feeding was successful in 11 of 16 cases. Pregnancy is contraindicated unless there is a strong desire for a child, and willingness to co-operate in close control and Caesarean section. Termination is indicated before the third month if these criteria are not satisfied. In the primipara Caesarean and sterilisation is indicated at the 36—38th week, and also in the multipara if there is any other complication, though an uncomplicated multiparous diabetic may be induced at the 36th week. There was no trouble from fœtal hypoglycæmia, but glucose water was given 2-hourly from birth. R. K.

Degenerative lesions in diabetes mellitus. J. D. Boyd, R. L. Jackson, and J. H. Allen (*J. Amer. Med. Assoc.*, 1942, **118**, 694—696).—Studies in 69 diabetic children showed that deficient body growth, or degenerative lesions of the liver, vascular system, eyes, or teeth, occurred only in cases where the diabetes was poorly controlled. C. A. K.

Two cases of diabetes mellitus. E. P. McCullagh (*Cleveland Clin. Quart.*, 1942, **9**, 123—134).—1 case associated with myxœdema, another case with Addison's disease, are reported. A. S.

Pancreatic diabetes in the owl. N. Nelson, S. Elgart, and I. A. Mirsky (*Endocrinol.*, 1942, **31**, 119—123).—Normal owls have a blood-sugar of 200—350 mg.-%, with a mild diabetic type of glucose tolerance and normal response to insulin. After pancreatectomy blood-sugar may reach 1200 mg.-%, fasting ketosis is greater, and death occurs in about 6 days irrespective of insulin administration. V. J. W.

Pancreatic diabetes in monkey. I. A. Mirsky, N. Nelson, I. Grayman, and S. Elgart (*Endocrinol.*, 1942, **31**, 264—270).—Pancreatectomy caused in rhesus monkeys a diabetes which could be controlled by insulin. Without insulin a mild ketosis occurred so long as the animals were fed, but on fasting ketosis became severe and coma ensued. V. J. W.

Ætiology of diabetic acidosis. I. A. Mirsky (*J. Amer. Med. Assoc.*, 1942, **118**, 690—694).—A lecture. The most important cause of development of diabetic ketosis is lack of glycogen in the liver. C. A. K.

Organic phosphates of blood and mineral metabolism in diabetic acidosis. G. M. Guest (*Amer. J. Dis. Child.*, 1942, **64**, 401—412).—An address. C. J. C. B.

General method for determination of α-keto-acids, and its application to α-keto-acid metabolism in pigeon brain. C. Long (*Biochem. J.*, 1942, **36**, 807—814).—Pure pyruvic, α-ketobutyric, α-ketovaleric, α-ketoglutaric, and glyoxylic acids give low results when determined by the $NaHSO_3$-binding method. A colorimetric method for determination of 0·001—0·0001 mol. of α-keto-acid is based on determination of the intensity of the reddish-brown colour obtained when excess of aq. NaOH is added to the appropriate 2 : 4-dinitrophenylhydrazone. Pyruvic and α-ketobutyric acids are equally well utilised by a washed prep. of minced pigeon brain (cf. A., 1939, III, 709). J. N. A.

Alcaptonuria and pregnancy. F. Lanyar (*Z. physiol. Chem.*, 1942, **273**, 283—284).—In a woman having alcaptonuria but otherwise healthy, excretion of homogentisic acid was not affected by pregnancy and parturition. Her milk contained 4 mg.-% of the acid. The healthy male child had no alcaptonuria. W. McC.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Sulphanilamido-derivatives of nitrogenous bases from Californian petroleum.—See A., 1942, II, 424.

Recent chemotherapeutic agents of the sulphonamide group. H. Heinz (*Chem.-Ztg.*, 1942, **66**, 6—8).—A review.

Determination of sulphonamide drugs by method of Werner. C. A. Mawson (*Biochem. J.*, 1942, **36**, 845—847).—0·5 c.c. of blood is mixed with 6·5 c.c. of water, and after 3 min. 0·5 c.c. of 30% aq. salicylsulphonic acid is added with shaking; after 10 min. the liquid is filtered through 2 Whatman No. 2, 3, or 40 filter papers folded together. To 2 c.c. of the clear filtrate is added 0·5 c.c. of 7% *p*-dimethylaminobenzaldehyde in 7% v/v H_2SO_4 and the colour compared with a standard using a violet or blue Ilford "Spectrum" filter on the eye-piece of the colorimeter. For determination of total sulphonamide, the acetyl derivative is first hydrolysed with hot dil. H_2SO_4. J. N. A.

Development of colours from sulphonamides (*p*-nitrobenzenesulphonamide) under bacterial action. H. Burton, J. W. McLeod, A. Mayr-Harting, and N. Walker (*J. Path. Bact.*, 1942, **54**, 407—419).—All bacteria investigated could produce a purple colour in blood agar media containing *p*-nitrobenzenesulphonamide owing to reduction of that substance to *p*-hydroxylaminobenzenesulphonamide, and possibly to its subsequent oxidation. The production of a purple colour in irradiated solutions of sulphonamide is associated with increased bactericidal effect. C. J. C. B.

Absorption, excretion, and distribution of 2-sulphanilamidopyrazine (sulphapyrazine) in man. M. Hamburger, jun., J. M. Ruegsegger, N. L. Brookens, and E. Eakin (*Amer. J. med. Sci.*, 1942, **204**, 186—193).—The drug is absorbed slowly from the gastro-intestinal tract and is excreted more slowly by the kidney than sulpha-diazine, -pyridine, or -thiazole. Acetylsulphapyrazine is more sol. in water or urine than sulphapyrazine. Both compounds are many times as sol. in alkaline as in acid media. Sulphapyrazine enters the c.s.f. slowly, reaching concns. of 50% of that of the blood 12 hr. after an intravenous injection. Concns. of the drug in most body fluids approach or exceed the concns. in the blood; very little sulphapyrazine appears in milk; its concn. in plasma is double that in red blood cells. C. J. C. B.

Mode of action of sulphapyridine. C. L. Lushbaugh and R. R. Cannon (*J. infect. Dis.*, 1942, **71**, 33—39).—Sulphapyridine acted directly on the pneumococci in pneumococcal intradermal lesions in rabbits. Phagocytosis did not play a conspicuous rôle in the disposal of the organisms as it does in acquired immunity. (12 photomicrographs.) F. S.

Blood- and urinary chloride studies in sulphathiazole-treated pneumonias and early rapid excretion of chloride in pneumonia. J. A. Oshlag and M. Eil (*Amer. J. clin. Path.*, 1942, **12**, 249—252).—Whole blood-Cl′ in patients with pneumonia showed a tendency to be low at scattered intervals following the onset of treatment. No definite trends were noted. In sulphathiazole-treated pneumonia clinical defervescence occurred an appreciable length of time before the crit. reappearance of Cl′ in the urine. C. J. C. B.

Effect of sulphanilamide on the experimentally damaged liver. T. E. Machella and G. M. Higgins (*Amer. J. med. Sci.*, 1942, **204**, 194—201).—Administration of sulphanilamide to rats with hepatitis produced by inhalation of CCl_4 lessened the damage to the liver. Simultaneous administration of alcohol and sulphanilamide to rats did not result in damage to the hepatic cells; in animals that received only alcohol fat was deposited in the liver. Sulphanilamide did not cause liver damage in animals with obstructive jaundice. C. J. C. B.

Chemotherapeutic studies of 2-sulphanilyl-3 : 5-dihydrothiazole (sulphathiazoline). G. W. Raiziss, M. Severac, and J. C. Moetsch (*J. Lab. clin. Med.*, 1942, **27**, 1276—1279).—When tested on mice, rabbits, and dogs, sulphathiazoline was less toxic than sulphathiazole. The therapeutic effect of sulphathiazoline in mice with type II or III pneumococcic infection was the same as that of sulphathiazole. C. J. C. B.

Sulphonamide therapy of streptococcus infections by intravenous drip method. J. A. Kolmer, H. Brown, A. M. Rule, and L. Groskin (*J. Lab. clin. Med.*, 1942, **27**, 1268—1274).—Intravenous drip administration of sulphanilamide and neoprontosil in doses of 0·02—0·20 g. per kg. once a day for 5 days had no toxic effects in rabbits. Intravenous drip administration of sulphanilamide in dose

of 4·8 g. (600 c.c. of 0·8% solution diluted with 600 c.c. of 5% glucose solution) at the rate of 200 c.c. per hr. for 6 hr., twice in 24 hr. for 5 days in succession, was well tolerated by patients with hæmolytic streptococcus septicæmia and gave good results. Intravenous drip administration of neoprontosil in dose of 5 g. (100 c.c. of 5% solution diluted with 1100 c.c. of 5% glucose solution) at the rate of 200 c.c. per hr. for 6 hr., twice in 24 hr. for 5 days in succession, gave similar results. The intravenous administration of Na sulphapyridine in dose of 4 g. dissolved in 1200 c.c. of physiological saline solution at the rate of 200 c.c. per hr. for 6 hr. (2 injections per 24 hr.) for 8 days in succession was well tolerated by 2 cases of subacute bacterial endocarditis due to infection with *Strep. viridans*, but gave unsatisfactory results. C. J. C. B.

Sulphadiazine in pneumonia. H. K. Ensworth, M. Kalkstein, S. W. Barefoot, J. Liebmann, and N. Plummer (*Amer. J. med. Sci.*, 1942, **204**, 179—185).—239 patients with typed pneumococcus pneumonia treated with sulphadiazine showed a death rate of 10·9% (7·8% if 24-hr. deaths are excluded). Sulphadiazine is as effective as sulphapyridine or sulphathiazole, and causes fewer toxic reactions. C. J. C. B.

Sulphapyridine in lobar pneumonia. W. L. Whittemore, C. L. Royster, and P. A. Riedel (*N.Y. Sta. J. Med.*, 1939, **39**, 540—543).—There was 1 death in the 30 cases reported. E. M. J.

Comparison of therapeutic efficacy of sulphapyridine and sulphathiazole in acute pneumonia. W. Löffler and R. Hegglin (*Schweiz. med. Wschr.*, 1942, **72**, 7—10).—The mortality rate in 511 patients with acute pneumonia, treated with sulphapyridine or sulphathiazole, was 6·2% (or, disregarding patients who died within 48 hr. after hospitalisation, 3·5%). 86·8% of 359 patients treated with sulphapyridine had normal temp. after 72 hr., as did 62·1% of 121 sulphathiazole cases. The pneumonic infiltration disappeared in 16·1% of 242 cases within 1 week, in 73·1% in 2—3, in 2·1% within 4, and in 8·7% in more than 4 weeks; there was no difference in sulphapyridine or -thiazole cases. Recurrences were observed in 4% of all cases. Innenkörper anæmia and porphyrinuria were frequently seen in sulphapyridine cases. Some cases were treated with a *N*-dimethylacryl derivative of sulphanilamide. Innenkörper formation in red cells and porphyrinuria were common. The return of the temp. to normal was gradual. A. S.

Sulphanilamide-resistant pneumonia. O. Gsell and M. Engel (*Schweiz. med. Wschr.*, 1942, **72**, 35—38).—A type of sulphanilamide-resistant pneumonia was observed in 7 patients, characterised by lack of marked physical chest signs with severe *X*-ray symptoms, lack of pneumococci in sputum, absence of leucocytosis, marked toxæmia, and endemic-infectious occurrence. A. S.

[Treatment of] *Hæmophilus influenzæ* (type *B*) meningitis of children. E. Neter (*J. Pediat.*, 1942, **20**, 699—706).—3 patients received sulphonamides exclusively. One, treated with sulphathiazole, made a complete recovery. 2 out of 12 patients who received anti-*H. influenzæ* horse serum + sulphonamide recovered. Of 7 patients who received anti-*H. influenzæ* rabbit serum + sulphonamides, 4 made a complete recovery. 1 of these patients had 2 attacks of *H. influenzæ* meningitis with an interval of 6 weeks. Following treatment with anti-*H. influenzæ* rabbit serum, antibodies were demonstrated in the blood of 2 patients at a time when viable organisms and sp. sol. substance of *H. influenzæ* were present in the c.s.f. C. J. C. B.

Sulphonamides in staphylococcal pneumonia following influenza. M. Finland, O. L. Peterson, and E. Strauss (*Arch. intern. Med.*, 1942, **70**, 183—205).—In 66 adults influenza was followed by *Staph. aureus* pneumonia, of varying clinical types. There were 21 deaths, and treatment with sulphathiazole or sulphadiazine was considered useful if given early in large doses, the latter drug being much the less toxic. C. A. K.

Treatment of whooping cough bronchopneumonia. W. P. Frank, E. F. Patton, and P. M. Hamilton (*J. Pediat.*, 1942, **20**, 720—722).—30 consecutive patients with whooping cough bronchopneumonia were treated with large doses of hyperimmune pertussis serum with a mortality rate of 20%. 16 patients were treated with sulphapyridine with a mortality rate of 25%. 77 consecutive patients were treated with sulphathiazole with a mortality rate of 4%. Blood concn. of sulphathiazole needed for good results was 2—3 mg.-%. C. J. C. B.

Sulphanilamides and experimental tuberculosis. B. Sjögren (*Nature*, 1942, **150**, 431—432).—2-Sulphanilamido-1 : 4-naphthaquinone, 1-sulphanilamido-2-methylnaphthalene, and 4-sulphanilamido-2-methyl-1-naphthol (A., 1943, II, 8) show growth-inhibiting activity towards types I and II pneumococci and *E. coli* of the same magnitude as that of sulphapyridine. E. R. S.

Treatment of gonorrhœic arthritis with sulphathiazole. U. Thiry (*Schweiz. med. Wschr.*, 1942, **72**, 13—15).—A case suffering from acute gonorrhœic coxarthritis was cured with sulphathiazole. A. S.

Apparent cure of periarteritis nodosa with sulphapyridine. B. A. Goldman, K. L. Dickens, and J. R. Schenken (*Amer. J. med. Sci.*, 1942, **204**, 443—447).—Report of a case. (1 photomicrograph.) C. J. C. B.

Chemotherapy of infantile diarrhœa : comparison of sulphathiazole and sulphaguanidine. R. B. Tudor (*J. Pediat.*, 1942, **20**, 707—710).—Both sulphathiazole and sulphaguanidine were equally effective in the treatment of 31 cases of infantile diarrhœa of the clinical bacillary dysentery and parenteral diarrhœa types. C. J. C. B.

Ineffectiveness of sulphonamides in poliomyelitis of mice. J. A. Kolmer and A. M. Rule (*J. Lab. clin. Med.*, 1942, **27**, 1166—1168). C. J. C. B.

Sulphamethylthiazole ; chronic toxicity and effect on hæmopoietic system. A. N. Bose (*Ann. Biochem. Exp. Med.*, 1941, **1**, 293—296).—Sulphamethylthiazole was fed in 100-mg. doses to 6 rabbits twice daily for two weeks. There was a slow rise in the concn. of the drug in the blood in both free and conjugated forms (max. vals. 2·5 and 3·9 mg.-% of free and total drug). Urinary excretion reached max. of 162 and 252 mg. per day. During the treatment there was a decrease in the granulocytes and a corresponding increase in lymphocytes. No marked anæmia developed. P. C. W.

Antagonism of antisulphonamide effect of methionine, and enhancement of bacteriostatic effect of sulphonamide, by urea.—See A., 1942, III, 938.

Chemotherapy and avian malaria. A. Bishop (*Parasitol.*, 1942, **34**, 1—54).—A review. (186 references.) F. S.

Treatment of sleeping sickness by 4 : 4′-diamidinodiphenoxypentane. G. F. T. Saunders (*Ann. trop. Med. Parasitol.*, 1941, **35**, 169—174).—Preliminary details are given of 14 cases of sleeping sickness successfully treated with this drug. F. S.

Action of two aromatic diamidines on *Trypanosoma congolense* infections in cattle ; delayed poisoning by 4 : 4′-diamidinodiphenoxypentane. R. Daubney and J. R. Hudson (*Ann. trop. Med. Parasitol.*, 1941, **35**, 175—186).—Neither 4 : 4′-diamidinodiphenoxypentane nor 4 : 4′-diamidinostilbene effected a complete cure. In delayed poisoning in cattle there was no evidence of renal injury, but the actual liver injury appeared to occur simultaneously with the onset of the blood-sugar changes. F. S.

Two cases of oral pharyngeal leishmaniasis treated with pentamidine. R. M. Humphreys (*Ann. trop. Med. Parasitol.*, 1942, **36**, 9—11).—Both cases showed marked improvement without toxic effects after large doses (up to 4 mg. per kg. once or twice daily) of pentamidine (4 : 4′-diamidinodiphenoxypentane). F. S.

Chemotherapeutic action of 4 : 4′-diamidinostilbene in *Babesia* infections of domestic animals. R. Daubney and J. R. Hudson (*Ann. trop. Med. Parasitol.*, 1941, **35**, 187—190).—16 cases of tick-fever (*Babesia canis* infection) in dogs were treated with good results. The drug was too toxic for therapeutic administration to horses. F. S.

Treatment of canine babesiasis by 4 : 4′-diamidinodiphenoxypropane. J. Carmichael and R. N. T. W. Fiennes (*Ann. trop. Med. Parasitol.*, 1941, **35**, 191—193).—The results of treatment in 116 cases of *Babesia canis* infection in dogs were satisfactory. No toxic effects were observed. F. S.

Action of some aromatic diamidines on infections of *Leishmania donovani* in the Syrian hamster, *Cricetus auratus*. S. Adler and I. Tchernomoretz (*Ann. trop. Med. Parasitol.*, 1942, **36**, 11—16).—Of 5 aromatic diamidines tested, one compound, 4 : 4′-diamidinodiphenoxypropane, had a therapeutic effect in light infections practically equal to that of 4 : 4′-diamidinostilbene, but it was not as effective in moderate or heavy infections. F. S.

Continued passage of extra-erythrocytic forms of *Plasmodium gallinaceum* in absence of erythrocytic schizogony [after quinine]. S. Adler and I. Tchernomoretz (*Ann. trop. Med. Parasitol.*, 1941, **35**, 241—246).—In fowls treated with quinine hydrochloride 5 passages were obtained of extra-erythrocytic infections with no erythrocytic multiplication. F. S.

Histological comparison of effects of certain drugs on scabies, as studied in rodent infections. R. M. Gordon and D. R. Seaton (*Ann. trop. Med. Parasitol.*, 1941, **35**, 247—263).—Comparison of tetraethylthiuram monosulphide, benzyl benzoate, and dimethylthianthren in rats showed that the first was the most lethal for the mites and eggs of *Notoëdres* and the most rapid in its action. (1 photomicrograph.) F. S.

Stability of drug-resistance in trypanosomes. J. D. Fulton and W. Yorke (*Ann. trop. Med. Parasitol.*, 1941, **35**, 221—227).—An atoxyl-resistant strain of *Trypanosoma rhodesiense* has preserved its characters unchanged for 12½ years, during which it has been passed through 1500 mice. One Bayer 205-resistant strain has maintained its resistance for 3¼ years. Two undecanediamidine-fast and a synthalin-fast strain lost resistance between 1 and 3½ years. F. S.

Drug-resistance in *Babesia* infections. J. D. Fulton and W. Yorke (*Ann. trop. Med. Parasitol.*, 1941, **35**, 229—232).—A strain

of *Babesia canis*, made resistant to 4 : 4′-diamidinostilbene, remained resistant after 42 passages in dogs during 28 months. The strain was also resistant to 4 : 4′-diamidinodiphenoxypropane and Bayer's acaprin. F. S.

Development of plasmoquine-resistance in *Plasmodium knowlesi*. J. D. Fulton and W. Yorke (*Ann. trop. Med. Parasitol.*, 1941, **35**, 233—239).—A strain of *Plasmodium knowlesi* in *Macacus rhesus* was made resistant to plasmoquine. F. S.

Relation between chemical structure and drug-resistance among arsenicals. H. King and W. I. Strangeways (*Ann. trop. Med. Parasitol.*, 1942, **36**, 47—53).—Trypanosomes can be acted on by arsenicals in at least three different ways, each preliminary to the final lethal action on the parasite. Compounds containing solubilising carboxyl groups form neutral Na salts, very sol. in water and loth to leave the watery medium, and thus have a relatively low toxicity for trypanosomes. Compounds which, apart from their AsO group, contain no hydrophilic group are taken up at a lipoid–water interface so that the phenyl or xylyl group is in the lipoid and the AsO group is at the water interface. They are thus readily transported to the site where AsO can exert its lethal action and are powerful trypanocides. A third group of compounds are those in which drug-resistance can be elicited. These are presumably of polar nature and can be waylaid by adsorption on polar surfaces in normal trypanosomes and are thus much less trypanocidal than the second group. F. S.

Antibacterial substance produced by *Penicillium claviforme*.—See A., 1942, III, 937.

Bacterial nutrition and chemotherapy.—See A., 1942, III, 938.

Attempts to prepare in fowls a strain of *Plasmodium gallinaceum* resistant to plasmoquine. J. D. Fulton (*Ann. trop. Med. Parasitol.*, 1942, **36**, 75—81).—During 33 passages by blood inoculation in fowls treated with plasmoquine over a period of 15½ months, and during 7 passages accompanied by intensive treatment, no resistance was developed. F. S.

New hæmostatic agents. I. Experiments with ayapanin and ayapin. P. K. Bose and P. B. Sen (*Ann. Biochem. Exp. Med.* 1941, **1**, 311—316).—Ayapanin (7-methoxycoumarin) and ayapin (6 : 7-methylenedioxycoumarin) are the active hæmostatic principles of *Eupatorium ayapana*. Both have min. effective dose of approx. 0·3 mg. per kg. when given subcutaneously to rabbits and 0·5 mg. per kg. orally. No toxic effects are found with doses of 20—40 mg. per kg. The clotting time of the blood is reduced by up to 50% ½—1½ hr. after the administration. P. C. W.

Experimental chemotherapy of leprosy. T. Wagner-Jauregg (*Chemie*, 1942, **55**, 195—198).—A review of progress. C. R. H.

General actions, toxicity, and clinical effects in amœbiasis of Kosam, an oriental amœbicide. W. C. Kuzell, W. B. Layton, W. D. Frick, and W. C. Cutting (*Amer. J. trop. Med.*, 1941, **21**, 731—738).—The amœbicidal effects of Kosam on cultures of *Endamœba histolytica* compared favourably with those of well-known amœbicides. It produced gastric irritation in dogs and cats. On clinical trial it caused gastric irritation, but occasionally produced good but fleeting symptomatic benefits in amœbiasis stubborn to other amœbicides. F. S.

Biological tests on rectum of *Coliptocephalus gayi*. E. Egaña Baraona (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 89—99).—The sensitivity of the rectum of *Coliptocephalus gayi* to acetylcholine varies in different preps., being greater in summer. Acetylcholine, choline, extracts of the hypophysis, strychnine, histamine, extracts of muscles, eserine in high concns., atropine, and K cause a contraction, and adrenaline a relaxation, of the muscle. I. C.

Acetylcholine contraction of rectum of frogs and its reaction to different drugs. H. Croxatto and F. G. Huidobro Toro (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 261—271).—A mixed solution of adrenaline and eserine causes a contraction of the rectum of the frog. Acetylcholine + adrenaline causes either a slight contraction or a relaxation and after ergotamine a contraction. Lack of K in the Ringer's solution potentiates the action of acetylcholine and lack of Ca potentiates the reaction to adrenaline. I. C.

Inhibition and activation of atropine-esterase.—See A., 1942, III, 935.

Control of dizziness from hypertension by histamine phosphate. W. Marshall (*Northw. Med.*, 1942, **41**, 305—308).—Dizziness in 18 hypertensive patients was controlled for 2—6 days by subcutaneous injections at 3—7 days' interval of 0·05—0·5 c.c. of 1 : 1000 histamine phosphate in graded doses. The patients were observed for 2 months—3 years. E. M. J.

Esters of pyridinecarboxylic acids as local anæsthetics.—See A., 1942, II, 422.

Treatment of epilepsy. Stähli (*Schweiz. med. Wschr.*, 1942, **72**, 100—102).—The relative merits in the treatment of epilepsy of Br salts, luminal, and hydantoinates are discussed. A. S.

Sedormid thrombocytopenia. S. Moeschlin (*Schweiz. med. Wschr.*, 1942, **72**, 119—124).—10 cases of sedormid thrombocytopenia were studied. There was no change in the megakaryocyte picture of bone marrow smears. The thrombocyte count falls, in sensitive patients, within 30—50 min. following administration of sedormid. There is no platelet lysin in the blood as the thrombocyte count does not decrease if blood is transfused at the height of the thrombocytopenia. The sedormid hypersensitivity cannot be transferred to a recipient. A. S.

Treatment of acute opium poisoning. Beneficial effect of coramine. I. Snapper, I. K. C. Shu, and T. Y. Chang (*Amer. J. med. Sci.*, 1942, **204**, 409—419).—Repeated intravenous injections of 5 c.c. of coramine restore breathing and consciousness in opium poisoning. This treatment + intravenous Na sulphapyridine has reduced the mortality in coma due to opium poisoning from 70—80% to 26% (46 cases). C. J. C. B.

Health hazards in handling magnesium. W. Schweisheimer (*Iron Age*, 1942, **150**, No. 3, 56—57).—The presence of Mg in wounds may cause gas gangrene. Inhalation of MgO causes digestive troubles. Precautions against Mg fires and explosions are outlined. R. B. C.

Ammoniacal copper sulphate for intravenous injection in copper chemotherapy. F. Cignoli (*Rev. centr. estud. farm. bioquím.*, 1936, **26**, 738—749).—Methods of preparing solutions of $Cu(NH_3)_4SO_4,H_2O$ for intravenous injection are described. CH. ABS. (*e*)

[Mapharsen] intravenous drip and other intensive methods for treatment of early syphilis. H. Eagle and R. B. Hogan (*Science*, 1942, **95**, 360—362).—The curative dose of mapharsen for syphilitic rabbits was independent of the duration of treatment. 12 treatment schedules were used. More was tolerated by animals on longer duration treatment; thus the chemotherapeutic index increases with duration of treatment. 4—10-week schedules for clinical use are recommended in place of 5-day intravenous drip or the 18-month schedule. E. R. S.

Antimony treatment of Sudan kala-azar. M. H. Sati (*Ann. trop. Med. Parasitol.*, 1942, **36**, 1—8).—150 cases were treated with tartar emetic, neostibosan, solustibosan, or combinations of these. Cases given initial small doses, gradually increased to a max., did not react so well as those given large doses from the beginning. Less Sb was needed to effect a cure with tartar emetic than with the quinquevalent compounds. A combination of drugs yielded better results than a single drug. F. S.

Castor bean poisoning. L. A. Koch and J. Caplan (*Amer. J. Dis. Child.*, 1942, **64**, 485—491).—A case report. C. J. C. B.

Toxicity of protamine. W. B. Shelley, M. P. Hodgkins, and M. B. Visscher (*Proc. Soc. Exp. Biol. Med.*, 1942, **50**, 300—304).—Lethal dose of salmine sulphate for rats and guinea-pigs is 60—120 mg. per kg. intravenously. It gives a ppt. when added to plasma and agglutinates blood, blocking the vessels when perfused through isolated organs. Toxic action is due to embolism and not to anaphylaxis. V. J. W.

Value of bromide determination in diagnosis and treatment of bromide intoxications. M. G. Gray and M. Moore (*Confinia Neurol.*, 1942, **4**, 213—237; cf. A., 1942, III, 576). H. L.

Toxicity of a dialkylaminoalkylaminoacridine akin to "atebrin." U. P. Basu and A. N. Bose (*Ann. Biochem. Exp. Med.*, 1941, **1**, 317—320).—The toxicity of the dihydrochloride of 2-chloro-5-(δ-diethylaminobutyl)amino-7-methoxyacridine in paramecia and mice was compared with that of the corresponding 5-(ω-diethylamino*iso*amyl) compound (mepacrine hydrochloride). The butyl compound was about twice as toxic to the paramecia. In mice the $L.D._{50}$ of the butyl compound was 190 mg. per kg. and of the amyl compound 212 mg. per kg. P. C. W.

Response of guinea-pigs and rats to repeated inhalation of vapours of mesityl oxide and *iso*phorone. H. F. Smyth, jun., J. Seaton, and L. Fischer (*J. Ind. Hyg.*, 1942, **24**, 46—50).—The animals received 30 8-hr. exposures to controlled concns. of vapour, checked by the interferometer or by activated C. No effect was observed from 25 p.p.m. of *iso*phorone or 50 p.p.m. of mesityl oxide. Rats were slightly more susceptible than guinea-pigs to higher concns. and 500 p.p.m. of mesityl oxide caused a high proportion of deaths whilst 250 p.p.m. caused none. *iso*Phorone caused a mortality that tapered gradually as concn. fell. Both compounds caused chronic conjunctivitis and nasal and pulmonary irritation, but no blood changes of importance. Mesityl oxide acted as a narcotic and survivors showed no pathological effects, whilst survivors from *iso*phorone showed toxic changes in kidney, liver, and spleen. E. M. K.

Methyl chloride poisoning. A. M. Jones (*Quart. J. Med.*, 1942, **11**, 29—43).—1 severe and 6 mild cases of methyl chloride poisoning in refrigerator workmen are described. Mild attacks consist of staggering gait, dizziness, headache, and nausea and do not interfere with working. In moderate cases symptoms persist for days or weeks, *e.g.*, depression, intermittent diplopia, impaired accommodation, and drowsiness. In severe cases there are epileptiform convulsions, slow myoclonic movements, fibrillary twitchings.

slurred speech, and delirium alternating with drowsiness. The c.s.f. is normal and optic atrophy does not occur. The hepatorenal syndrome has been found. Determination of urinary formic acid is of no val. in diagnosis. The only treatment is the protection of the liver with glucose. The main danger is to repairers of refrigerators, who tend to be careless in spite of recurrent unpleasant symptoms. Domestic leaks, especially from a central compressor supplying several refrigerators, are dangerous as the gas has very little odour. It is suggested that a detector substance, *e.g.*, acraldehyde 1%, should be added, but only partial protection would be given.
R. K.

Pharmacology of α-phenyl-β-(3 : 4-di-iodo-4-hydroxyphenyl)propionic acid (biliselectan). W. Modell (*J. Lab. clin. Med.*, 1942, **27**, 1376—1384).—Intravenous injection of biliselectan in cats in doses of 50—75 mg. per kg. causes excitement with respiratory stimulation. Larger doses cause myoclonic convulsions with stimulation and secondary depression of the circulation and respiration. The intravenous $L.D._{50}$ is 150 mg. per kg. The convulsant action can be abolished by Na amytal. The drug is much less toxic by mouth; animals survive 1 g. per kg. Oral doses of 250 mg. per kg. or more cause impaired appetite, nausea, vomiting, and general depression. The emetic effect is due to local action in the gastrointestinal tract. Albuminuria occurs with doses as low as 100 mg. per kg.; it is transient, and its duration varies with the dose. Doses of 100—1000 mg. per kg. are without effect on blood-non-protein-N, phenolsulphonephthalein excretion, red blood cell count or fragility, and blood clotting time. There are no changes in the kidneys.
C. J. C. B.

Administration of non-steroid substances by implantation technique. A. S. Parkes (*J. Endocrinol., Lond.*, 1942, **3**, 220—233).—Experiments were carried out on the administration of non-steroid substances to rats or rabbits by the subcutaneous implantation of tablets made with or without excipient. Cholesterol and benzylsulphanilamide were satisfactory excipients for improving the properties of the tablets or delaying their absorption. The complete absorption of the glucose from a 100-mg. tablet containing 90% of cholesterol was delayed for some weeks. Thyroxine was not absorbed in weighable amounts from tablets implanted for many months. Using cholesterol as an excipient tablets containing 15% of adrenaline yield about 5 mg. per month and those containing 25% yield about 10 mg. per month, 100-mg. tablets being used. 100-mg. tablets of insulin and cholesterol containing 10—25% of insulin were usually lethal to male rats; in female rats 2—3 mg. per month were absorbed from tablets containing 25% of cryst. insulin. Chorionic gonadotrophin was rapidly absorbed from tablets containing 90% of cholesterol. Sheep pituitary gonadotrophin was more effective in immature female rats when given in tablets with excipient than when given by daily injection.
P. C. W.

Mode of [pharmacological] action of sulphonated thiophen-containing shale oils. H. Fiedler (*Chem.-Ztg.*, 1942, **66**, 78).—The action of sulphonated shale oils cannot be due to the presence of steroid œstrogens, as suggested by Hosemann (*Geburtsh. u. Frauenhk.*, 1940, **2**, 263), since they would be destroyed at the high temp. (500—600°) of the extraction process.
M. H. M. A.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Physiology of work. A. C. Ivy (*J. Amer. Med. Assoc.*, 1942, **118**, 569—573).—A lecture.
C. A. K.

Influence of industrial medical work on general health and medical science. R. R. Sayers and R. R. Jones (*N.Y. Sta. J. Med.*, 1939, **39**, 1005—1010).
E. M. J.

Commercial talc : animal and mineralogical studies. R. Z. Schulz and C. R. Williams (*J. Ind. Hyg.*, 1942, **24**, 75—79).—" Talcs " of various compositions were suspended in normal saline and injected intraperitoneally into guinea-pigs. The animals were killed at intervals of 10 days to 15 months; examination of the deposit showed that true talc (hydrous Mg silicate) did not disappear but carbonates did. The material was taken up by macrophages and giant cells, with minimal fibrous tissue reaction; some mixtures produced an early fibrous tissue reaction, but this did not progress.
E. M. K.

Glycine and work capacity in man. E. Q. King, L. B. McCaleb, H. F. Kennedy, and T. G. Klumpp (*J. Amer. Med. Assoc.*, 1942, **118**, 594—597).—4·5—6 g. of glycine were given daily for 3 weeks to 33 men under rigidly controlled conditions. There was no effect on work capacity when compared with controls receiving lactose–sucrose under identical conditions or with the original subjects receiving lactose–sucrose.
C. A. K.

Industrial exposure to toluene. L. Greenburg, M. R. Mayers, H. Heimann, and S. Moskowitz (*J. Amer. Med. Assoc.*, 1942, **118**, 573—578).—106 painters in an airplane factory were exposed during their work to 100—1100 p.p.m. of toluene in the air for 2 weeks—5 years. There were no symptoms from exposure, but enlargement of the liver, macrocytosis, moderate decrease of erythrocyte count, and abs. lymphocytosis. There was no leucopenia.
C. A. K.

XXII.—RADIATIONS.

Effects of radiation on blood and hæmopoietic tissues. C. E. Dunlap (*Arch. Path.*, 1942, **34**, 562—603).—A general review.
C. J. C. B.

Treatment of arthritis by electropyrexia including some physiological studies during fever therapy. S. L. Osborne, D. E. Markson, R. E. Driscoll, and J. R. Merriman (*J. Lab. clin. Med.*, 1942, **27**, 1135—1143).—27 patients suffering from chronic infectious arthritis were submitted to a fever of 104° F. induced by electromagnetic induction maintained for 4 hr. 22% of the patients were markedly, 22% moderately, 33% slightly improved, and 22% unimproved.
C. J. C. B.

Short-wave therapy in sinusitis. G. R. Brighton, W. B. Snow, and H. S. Friedman (*J. Amer. Med. Assoc.*, 1942, **118**, 507—510).—Short-wave therapy is of no val. in allergic rhinitis or in acute sinusitis but is effective in chronic non-purulent sinusitis particularly in relief of headaches.
C. A. K.

New radium applicator in treatment of cancer of corpus uteri. I. I. Kaplan (*Radiology*, 1942, **39**, 135—142).—A pliable metal spiral in ring form and containing Ra tubes was used together with the customary rubber tandem for intrauterine application.
E. M. J.

Radiological treatment of cancer of cervix uteri. M. C. Reinhard, H. L. Goltz, and B. F. Schreiner (*Radiology*, 1942, **39**, 144—150).—A survey of 457 cases showed that cases, both of stage I and II, as well as of stage III, did better with " primary " irradiation consisting of 1 or 2 small doses of 200-kv. *X*-rays delivered to the pelvis, insertion of 100—200 mg. of Ra into the uterus, and insertion of gold Rn seeds into the growth itself, only, than with a supplementary course of deep *X*-rays. There was no appreciable difference in 5-year survival rates with primary irradiation only for doses of 4000—8000 r. (measured at the cervix) whereas the group of stage I and II cases given supplementary treatment showed fall in survival rates as the dose increased.
E. M. J.

Effect of combined fever and *X*-ray therapy in far-advanced malignant growth. H. S. Shoulders, E. L. Turner, L. D. Scott, and W. H. Grant (*Radiology*, 1942, **39**, 184—193).—Some of the treatments in a deep *X*-ray course were given immediately after raising the body-temp. to 106—107° in a fever cabinet. Temporary symptomatic improvement is reported in 27 of 42 patients. In some cases there was evidence of regression of the primary growth and of metastatic lesions.
E. M. J.

Prevention of radiodermatitis as sequel to Rœntgen therapy for certain common dermatoses. G. H. Curtis (*Cleveland Clin. Quart.*, 1942, **9**, 3—15).—Of the 69 cases of radiodermatitis 39 were the result of treatment of superficial dermatoses, 15 occurred among physicians, dentists, and experimentalists, and 15 were the result of treatment of sarcoma, carcinoma, and thyroid disease.
A. S.

Value of *X*-ray therapy on experimental gas gangrene infection. E. Singer (*Med. J. Austral.*, 1942, II, 1—3).—*X*-Ray treatment of mice infected intramuscularly with *Cl. welchii* or *Cl. septique* was ineffectual.
F. S.

Nature of *X*-ray effect in carbon monoxide recovery.—See A., 1942, III, 880.

Effects of million-volt Rœntgen rays, 200-kilovolt Rœntgen rays, radioactive phosphorus, and neutron rays by marrow culture technique. E. E. Osgood, P. C. Aebersold, L. A. Erf, and E. A. Packham (*Amer. J. med. Sci.*, 1942, **204**, 372—381).—The effects of Rœntgen rays produced with 1000-kv. or 200-kv. apparatus, of β-rays (average 600 kv.) emitted by radioactive P, and of neutron rays were compared by the technique of human marrow culture. An exposure to 200 r. of 200-kv. Rœntgen rays had similar effects to an exposure to 200 r. of 10^6-v. Rœntgen rays on lymphocytes. An exposure to 50 n. of neutron rays had similar effects to an exposure to 200 r. of Rœntgen rays given at 200 kv. or 10^6 v. An exposure to 15 n. of neutron rays had similar effects on both lymphocytes and progranulocytes to an exposure to 60 r. and 400 r. respectively of Rœntgen rays given at 220 kv. The exposure ratio r./n., for lymphocytes and progranulocytes in marrow cultures is approx. 4. 1 μc. of radioactive P distributed through 1 c.c. of human marrow culture acting for a period of 24 hr. has an effect similar to 35 r. of high-voltage Rœntgen rays on lymphocytes and progranulocytes. These effects and the straight-line character of the drop may all be explained if the major action of the ionising radiation is to inhibit the onset of mitotic and amitotic division of the cells receiving the irradiation.
C. J. C. B.

Dosage specifications in *X*-ray therapy. E. H. Quimby (*N.Y. Sta. J. Med.*, 1939, **39**, 509—514).
E. M. J.

Barium meals. H. W. Tomski (*Pharm. J.*, 1942, **149**, 181).—Stable Ba meals are prepared by suspending light $BaSO_4$ in water

with the min. amount of best tragacanth, passing the prep. through a homogeniser, and, as far as possible, excluding air during mixing. J. H. B.

Bactericidal action of ultra-violet radiation on air-borne organisms. H. C. Rentschler and R. Nagy (*J. Bact.*, 1942, **44**, 85—94).—By the use of a specially devised tower experiment it was shown that the sensitivity to ultra-violet radiation of organisms air-borne or on the surface of agar is the same. Bacteria injured by heat, Grenz rays, or *X*-rays were less resistant to ultra-violet radiation—a result incompatable with the "single photon hit" theory. The selective action of the air centrifuge, as used in determining bacterial contamination of air at low R.H., explains the general statements that air-borne bacteria at low R.H. are more vulnerable to ultra-violet radiation than when on the surface of agar. F. S.

***X*-Ray induced changes in the chromosomes of *Drosophila pseudoobscura*. Deficiency effects of ultra-violet light in *Drosophila melanogaster*.**—See A., 1942, III, 867.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Hydration of β-lactoglobulin crystals. T. L. McMeekin and R. C. Warner (*J. Amer. Chem. Soc.*, 1942, **64**, 2393—2398).—Crystals of β-lactoglobulin contain 0·83 g. of water per g. of anhyd. protein over a wide range of temp. in the absence of salt or in presence of high concn. of $(NH_4)_2SO_4$. $(NH_4)_2SO_4$ diffuses rapidly into the crystals but the concn. of $(NH_4)_2SO_4$ on the inside of the crystal reaches 82·3% of the salt concn. in the surrounding liquid. In org. liquids the density for wet crystals is 1·146. Vals. for density of the crystals are recorded for different conditions. W. R. A.

Structure of collodion membrane and its electrical behaviour.—See A., 1943, I, 14.

Rate of dissolution of particles of quartz and certain silicates.—See A., 1943, I, 20.

***X*-Ray diffraction studies of iodinated amino-acids and proteins.**—See A., 1943, I, 8.

XXIV.—ENZYMES.

Catalysts—ancient and modern.—See A., 1943, I, 20.

Effect of salicylate and cinchophen on enzymes and metabolic processes. C. Lutwak-Mann (*Biochem. J.*, 1942, **36**, 706—728).—Respiration of slices and extracts of rat liver and kidney cortex is unaffected by 0·05M-salicylate but inhibited by 0·1M-salicylate or 0·02M-cinchophen, whereas anaerobic acid production is unchanged by 0·1M-salicylate but decreased by 0·05M-cinchophen. Formation of conjugated glucuronides *in vitro* by rat liver is negligible with salicylate, negative with cinchophen, but positive with benzoate, *o*- and *p*-amino- and *p*- and *m*-hydroxy-benzoate. Acetylsalicylate is hydrolysed rapidly by liver and kidney but to a smaller extent by other animal tissues and extracts and by yeast. Xanthine oxidase, carboxylase, and dismutation between hexose diphosphate and pyruvate are affected more by salicylate than by cinchophen, whereas the latter has a greater effect on indophenol oxidase, certain dehydrogenases, and glucose fermentation in yeast. *In vivo* respiration of liver and dismutation of hexose diphosphate and pyruvate in muscle is unaffected by injection of salicylate or cinchophen. Liver-glycogen disappears almost completely 4—7 hr. after injection of salicylate and is fully restored after 24 hr. The decrease is less drastic with cinchophen and other benzoic acid derivatives and usually returns to normal after 24 hr. Liver-glutathione is increased by 100% 24 hr. after injection of salicylate. A considerable increase in the reducing power of urine (probably due to ascorbic acid in the case of salicylate) is observed after injection of salicylate, cinchophen, and other derivatives of benzoic acid, but does not occur with salicylaldehyde until this is converted into salicylate by the organism. HCO_3', albumin, and glucose but not glucuronide are present in the urine after large doses of salicylate and appreciable quantities of glucuronide after benzoate, anthranilate, *p*-amino- and *m*- and *p*-hydroxy-benzoate. Urine contains substances which give dark-coloured pigments with alkalis and in presence of O_2 after treatment with salicylate, anthranilate, and *o*-creosotate but not after cinchophen and other derivatives of benzoic acid. It is improbable that this is due to alkapton, since its excretion is not suppressed by large doses of ascorbic acid. H. G. R.

Is the acetylene linking hydrogenated by enzymes? F. G. Fischer (*Naturwiss.*, 1942, **30**, 374).—Neither propargyl alcohol nor Δ^{β}-butinene-αδ-diol is hydrogenated by brewer's yeast, which contains an enzyme system capable of hydrogenating the ethylene linking. F. O. H.

Succinoxidase system of rat liver in riboflavin deficiency. A. E. Axelrod, K. F. Swingle, anf C. A. Elvehjem (*J. Biol. Chem.*, 1942, **145**, 297—307).—Cytochrome oxidase and Al have been eliminated as interfering factors in the assay of succinic dehydrogenase. Cytochrome *c* and the enzyme system destroying co-enzyme I are not affected by riboflavin deficiency. Succinoxidase activity per g. of liver is increased in starvation, but the total activity of the whole liver is unchanged. Succinoxidase activity is unaffected by biotin and pantothenic acid deficiency. R. L. E.

Mechanism of vegetable tissue respiration. I. Fumarase and succino-dehydrogenase.—See A., 1942, III, 947.

Tyrosinase and phenolic pressor amines. G. A. Alles, C. L. Blohm, and P. R. Saunders (*J. Biol. Chem.*, 1942, **144**, 757—766).—The production and purification of stable preps. of tyrosinase from mushrooms are described. The catecholase : cresolase ratio is only slightly altered by purification. The initial rates of oxidation by the preps. of diphenolic amines derived from pyrocatechol (*e.g.*, adrenaline) are greater than those of monophenolic amines no matter what the val. of the ratio. The preps. oxidise many monophenolic and *o*-diphenolic pressor amines but do not attack those having a single OH in the *m*-position to the side-chain. The extent of oxidation varies greatly from amine to amine probably because of varying routes of oxidation of the side-chains; mono- and diphenolic amines do not differ as regards the dissociation consts. of the combinations which they yield with tyrosinase and these consts. together with the oxidation rates show that such oxidation cannot account for more than a small part of the normal biological inactivation of tyramine, adrenaline, and related amines. In order to inactivate pressor amines in the body at physiological rates, injection of large amounts of very active tyrosinase would be necessary. W. McC.

Mammalian tyrosinase and dopa oxidase. G. H. Hogeboom and M. H. Adams (*J. Biol. Chem.*, 1942, **145**, 273—279).—A tumour from the skin melanoblast of mice contains enzymes oxidising tyrosine and dihydroxyphenylalanine to melanin. The dopa oxidase occurs in normal mammalian skin, but the tyrosinase has not previously been identified in mammalian tissue. R. L. E.

Catecholase (tyrosinase) : improved method of preparation. L. E. Tenenbaum and H. Jensen (*J. Biol. Chem.*, 1942, **145**, 293—296).—The enzyme is pptd. with $(NH_4)_2SO_4$, extracted from the ppt. by PO_4''' buffer (pH 7·3), and dialysed. The enzyme is repptd. with $(NH_4)_2SO_4$, and extracted from the ppt. It contained 500 units per mg. of dry org. wt., and had 35 times the activity of the original mushroom extract. R. L. E.

Carboxylases of animal tissues. D. E. Green, W. W. Westerfeld, B. Vennesland, and W. E. Knox (*J. Biol. Chem.*, 1942, **145**, 69—84).—Using the method employed for concentrating the muscle enzymes (A., 1938, III, 438), an enzyme prep. was obtained from pig's heart which decarboxylated α-keto-acids anaerobically in the presence of $Mg^{\cdot\cdot}$ or $Mn^{\cdot\cdot}$ and diphosphothiamin at pH 6—8. α-Ketoglutarate gave succinic semialdehyde, pyruvic acid acetoin, α-ketobutyrate propioin, and acetaldehyde acetoin. When aldehydes were added to the pyruvate system, the corresponding ketols were obtained (*e.g.*, acetoin from acetaldehyde), the rate of reaction being 4 times that with pyruvate alone. Similarly, α-ketobutyrate and aldehydes yielded the corresponding acyloins (acetaldehyde gave propionylmethyl- and acetylethyl-carbinol). A. L.

Blood esterases. D. Richter and P. G. Croft (*Biochem. J.*, 1942, **36**, 746—757).—Choline-esterases present in different species, and in serum and corpuscles of the same species, differ greatly in their properties. The enzyme of human corpuscles is more sp. towards acetylcholine than is that present in the serum, but it does not hydrolyse methyl butyrate or tributyrin, nor does quinine accelerate its action. The esterases that attack simple aliphatic esters are present in the blood of many species, but occur in only minute amounts in human serum; they do not hydrolyse fats, acetylcholine, or cholesteryl acetate, they resemble liver esterase in substrate specificity and inhibition by surface-active substances, but they differ in their inhibition by atoxyl and quinine. Normally, little true lipase is present in serum. P. G. M.

Choline-esterase, mono- and di-amine oxidase in semen and prostate gland.—See A., 1942, III, 893.

Effect of enzyme from kidney on solubility of calcium phosphate. H. Lehmann (*Nature*, 1942, **150**, 603).—Ca phosphate in HCl solution is not pptd. by making alkaline in the presence of much alanine. Using *d*- and *l*-alanine, and incubating for 1 hr. with a pig's kidney extract, only the *d*-alanine solution gave a ppt. of Ca phosphate in the last ½ hr. The solubility of Ca salts is increased by amino-acids. More Ca is absorbed from a high-protein diet than from a low-protein diet, and more Ca excreted by the kidneys. E. R. S.

Influence of substrate structure on kinetics of carboxypeptidase action. M. Bergmann and J. S. Fruton (*J. Biol. Chem.*, 1942, **145**, 247—252; cf. A., 1941, III, 534).—The proteolytic coeff. *C* may be expressed according to the equation $C = p_E.abr$, in which p_E is a proportionality factor characteristic of the enzyme *E* and *a*, *b*, *r* characterise numerical factors determined by the structure of groups in the substrate mol. These groups *A*, *R*, and *B* are indicated by dotted lines in the formulæ : for trypsinases $Bz\cdot NH\cdot CH[\cdot(CH_2)_3\cdot NH\cdot C(:NH)\cdot NH_2]\cdot CO\cdot NH_2$; for pepsinase

$CO_2CH_2Ph\cdot NH\cdot CH[\cdot(CH_2)_2\cdot CO_2H]\cdot CO|\cdot NH\cdot CH[CH_2\cdot C_6H_4OH]\cdot CO|NH\cdot CH_2\cdot CO_2H$ and for carboxypeptidases, $CO_2CH_2Ph\cdot NH\cdot CH_2\cdot CO|\cdot NH\cdot CH(CH_2Ph)\cdot CO|OH$. Validity of the equation cannot be examined directly since the abs. vals. of p_E, a, b, and r are unknown but can be tested indirectly by comparing the action of an enzyme on two substrates which differ only with respect to their R groups. It has been applied to the hydrolyses by pancreatic carboxypeptidase of carbobenzyloxyglycyl-*l*-phenylalanine (CGlyP) and carbobenzyloxyglycyl-*l*-tyrosine (CGlyT) for which $C(\text{CGlyP})/C(\text{CGlyT}) = r_1/r_2$. The equation implies that the numerical val. of the proteolytic quotient $C(\text{CGlyP})/C(\text{CGlyT})$ should depend only on the nature of the amino-acid residues R_1 and R_2 but should be independent of the nature of groups A and B as long as either of these groups is identical for the two substrates which are compared. This is the case in the action of pancreatic carboxypeptidase and four pairs of substrates containing one of the following A groups: carbobenzyloxy, carbobenzyloxyglycyl, carbobenzgloxy-*l*-alanyl, and carbobenzyloxy-*l*-glutamyl. This work gives confirmation also of the constancy of the proteolytic quotient with substrates which differ solely with respect to the A group. (See also A., 1943, II, 11.) H. W.

Multiple specificity of chymotrypsin. J. S. Fruton and M. Bergmann (*J. Biol. Chem.*, 1942, **145**, 253—265).—The hydrolysis of glycyl-*l*-tyrosinamide and glycyl-*l*-phenylalaninamide by chymotrypsin is a reaction of the first order and occurs at the peptide linkings involving the carbonyl group of the aromatic amino-acid residues. The hydrolysate does not contain free amino-acid and carbobenzyloxylation of it leads to carbobenzyloxy-glycyl-*l*-tyrosine and -glycyl-*l*-phenylalanine. Chymotrypsin endopeptidase appears to require the arrangement $\cdot CO\cdot NH\cdot CHR\cdot CO|NH$ in the substrate. Since chymotrypsin slowly hydrolyses *l*-tyrosinamide and *l*-phenylalaninamide it shows two distinct specificities, one of a carbonylproteinase and the other of an aminopeptidase. Evidence is adduced against the view that it (and γ-chymotrypsin) is a mixture of two separate enzymes. (See also A., 1943, II, 11.) H. W.

Carbon suboxide and proteins. VI. Chymotryptic digestion of malonyl-ovalbumin and -serum-albumin. W. F. Ross and A. H. Tracy (*J. Biol. Chem.*, 1942, **145**, 19—26; cf. A., 1942, II, 241).—Malonylation has no important effect on the optimum pH for hydrolysis by chymotrypsin of ovalbumin and serum-albumin although the treated ovalbumin was at first more readily digested than was the native protein and, like the malonylated serum-albumin, was not degraded so far. A. L.

Proteases of tetanus toxin and their relation to tetanus spasmin. H. E. Schultze (*Z. physiol. Chem.*, 1942, **274**, 157—174).—Conc. cell-free crude toxin contains a proteinase, gelatinase, which hydrolyses gelatin, but not casein, serum-albumin, or clupein in absence or presence of cysteine + $Fe^{\cdot\cdot}$. Gelatinase is not activated by thiol groups and is only very slightly inhibited by CN'. H_2O_2 has practically no effect on the hydrolysis of gelatin, and NH_2OH and N_2H_4 cause only slight inhibition, from which it is concluded that carbonyl groups do not participate in hydrolysis by gelatinase. The enzyme is very sensitive to formaldehyde, which completely inhibits proteolysis and forms a tetanus formol-toxoid. The enzyme is not inhibited by horse serum. It is partially inactivated after 2 days at 40°, completely after 15 min. at 70° at pH 7·0 (the optimum). The crude toxin also contains di- and poly-peptidases. In washed ultrafiltrate concentrates there is only moderate activation of the dipeptidase by cysteine alone, but strong activation by cysteine + $Fe^{\cdot\cdot}$ or $Mn^{\cdot\cdot}$; activation also occurs with cysteine and $Co^{\cdot\cdot}$ or $Zn^{\cdot\cdot}$, but not with $Cu^{\cdot\cdot}$ or $Mg^{\cdot\cdot}$. N_2H_4 has no effect on the dipeptidase, whilst H_2O_2 and formaldehyde inhibit it considerably, and complete inhibition occurs only with CN'. The dipeptidase has a pronounced optimum at pH 8·0, and without substrate it is very thermolabile at 40°. Native horse serum exerts a further activating effect on the dipeptidase which has been pre-activated by cysteine + $Fe^{\cdot\cdot}$, whilst serum purified by fermentation has no action. The polypeptidase is less active than the dipeptidase. The pH optimum is 8·0, but marked activation occurs at pH 7·0 in presence of cysteine and $Fe^{\cdot\cdot}$. Spasmin and gelatinase appear to be closely related, but the latter is not a constituent of the former. Thus both are inhibited by formaldehyde, CN' and cysteine + $Fe^{\cdot\cdot}$ have the same effects on both, and both are inactivated by heating for 15 min. at 70°. Double flocculation always occurs with toxin ultraconcentrates and native tetanus horse serum and fermentation-purified tetanus antitoxin. After flocculation of tetanus serum and toxin ultraconcentrates, there is little alteration in gelatinase and dipeptidase activity, and CN' is without effect, but after removal of the ppt. by centrifuging, only a weak gelatinase action is observed. Thus tetanus serum and purified antitoxin solutions contain, in addition to the antibodies which neutralise spasmin, an anti-gelatinase. There are apparently no antibodies for the dipeptidase. Tetanus ultraconcentrates also contain a tetanolysin. J. N. A.

Emulsin. XLVI. Action of salts on sweet almond emulsin. B. Helferich and M. Hase (*Z. physiol. Chem.*, 1942, **274**, 261—266; cf. A., 1942, II, 133).—Fractional pptn. of the crude enzyme (prepared by extraction with water and pptn. with tannin) with $(NH_4)_2SO_4$ increases the activity of the β-*d*-glucosidase. Similar treatment of the enzyme purified by Ag pptn. or C has no effect. 50% saturation with KF has only a slight effect on purity. Guanidine thiocyanate at first increases the activity of the enzyme, but later causes irreversible denaturation. J. N. A.

Effect of oxidants and reductants on sugar-hydrolysing enzymes. J. Fiegenbaum (*Biochem. J.*, 1942, **36**, 768—771).—Taka-maltase is markedly inhibited by H_2O_2 and slightly stimulated by $Na_2S_2O_4$, whilst taka-sucrase is inhibited and sometimes completely inactivated by both reagents. Yeast sucrase is completely inactivated by H_2O_2 and strongly stimulated by $Na_2S_2O_4$. Taka-maltase and sucrase are probably distinct enzymes. P. G. M.

Optimal reaction for starch-liquefying activity of duodenal amylase of infants.—See A., 1942, III, 895.

Enzymic fission of 3-β-*d*-glucosidoprotocatechualdehyde.—See A., 1943, II, 4.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Direct fermentation of maltose by yeast. II. J. Leibowitz and S. Hestrin (*Biochem. J.*, 1942, **36**, 772—785; cf. A., 1939, III, 724).—Methyl-α-glucoside powerfully inhibits fermentation of maltose by baker's yeast but not by brewer's yeast. Equiv. concns. of methyl-β-glucoside and methyl alcohol do not inhibit fermentation by either. Fermentation of maltose by baker's yeast is direct at whatever pH it takes place, whilst fermentation by brewer's yeast is direct at an acid pH but largely indirect (maltase + glucozymase) in the neutral range. Fermentation of methyl-α-glucoside by brewer's yeast does not occur at pH vals. above 4·0, and normally both maltose and glucose are fermented at an equal rate, although the former is sometimes fermented more rapidly at high concn. Maltase may exist in the cell in an inactive form (maltasogen), which is converted into the active enzyme by breakdown of the cell structure by desiccation or autolysis. *In-vitro* analysis is not a reliable method of determining *in-vivo* activity, since an enzyme inactive in the living cell may become active *in vitro*. P. G. M.

Stimulation of yeast respiration by ultra-violet radiations. A. C. Giese (*J. Cell. Comp. Physiol.*, 1942, **20**, 35—46).—Irradiation causes increased O_2 uptake by washed cultures having originally a low endogenous metabolism. If excess of glucose is present irradiation depresses O_2 uptake. Similar stimulant effects were observed for *Achromobacter fischeri*, but were absent in sea-urchin sperm, the protozoan *Tetrahyma*, and the mould *Neurospora*. V. J. W.

Phosphate content of pressed yeast in aërobic metabolism of glucose, and during growth. K. Brandt (*Naturwiss.*, 1942, **30**, 278).—A suspension of washed pressed yeast in succinate–succinic acid buffer, at pH 5·0 at 25° in absence of glucose, contains 370 μg. of total P per 100 mg. of pressed yeast, and approx. 45% of this amount is bound PO_4'''. When shaken vigorously with air the free PO_4''' decreases at first, and then gradually increases whilst acid-sol. bound PO_4''' markedly increases. Shaking in presence of glucose causes a rapid decrease in free and acid-sol. bound PO_4'''. In presence of glucose and NH_4Cl, free PO_4''' decreases very rapidly to a min., but after approx. 40 min. it increases again. The amount of acid-sol. bound PO_4''' varies considerably. NH_4Cl causes pronounced aërobic fermentation of glucose during the first hr. At first respiration is less than in absence of NH_4Cl, but it increases after 45 min. There is decreased formation of reserve carbohydrate, accumulated trehalose is decomposed, nucleic acid is liberated in the plasma, nucleotides are produced, and reproduction occurs after approx. 1 hr. J. N. A.

Minor sterols of yeast. X. Relationships between lanosterol and cryptosterol.—See A., 1943, II, 13.

Metabolism of *Candida albicans*. C. B. van Niel and A. L. Cohen (*J. Cell. Comp. Physiol.*, 1942, **20**, 95—112).—There is no qual. difference between the actions of this yeast on glucose and sucrose, but the fermentation of sucrose is much slower. Fermentation is not stopped by H_2SO_4 until a concn. of 0·5 mol. is reached. Lactic acid is more effective. Oxidation of sucrose, but not of glucose, shows an induction period. Oxidations of alcohol and of pyruvate take place via acetate, and if cells are aërated for 16—24 hr. in absence of substrate they can oxidise pyruvate twice as fast if thiamin is added. V. J. W.

Influence of film yeast, *Candida krusei*, on heat-resistance of certain lactic acid bacteria grown in symbiosis with it. H. J. Peppler and W. C. Frazier (*J. Bact.*, 1942, **43**, 181—191).—After symbiosis with *C. krusei*, *Streptococcus thermophilus* and *Lactobacillus helveticus* from near the surface film were more active after 30 min. at 64° and 62° respectively than bacteria from the same culture from lower levels. Bacterial cultures stored under conditions in which the apparent actions of the film yeast were simulated by a reduction

of acidity, lowered O_2 tension, and the addition of Neopeptone showed that each of these factors alone had no effect but the combination of all three greatly increased the heat-resistance of *S. thermophilus*. F. S.

Toxicity of intestinal volatile fatty acids for yeast and *Esch. coli*. O. Bergeim (*J. infect. Dis.*, 1940, **66**, 222—234).—Formic, acetic, butyric, and lactic acids had little effect on the growth of yeast and *Bact. coli* above pH 6·5. Below pH 4·0 the pH in itself was inhibitory. In the pH range of 5·0—6·0 low concns. of the fatty acids had a considerable inhibitory action, acetic and butyric acid being most effective and lactic acid having relatively little effect. *Bact. coli* was less resistant than yeast and *B. acidophilus* was very resistant to the action of fatty acids. F. S.

Effect of Roentgen rays on yeast.—See A., 1942, III, 933.

Effect of trace elements on growth of *Aspergillus niger* with amino-acids. R. A. Steinberg (*J. Agric. Res.*, 1942, **64**, 455—475).—The efficiency of numerous amino-acids as N and C sources for *A. niger* is examined. Of those which were as effective as inorg. N, none contained a stable cyclic group or branched C chains and none was incapable of synthesis by *A. niger*. The assimilability of amino-acids was affected by a poor C source, *e.g.*, glycerol. Cystine inhibited growth with inorg. N or amino-acid-N and increased starch production. Availability of cystine-N was not increased by oxidation of the SH group or replacement of SH-H. Homomethionine, unlike other S-containing amino-acids, was not utilised as a S source. Among α-amino-monocarboxylic acids an increase in length of C chain was associated with rapid decrease in N assimilability. In 4- and 5-C acids the introduction of NH_2 at the terminal C or its oxidation to carboxyl increased the assimilability of both N and C, α- and δ-Derivatives of valeric acid (proline, ornithine, glutamic acid) are the first amino-acids to be formed in the synthetic process. Growth responses to structural modifications in glycine and alanine are paralleled by those for enzyme action on dipeptides *in vitro*. Utilisation of N is dependent on the presence of α-amino-N and of α- and β- and carboxyl-H. Substitution of α-, β-, or carboxyl-H, reduction of CO_2H, or transfer of NH_2 to β-position inhibited assimilability. Fe, Zn, Cu, Mn, Mg, and Ga are essential for utilisation of amino-acid-N. Minute quantities of these elements are firmly retained by amino-acids during purification of nutrients with $CaCO_3$. A. G. P.

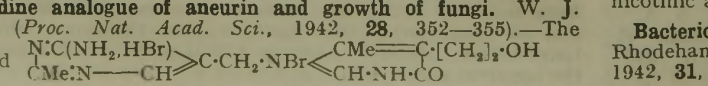
Biochemistry of micro-organisms. LXXI. Fumaryl-*dl*-alanine (fumaromono-*dl*-alanide), a metabolic product of *Penicillium resticulosum, sp. nov.* J. H. Birkinshaw, H. Raistrick, and G. Smith (*Biochem. J.*, 1942, **36**, 829—835; cf. A., 1942, II, 242).—*P. resticulosum* when grown on Czapek–Dox 5% glucose medium yields *fumaryl*-dl-*alanine*, m.p. 229° (decomp.), synthesised from *dl*-alanine and fumaryl chloride followed by hydrolysis of the condensation product with water. Reduction (Pd–C–H_2) gives *succinyl*-dl-*alanine*, m.p. 157°, and reaction with diazomethane gives a *compound*, $C_{10}H_{15}O_5N_3$, m.p. 164—167°. The metabolism solution completely suppresses growth of *Staph. aureus* in bullock heart broth containing 2% of glucose at a dilution of 1 : 320. The anti-bacterial substance is very sensitive towards acids, and the metabolism solution becomes completely inactive when stored for 12 hr. at pH 2·0. The crude anti-bacterial substance is a water-sol., pale brownish-yellow resin. It contains N, 3·8% of ash, and gives a positive Molisch reaction; it is not penicillin. It completely inhibits growth of *Staph. aureus* in glucose broth at 1 : 160,000, partially at 1 : 320,000. Fumaryl-*dl*-alanine does not appear to form an integral part of the mol. of the anti-bacterial substance. J. N. A.

Anti-bacterial substances from moulds. VI. Puberulic acid, $C_8H_6O_6$, and puberulonic acid, $C_8H_4O_6$, metabolic products of a number of species of *Penicillium*. A. E. Oxford, H. Raistrick, and G. Smith (*Chem. and Ind.*, 1942, 485—487; cf. A., 1942, III, 490).—Puberulic acid and the yellow acid $C_8H_4O_6$, now named puberulonic acid (A., 1932, 651), were isolated from culture solutions of *Penicillium aurantio-virens*, *P. Johannioli*, and species of the *P. cyclopium–viridicatum* series. These acids at high dilutions suppress growth of a no. of Gram-positive bacteria, puberulic acid being the more potent. They account for most of the anti-bacterial activity of the mould culture solutions. J. H. B.

Activity and mechanism of action of penicillin.—See A., 1942, III, 916.

Factor *Z*. W. J. Robbins (*Bot. Gaz.*, 1941, **102**, 520—535).—Neopeptone contains much Z_1 but less Z_2. A pyridine extract of Difco agar which affected the growth of *Phycomyces* contained some Z_1 but little Z_2. Z_1 with little or no Z_2 occurred in cathode liquors from electrodialysed shredded agar; neither appeared in the anode liquor. Z_1 was not identical with biotin, pantothenic acid, glutamine, or *p*-aminobenzoic acid. Z_2 was not glutamine or *p*-aminobenzoic acid. A. G. P.

Pyrimidine analogue of aneurin and growth of fungi. W. J. Robbins (*Proc. Nat. Acad. Sci.*, 1942, **28**, 352—355).—The compound



cannot replace aneurin in the physiology of *Phycomyces blakesleeanus*, *Pythiomorpha gonapodyides*, and *Phytophthora cinnamomi*. The last named will not grow unless supplied with aneurin, whilst for the other fungi the effectiveness of the analogue as a source of the pyrimidine component of aneurin is 0·002—0·001 that of aneurin. The analogue is not decomposed by either fungus. J. N. A.

Athletes' foot and its control. II. R. E. Williamson and H. G. DeKay (*J. Amer. Pharm. Assoc.*, 1942, **31**, 284—286).—Foot baths containing 0·3 and 0·5% of NaOCl prevent the growth of characteristic dermatophytes after 30 and 10 sec. exposure, respectively. H. G. R.

Comparative atopic activity of *Alternaria* spores and mycelium. H. N. Pratt and R. Crossman (*J. Allergy*, 1942, **13**, 227—230).—By direct testing of 10 patients sensitive to *Alternaria* 95% of the atopic excitant in the spores was found to reside in the protein-N and the spores are 10 times as strong in atopic excitant as the mycelium. Whereas mycelial extracts neutralised only mycelial reagins, spore extracts invariably neutralised both spore and mycelial reagins. C. J. C. B.

Effect of phosphorus on metabolism in *Paramecium*. S. O. Mast and D. M. Pace (*J. Cell. Comp. Physiol.*, 1942, **20**, 1—9).—*Paramecium* grows well in solutions containing K acetate and inorg. salts including Na_2HPO_4, but dies out if P is omitted. As P concn. increases from 0 to 0·00109M., divisions increase to a max. of 4 per day, and thence decrease to 0 at 0·0035M. P can be partly but not wholly replaced by Si as Na_2SiO_3. V. J. W.

Specific agglutinogenic properties of inactivated sporozoites of *Plasmodium gallinaceum*. P. F. Russell, H. W. Mulligan, and B. N. Mohan (*J. Malaria Inst. India*, 1941, **4**, 15—24).—Repeated injections into fowls of sporozoites inactivated by ultra-violet radiation produced sp. agglutinins in their sera. The agglutinating titre of these sera was higher than that in the sera of fowls with acute or chronic experimental infections. F. S.

Active immunisation of fowls against *Plasmodium gallinaceum* by injections of killed homologous sporozoites. H. W. Mulligan, P. F. Russell, and B. N. Mohan (*J. Malaria Inst. India*, 1941, **4**, 25—34).—Fowls injected as described above and responding with a high agglutination titre showed partial active immunisation against mosquito-borne infection with the homologous plasmodium. F. S.

Nature of the malarial pigment present in infections of monkeys (*Macacus rhesus*) with *Plasmodium knowlesi*. J. Devine and J. D. Fulton (*Ann. trop. Med. Parasit.*, 1941, **35**, 15—22).—In chemical and spectroscopic investigations the pigment was indistinguishable from hæmatin. F. S.

Formation of lactic acid and pyruvic acid in blood containing *Plasmodium knowlesi*. W. B. Wendel and S. Kimball (*J. Biol. Chem.*, 1942, **145**, 343—344).—Blood of monkeys infected with *P. knowlesi* (malarial parasite) produces high concns. of pyruvic acid, particularly in the presence of mature parasites. Anaerobiosis prevents pyruvic acid formation, but CO_2 and yeast have no effect. None of these prevented morphological changes in *Plasmodium*. R. L. E.

Adaptive production of enzymes by bacteria. R. J. Dubos (*Bact. Rev.*, 1940, **4**, 1—16).—A review. (87 references.) F. S.

Effect of change of concentration on relative [bactericidal] activity of phenol and *p*-chloro-*m*-cresol. E. R. Withell (*Quart. J. Pharm.*, 1942, **15**, 301—313).—The disadvantages of the end-point methods for determination of bactericidal power are discussed, and it is suggested they should be replaced by counting methods. From the counts which show the rate of death of organisms in two lethal solutions, the times required for 50% of deaths (LT 50) are determined. The ratio of LT 50 for two substances is a measure of their relative bactericidal efficiency. The concn. exponent of phenol determined by counts and calc. from the LT 50 val. for *B. coli* (type I) is approx. 4·4, and for *p*-chloro-*m*-cresol 8·0. The activity of the latter increases much more rapidly than that of phenol when the concn. is increased by the same amount, and the reverse is true on decrease of concn. The formula $C^n t = A$ (A., 1908, ii, 976) where C is concn., n is concn. exponent, and t is time required for disinfection, is used to calculate relative activities at different concns., and one of these vals. is checked experimentally. J. N. A.

***p*-Aminophenyl ketones as antagonists of *p*-aminobenzoic acid.** E. Auhagen (*Z. physiol. Chem.*, 1942, **274**, 48—54).—*p*-Aminobenzophenone, *p*-aminoacetophenone, and *pp'*-diaminobenzophenone are antagonistic to *p*-aminobenzoic acid as essential nutrient for *Streptobacterium plantarum*. The activity of the amines increases in this order, and the diamine is 0·2—0·3 times as active as sulphanilamide, and 30—50 times less active than *pp'*-diaminodiphenyl sulphone. *pp'*-Diaminobenzophenone is also active in infected mice. There is no antagonism between 3-acetylpyridine and nicotinic acid. J. N. A.

Bacteriostatic properties of certain derivatives of thiophen. H. W. Rhodehamel, jun., and E. F. Degering (*J. Amer. Pharm. Assoc.*, 1942, **31**, 281—283).—No outstanding bacteriostatic activity was

observed in any of the thiophen derivatives tested. Substitution of a phenyl group by a thiophen nucleus tends to increase the bacteriostatic activity of the substance. H. G. R.

Why does H^+ become toxic to soil bacteria? T. M. McCalla (*Proc. Soil Sci. Soc. Amer.* [1941], 1942, **6**, 165—167).—From data on dye adsorption by bacteria it appears that H^+ impairs the growth of bacterial cells not by a direct lethal effect but by preventing the assimilation of nutrients. S. and F. (*m*)

Relation of maximum growth temperature to resistance to heat. C. Lamanna (*J. Bact.*, 1942, **44**, 29—35).—There is in general a direct correlation between the temp. withstood by bacterial cells and spores and the max. temp. at which growth occurs. F. S.

Killing of bacterial spores in fluids by agitation with small inert particles. H. R. Curran and F. R. Evans (*J. Bact.*, 1942, **43**, 125—138).—Bacterial spores and vegetative forms were progressively destroyed when their fluid suspensions were agitated long and vigorously with finely divided abrasives. Highest sporicidal efficiency was obtained with small glass beads (60/80 grade); vegetative forms were more rapidly killed than spores. (3 photomicrographs.) F. S.

Method for measuring bacterial pigments by use of spectrophotometer and photoelectric colorimeter. G. L. Stahly, C. L. Sesler, and W. R. Brode (*J. Bact.*, 1942, **43**, 149—154).—A spectrophotometer is used to secure the complete absorption spectra data for each pigment. These data are then applied in the use of a photoelectric colorimeter for the measurement of the pigment in a bacterial suspension. One filter is chosen which transmits the light waves which are unabsorbed by the bacterial pigment; a second filter transmits the light which is affected most by the pigment. The colorimeter reading with the first filter represents turbidity and with the second filter, turbidity plus pigment. Photometric density due to pigment for a standard turbidity can thus be calc. F. S.

Quantitative micro-pipette for intranasal inoculation of mice with virus suspensions. Unit Personnel, Naval Lab. Research Unit No. 1 (*J. Lab. clin. Med.*, 1942, **27**, 1197—1198). C. J. C. B.

Seitz filtering directly into storage bottles. D. M. Pipes (*J. Allergy*, 1942, **13**, 312—313).—2 methods are described. C. J. C. B.

Adaptability of silica gel as culture medium. A. J. Sterges (*J. Bact.*, 1942, **43**, 317—327).—Details are given for the prep. of a SiO_2 gel medium suitable for the growth of both autotrophic and heterotrophic organisms. F. S.

Counterstain for use in Gram technique. L. D. Meyrick and C. V. Harrison (*J. Path. Bact.*, 1942, **54**, 517—518).—The counterstain was: 1% aq. Ehrlich's, 15 vols.; carbol-fuchsin (90 c.c. of 5% carbolic acid + 9 c.c. of 10% alcoholic solution of basic fuchsin), 1 vol. C. J. C. B.

Biotin as growth factor for *Rhizobia*. J. B. Wilson and P. W. Wilson (*J. Bact.*, 1942, **43**, 329—341).—Most strains of *Rhizobium* grow very poorly without biotin but continuous transfer is possible. A few strains attain practically max. growth without biotin. A few strains are unable to grow without biotin. F. S.

Isolation and identification of *Rhizobia* bacteriophage. W. H. Fuller and S. C. Vandecaveye (*Proc. Soil. Sci. Soc. Amer.* [1941], 1942, **6**, 197—199).—Suitable technique is described. S. and F. (*m*)

Microbial factors in digestive assimilation of starch and cellulose in herbivora. F. Baker (*Nature*, 1942, **150**, 479—481).—A review. E. R. S.

Effect of pH on lactic acid fermentation. I. C. Gunsalus and C. F. Niven, jun. (*J. Biol. Chem.*, 1942, **145**, 131—136; cf. Friedemann, A., 1939, III, 1013).—In buffered medium rich in protein, *Streptococcus liquefaciens* converts glucose into formic and acetic acid and alcohol in the proportions 2 : 1 : 1, the combined yield being 25—40% of the glucose fermented if the pH is maintained at or above 6·5. Production of lactic acid by the micro-organism decreases from approx. 90% of the glucose fermented at pH 5 to 60% at pH 9. When the reaction is alkaline, a polysaccharide, which renders the medium viscous, is produced. W. McC.

Influence of diet on distribution of bacteria in stomach, small intestine, and cæcum of white rat. J. R. Porter and L. F. Rettger (*J. infect. Dis.*, 1940, **66**, 104—105).—On a stock diet the upper segments of the intestinal tract contained mostly the *Lactobacillus acidophilus* type of aciduric organisms. Bacteria in the lower segments were more abundant, containing also many coliform organisms and a few sporulating anaerobes. Yeasts were found throughout. A lean beef diet reduced the lactobacilli; otherwise the flora was fairly stable, irrespective of various diets. F. S.

Isolation of *B. anthracis* from industrial material with special reference to resistance of spores to heat. E. R. Jones (*J. Path. Bact.*, 1942, **54**, 307—314).—When heated at 80° for 2 min. most of the spores are killed. The best time and temp. for heating industrial material suspected of being infected with anthrax are 5 min. at 65°. C. J. C. B.

Nature of type C botulinus toxin fractions. D. R. Coburn (*Science*, 1942, **95**, 389—390).—The thermostable fraction of type C botulinus toxin consists of NH_4 salts, has no antigenic property, and is a neuro-toxin which acts without delay. Administered orally to a mallard duck it gave typical symptoms of botulism which disappeared in 48 hr. It is volatile and resistant to bacterial action, but is destroyed by strong alkali. E. R. S.

Accessory growth factor requirements of *Brucella* group. S. A. Koser and M. H. Wright (*J. infect. Dis.*, 1942, **71**, 86—88).—3 out of 7 *Brucella* strains required biotin. 0·0001 μg. per c.c. of a synthetic medium produced 90% of max. growth and 0·000003 μg. was sufficient for light growth. Cultures were carried through successive passages in the presence of 0·00001 μg. per c.c. of biotin or biotin methyl ester and larger quantities of nicotinamide, pantothenic acid, and thiamin. The pyrimidine but not the thiazole component of thiamin was required for all 7 strains. F. S.

Brucellosis: studies emphasising strain variation in serologic testing. F. E. Angle, W. H. Algie, and D. Morgan (*J. Lab. clin. Med.*, 1942, **27**, 1259—1263).—Marked variation in both agglutinin titres and opsonocytophagic indices was found in 34 patients with chronic undulant fever. This indicates the necessity for standardisation of *Brucella* polyvalent antigens for agglutination tests. C. J. C. B.

Agglutinin response of normal persons to skin tests with brucellergen and brucella vaccine. W. M. M. Kirby and L. A. Rantz (*J. Lab. clin. Med.*, 1942, **27**, 1244—1248).—Positive intradermal reactions were present in 36% of 50 persons. Half of those skin-tested failed to develop agglutinins. There was little difference in response to the 2 antigens, and there was no correlation between positive skin tests and agglutinin production. C. J. C. B.

Persistence of antibodies one year after active immunisation of human beings with mixed heat-killed vaccine of *B. typhosus*, *Br. abortus*, and *Br. melitensis* J. A. Kolmer, A. Bondi, and A. M. Rule (*J. infect. Dis.*, 1942, **70**, 54—57).—The antibodies persisted satisfactorily for at least one year in 25 normal adults. F. S.

Growth of coliform bacilli in water containing various organic materials. J. H. Nelson (*J. Path. Bact.*, 1942, **54**, 449—453).—The results of Parr (*J. infect. Dis.*, 1937, **60**, 291) in connexion with the growth of coliform organisms in a medium of autoclaved string in tap water were confirmed. 28 substances, (cork, leaves, etc.) were further tested at 37° and 22° with tap water, raw or autoclaved, and with autoclaved glass-distilled water; 24 were found to be growth-supporting. C. J. C. B.

Effect of indolyl-3-acetic acid on multiplication of *Esch. coli* and *E. typhosa*. T. D. Beckwith and E. M. Geary (*J. infect. Dis.*, 1940, **66**, 78—79).—Indolyl-3-acetic acid in concns. of 1/100—1/1000 inhibited the growth of *Bact. coli* and *Bact. typhosum*. In concns. of 1/5000—1/3,000,000 it stimulated growth. F. S.

Variations of bactericidal effect of sulphathiazole on different strains of *E. coli*.—See A., 1942, III, 917.

Heterophile antibody reaction caused by bacterial infection. S. Bornstein (*Ann. int. Med.*, 1942, **16**, 472—479).—A strain of *E. coli* from the blood of a patient suffering from severe cystitis contained heterophile antigen. Following the bacteræmia the patient's serum gave a positive heterophile antibody reaction (1 : 1600). The antibodies were of Forssman type and disappeared from the patient's blood and from serum specimens kept in the ice box. The Wassermann reaction was temporarily positive and there was an increase in iso-agglutinins. A. S.

Utilisation of carbon and nitrogen compounds by *Coccidioides immitis* (Rixford and Gilchrist, 1896). E. E. Baker and C. E. Smith (*J. infect. Dis.*, 1942, **70**, 51—53).—A wide variety of relatively simple C and N compounds can serve as sources of C and N for *Coccidioides immitis*. The C sources include many sugars, alcohols, org. acids, amino-acids, and amides. The N sources include peptone, amino-acids, amides, NH_4^+, and NO_3^-. F. S.

Growth of non-sporulating anaërobic bacteria of intestinal origin in synthetic media. I. General requirements and special importance of pyruvic acid. R. A. West, K. H. Lewis, and W. E. Militzer (*J. Bact.*, 1942, **43**, 155—169).—A synthetic medium composed of mineral salts, amino-acids, glucose, Na lactate, and glycerol supported the growth of only two of 29 strains of non-sporulating anaërobic bacteria. Addition of a mixture of chemically defined growth factors including pyruvic acid allowed development of the majority. Pantothenic acid increased the growth of a no. of strains and was essential for some. F. S.

***Clostridium acidi-urici* and *Cl. cylindrosporum*, organisms fermenting uric acid and some other purines.** H. A. Barker and J. V. Beck (*J. Bact.*, 1942, **43**, 291—304).—The influence of various environmental and nutritional factors on the growth of these organisms has been investigated and satisfactory culture media are described. (2 photomicrographs.) F. S.

Clostridium kluyverii, **an organism concerned in formation of caproic acid from ethyl alcohol.** H. A. Barker and S. M. Taha (*J. Bact.*, 1942, **43**, 347—363).—This organism from fresh water and marine muds is unique in forming hexoic acid from ethyl alcohol, particularly when growing with the methane-producing bacterium, *Methanobacterium omelianskii*. Various morphological, physiological, and nutritional characteristics are described. (3 photomicrographs.) F. S.

Artificially induced loss of θ-toxin production by *Clostridium welchii* types A and C. A. W. Turner, C. Eales, and A. W. Rodwell (*Nature*, 1942, **150**, 549—551).—12 passages of *Cl. welchii* type A through a lecithin-containing medium (Hall's cooked brain) showed no change in production of α-toxin and proteinase, but lost capacity to produce θ-toxin. Type C strains behaved similarly. It is thus possible to produce quantities of *Cl. welchii* toxins free from θ-toxin. E. R. S.

Medium showing distinctive green coloration with growths of *C. diphtheriæ intermedius*. M. Gordon and C. Higginbottom (*J. Path. Bact.*, 1942, **54**, 435—442).—A serum-reinforced heated blood agar medium is described on which growths of *C. diphtheriæ intermedius* produce a typical green coloration distinguishing them from *gravis* and *mitis* strains and from nasal diphtheroids. No evidence of change to *mitis* type on subculture was obtained. The factor promoting green coloration is associated with the protein fraction of the serum. The greenish change varies only in so far as the O_2 tension influences the degree of growth. Since the factor passes a Maassen filter without loss of potency the serum can be so sterilised. C. J. C. B.

Diphtheria immunity in infancy. M. A. Brescia (*Arch. Pediat.*, 1942, **59**, 513—524).—Of 52 mothers with positive Schick tests the infants up to 4 months of age gave 52% positive Schick tests and after 4 months gave 100% positive. Of 148 Schick-negative mothers, their infants up to 4 months of age were all Schick-negative. After 4 months of age, the % of positive Schick tests gradually increased until at 1 year 87—100% become Schick-positive. C. J. C. B.

Treatment, complications, and deaths in 753 cases of clinical diphtheria. Y. Togasaki, L. Rosove, A. G. Bower, and P. M. Hamilton (*Amer. J. med. Sci.*, 1942, **204**, 218—227). C. J. C. B.

Pathogenesis of experimental dysentery intoxication. A. Penner and A. I. Bernheim (*J. Exp. Med.*, 1942, **76**, 271—282).—Intravenous injection of Shiga toxin into dogs decreases the circulating blood vol. and causes a rise in hæmoglobin concn., red cell count, hæmatocrit, and sp. gr. of the whole blood (that of plasma does not change). Following this shock-like state, there is vasoconstriction in the dog's duodenum and the rabbit's cæcum. The toxin, if applied to the intestinal muscosa, has no direct effect but its absorption produces a duodenal lesion in dogs. The intestinal pathological findings are explained as results of prolonged vasoconstriction. A. S.

Modified Leifson media for isolation of *B. dysenteriæ* and pathogenic members of colon–typhoid group. J. Brodie (*J. Path. Bact.*, 1942, **54**, 499—509).—Enrichment in citrate rosolic taurocholate Lemco broth containing serum digest as the nutrient, followed by plating on a solid medium of the same nature, is very satisfactory for the isolation of dysentery bacilli and pathogens of the colon–typhoid group. C. J. C. B.

Testing of erysipelas cultures used in simultaneous active and passive immunisation of pigs. A. Demnitz and K. Dräger (*Z. physiol. Chem.*, 1942, **274**, 149—156).—The method of testing cultures is described. Strains which are not toxic to mice and pigeons are unsuitable, and the strain finally selected must be tested on pigs. A strain for immunisation must be pathogenic to mice and pigeons and harmless to pigs, and it should have the highest immunisation titre. J. N. A.

Growth requirements of *Erysipelothrix* and *Listerella*. S. H. Hutner (*J. Bact.*, 1942, **43**, 629—640).—Simple media allowing heavy growth of *E. rhusiopathiæ* and of *L. monocytogenes* are described. Both require riboflavin and one or more amino-acids supplied as casein or gelatin hydrolysate. *E. rhusiopathiæ* required in addition oleic acid, which was non-inhibitory in the presence of adequate saponin. The properties of unidentified growth factors for both organisms are described. F. S.

Nutrition of *Hæmophilus influenzæ*. Relationship between utilisation of co-enzyme and hæmin and reduction of nitrate. C. L. Hoagland, S. M. Ward, H. Gilder, and R. E. Shank (*J. Exp. Med.*, 1942, **76**, 241—252).—The metabolic activity of *H. influenzæ* can be followed quantitatively by measuring nitrite production in a medium containing 0·2% of KNO_3 or $NaNO_3$. When *X*-factor, hæmin, and other sp. substances essential for optimum growth are present in excess, the nitrite produced by 5 strains of the organism is quantitatively related to the concn. of *V*-factor, or total co-enzyme. Many media used for determination of co-enzyme by growth of *H. influenzæ* are deficient in *X*-factor which is the sp. factor limiting growth. When 0·5% of blood is added to a proteose–peptone medium optimum conditions for growth and metabolism are created and further addition of many nutritive substances is without effect in stimulating further growth. A. S.

Non-icteric leptospirosis icterohæmorrhagia (Weil's disease) contracted while bathing. P. L. Davis and M. S. Davis (*Ann. int. Med.*, 1942, **16**, 569—570).—A case is reported. A. S.

Comparison of a recently developed macroscopic agglutination test for diagnosis of leptospiral jaundice with standard microscopic test. E. B. Starbuck and T. G. Ward (*J. infect. Dis.*, 1942, **70**, 88—91).—The technique of the macroscopic test is described and the test is shown to be sp. and sufficiently sensitive in acute cases of leptospiral jaundice. F. S.

Action of human blood on meningococci. S. E. Branham, A. P. Hitchens, and M. B. Root (*U.S. Publ. Health Repts.*, 1942, **57**, 1021—1031).—At least half the subjects tested (50 boys aged 12—18 years) gave a positive skin reaction to meningococcus toxins. The blood of half the boys showed marked bactericidal activity for meningococci. Phagocytosis of meningococci by the leucocytes in blood from normal boys was never very pronounced and varied from 0 to 32%. There was no correlation between the 3 phenomena studied. Individual strains of meningococci varied greatly in their response to bactericidal and phagocytic activity. C. G. W.

Bacteriological characteristics and clinical symptoms in cases of meningococcal meningitis. G. Déruaz and E. Novel (*Schweiz. med. Wschr.*, 1942, **72**, 65—70).—Macroscopical agglutination tests and the Bordet–Gengou reaction allow easy determination of the type of meningococci involved. The sugar fermentation test alone does not give sufficiently precise information. 6 cases of meningococcus *A* and 1 case of type *B* infection were studied. Purpura was seen in 1 type *A* and 1 type *B* infection. There was no correlation between meningococcal type and severity of infection. Sulphanilamides were equally effective in *A* and *B* infections; c.s.f. changes took place in the following sequence: disappearance of meningococci, replacement of polymorphs by lymphocytes, disappearance of lymphocytes; the low NaCl and glucose content took longer to be remedied; hyperalbuminosis and globulin reactions persisted for a long time. A. S.

Antigenic structure of *Hæmophilus pertussis* and its clinical significance. E. W. Flosdorf and A. C. McGuinness (*Amer. J. Dis. Child.*, 1942, **64**, 43—50).—*H. pertussis* is of a single serological type. 2 toxins occur in *H. pertussis*; 1 is thermolabile and the other thermostable. They are not adequate without bacteria for production of immunity. C. J. C. B.

Pertussis antitoxin. M. Weichsel, N. Katona, and F. Liu (*Amer. J. Dis. Child.*, 1942, **64**, 1—10).—Pertussis antitoxin was rarely found in the serum of normal children or adults. During active whooping cough a few children had positive titres, but many had no antitoxin in their serum during convalescence. The injection of "detoxified pertussis antigen" raised the titre in 12 of 24 children as well as of healthy children treated with large doses. The max. antitoxin response was obtained 2—8 weeks after completing the injections. C. J. C. B.

Biological characteristics of organisms of pleuropneumonia group. J. Warren (*J. Bact.*, 1942, **43**, 211—228).—All 8 strains fermented glucose and contained a lactic dehydrogenase. The strains fell into one of three types of oxidation–reduction potential curve. Rapid loss of virulence in *Streptobacillus moniliformis* and the L_4 organism was associated with the disappearance of a reductase. Only *Pleuropneumonia bovum* produced a hæmolysin. In their sensitivity to H_2O_2, phenol, and ultra-violet light the pleuropneumonia group resembled the larger bacterial species. F. S.

Effect of carbon dioxide on growth rate of pneumococcus. W. Kempner and C. Schlayer (*J. Bact.*, 1942, **43**, 387—396).—The growth rate of pneumococci of types I, II, and III in various concns. of CO_2 was measured manometrically with the Warburg technique. In concns. of CO_2 between 0 and 0·1 vol.-% there was no growth in 48 hr., whereas the logarithmic phase of multiplication was reached in 1 vol.-% CO_2 after 41 hr., at 5 vol.-% CO_2 after 26 hr., and at 10 vol.-% CO_2 after only 21 hr. F. S.

Respiratory pattern as predisposing factor in ætiology of pneumonia. W. J. Nungester, R. G. Klepser, and A. H. Kempf (*J. infect. Dis.*, 1942, **71**, 57—60).—In rats inoculated intranasally with pneumococci and mucin, pneumonia was produced in 12 out of 25 subjected to forceful inspiration and in none of 9 allowed to breathe normally. After mid-tracheal inoculation pneumonia was produced in 9 of 19 subjected to forceful inspiration and in 4 out of 22 subjected to forceful expiration. F. S.

Pneumococcal hæmolysin: preparation of concentrates, and their action on red cells. B. Cohen, S. P. Halbert, and M. E. Perkins (*J. Bact.*, 1942, **43**, 607—627).—By suitable control of cultural conditions, pneumococci were grown in mass cultures so as to produce large quantities of active hæmolysin, mostly retained within the

cells. The latter, when dried, held their activity (300—900 h.u. per mg.) for several years. From these cells, active concentrates (up to 6000 h.u. per mg.) were prepared by extraction and subsequent pptn. at pH 4·0—4·3. From the active concentrates, 90% reversibly oxidised products were obtained by treatment with S and cystine. The hæmolytic activity of such stable preps. was associated with protein material which sedimented in an ultracentrifugal field much more rapidly than ovalbumin and somewhat more slowly than rabbit hæmoglobin. Benzene-sol. substances in the stroma of the red cell appeared to be necessary for binding the active hæmolysin. The hæmolysin showed no typical enzymic activity either on common substrates or on the red cell. F. S.

Reversibility of "Quellung" reaction and relation between the reaction and bile solubility. A. H. Kempf and W. J. Nungester (*J. infect. Dis.*, 1942, **71**, 50—54).—The swelling reaction of pneumococci with immune serum can be inhibited or reversed by the addition of sp. polysaccharide before or after the serum is applied. Bile solubility is much delayed in pneumococci in which the swelling reaction has occurred. Pneumococci in which swelling has been inhibited or reversed by polysaccharide are as sol. in bile as untreated pneumococci. F. S.

Effect of surface-active agents on *B. proteus*. I. Lominski and A. C. Lendrum (*J. Path. Bact.*, 1942, **54**, 421—433).—Of 54 surface-active agents, mostly soaps, examined, 42 have a sp. action against the swarming of *B. proteus*. This swarming may be inhibited at concns. 20—70 times lower than those inhibiting the growth of susceptible pathogens. The anti-swarming power resides in an as yet undetermined physical property which usually accompanies surface tension depression and frothing power, but which may be a further property of this class of compounds. Gummy materials counter the anti-swarming power of surface-active agents. *B. proteus* grown on media containing anti-swarming agents undergoes a temporary transformation into a non-flagellate form. C. J. C. B.

(A) Distribution of colour variants in ageing broth cultures of *Serratia marcescens*, strain 274. M. I. Bunting and L. J. Ingraham. **(B) Factors affecting the distribution.** M. I. Bunting (*J. Bact.*, 1942, **43**, 585—591, 593—606).—(A) When cultures of *S. marcescens* were allowed to age in a synthetic broth medium at 30°, cells which produced typical dark red colonies predominated at first. Later, pink and sometimes white colony-forming cells increased in no. until at the end of 2 weeks less than 50% produced red colonies. This stage was followed by an increase in dark red cells.

(B) When *S. marcesens* was incubated at 30° in non-nutrient PO_4''' buffers, dark red cells supplanted the paler variants. The appearance of pale variants in ageing cultures could not be hastened by impoverishing the medium but it could be postponed by the addition of an extra source of energy. An increase in the variants could be produced by adding autoclaved filtrates of old broth culture. Detergents such as lauryl sulphate had a similar action. F. S.

Effect of inorganic salts on production of small colony variants by *Staphylococcus aureus*. G. P. Youmans and E. Delves (*J. Bact.*, 1942, **44**, 127—136).—17 strains of *Staph. aureus* all produced numerous small colony variants within 2—6 days when grown in a peptone meat-extract medium to which 0·5—4·0% of $BaCl_2$ was added. $Ba(NO_2)_2$ gave similar results. $Ba(NO_3)_2$ stimulated growth, probably by the energy from the reduction of NO_3' to NO_2', and produced no small colony variants. Other inorg. salts tested produced no small colony variants except LiCl on one occasion. The growth-inhibiting activity of the inorg. salts in the order of decreasing effectiveness was: $BaCl_2$, $Ba(NO_2)_2$, $Ba(NO_3)_2$, $CaCl_2$, LiCl, $MgCl_2$, NaCl. The mechanism of the action of $BaCl_2$ and the significance of the variants are discussed. F. S.

Effect of bacteriophage in experimental staphylococcal septicæmia in rabbits. S. E. Sulkin, D. D. Douglass, and J. Bronfenbrenner (*J. infect. Dis.*, 1942, **70**, 92—95).—Rabbits treated with phage propagated on non-invasive and moderately invasive strains of staphylococci lived somewhat longer than untreated rabbits, while rabbits treated with phage propagated on a highly invasive streptococcus or with Reynals spreading factor tended to die sooner than controls. This unfavourable effect of bacteriophage may be due to the presence of spreading factor in the phase lysates. F. S.

Effect of staphylococcus toxin on antigen dilution and antibody dilution titres in albino rate. G. P. Youmans and C. A. Colwell (*J. infect. Dis.*, 1940, **66**, 235—239).—No stimulation of precipitin production was observed in rats which were injected with staphylococcus toxin along with the antigens fresh egg-white, horse serum, dog serum, sheep serum, and cryst. hen egg-albumin. F. S.

Behaviour of rabbits after infection with toxigenic and non-toxigenic staphylococci. B. Kleiger, J. E. Blair, and F. A. Hallman (*Arch. Surg., Chicago*, 1942, **45**, 571—577).—Toxigenic staphylococci injected intravenously in rabbits produced a characteristic chain of clinical symptoms, with characteristic changes in the pulse and e.c.g. Non-toxigenic staphylococci caused different symptoms and no changes in the e.c.g. F. S.

Lysis of precipitated fibrinogen in agar medium by staphylococci. G. H. Chapman (*J. Bact.*, 1942, **43**, 313—314).—A medium incorporating heat-pptd. plasma is described in which coagulase-positive staphylococci produce lysis. F. S.

Serological and biological classification of hæmolytic and non-hæmolytic streptococci from human sources. L. A. Rantz (*J. infect. Dis.*, 1942, **71**, 61—68).—392 strains are classified and the clinical source, biological characteristics, and type of hæmolysin formation of each group are discussed. F. S.

Bacteriological study of streptococci from raw retail milk. E. H. Beahm (*Amer. J. Hyg.*, 1942, **36**, 147—152).—Samples of raw distributor milk obtained from 48 Omaha dairies were examined for streptococci by means of blood agar pour plates. Hæmolytic and non-hæmolytic colonies were counted and representative organisms picked into blood broth for further examination. Differential criteria included hæmolytic activity, carbohydrate fermentation, Na hippurate hydrolysis, growth in the presence of bile, and action on milk. Counts of hæmolytic streptococci ranged from 0 to 12,000 per ml. and of non-hæmolytic streptococci from 0 to 76,000 per ml. 7 samples showed only β-hæmolytic, 18 only non-hæmolytic, 21 both types, and 2 no streptococci. Group *A* streptococci were found in 7 samples, group *B* in 24, group *C* in one, and group *D* in 3. 3 cultures could not be grouped. From 39 samples of milk were obtained 45 cultures of *Str. viridans*, and 26 non-hæmolytic streptococci which were classified as *Str. salivarius*, *Str. bovis*, *Str. lactis*, and *Str. fæcalis*. The presence of streptococci of human origin in milk produced under rigid inspection is regarded as a convincing argument for pasteurisation. B. C. H.

Relationship of methods of bacteriological examination to eradication and control of mastitis (*Streptococcus agalactiæ*). I. Use of enrichment technique in revealing streptococcal infections of cow's udder. II. *Str. agalactiæ* infection in heifers. A. T. R. Mattick, P. M. F. Shattock, and M. M. Jacob (*J. Dairy Res.*, 1941, **12**, 139—154).—The enrichment technique consisted of incubating carefully-taken samples of milk for 24 hr. at 37°, then streaking on æsculin–crystal-violet–blood agar, and incubating the plates for 48 hr. at 37°. The usual confirmatory tests were then applied to picked-off colonies. This method revealed the presence of *Str. agalactiæ* in considerably more cases than did azide broth and ordinary plating. *Str. agalactiæ* was recovered from 21% of first-calf heifers and 4·5% of heifers. Light infections may persist for years. J. G. D.

Diagnostic test materials in chancroid. H. C. Saunders, O. Canizares, and R. F. Reider (*N.Y. Sta. J. Med.*, 1939, **39**, 447—449).—Equal results were obtained in 162 cases of chancroid and 117 controls in intradermal tests performed with "Dmelcos" (the French prep. of Ducrey's streptobacillus vaccine), Greenblatt's vaccine, and an American commercial prep. (Lederle). E. M. J.

Effect of Rœntgen therapy on infections produced by *Streptococcus hæmolyticus* and *Staphylococcus aureus*. Combined action of Rœntgen rays and sulphanilamide on *Staph. aureus*.—See A., 1942, III, 933.

Polyphasic potencies of bacterial cell; general biological and chemotherapeutic significance. R. R. Mellon (*J. Bact.*, 1942, **44**, 1—25).—A streptothrix which displays all the known categories of bacterial variability is described. The nature of variability and its significance in chemotherapy are discussed. (8 photomicrographs.) F. S.

Kahn test: evaluation of results obtained with plasma. M. B. Kurtz and E. Hill (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 33—36; cf. A., 1940, III, 542).—With 1 exception in 194 tests the reaction obtained with plasma was the same as or stronger than that with serum. C. J. C. B.

Nutritive requirements of *Salmonella*. IV. Function of amino-acids in growth of typhoid bacillus. J. A. Lorr and W. Burrows (*J. infect. Dis.*, 1942, **71**, 89—96).—In experiments with suspensions of washed typhoid bacilli it was found that the presence of tryptophan in amounts adequate for growth did not alter the rate of glucose decomp. under aërobic conditions, as indicated by disappearance of the sugar, or the route of the anaërobic decomp. of glucose as indicated by methylene-blue reduction. All of 8 amino-acids tested reduced methylene-blue, and none oxidised leucomethylene-blue. NH_3 was not evolved in the anaërobic oxidation of the amino-acids tested nor by paired amino-acids. F. S.

Selective media for organisms of *Salmonella* group. R. Knox, P. G. H. Gell, and M. R. Pollock (*J. Path. Bact.*, 1942, **54**, 469—483). C. J. C. B.

Significance of antigen structure of *Salmonella* bacteria for their agglutination by hydrogen ions. H. Schmidt (*Z. physiol. Chem.*, 1942, **274**, 129—148).—The mechanism of acid agglutination of typhoid and related *Salmonella* bacteria is still obscure in many respects. The Vi-antigen is responsible for acid agglutination but it causes inhibition with the typhoid bacillus. The *V*-form causes complete inhibition whilst the *W*-form is not sufficient to produce acid

agglutination in the pH range 2—3. It is uncertain whether acid agglutination is caused only by the Vi-antigen or also by the *R*-antigen. The *O*-antigen also inhibits acid agglutination, and although it is destroyed by heat, like the Vi-antigen, the *R*-antigen can then cause acid agglutination. Trichloroacetic acid extraction of the bacteria removes the *O*- and Vi-antigens, and there is no acid agglutination over the pH range 2—3, with or without previous treatment with trypsin. J. N. A.

Effects of antimicrobial substances on biological origin on bacterial toxins. E. Neter (*Science*, 1942, **96**, 209—210).—Tyrothricin inhibits the loss of toxicity of tetanus and diphtheria toxins when incubated in dil. solutions. Actinomycin *A* has no effect on tetanus or diphtheria toxins. Pyocyanase inhibits the toxic effect of tetanus toxin. Zephiran inhibits tetanus toxin but not in the presence of broth or serum. E. R. S.

Effect of blood charcoal on the growth of the tubercle bacillus. E. Nassau (*J. Path. Bact.*, 1942, **54**, 443—447).—Blood charcoal added to a solid or a liquid medium increases the rate of growth and the no. of colonies of the human tubercle bacillus. C. J. C. B.

Analysis of tubercle bacillus and its natural products by immune, allergic, and anaphylactic tests. H. J. Corper (*J. infect. Dis.*, 1940, **66**, 23—29).—On a medium consisting of an NH_4 malate–glycerol buffered salt mixture max. growth of human tubercle bacilli occurs within 2—3 months, while tuberculoprotein liberation into the medium takes place mainly after max. growth is attained. The bacillary body sensitises to tuberculo-allergy and immunises guinea-pigs against virulent infection. The filtrate containing tuberculoprotein sensitises to anaphylaxis and provokes anaphylactic shock but does not sensitise to allergy or specifically immunise against virulent infection. F. S.

Golden hamster as test animal for tubercular infection. J. Ungar (*Nature*, 1942, **150**, 432).—The advantages of the Syrian or golden hamster, *Cricetus* (*Mesocrisetus*) *auratus*, Waterhouse, as a test animal for Koch's bacilli are described. 1-μg. dose of a virulent strain gave macroscopic lesions in 16—20 days. E. R. S.

Sauton's tuberculin: its purification. H. Schuberth (*Z. physiol. Chem.*, 1940, **266**, 225—238).—A method of partly purifying the electrodialysed tuberculin by pptn. with tannin and decomp. of the ppt. with acetone + HCl is described. The product contains the toxic and "skin" substances in approx. the same ratio as does the starting material. When acetone + HCl alone are used for pptn., the ppt. contains carbohydrate yielding glucose on hydrolysis. During the growth of human tubercle bacilli, the content of protein pptd. by tannin does not increase appreciably after the 60th day whilst that of material, chiefly carbohydrate, pptd. by acetone continues to increase until approx. the 120th day. The sp. activity of the tuberculin varies approx. directly with the content of protein pptd. by tannin. W. McC.

Rapid method for preparation of precipitated tuberculin. G. E. Shaw (*Quart. J. Pharm.*, 1942, **15**, 280—290).—Purified tuberculin must have const. potency, const. composition, and freedom from antigenicity. These conditions are fulfilled by isolation of an active tuberculoprotein, free from nucleoprotein and polysaccharide, which has been subjected at some stage of prep. to such a heat-treatment that the potency is maintained and antigenicity destroyed. Tuberculin prepared by pptn. with trichloroacetic acid (or sulphosalicylic acid or HPO_3) of steamed autoclave cultures grown on Long's medium, followed by repptn. with $(NH_4)_2SO_4$ and dialysis, provides a basis for the specification of a standard tuberculin which should be suitable for all purposes. An ultra-filter suitable for general purposes is described. J. N. A.

Fermentation of sugars by *Bacterium tularense*. E. Francis (*J. Bact.*, 1942, **43**, 343—346).—Fermentation reactions are reported on 60 strains. Classification on a basis of sugar fermentations is impracticable. F. S.

Vaccine prophylaxis against tularæmia in man. L. Foshay, W. H. Hesselbrock, H. J. Wittenberg, and A. H. Rodenberg (*Amer. J. Publ. Health*, 1942, **32**, 1131—1145).—The vaccine used was prepared by the oxidation of virulent strains by HNO_3 and immunity lasted only a year. Field trials showed encouraging results. C. J. C. B.

Dissolved air as a source of error in fermentation tube results. J. Archambault and M. H. McCrady (*Amer. J. Publ. Health*, 1942, **32**, 1164—1168).—7 days of storage of single-strength lactose broth at 4° c., or even at 13°, sufficed for the production, on incubation at 37°, of visible gas in some of the tubes. C. J. C. B.

Therapeutic use of bacteriophages. W. J. MacNeal (*N.Y. Sta. J. Med.*, 1939, **39**, 451—459). E. M. J.

Infection of mice by feeding with tissues containing the virus of St. Louis encephalitis. C. G. Harford and J. Bronfenbrenner (*J. infect. Dis.*, 1942, **70**, 62—68).—When mice were fed on newly-born mice that were dead or moribund from experimental infection with the virus of St. Louis encephalitis, some of them developed encephalitis due to this virus. Some of the survivors showed sp. resistance. F. S.

Equine encephalomyelitis in laboratory technician with recovery. H. Gold and B. Hampil (*Ann. int. Med.*, 1942, **16**, 556—569). A. S.

pH stability of virus of equine encephalomyelitis (Eastern strain) under various conditions. H. Finkelstein, W. Marx, D. Beard, and J. W. Beard (*J. infect. Dis.*, 1940, **66**, 117—126).—Virus purified by differential centrifugation was most stable at pH 7—10. Infectivity to mice diminished rapidly in solutions more alkaline than pH 10, and more slowly in the acid range to pH 2. Crude chick embryo virus suspensions had a similar range of max. stability but also had a second range of relative stability between pH 3 and 5, and a region of rapid inactivation at pH 5·5. It is suggested that an enzyme present in chick embryo may cause this anomalous result. F. S.

Influence of pH on molecular stability of equine encephalomyelitis virus protein (Eastern strain). A. R. Taylor, D. G. Sharp, and J. W. Beard (*J. infect. Dis.*, 1940, **67**, 59—66).—The pH range of max. molecular stability, as determined by the sedimentation pattern of the protein in buffer–Ringer solution in a centrifugal field of 17,000 *g*, was 7·0—8·5. This range corresponds to that of infectivity. F. S.

Epidemiology of epidemic cerebrospinal meningitis. Studies in bacterial metabolism. A. I. Kendall (*Quart. Bull. Northwest Univ. Med. School*, 1942, **16**, 108—109). A. S.

Reciprocal transmission tests with infectious catarrh of chickens, rats, and mice. J. B. Nelson (*J. Exp. Med.*, 1942, **76**, 253—262). A. S.

Effect of mucin on influenza virus infection in hamsters. A. H. Wheeler and W. J. Nungester (*Science*, 1942, **96**, 92—93).—Influenza *A* virus suspended in sterile mucin produced gross lung lesions, when injected intratracheally into hamsters, in 71% of the animals; virus in saline produced lesions in 9%, mucin alone in 25%, and neutralised virus in mucin in 33% of the animals. E. R. S.

Immunity to poliomyelitis. Heterologous strains and discrepant neutralisation tests. W. L. Aycock (*Amer. J. med. Sci.*, 1942, **204**, 455—467).—Where human convalescent sera from cases occurring in an outbreak in which the epidemiologic evidence indicated infection with a single strain of virus were tested against that strain, neutralising antibody was regularly found; in tests against an old laboratory strain, only a portion had neutralising antibody. Monkeys convalescent from an attack from each of 2 strains of virus neutralised the homologous virus but not the heterologous strain. Monkeys convalescent from separate attacks from the 2 strains of virus neutralised both strains. Discrepant neutralisation tests in poliomyelitis are thus due to the use of heterologous strains of virus. C. J. C. B.

Chemical prophylaxis of experimental poliomyelitis. E. W. Schultz and L. P. Gebhardt (*J. infect. Dis.*, 1942, **70**, 7—50).—A 1% solution of $ZnSO_4$ was the most efficient of a no. of chemical agents which, when applied in aq. solution to the olfactory mucosa in monkeys, induced resistance against later instillation of poliomyelitis virus. Resistance lasted for 3—6 months. The associated histological changes are described. (27 photomicrographs.) F. S.

Recognition of virus type pneumonia. B. E. Goodrich and H. A. Bradford (*Amer. J. med. Sci.*, 1942, **204**, 163—178). C. J. C. B.

Experimental infection of chick embryo with pseudorabies virus. F. B. Bang (*J. Exp. Med.*, 1942, **76**, 263—270). A. S.

Investigations on immunogenic properties of fixed rabies virus strains. B. Hampil and G. H. Roberts (*J. Bact.*, 1942, **43**, 397—407).—17 strains of fixed rabies virus were tested for their immunogenic properties as virulent vaccines in mice. Wide differences occurred in the immunity response of the mice depending on the strain of virus used. F. S.

Effect of temperature on growth and survival of myxoma, herpes, and vaccinia viruses in tissue culture. R. L. Thompson and M. S. Coates (*J. infect. Dis.*, 1942, **71**, 83—85).—Minced chick embryonic tissue suspended in serum–Tyrode's solution in large test-tubes was a convenient medium. The max. growth of each virus occurred at 34—35°. Herpes and myxoma did not survive 40·2° and 42·2° respectively. One strain of vaccinia remained viable at 45·1° and another failed to survive. F. S.

Local formation of antivaccinial antibodies by skin. G. Hartley (*J. infect. Dis.*, 1940, **66**, 44—52).—When small quantities of vaccinia virus were adsorbed to $Al(OH)_3$ gel and inoculated into cutaneous nodules in rabbits caused by a previous injection of the gel, neutralising antibodies were found in the nodules before they appeared in the serum. It was concluded that the antibodies were produced by the macrophages mobilised in the nodules. (3 photomicrographs.) F. S.

Susceptibility of heart of rabbit to specific infection in viral diseases. J. M. Pearce (*Arch. Path.*, 1942, **34**, 319—333).—Intratesticular inoculation of vaccinia-, pseudorabies-, inflammatory fibroma-, strain *A* fibroma- and myxoma-viruses into rabbits previously injected intravenously with a solution of acacia caused cardiac lesions situated predominantly in the myocardium. The lesions did not usually develop if the acacia injection was omitted. (12 photomicrographs.) C. J. C. B.

Reciprocal infection of ducks and chickens with tumour-inducing viruses. Electrophoretic analysis of anti-papilloma rabbit serum. Study of papilloma virus protein with electron microscope.—See A., 1942, III, 903.

Physical and chemical properties of a distinctive strain of tobacco mosaic virus. C. A. Knight (*J. Biol. Chem.*, 1942, **145**, 11—18).—A strain of tobacco mosaic virus originally discovered in rib grass was isolated from Turkish tobacco in needle-like paracrystals. The S content was 0·64%; otherwise elementary analysis and examination in the ultracentrifuge and with the electron microscope gave results indistinguishable from those obtained with ordinary tobacco mosaic virus. Again there was little difference in the ultra-violet absorption spectra of the two viruses or of their protein and nucleic acid components, but there was a significant difference in the band structure (H_2 discharge tube), particularly in the tyrosine–tryptophan region. Both had common antigenic properties, but each possessed distinctive groups missing in the other. A. L.

Significance of amino-groups for multiplication of tobacco mosaic virus. G. Schramm and H. Müller (*Z. physiol. Chem.*, 1942, **274**, 267—275).—Using the Van Slyke method, tobacco mosaic virus contains 0·25% (±20%) of amino-N. Acetylation for a short time with keten yields an active product which contains practically no detectable amino-N. The acetyl groups cannot be determined by alkaline hydrolysis followed by acidification, since the virus itself under these conditions gives volatile acid. Longer acetylation with keten causes considerable loss of activity, which is thought to be due to O-acetylation, but hydrolysis for 1 hr. in glycine buffer at pH 9 or 10 has no effect, whilst at pH 11 the activity is completely destroyed. Normal virus is isolated from plants 4 weeks after inoculation with a highly acetylated virus. Attempts to isolate an enzyme from the leaves, capable of hydrolysing acetyl groups, were unsuccessful. Reaction of tobacco mosaic virus with *p*-bromophenylcarbimide yields a completely active product which contains 0·58% of Br. If most of the amino-groups in the virus can be acetylated or react with *p*-bromophenylcarbimide without loss of activity, it might be possible to deaminate without loss of activity, but treatment for 20 hr. with 2% $NaNO_2$ at pH 3·5 causes complete inactivation. J. N. A.

Fine structure of tobacco mosaic virus. A. Butenandt, H. Friedrich-Freksa, S. Hartwig, and G. Scheibe (*Z. physiol. Chem.*, 1942, **274**, 276—284).—Examination of a solution of tobacco mosaic virus protein under pressure in polarised light reveals that the ribonucleic acid is combined with the protein framework of the mol. in such a way that the planes of the purine and pyrimidine rings are mostly parallel to one another and probably vertical to the long axis of the mol. The protein framework is arranged so that the plane of the indole ring of tryptophan is also perpendicular to the long axis of the mol. J. N. A.

Concentration and purification of tobacco mosaic virus by means of the Sharples super-centrifuge. W. N. Stanley (*J. Amer. Chem. Soc.*, 1942, **64**, 1804—1806).—Details are recorded whereby 10—15 g. of the virus can be prepared in 10 hr. by means of this centrifuge. R. S. C.

Infectious diseases. H. A. Reimann (*Arch. intern. Med.*, 1942, **70**, 132—177).—Review of recent literature. C. A. K.

Transmission of certain respiratory infections. L. Buchbinder (*J. Amer. Med. Assoc.*, 1942, **118**, 718—730).—A review. C. A. K.

Preparation of apparently non-antigenic beef serum-protein by treatment with alkali. L. E. Arnow, L. A. Kazal, and R. J. De Falco (*J. Biol. Chem.*, 1942, **145**, 347—348).—Beef serum treated with N-NaOH for 27 hr. loses its antigenic activity towards rabbits and guinea-pigs. R. L. E.

Effect of removal of lipins on solubility of antibody proteins and on reaction between antigens and antibodies.—See A., 1942, III, 876.

Antibodies against aminothiazole.—See A., 1942, III, 928.

Influence of sulphanilamide on immunity.—See A., 1942, III, 918.

Infection and immunity in mouse catarrh. H. E. Pearson (*J. Bact.*, 1942, **43**, 229—235).—Intraperitoneal or subcutaneous inoculation of mice with the agent of mouse catarrh gave an increased resistance to subsequent intranasal inoculation. The agent is readily cultivated in tissue culture. F. S.

Protein–tyrosine reaction as diagnostic test for malaria. J. C. Swartzwelder and C. C. Adams (*Amer. J. trop. Med.*, 1941, **21**, 717—723).—The protein–tyrosine reaction (Proske and Watson, *U.S. Publ. Health Repts*, 1939, **54**, 158) is an indirect determination of the serum-euglobulin. The fraction is pptd. by Na_2SO_4, after which the tyrosine chromogenic index is determined by comparison with a known tyrosine standard. Sera from malarial subjects usually have indices for euglobulin in excess of those of healthy individuals. It is also high in cases of leprosy, typhoid fever, and granuloma inguinale and in most cases of active tuberculosis. F. S.

Use of complement fixation test in Rocky Mountain spotted fever. H. Plotz and K. Wertman (*Science*, 1942, **95**, 441—442).—Complement fixation tests were used for diagnosis of Rocky Mountain spotted fever in 9 cases. One case had the disease 4½ years and one 12 days before examination. E. R. S.

Serum sickness and anaphylaxis. Analysis of 6211 patients treated with horse serum for various infections. F. G. Kojis (*Amer. J. Dis. Child.*, 1942, **64**, 93—143, 313—350).—The following factors influenced the incidence of serum sickness and anaphylaxis: kind and prep. of serum, quantity administered, horse producing the serum, race of the patient, route of administration, repeated injections, and the patient. When the reaction to the intradermal sensitivity test was positive, the incidence of serum sickness following inoculation with diphtheria antitoxin was 4 times, of anaphylaxis 35 times, and of death mortality 11 times greater than when the reaction to the test was negative. If the reaction to the sensitivity test was positive, the incidence of serum sickness following inoculation with scarlet fever serum was 63% higher, and that of anaphylaxis was 33 times higher, than if the reaction to the test was negative. Secondary injections of diphtheria antitoxin increased the incidence of serum sickness by 50% while the anaphylaxis rate was 23 times greater than after the primary injections. Use of the intramuscular route increased the incidence of anaphylaxis 14 times, with the intravenous route 62 times. Secondary injections of scarlet fever had no pronounced effect on the incidence of serum sickness, but the anaphylaxis rate was 8 times greater than after the primary injection. Use of the intramuscular route increased the incidence of anaphylaxis 3½ times, the intravenous route 22 times. C. J. C. B.

Inhalant sensitisation in guinea-pigs under controlled atmospheric conditions. L. J. Courtright, S. H. Hurwitz, and A. B. Courtright (*J. Allergy*, 1942, **13**, 271—281).—An air-conditioned experimental chamber is described for the study of inhalant sensitisation in laboratory animals. A kymograph record is shown of the breathing found in sensitised guinea-pigs suffering from sublethal respiratory anaphylaxis. C. J. C. B.

Protein of ragweed pollen. R. R. Roth and T. Nelson (*J. Allergy*, 1942, **13**, 283—288).—There are 2 protein fractions in ragweed pollen. One is of large mol. size and is responsible for the pptg. reaction with pollen rabbit antiserum and for anaphylaxis in the sensitised guinea-pig. The other fraction is made up of small protein mols. and is responsible for the skin-reactivity. C. J. C. B.

Value of continuing preseasonal therapy during pollen season. H. G. Golan and S. S. Sack (*J. Allergy*, 1942, **13**, 300—305).—122 cases of ragweed hay fever given preseasonal and coseasonal therapy, or preseasonal therapy alone, showed similar results. C. J. C. B.

Relationship between clinical symptoms and pollen count in pollinosis. S. S. Sack and H. G. Golan (*J. Allergy*, 1942, **13**, 296—299).—The intensity of the individual symptoms of ragweed hay fever corresponds in a general way to the rise and fall of the pollen curve. C. J. C. B.

Multiplicity of allergens and reagins in cottonseed sensitiveness. H. S. Bernton, J. R. Spies, and H. Stevens (*J. Allergy*, 1942, **13**, 289—295).—A protein picrate was the major allergenic component of cottonseed; it is immunologically distinct from other allergens in cottonseed. Sera from cottonseed-sensitive patients contain a variable no. of cottonseed reagins. The multiplicity of allergens in cottonseed was demonstrated by the passive transfer technique. C. J. C. B.

Chemistry of allergens. VI. Chemical composition and properties of an active carbohydrate-free protein from cotton seed. J. R. Spies and E. J. Umberger (*J. Amer. Chem. Soc.*, 1942, **64**, 1889—1891; cf. A., 1942, III, 356).—Allergenic fractions containing 0·9—3·0% of carbohydrate are converted by electrophoresis into a protein, CS-60C, which gives no chemical tests for carbohydrates. Freedom from carbohydrates is further indicated by the ratio, % N : % carbohydrates. CS-60C has a composition typical of a protein, $[\alpha]_D^{20}$ −140° (1%), −135° (2%) in water, and an absorption max. at 2750 A. ($E_{1cm.}^{100\%}$ ~2·86) in water, and is allergenic (guinea-pigs), positive passive transfer reactions being produced by 10^{-9} g. Solubilities indicate that CS-60C is probably a mixture of active proteins of similar structure. R. S. C.

Grass hay fever. C. R. K. Johnston (*Cleveland Clin. Quart.*, 1942, **9**, 98—103).—Pollen tests alone are inadequate and should be supplemented by tests with the more common inhalant and food allergens, with subsequent hyposensitisation. Treatment of choice is perennial pollen therapy. A. S.

"Coli metabolin" therapy in hay fever. M. H. Loveless and H. S. Baldwin (*J. Amer. Med. Assoc.*, 1942, **118**, 451—453).—"Coli metabolin," a filtrate of *Escherichia coli* (Elsbach, A., 1941, III, 812), was as effective as injections of 0·9% NaCl solution in 20 ragweed-sensitive hay fever patients. The benefits were considered of psychological origin. C. A. K.

Allergy to Australian pine. N. Zivitz (*J. Allergy*, 1942, **13**, 314—316).—A report of 3 cases. C. J. C. B.

Generalised eruptions following use of patch test [in contact dermatitis]. P. E. Bechet (*N.Y. Sta. J. Med.*, 1939, **39**, 829—833).—Report of 2 cases. E. M. J.

Iodine allergy. L. Pelner (*J. Lab. clin. Med.*, 1942, **27**, 1150—1154).—Report of 5 cases with positive patch tests. C. J. C. B.

Acquired immunity in human hookworm (*Necator americanus*) infections. A. J. Sheldon and M. E. Groover, jun. (*Amer. J. Hyg.*, 1942, **36**, 183—186).—Serum from school children many of whom were infected with *N. americanus* were examined for precipitins against infective larvæ. A precipitin reaction was observed microscopically around and in the oral opening and around the genital and anal pores of some of the larvæ placed in sera from 8 of 14 children harbouring light and moderate infections and from 3 uninfected children. Sera from 6 children with heavy infections and from 5 unexposed to infection were negative. B. C. H.

Transmission from mother to offspring of immunity against mouse cestode, *Hymenolepis nana*, var. *fraterna*. J. E. Larsh (*Amer. J. Hyg.*, 1942, **36**, 187—194).—Young mice were protected against infection with *H. nana* for 37—41 days after birth by substances transferred to them from infected mothers. Immunity was demonstrated in the young of mice infected before pregnancy. The transfer of immune bodies occurred *in utero* and in the milk. Protection received *in utero* disappeared 7—9 days after weaning; that received from milk was of longer duration and accounted for added days of resistance. Immunity to animal parasites is similar to that conferred by bacteria and viruses. B. C. H.

Epidemiology and diagnosis of trichinosis. O. Wagner (*Z. physiol. Chem.*, 1942, **274**, 116—128).—A review and a description of the complement-fixing reaction of Gaase. J. N. A.

Metabolism of trichinosed rats during the early phase of disease. W. P. Rogers (*J. Helminthol.*, 1941, **19**, 87—104).—Protein digestion fell to its lowest point 8—12 days after infection, probably due to antiproteases secreted by the adult parasites and to damage in the intestinal mucosa. Urinary N rose immediately after infection, and then fell to below normal, after which the excretion rate rose steeply. The urea output also rose immediately after infection, fell during the period 10—12 days after infection, and then increased greatly. These changes were attributed to toxins elaborated by the adult parasites. F. S.

Toxic principle in eggs of ticks. E. A. Steinhaus (*U.S. Publ. Health Repts.*, 1942, **57**, 1310—1312).—When many eggs of normal *D. andersoni* ticks were inoculated into experimental animals, characteristic toxic symptoms followed by death in 2 or 3 days usually resulted. The active principle was filterable, resistant to drying, alcohol, and acetone, and nondialysable. C. G. W.

Microbiology of insects, with special reference to biologic relationships between bacteria and insects. E. A. Steinhaus (*Bact. Rev.*, 1940, **4**, 17—57).—A review. (204 references.) F. S.

XXVI.—PLANT PHYSIOLOGY.

Aërobic fermentation in active plant meristems. W. Ruhland and K. Ramshorn (*Planta*, 1938, **28**, 471—514).—The R.Q. of young growing tissues exceeds 1, sometimes to a considerable extent. This is not due to restricted access to O_2, but to aërobic fermentation. Alcohol and acetic acid are produced and an alcohol-dehydrogenase is present. Aërobic fermentation is controlled by meristematic activity. Respiration of elongating cells is normal. Artificial stimulation of cell division results in aërobic fermentation and R.Q. exceeding 1. The O_2 consumption of dividing cells is less than that of elongating cells; it increases with the cessation of meristematic activity. A. G. P.

Effect of electrolytes on intake of acid and basic dyes by plant cells. S. Rehm (*Planta*, 1938, **28**, 359—382).—The intake of dissociated compounds by root hairs of *Impatiens balsamina* depends mainly on the adsorption of ions by or their chemical combination with cell constituents. The degree of dissociation of the dye is not an important factor. Alkali salts readily penetrate the cell and displace basic dyes from the plasma and cell sap. Ca salts diminish the permeability of cells to basic dyes. Al salts retard the intake of acid and basic dyes. The intake of acid dyes is increased by alkali salts to extents which are inversely related to the lyotropic character of the salt anion. A. G. P.

Anatomical and physiological responses of tomato to varying concentrations of sodium chloride, sodium sulphate, and nutrient solutions. H. E. Hayward and E. M. Long (*Bot. Gaz.*, 1941, **102**, 437—462).—Tomato plants were grown in a series of culture solutions of different osmotic concns. and in others in which part of the nutrient material was replaced by Na_2SO_4 or NaCl of equiv. osmotic concn. Effects of salt concn. on the relative size and development of plant tissues and organs are recorded. In all series high osmotic concn. in the nutrient was associated with smaller and thicker-walled cells in mechanical tissues. High salt concn. inhibited cambial activity. High [NaCl] produced more succulent leaves than did Na_2SO_4 or simple nutrient salts of similar osmotic concn., retarded flower-bud formation, and delayed anthesis. Na_2SO_4 was the more active in preventing flower-bud formation. High salt concn., especially of Na_2SO_4, induced starch accumulation in parenchymatous tissues of basal stems, and high osmotic concn. in saps. With rising [NaCl] in the nutrient the accumulation of Na and Cl in plant tops increased; in the case of Na_2SO_4 the Na in tops increased with [$Na^{\cdot}$] of the nutrient but the [SO_4''] in nutrient was less definitely related to that in plant tops. A. G. P.

The Höfler "specific permeability series." II. Urea and glycerol. H. G. Bogen (*Planta*, 1938, **28**, 535—581).—Possible causes of variation from the sp. permeability rule are examined. The quotient permeability to urea (of plant membranes)/permeability to glycerol increases with the acidity of the solution. Hydrolysis of urea by urease within the plant cell during the period necessary for observations of plasmolysis is negligible. The dependence of permeability on pH is related to swelling of plant cell membranes. Urea increases and glycerol decreases the swelling of gelatin, the effect being a function of pH. A. G. P.

Relation of length of photoperiod and intensity of supplemental light to production of flowers and berries in the greenhouse by several varieties of potatoes. H. O. Werner (*J. Agric. Res.*, 1942, **64**, 257—274).—Max. production of flowers, berries, and seeds under greenhouse conditions was obtained with a light intensity of 500 ft.-candles and a photoperiod of 24 hr. Vegetative growth of tubers was max. with low supplemental light intensity (50 ft.-candles) and a photoperiod of 24 hr., and was min. with a photoperiod of 18 hr. The average size of leaves increased with decrease in light intensity. Tuber growth was substantially the same at all light intensities. A. G. P.

Relative humidity and nectar concentration in fireweed. H. A. Scullen (*J. Econ. Entom.*, 1940, **33**, 870—871).—Nectar concn. in *Epilobium augustifolium*, L., is indirectly proportional to the R.H. A. W. M.

Chlorosis of bracken due to manganese deficiency. J. G. Hunter (*Nature*, 1942, **150**, 578—579).—Analytical data are given for fronds of normal and a chlorotic bracken, and for the soils on which they were growing. A low Mn content is probably a factor in the production of the chlorosis, although the latter was not removed by spraying or watering with $MnSO_4$ solutions in early September. The condition may be intensified by the high Ca content of the tissues interfering with the mobility of the Fe. A. A. E.

Chlorosis in tomatoes. B. T. Cromwell and J. G. Hunter (*Nature*, 1942, **150**, 606—607).—Chlorosis of the leaves of tomato plants is associated with, and probably a result of, Mg deficiency in plants grown in soil containing ample replaceable Mg. Injection of Mg salts improved the condition only slightly. Low absorption of Mg is associated with a high K : Mg ratio in the soil solution; it is not influenced by liming. A. A. E.

Nitrogen balance and loss of nitrogen [in plants]. K. Mothes (*Planta*, 1938, **28**, 599—616).—When stems of cut leaves are placed in water only insignificant amounts of N compounds pass into the water. Deficit of N in higher and lower plants is due to loss of mol. N_2 formed by interaction of NO_3' and amino-N under acid conditions. Loss of N is rare in healthy higher plants but is frequent in expressed saps and in mould cultures. In yeast thiol favours reduction of NO_3'. Liberation of N from plants is the result of a NO_2'-detoxicating action. A. G. P.

Biochemical nitrogen fixation. III. Production and oxidation of ethyl alcohol by legume nodules. C. A. Ludwig, F. E. Allison, S. R. Hoover, and F. W. Minor (*Bot. Gaz.*, 1941, **102**, 417—436).—All nodule tissue examined contained alcohol. Under anaërobic conditions the amount of alcohol present increased and CO_2 was produced in quantities approximating to those formed in the alcoholic fermentation of sugar. Aërobic conditions resulted in oxidation (probably complete) of alcohol in the tissues or added to the medium. In media containing both sugar and alcohol each tended, competitively, to inhibit the oxidation of the other. The sparing action of O_2 on carbohydrate was apparent in nodules in presence of added alcohol and in roots without added substrate, but not in nodules with added glucose or without added substrate. There was no evidence of oxidative reconversion of alcohol. The significance of the oxidation of alcohol in the carbohydrate metabolism of plants is discussed. A. G. P.

Influence of sulphur deficiency on metabolism of sunflower. S. V. Eaton (*Bot. Gaz.*, 1941, **102**, 536—556).—S deficiency in sun-

flower is associated with yellow-green colour and decreased size of leaves, thinner stems, accumulation of sol. org. N and S compounds and NO_3' in stems, and slightly increased starch and acid-hydrolysable carbohydrates, somewhat diminished sugar, but much increased polysaccharide contents. Low reductase activity in deficient plants results in poor assimilation of N and accumulation of NO_3'. High sol. N contents are largely due to proteolysis but may result, in part, from insufficient S-containing amino-acids to permit adequate synthesis of proteins. Gradients of N, S, protein, and carbohydrate in the plant support the view that protein hydrolysis and re-utilisation characterises the metabolism of S-deficient plants. A. G. P.

Variations in organic acid contents of saps of birch (*Betula alba*) **and maple** (*Acer pseudoplatanus*). J. Wolf (*Planta*, 1938, **28**, 721—724).—Periodical analyses of sap collected from bore-holes in the tree trunks are recorded. In birch malic acid represents 40% and 80—100% of the total org. acids in the initial and late stages respectively of the sap flow. The proportion of citric acid is smaller throughout but shows similar variations. The total acid content from borings on the north is greater and the total sap flow smaller than in those from the south side of the tree. Maple sap contains more acid than that from birch; the proportion of malic acid in the total acid increases as the flow of sap proceeds. The citric acid content is smaller but varies similarly. The abs. concn. of citric acid in maple is 5 times that in birch sap. A. G. P.

Changes in sunflower seed oil during germination: influence of acetate. G. Tilenius (*Planta*, 1938, **28**, 429—452).—During germination of the seed in darkness the oil showed an initial increase followed by a steady decline in I val. Of the total oil in the seed ⅓ disappeared while the I val. was 120 or over; the remainder was utilised during the period of falling I val. When seeds were germinated in K or Ca acetate solutions the initial increase in I val. was greater and morphological differences in seedlings were apparent. A. G. P.

Effect of fluorescence on germination. F. C. Lodat and C. Weber (*Arch. Sci. phys. nat.*, 1942, [v], **24**, *Suppl.*, 28—32).—The stimulating effect of small doses of ultra-violet light is reduced by fluorescence (produced by soaking seeds of *Raphanus sativus* in berberine sulphate), whereas partial protection against the inhibiting effect of larger doses is observed. H. G. R.

Daily course of assimilation and respiration in some halophytes. W. Neuwohner (*Planta*, 1938, **28**, 644—679).—The assimilation process of halophytes is not fundamentally different from that of glycophytes, but the daily gain in dry matter is much smaller. A. G. P.

Effects of root-growth hormones on meristem of excised pea roots. F. T. Addicott (*Bot. Gaz.*, 1941, **102**, 576—581).—Deficiency of vitamin-B_1 or nicotinic acid in cultures of excised pea roots diminishes and ultimately prevents growth; the length of meristem, the no. of cell divisions, and the length of mature cells decrease. In nicotinic acid deficiency roots become thin due to reduction in diameter of root cells and no. of columns of cells in roots. The meristem of -*B*-deficient roots does not become appreciably smaller but growth declines very rapidly and irregular thickenings develop on mature parts of roots. A. G. P.

Growth effects of pyridine, piperidine, atropine sulphate, and thiamin chloride on *Stramonium* **seedlings.** H. W. Youngken, jun., and E. B. Fischer (*J. Amer. Pharm. Assoc.*, 1942, **31**, 257—263).—Pyridine, piperidine, and atropine sulphate inhibit stem growth without appreciably affecting leaf growth, though roughened leaves have been observed in some seedlings treated with the two latter substances. Growth is accelerated by thiamin chloride especially at concns. between 0·001 and 0·0025%. Growth responses are most satisfactory at low concns., *i.e.*, below 0·075%. H. G. R.

Action of carcinogenic hydrocarbons on carrot *in vitro*. R. Buvat (*Compt. rend.*, 1942, **214**, 128—130).—Benzpyrene and methylcholanthrene cause abnormal growth of the cells in the phloem and cambium. W. McC.

Heteroauxin and production of tetraploid shoots in *Brassica oteracea*.—See A., 1942, III, 867.

Viroplasm hypothesis. J. Johnson (*J. Agric. Res.*, 1942, **64**, 443—454).—The possibility of the transfer of protoplasmic constituents (or living protein mols.) from one plant species to another and its subsequent reproduction in the new host is examined. *Phaseolus vulgaris* was inoculated with extracts from 122 other legumes. In 119 cases no symptoms of virus infection were obtained. The remaining 3 cases are discussed; in one of them the reaction appears to be due to allergy. A. G. P.

XXVII.—PLANT CONSTITUENTS.

Osmotic value of plant saps. H. Knodel (*Planta*, 1938, **28**, 704—715).—80—96% of the osmotic pressure of expressed plant saps is accounted for by sugars, org. acids, and (especially) salts. A. G. P.

Manganese in the soil of the state of São Paulo. J. E. de Paiva Netto (*Anais Assoc. Quím. Brasil*, 1942, **1**, 159—189; cf. A., 1942, III, 949).—The chlorophyll in coffee leaves is dependent on the soil content of Mn, which is readily washed out at pH below 5 and immobilised at pH above 6·5. Extraction of Mn from the soil by 0·001N-HNO_3 or -H_2SO_4 most nearly resembles the behaviour of the roots of the coffee plant. The distribution of Mn in São Paulo is described. F. R. G.

Volatile products from apples. L. P. Walls (*J. Pomology*, 1942, **20**, 59—67).—Volatile products evolved from stored apples are almost completely absorbed by H_2SO_4 activated by Ag_2SO_4 (2%); the acid alone absorbs only ⅓ of the amount. Determinations of volatile products by combustion methods are vitiated by absorption of ethylene by soda-lime. Ethylene represents a high proportion of the volatile products. Odorous products include amyl formate and acetate. A. G. P.

Component fatty acids of some vegetable seed phosphatides. T. P. Hilditch and Y. A. H. Zaky (*Biochem. J.*, 1942, **36**, 815—821).—The component acids of ground-nut phosphatides are palmitic (16·2), stearic (2·8), C_{20}—C_{24} (4·6), C_{26} (2·5), oleic (47·1), linoleic (22·7), and unsaturated C_{20}—C_{22} acids (4·1%). Cottonseed phosphatides contain palmitic (17·3), stearic (7·3), arachidic (2·8), hexadecenoic (1·5), oleic (20·3), linoleic (44·4), and unsaturated C_{20}—C_{22} acids (6·4%). Sunflower seed phosphatides contain palmitic (14·7), stearic (5·1), arachidic (9·5), oleic (19·3), linoleic (45·9), and unsaturated C_{20}—C_{22} acids (5·5%), whilst linseed phosphatides contain palmitic (11·3), stearic (10·6), hexadecenoic (3·5), oleic (33·6), linoleic (20·4), linolenic (17·4), and unsaturated C_{20}—C_{22} acids (3·2%). The data confirm and extend the conclusions suggested by Hilditch and Pedelty (A., 1937, III, 503) from the phosphatides of soya bean and rape seed. In all cases there is a consistent occurrence of a small amount of highly unsaturated C_{20}—C_{22} acids, which are absent from seed glycerides; saturated acids, notably palmitic acid, form a larger proportion of seed phosphatides than of seed glyceride fatty acids; linoleic acid is, on the whole, the most characteristic acid of seed phosphatides, and although in 2 cases, it amounts to only 20—25%, yet in the other 4 cases it forms 45—55% of the total phosphatide fatty acids. J. N. A.

Constituents of volatile oil of catnip. II. Neutral components. Nepetalic anhydride.—See A., 1943, II, 14.

Annual plants. H. F. Müller and W. Overbeck (*Ber.*, 1942, **75**, [*B*], 909—920).—The pith of annual plants is characterised by the uronic acid content, which may attain 30% of the dry substance; galacturonic acid and a little glucuronic acid are present. In the stems of annuals the amount of glucuronic exceeds that of galacturonic acid. In contrast with the woods of perennials, the stems of annuals yield notable amounts of relatively simple polysaccharides and some lignin to alcohol. With N-NaOH lignin in addition to much carbohydrate is obtained. After removal of the sol. portions of the lignin from the stems there remains 17—18% of a lignin very similar to that of wood. Oxidative degradation of tobacco stem lignin gives dehydrodiveratric, *iso*hemipinic, and veratric acid, the two latter being also obtained from sunflower lignin; these products show differences similar to those observed in the oxidation of beech and pine lignin. The findings indicate a state of growth, the reactions which lead to complex polysaccharides and lignin being incomplete. H. W.

Preparation of asparagine. H. B. Vickery, G. W. Pucher, and C. G. Deuber (*J. Biol. Chem.*, 1942, **145**, 45—53).—A method for the isolation of asparagine from etiolated lupin and soya-bean seedlings is described. A. L.

Variations in ascorbic acid contents of cut leaves of *Bryophyllum calycinum* **at different temperatures.** J. Wolf (*Planta*, 1938, **28**, 725—729).—The ascorbic acid contents of leaf tissues in darkness decreased rapidly at 20°. At 7° and 37° little change occurred in 48 hr. Variations were unrelated to carbohydrate decomp. (acid formation) in the tissues. A. G. P.

Vitamin-*C* and chromosome number in *Rosa*. J. W. H. Harrison, K. B. Blackburn, and E. Bolton (*Nature*, 1942, **150**, 574).—Errors in chromosome nos. given by Darlington (A., 1942, III, 949; Pyke and Melville, A., 1942, III, 912) are pointed out. Such correlation as exists lies between the period of ripening of the species and its ascorbic acid content. A. A. E.

[**Vitamin-*C* and chromosome number in** *Rosa*.] R. Melville and M. Pyke (*Nature*, 1942, **150**, 574; cf. preceding abstract).—Mean vitamin-*C* vals. of hips show an upward trend for increasing degrees of polyploidy, and rise for short intervals of latitude from south to north. In the London area, species ripening early in August are richest in -*C*, and species placed together in the accepted classification of the genus are generally similar in -*C* content. A. A. E.

[**Vitamin-*C* and chromosome number in** *Rosa*.] C. D. Darlington (*Nature*, 1942, **150**, 575; cf. preceding abstracts).—An acknowledgment. A. A. E.

Highly active glucoside from crocus pollen. R. Kuhn, I. Löw, and F. Moewus (*Naturwiss.*, 1942, **30**, 373—374).—The pollen yields a glucoside, m.p. 188—189° (decomp.), $[\alpha]_D^{20}$ −85° in 0·1N-NaOH, hydrolysed by 2N-H_2SO_4 to an aglycone, which is not of a carotenoid nature. The glucoside inhibits the mobility of the gametes of *Chlamydomonas eugametos* to an extent greater than that due to heavy-metal ions; the aglycone is inactive in this respect but renders the asexual cells of the alga capable of conjugating with the male cells. F. O. H.

Crystalline cardiac glucoside from *Adonis vernalis*.—See A., 1943, II, 4.

Indian *Artemisia*. N. A. Qazilbash (*Quart. J. Pharm.*, 1942, **15**, 323—331).—Santonin-containing and santonin-free forms of *Artemisia* occur in the Kurram area of India. The two forms belong to two distinct species, the former to a sub-species under *A. cina* group. Methods for detection and determination of santonin in dried samples of *Artemisia* are described. The amounts vary considerably in different localities in the same geographical area. Santonin is present in leaves, flower heads, seeds, and tender stalks of flowering heads, and absent from the woody stems and roots. Material for manufacturing purposes should consist of leaves and immature flower heads only, since these are richest in santonin. J. N. A.

Proteins in chloroplasts and cytoplasm of spinach leaves. K. Noack and E. Timm (*Naturwiss.*, 1942, **30**, 453).—The isolation of the proteins is described. The cytoplasm protein contains N 14·5, S 1·13, and ash 3·1%, whilst the chloroplast protein contains N 13·8, S 1·03, P 0·50, and ash 4·6%. 80—82% of the N is converted into amino-N in 144 hr. by the action of pepsin and trypsin. The constituent amino-acids have been determined. There is no essential difference between the two proteins, but that from the cytoplasm contains more lysine and glutamic acid and slightly less histidine. J. N. A.

Application of acidic and basic alumina columns to analysis of protein hydrolysates.—See A., 1943, II, 18.

Influence of preparative procedure on purity of chlorophyll components as shown by absorption spectra. F. P. Zscheile and C. L. Comar (*Bot. Gaz.*, 1941, **102**, 463—481).—The prep. of solutions of chlorophyll components having reproducible spectroscopic properties is described. The adsorption spectrum of ether solutions of chlorophyll varies considerably with the pretreatment of the solution. Drying the sample and delay between purification and spectroscopic examination should be avoided. Spectra of acidified solutions of chlorophyll are recorded and discussed. A. G. P.

Red colouring matter from the green leaves of spinach beet. R. J. B. Marsden (*Nature*, 1942, **150**, 580).—An aq. extract of the leaves, when cooled and treated with an unheated extract of raw potato, affords a brownish-red coloration which with NaOH becomes yellow, the colour being largely restored on acidification, thus resembling the reddish colouring matter extractable from ordinary beetroot leaves. A. A. E.

Anthochlor pigments of *Cosmos sulphureus*.—See A., 1942, II, 421.

Active principles of leguminous fish-poison plants.—See A., 1943, II, 15.

Isolation of three new bitter principles from neem oil.—See A., 1943, II, 19.

Alkaloids of *Hunnemania fumariæfolia*, Sweet.—See A., 1942, II, 429.

Alkaloids of the seeds of *Sophora chrysophylla*.—See A., 1942, II, 429.

Alkaloids of fruit of *Solanum xanthocarpum*.—See A., 1943, II, 18.

Primula saponin.—See A., 1943, II, 19.

Saponin of *Dioscorea tokoro*.—See A., 1943, II, 14.

Seeds of *Alangium lamarckii*.—See A., 1943, II, 12.

Plant phosphatases.—See A., 1942, III, 936.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

New eviscerated preparation. S. Palma Vicuna (*Anal. Acad. Biol. Univ. Chile*, 1935, **1**, 81—88).—A technique of evisceration in rabbits is described: after removal of all abdominal organs, the carotid and the vertebral arteries are tied, thus excluding the brain. A variation of this prep. is one in which the liver is present and normally perfused. I. C.

Laboratory shaking machine. E. E. Myers (*J. Lab. clin. Med.*, 1942, **27**, 1330—1332). C. J. C. B.

Protective caps for glass tissue grinders. E. J. Foley (*J. Lab. clin. Med.*, 1942, **27**, 1337). C. J. C. B.

Method of suspending inverted bottle. E. E. Myers (*J. Lab. clin. Med.*, 1942, **27**, 1336). C. J. C. B.

Simple test-tube rack and comparator. A. L. Copley (*J. Lab. clin. Med.*, 1942, **27**, 1338). C. J. C. B.

Nomographic chart for colorimeter. E. M. Abrahamson (*Amer. J. clin. Path. Tech. Sect.*, 1942, **6**, 45). C. J. C. B.

Simplification of fluorescence microscopy. C. F. Graham (*J. Lab. clin. Med.*, 1942, **27**, 1188—1191).—The apparatus used is described fully. C. J. C. B.

Mercury vacuum release for ultrafiltration and other evacuated systems. P. S. Ehrhard and G. M. Decherd, jun. (*J. Lab. clin. Med.*, 1942, **27**, 1206—1208). C. J. C. B.

Steam-distillation apparatus for micro-Kjeldahl analysis. R. Markham (*Biochem. J.*, 1942, **36**, 790—791).—An efficient steam-jacketed apparatus is described, by means of which 0·02 mg. of N can be determined with an error of less than 1%. P. G. M.

Drying of plasma and sera. G. E. Shaw and H. G. Hind (*Quart. J. Pharm.*, 1942, **15**, 272—279).—An apparatus for drying of serum and plasma, suitable for large-scale operation, is described. Evaporation is carried out at 30—36° with a bath temp. of 55°. Immune and hormone-containing sera can be dried without loss of activity. Denaturation does not occur and a satisfactory product is obtained. The only significant change in the physical properties of human plasma and the reconstituted product is that the pH of the latter is increased and dichroism is considerably more marked. Neither of these affects the suitability of the product for clinical use, and the effect is probably due to species variation, since similar phenomena are observed with sheep plasma, but not with horse plasma. J. N. A.

Determination of protein by biuret and Greenberg methods. F. Wokes and B. M. Still (*Biochem. J.*, 1942, **36**, 797—806).—The determination of protein in serum by the biuret and Greenberg methods within 1—2 hr. after removal of blood gives lower results than the Kjeldahl method. This applies to total protein and to albumin or globulin separated from oxalated or citrated horse or human sera. The results increase with the age of the serum, and the rate of increase is more rapid at high temp. The absorption curve of the biuret colour shows the following max.: 545—555 for fresh-serum protein, 555—565 for fresh milk-protein, and 535 mμ. for biuret itself. In old solutions of caseinogen the biuret max. is displaced slightly towards longer λ at approx. 570 mμ., and there are indications of subsidiary max. at approx. 540 and 600 mμ. The higher results obtained with old serum using the tintometer and Klett colorimeter are confirmed by determination of density with the spectrophotometer in the region of max. absorption. Spectrophotometric examination of a set of Lovibond biuret glasses used for determination of protein by Harrison's method showed a main peak at approx. 545 mμ. and subsidiary peaks at approx. 460, 605, and 650 mμ. which are not present in the biuret colour on fresh protein and may therefore lead to inaccurate results. An error greater than 16% may also be introduced by inaccurate grading of the glasses. J. N. A.

Determination of nicotinic acid in blood cells and plasma. J. R. Klein, W. A. Perlzweig, and D. Handler (*J. Biol. Chem.*, 1942, **145**, 27—34).—Methods for the determination (using CNBr and *p*-methylaminophenol sulphate) of nicotinic acid in blood cells (2 ml.) and plasma (10 ml.) are described. Data on human and dog blood are reported. A. L.

Spectrophotometric determination of phosphorus and cholesterol. M. Kaucher, V. Button, and H. H. Williams (*J. Lab. clin. Med.*, 1942, **27**, 1349—1353).—The gasometric P and the colorimetric cholesterol digitonide methods are adapted for use with the spectrophotometer. P may be determined within the range of 0·006—0·3 mg. For cholesterol it has been possible to increase the quantities (0·04—0·7 mg.) determined without loss of accuracy. C. J. C. B.

Titrimetric micro-determination of chloride, sodium, and potassium in a single tissue or blood sample. W. G. Clark, N. I. Levitan, D. F. Gleason, and G. Greenberg (*J. Biol. Chem.*, 1942, **145**, 85—100).—In 20—1000 mg. of wet tissue or biological fluid, Cl′ is determined by digesting with conc. H_2SO_4, collecting liberated HCl in conc. aq. KOH, and applying the procedure of Schales and Schales (A., 1941, III, 1087). After evaporation of the digest, the ash is used for determination of K as K_2PtCl_6 by the procedure of Cunningham *et al.* (A., 1941, I, 345) and of Na by a modification of the method of Dreguss (A., 1940, III, 370). The errors are 1—2%. W. McC.

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Page	Line	
856	5	*For* " L. R. Webster " *read* " L. T. Webster."

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