BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

A., III.—Physiology and Biochemistry

DECEMBER, 1938.

(a) HISTOLOGY.

Historadiography. P. LAMARQUE (Brit. J. Radiol., 1938, **11**, 425—435).—A description of the technique of making and interpreting *X*-ray photographs of histological sections. W. F. F.

Combined Gram-methyl-green-pyronine stain for formaldehyde-fixed tissues. J. R. LISA (Arch. Path., 1938, **26**, 728—729). C. J. C. B.

Perforated spoons for handling tissue sections (frozen, paraffin, and pyroxylin). G. W. LUBINSKY (Arch. Path., 1938, **26**, 882—883). C. J. C. B.

Hortega's silver impregnation technique: uses and application. W. M. GERMAN (Amer. J. clin. Path., Tech. Suppl., 1938, **8**, 165—171).—Its use as a general nuclear stain, for connective tissue and for epithelial fibrils, epithelial bridges, and protoplasmic reticulum is described. (4 photomicrographs.) C. J. C. B.

Rubber paraffin method for embedding tissues. L. SHERMAN, L. W. SMITH, and S. H. KANE (Amer. J. clin. Path., Tech. Suppl., 1938, **8**, 171—173). C. J. C. B.

Double embedding method for rubber paraffin. E. M. BEYER (Amer. J. clin. Path., Tech. Suppl., 1938, **8**, 173—175). C. J. C. B.

Use of dioxan in histological technique. T. GARVIN (Amer. J. clin. Path., Tech. Suppl., 1938, **8**, 175—178). C. J. C. B.

Myelin methods. E. LANDAU (Bull. Histol. Tech. micr., 1938, **15**, 181—185).—Formol fixation is followed by mordanting in $K_2Cr_2O_7$ with $FeCl_3$ or alum. Paraffin sections are re-mordanted in $FeCl_3$ or alum, stained in aq. hæmatoxylin, and differentiated with $K_4Fe(CN)_6$ in Li_2CO_3 solution. E. E. H.

Histogenesis and normal structure of knee joint. F. RASZEJA (Bull. Histol. Tech. micr., 1938, **15**, 186—210).—At 2½ months of fœtal development the meniscus is already separate from the surface of the epiphysis of the femur. The fibrous layer of the capsule of the joint is formed independently later from a band of vascular connective tissue which unites with the meniscus. At first very cellular, the meniscus by birth contains many collagen fibres; soon after birth it is gradually transformed into fibrocartilage. Elastic fibres appear about the 5th fœtal month, gradually increasing in size and no., particularly in the central part of the meniscus and at its points of insertion into the tibia; no mucoid substances were ever found. E. E. H.

The spodogram in the study of the structure of chromosomes. C. BARIGOZZI (Bull. Histol. Tech. micr., 1938, **15**, 213—219).—Microincineration shows that chromosomes consist of alternate bands of different chemical composition, dark bands rich in proteins, mineral substances, and thymonucleic acid, and light bands rich in proteins but without thymonucleic acid or mineral substances. [Spodogram = microscopic picture showing results of microincineration.] E. E. H.

Rapid preparation of sections suitable for examination with oil-immersion objectives. R. D. REID (J. Path. Bact., 1938, **47**, 348—349).—Frozen sections 12·5 μ. thick are cut and received in 4% formaldehyde in normal saline. After a min. or two the section is picked up, floated on to a clean slide, and flattened in water. Drops are blotted off the slide and the remaining water is dried off by careful heating with a Bunsen flame. Fat is removed by immersion in xylol for 10 sec. The slide is then taken through alcohols to water, stained with hæmatoxylin and eosin, blued in tap-water, taken up through alcohols to xylol, and mounted in balsam. The sections stain very strongly with hæmatoxylin so that they require only half the time given to paraffin sections. C. J. C. B.

Precursor of the Golgi systems in cells. G. C. HIRSCH (Proc. K. Akad. Wetensch. Amsterdam, 1938, **41**, 840—846).—The Golgi systems of cells originate in a precursor substance ("Præsubstanz") which is homogeneous and adsorbs and is stained by OsO_4, $Fe(NO_3)_2$, $AgNO_3$, and basic vital dyes (neutral-red). "Præsubstanz" and the external Golgi apparatus can be distinguished by differences in adsorptive capacity. A. S.

Chromosome formula and sexual complex in the marsupial *Lutreina crassicaudata*, Desmaret. F. A. SÁEZ (Rev. Soc. argent. Biol., 1938, **14**, 156—161).—The diploid no. is 22, the haploid 11. There are 3 large pairs, 7 medium, and 1 hetero-morphic pair (*X*–*Y*, sexual chromosomes). They are of the telomitic type. The sexual pair maintain their individuality through all the stages of gametogenesis and are separated at the first meiotic division. Spermatocyte I has 10 equatorial homomorphous and 1 heteromorphous tetrads. Observations in this species extend to another genus of the family Didelphidæ the fact that 22 is the typical no. of chromosomes as in the genus *Didelphis*. J. T. L.

(b) BLOOD AND LYMPH.

Histology of the bone marrow in aplastic anæmia. C. P. RHOADS and D. K. MILLER (Arch. Path., 1938, **26**, 648—663).—69 cases of idiopathic

progressive anæmia not responding to any known hæmopoietic agent could be divided by histological examination of the sternal bone marrow into 5 distinct groups: (1) where the marrow showed replacement of hæmopoietic tissue by a cellular structure of megakaryocytes in various stages of development; (2) where the marrow was sclerotic, and (3), (4), and (5) characterised by the absence of mature forms but with an aplastic, an active, or a hyperplastic cellularity. The last group is believed to be distinct from cases of aleukæmic leukæmia. (18 photomicrographs.) C. J. C. B.

Bone marrow pathology. K. ROHR (Schweiz. med. Wschr., 1938, **68**, 641—647).—A review. A. S.

Action of *X*-rays on bone marrow. H. W. WÜNSCHE (Arch. exp. Path. Pharm., 1938, **189**, 581—599).—After irradiation of rabbits with *X*-rays, smears of bone marrow obtained by puncture of the vertebræ contain a special type of myeloid giant cell about 2—3 times the size of a normal leucocyte. Another new type of cell occurs, immature monocytic cells with lobular or subdivided nuclei ("tumour-like" cells). H. BL.

Changes of bone marrow function and blood cell formation in diseases of the liver and gall bladder. W. TISCHENDORF (Dtsch. Arch. klin. Med., 1938, **182**, 261—287).—Stimulation of red blood cell formation, pigment phagocytosis, and increase in the no. of reticular plasma cells in sternal bone marrow run parallel with the severity of the liver disease in cases of simple or toxic jaundice, liver atrophy or cirrhosis, or liver tumours. A myeloid reaction of the bone marrow was observed in inflammatory conditions (*e.g.*, cholangitis). A. S.

Pathogenesis of acute myeloblastic leukæmia. F. LASCH (Klin. Woch., 1938, **17**, 1157).—Negative post-mortem findings do not necessary exclude a true myeloblastic leukæmia. E. M. J.

Agranulocytosis and panmyelophthisis. R. STAEHELIN (Münch. med. Wschr., 1938, **85**, 1419—1423).—7 out of 12 cases of agranulocytosis died. Energetic treatment with nucleotides and blood transfusions in the early stages of the conditions are recommended. A. S.

Megakaryocytic leukæmia. H. MATTHAEUS (Beitr. pathol. Anat., 1938, **101**, 189—196).—Two cases of myelocytic leukæmia are described with numerous megakaryocytes in spleen, liver, and lymph nodes. It is suggested that megakaryocytes are formed in these organs. H. W. K.

Action of hormones on fat metabolism of cultures of human leucocytes. G. WALLBACH (Endokrinol., 1938, **20**, 230—241).—The action of Na taurocholate, phloridzin, and preps. of thyroid, testis, pancreas, adrenal, and pituitary on lipin storage in human leucocytes cultured in plasma was studied. Thyroxine, insulin, hypophysin, adrenaline, testifortan, and phloridzin increase fat storage in the cells; tonephin has no effect. A. S.

Attraction of human polymorph leucocytes by tuberculoprotein. W. B. WARTMAN (Arch. Path., 1938, **26**, 694—699).—Human polymorph leucocytes on a glass slide in a hot box, in the presence of a small quantity of tuberculoprotein, were strongly attracted to the protein compared with controls. The protein was obtained by complete saturation of tuberculin with $(NH_4)_2SO_4$. C. J. C. B.

Influence of pretreatment, with or without fixation, on the Sudan granulation of leucocytes, and the character of phenol granulation in general. P. H. DE BRUYN and J. H. C. RUYTER (Proc. K. Akad. Wetensch. Amsterdam, 1938, **41**, 832—839).—The inhibition of Sudan colouring of granules by $HgCl_2$ is in part attributable to the acidity of the aq. $HgCl_2$. The inhibitory action is reversed by treatment with KI or NaCl; such reversion does not occur when acid formol is used as a fixative. The acidity of the fixative also influences the granulating action of phenols, which is negative at p_H 3·0, weak at 4·9, and strong at 6·9. Granulation in leucocytes stainable with Sudan is due to separation of hydrophile colloids (albumins) and lipins. A. G. P.

Action of asphyxia on phagocytic capacity of serum. G. VON LUDÁNY, L. BERTA, and G. GYÖRY (Klin. Woch., 1938, **17**, 1293).—Asphyxia, produced by repeated compression of the dog's trachea for 2 min., increases the opsonic activity of serum. This is attributed to stimulation of the sympathetic. E. M. J.

Leucocyte changes in plumbism. A. H. MÜLLER (Klin. Woch., 1938, **17**, 1183—1186).—Lymphocytosis was the only change observed in 9 varnishers using white lead for 7 years. E. M. J.

Influence of bacteriophage on phagocytosis. N. V. KAGAN (Compt. rend. Acad. Sci. U.R.S.S., 1938, **20**, 39—42).—Using cultures of *B. coli* and *Staphylococcus* and homologous bacteriophages, phagocytosis (*in vitro*) by guinea-pig leucocytes was studied. W. F. F.

Indophenol-reducing capacity of guinea-pig leucocytes. A. E. KELLIE and S. S. ZILVA (Brit. J. Exp. Path., 1938, **19**, 267—272).—Leucocytes, unlike most tissues in the guinea-pig, retained some capacity for rapidly reducing indophenol when the animals were deprived of vitamin-*C* for a few days. Little alteration of this capacity was produced by the introduction of large quantities of ascorbic acid into the blood. The suggestion that the indophenol-reducing capacity of the leucocytes is not due to ascorbic acid is discussed. R. L. N.

Leukæmia in the new-born, with death at birth from traumatic rupture of the spleen. B. W. RHAMY (Amer. J. clin. Path., 1938, **8**, 567—572).—The infant showed the hæmatological features of an erythroblastosis fœtalis with very numerous immature leucocytes in the blood suggesting a diagnosis of leukæmia. C. J. C. B.

Leucosis research in recent years. J. ENGELBRETH-HOLM (Klin. Woch., 1938, **17**, 993—998).—A review. E. M. J.

Serious injury of the blood in consequence of *X*-ray therapy of the whole body. D. DEN HOED, B. LEVIE, and M. STRAUB (Acta radiol., Stockh.,

1938, **19**, 151—163).—In 4 cases it was found that *X*-ray treatment of the whole body led to severe damage to the bone marrow. W. F. F.

Seasonal variations in blood picture of *Bufo arenarum*, Hensel. M. E. VARELA and M. E. SELLARES (Rev. Soc. argent. Biol., 1938, **14**, 229—235).—In winter (July—August) higher red cell counts were found than in spring and summer (October—January). The fall began immediately after the sexual activity period and is attributed to blood dilution since hæmatopoiesis continued and a parallel decrease in white cells and thrombocytes was seen. Erythropoiesis began in September and reached its max. in November, leading to the appearance in the circulating blood of many erythroblasts. In spring and summer many young lymphocytes and lymphoblasts were seen; adult and involutional forms (frequently found in the winter) disappeared. J. T. L.

Effect of splenectomy on the blood picture of *Bufo arenarum*, Hensel. M. E. VARELA and R. CALANI BARRY (Rev. Soc. argent. Biol., 1938, **14**, 253—259).—Splenectomy performed in November and December (summer) produced a marked decrease in basophil leucocytes and thrombocytes. Seasonal variations in the red and white cell count due to hydræmia were observed both in splenectomised toads and the controls. In splenectomised animals the hæmatopoiectic activity occurring in spring was not observed. The bone marrow did not change its myeloid character after splenectomy, and no compensatory lymphatic metaplasia was observed. J. T. L.

Splenogenic bone marrow inhibition. H. E. BOCK and B. FRENZEL (Klin. Woch., 1938, **17**, 1315—1321).—The splenic and gastric veins were tied in 5 rabbits; there was a decrease in red and white cell and thrombocyte count, and red cell fragility increased. Recovery was slow. Microscopical examination of the spleen showed congestion and siderosis. E. M. J.

Action of karyoklastic agents on the respiration of the spleen *in vitro*. P. PERUZZI (Arch. Fisiol., 1937, **37**, 549—565).—Injection of large doses of trypan-blue into albino rats increases the respiration of the spleen. S. O.

Rôle of the spleen. A. KOSTITSCH (Presse méd., 1938, **46**, 683—686).—A review. G. SCH.

Action of spleen on blood coagulation. S. BOKU, I. HIRAI, and K. GON (Japan. J. Med. Sci., 1938, IX, **5**, 377—378).—Splenectomy produces hypercholesterolæmia; neither this nor the changed sedimentation rate and viscosity of blood have a relationship to blood coagulation. J. P.

Influence of splenectomy on blood platelets and blood coagulation. Y. SAGAWA (Japan. J. Med. Sci., 1938, IX, **5**, 378—379).—The coagulation time of blood is diminished by splenectomy. J. P.

Histological changes after splenectomy. S. FUKAI (Japan. J. Med. Sci., 1938, IX, **5**, 379).—Cholesterol esters, size and no. of cells of the zona glomerulosa and fascicularis increase, the cells of the zona reticularis show regressive changes in male guinea-pigs, and the cells of the adrenal medulla shrink, after splenectomy. J. P.

Splenectomy in primary hæmolytic jaundice. B. JO (Japan. J. Med. Sci., 1938, IX, **5**, 379).—Hæmoglobin concn. increased from 12% to 75% in a case of primary hæmolytic jaundice after splenectomy. J. P.

Fat metabolism in splenectomised rabbits. Y. UTINO (Japan. J. Med. Sci., 1938, IX, **5**, 379—380).—Fat emboli in the lung arteries and the renal glomeruli were observed after splenectomy. They disappear after 20 days. Feeding with lanolin produces hyperlipæmia, and hypertrophy of the reticulo-endothelial system and the wall of the gut, in normal and splenectomised rabbits. J. P.

Blood composition in sheep and their hybrids with *Ovis polii Karelini* (Sev.) in connexion with the power of acclimatisation. H. F. KUSCHNER and O. N. KITAEVA (Compt. rend. Acad. Sci. U.R.S.S., 1938, **20**, 47—52).—In 345 animals whose blood was examined at an altitude of 1500 m. it was found that the Precoce type (a Merino) is superior for high-altitude breeding. W. F. F.

Certain difference in blood composition in cattle, yaks, and their hybrids. V. I. PATRUSCHEV (Compt. rend. Acad. Sci. U.R.S.S., 1938, **19**, 729—733). W. F. F.

Connexion between heterosis in mules and their blood composition. H. F. KUSCHNER (Compt. rend. Acad. Sci. U.R.S.S., 1938, **19**, 747—750). W. F. F.

Mutation of the blood-group genes. R. ELSDON-DEW (Nature, 1938, **142**, 575).—A discussion, based on racial differences. W. F. F.

Nature of blood group *O*. L. HIRSZFELD and Z. KOSTUCH (Klin. Woch., 1938, **17**, 1047—1051).—Anti-*O* sera are produced when goats are immunised against Shiga bacilli. These sera agglutinate blood containing groups *A*1 or *B*, indicating that *O* is a positive substance which is present in such bloods. Groups *A* and *B* possibly develop from group *O* by an incomplete mutation, the new groups retaining some of their original *O* character. The presence of *O* residues prevents the production of anti-*O* agglutinins. This accounts for group *O* acting as universal donor. E. M. J.

Mono-ovular twins with different blood groups. P. PANAGIOTOU (Dtsch. med. Wschr., 1938, **64**, 1544—1545).—A pair of mono-ovular boy-twins belonged to blood group *B* and *O*; the father belonged to group *B*, the mother to *O*. A. S.

Life cycle of the red blood cell in the dog. W. B. HAWKINS and G. H. WHIPPLE (Amer. J. Physiol., 1938, **122**, 418—427).—Two types of fistula dogs were used: the gall-bladder renal type (Kapsinors, Engle, and Harvey) and the closed sterile fistula (Rous and McMaster). Under control conditions a uniform sustained output of bile pigment was observed. The dogs were fed a diet rich in carbohydrate and low in fat and were given

adequate amounts of bile (50—70 c.c.) by mouth daily; they were made anæmic by bleeding or by injection of acetylphenylhydrazine. A mass of new red cells and hæmoglobin appeared in the circulation. The bile pigment output fell to low vals. for many weeks and then a conspicuous rise occurred which marked the obsolescence of the new red cells. The length of their life cycle thus determined was on an average 124 days in 4 dogs. M. W. G.

Behaviour of red blood corpuscles at the platinum electrode. A. VOGL (Klin. Woch., 1938, **17**, 1042—1043).—Red cells suspended in normal saline through which a galvanic current is passed will disintegrate more rapidly at the cathode than at the anode, where they are protected by nascent O and thePt. E. M. J.

Spherical form of mammalian erythrocyte. IV. Disc-sphere transformations between surfaces covered with monolayers. E. PONDER and H. NEURATH (J. exp. Biol., 1938, **15**, 358—362).—When both surfaces are coated with a hydrophobic colloid (monolayers of Ca stearate) washed human red cells remain discoid, but hæmolysis occurs rapidly. Coating either of the surfaces with the monolayer does not prevent the disc-sphere transformation, but lysis does not occur. J. M. R.

Porphyria and symptoms due to porphyrin (porphyrinopathy). H. T. SCHREUS (Strahlenther., 1938, **61**, 649—657).—The normal destruction of red blood corpuscles does not cause the appearance of porphyrin III in urine. The pathological destruction of red cells causes the appearance of coproporphyrin III. Various suggestions are made as to the origin of coproporphyrin I, and the general significance and effect of porphyrin excretion. [Good literature of porphyrinopathy.] S. H.

Hypochromic anæmia of infants: comparison of the efficacy of ferric and ferrous iron. R. STEPHENSON (Amer. J. Dis. Child., 1938, **55**, 1141—1157).—Hypochromic anæmia was found in 64 infants between 3 and 24 months old. Fe therapy restores the hæmoglobin to the normal adult level. 6-grain doses of Fe^{II} are as effective as 30-grain doses of Fe^{III}. Discontinuance of Fe therapy after 3 months causes a fall in hæmoglobin level which does not occur if treatment is continued. A sufficiency of Fe rather than the presence of traces of Cu is considered to be the potent factor. A. C. F.

Action of reduced iron in anæmia. III. F. HASHIGUCHI (Japan. J. Med. Sci., 1938, IX, **5**, 253).—Reduced Fe has no effect on anæmia produced by a fistula of the gall-bladder or by splenectomy. J. P.

Essential hypochromic anæmia. I. Pathogenesis. II. Symptomatology with special reference to the Plummer-Vinson syndrome. W. THIELE and H. KÜHL (Klin. Woch., 1938, **17**, 1137—1140, 1191—1193).—Familial incidence points to the genetic importance of constitutional factors. Achlorhydria in itself is not the essential ætiological factor. E. M. J.

Relationship of gastritis and pernicious anæmia. W. THIELE (Dtsch. med. Wschr., 1938, **64**, 1503—1506).—Pernicious anæmia results from chronic gastritis; conditions which produce chronic gastritis may therefore produce a secondary pernicious anæmia. A. S.

Gastritis and pernicious anæmia. K. LÜHR and M. GÜLZOW (Dtsch. Arch. klin. Med., 1938, **182**, 327—337).—Gastritis (acute or chronic) or atrophic changes of the mucous membrane were found gastroscopically in several cases of pernicious anæmia. The gastritis may explain the increased protein content of the gastric juice in certain cases of pernicious anæmia. A. S.

Assay of anti-anæmic liver extracts *in vitro*. G. A. OVERBEEK, P. J. GAILLARD, and S. E. DE JONGH (Schweiz. med. Wschr., 1938, **68**, 711—713).—1 c.c. of guinea-pig bone marrow is suspended in a droplet of physiological saline containing the liver prep.; a droplet of plasma is added, and the specimen is kept in the incubator for 24 hr. Subsequently the field of migrating bone marrow cells is measured planimetrically. The accuracy of this method is ±25%. A. S.

Polycythæmia terminating in leucoerythroblastic anæmia. D. M. STONE and D. WOODMAN (J. Path. Bact., 1938, **47**, 327—336).—A case is described with full records over 13 years. The post-mortem examination revealed a hyperplastic bone marrow in the femur with marked increase in megakaryocytes and myelosclerosis of the lower third. In addition, foci of extramedullary erythropoiesis were present in the spleen, liver, and glands. Some of the lymph-glands also contained caseous foci and acid-fast bacilli. [4 photomicrographs.] C. J. C. B.

Effect of *X*-rays on the reticulocytes of the white mouse. H. LANGENDORFF (Strahlenther., 1938, **62**, 304—314).—Doses of 50 r.—0·5 r. halve the no. of reticulocytes. The fall is less marked but may be more prolonged when the dose is divided, or when the dosage rate is reduced. S. H.

Action of *X*-rays and ultra-violet rays on the composition of blood. K. YAMADA (Japan. J. Med. Sci., 1938, IX, **5**, 271—272).—The O_2 capacity, erythrocyte count, and hæmoglobin concn. of blood are reduced by *X*-radiation. J. P.

Simple colorimetric micro-methods for blood examination. E. BECHER (Münch. med. Wschr., 1938, **85**, 1456—1459).—A review. A. S.

Estimation of hæmoglobin in undiluted blood, using a Lovibond comparator. G. A. HARRISON (Lancet, 1938, **235**, 621—622).—Apparatus and technique are described. C. A. K.

Blood bank of the graduate hospital of the University of Pennsylvania. P. B. PATTON (Amer. J. clin. Path., Tech. Suppl., 1938, **8**, 178—182). C. J. C. B.

Changes in blood kept several weeks and its therapeutic value. H. GNOINSKI (Sang, 1938, **12**, 820—831).—Sterile blood mixed in the proportion of 1 : 5 with 6% Na citrate can be used up to 90 days after removal, if kept in an hermetically sealed container completely filled at 4—5° and not subjected to shocks. 15% of the red cells are destroyed and

40% show morphological changes. The white cells show marked changes in a very short time. Blood kept for 60 days is not toxic and can be used for transfusions without causing any reactions.

C. J. C. B.

Inapplicability of the osmotic theory to the volume of red cells in electrolytic and non-electrolytic media of various concentrations. H. NAKAMURA and K. KURODA (Keijo J. Med., 1938, **9**, 170—186).—Red cells have no abs. vol. The vol. of red cells determined by the hæmatocrit is a function of the concn. of the medium and of the centrifugal force. Red cells in media of various concns. show vol. changes which are not related to osmosis through semi-permeable membranes. If the concn. of the medium is expressed as total concn. of dissociated and non-dissociated mols., then the vol. change of red cells is the same with electrolytes (neutral salts) and with non-electrolytes (sugars). F. JA.

Serological patterns of human sera. Reciprocal heteroagglutination reactions of human and sheep bloods. G. H. SMITH (Yale J. Biol. Med., 1938, **10**, 449—454).—Titrations of the heteroagglutinin of human sera for sheep cells and the corresponding heteroagglutinin of sheep serum for human cells were made. There was no fixed relationship between the amount of antibody in a given human serum capable of agglutinating sheep cells and the amount of antigen in the cells of the same blood sensitive to agglutination by sheep serum. In general human sera were more agglutinative for sheep cells than sheep serum for human cells. Human serum agglutinative for sheep cells had a titre curve which was low during the first year and max. between 1 and 10 years, with a gradually diminishing titre for each subsequent decade. Sheep serum agglutinative for human cells for the same age groups showed a titre which remained relatively const. throughout. In the titrations of human serum agglutinative for sheep cells, the *B* group gave the highest and the *A* group the lowest vals. With sheep serum agglutinative for human cells, group *O* gave the highest and group *A* the lowest vals. There were only four cases of the *AB* group. The antigen pattern varies as does the antibody pattern, but independently.

A. G. M. W.

Hæmolysis from intermediate formation of peroxide. C. HENZE (Klin. Woch., 1938, **17**, 24).—The luminol method of Langenbeck shows that under conditions in which $KMnO_4$ AsH_3 H_2S, eosin, cholesterol, and turpentine are hæmolytic, H_2O_2 or active O is produced. F. W. L.

Permeability of erythrocytes to sugars. W. WILBRANDT (Verh. Schweiz. Physiol., 1938, **13**, 33—34).—The rate of penetration into dog's red blood cells is fructose > sorbose; glucose, galactose, and mannose do not penetrate. The permeability in human erythrocytes is: mannose and galactose > sorbose and glucose > fructose. Arabinose and xylose pass into red cells more quickly than the other sugars. It is undecided whether iodoacetic acid changes these results. A. S.

Congenital hæmolytic anæmia with normal fragility of the red blood cells. E. SCHIFF (Arch. Dis. Childh., 1938, **13**, 264—268).—A girl aged 20 months showed in the first days of life severe hypochromic anæmia with enlarged liver and spleen and signs of hæmolytic anæmia. The fragility test was, however, normal. There was no evidence of an inherited trait. Periodic temp. rises without any blood changes were observed. C. J. C. B.

Macrocytic hæmolytic anæmia with increased red cell fragility. S. C. DYKE and F. YOUNG (Lancet, 1938, **235**, 817—821).—6 cases of macrocytic anæmia are described in which there were increased red cell fragility, hæmolysis, excessive no. of nucleated red cells and reticulocytes in the blood, hyperplastic bone marrow, and lack of response to liver. Splenectomy in 4 cases was of doubtful val. The condition is a clinical and hæmatological entity. C. A. K.

Variation in corpuscular resistance in morbid conditions. A. MANAI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 193—195).—The relationship between corpuscular resistance and the biochemical blood picture is discussed. F. O. H.

Corpuscular resistance during experimental acidosis and alkalosis. F. CHESSA (Boll. Soc. ital. Biol. sperim., 1938, **13**, 197—198).—Osmotic resistance of the corpuscles is diminished during acidosis whilst the change during alkalosis is not apparent. F. O. H.

Flocculation number of the serum. A. JEZLER and P. BOTS (Klin. Woch., 1938, **17**, 1140—1141).—The flocculation no. of Takata and Dohmoto is useful in the prognosis of hepatic and other diseases. The prognosis is hopeless if vals. of under 35 are obtained. E. M. J.

Biochemistry of the anæmias. I. Plasma-proteins and non-protein-nitrogen of the blood. G. STOLFI, L. PROVENZALE, and MARZIALE (Boll. Soc. ital. Biol. sperim., 1938, **13**, 423—424).—In anæmias due to poisoning with phenylhydrazine, saponin, or tolylenediamine, the plasma-proteins show no characteristic variations but the residual N tends to increase.

F. O. H.

Tissue-protein and its colloidal pressure after plasmaphoresis. S. YAMAMOTO (Tohoku J. exp. Med., 1938, **33**, 483—488).—Acute lack of plasma-protein, produced by plasmaphoresis in rabbits, leads to a mobilisation of tissue-protein from the liver and kidney within a few hr. Liver tissue-protein is delivered as such but kidney-protein is first split up into smaller mols. before its release into the blood.

F. JA.

Colloid-osmotic pressure of plasma and the composition of the blood after acute hæmorrhage and after intravenous injection of artificial blood substitutes. A. W. J. H. HOITINK (Acta brev. neerl. Physiol., 1938, **8**, 42—45).—Total plasma-protein, albumin and globulin, non-protein-N, colloid-osmotic pressure of 100 mg. of protein-N per 100 c.c. of plasma, and hæmoglobin concn. were determined after acute hæmorrhage and subsequent injection of 0·9% NaCl with or without 6 or 7% gum arabic. Non-protein-N is increased, the concn. of proteins and, sometimes, the colloid-osmotic pressure are diminished after acute hæmorrhage. In most cases, the colloid-

osmotic pressure increased. Subsequent saline injection produces a dilution of the blood constituents; the non-protein-N increased. If gum arabic is added, the colloid-osmotic pressure is increased. A. S.

Difference in colloidal lability between arterial and venous umbilical blood. G. ROMANIELLO (Boll. Soc. ital. Biol. sperim., 1938, **13**, 187—188).—The Na vanadate method indicates that the venous blood has a greater stability than has the arterial blood; the stability is probably related to the protein content. F. O. H.

Enzymic activity of protein fractions of serum. II. Amylase activity. C. CATTANEO and B. BASSANI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 424—426).—With the globulin and albumin fractions obtained by fractionation with acetone at −4°, amylase occurs only in the albumin fraction in man and in the globulin fraction in the horse. F. O. H.

Determination of plasma-fibrinogen. L. A. CHIODIN and E. HUG (Rev. Soc. argent. Biol., 1938, **14**, 357—359).—Na oxalate used by Foster and Whipple is replaced by Na citrate; this avoids the necessity for determining the ash content and reduces the weighing operations to one. Satisfactory results were obtained. J. T. L.

Action of strontium chloride on blood clotting in parathyroid tetany. R. FERRARI (Arch. Fisiol., 1937, **37**, 449—454).—In parathyroidectomised dogs the clotting time is increased and the concns. of thrombin, prothrombin, and thrombokinase are decreased. Injection of $SrCl_2$ re-establishes normal vals. S. O.

Why does blood of cadavers not coagulate? K. LENGGENHAGER (Schweiz. med. Wschr., 1938, **68**, 719—722).—Blood does not coagulate in cadavers if the cessation of respiration preceded by a considerable time the arrest of the heart. In this case, fibrinogen disappears from the blood much more quickly because of acidosis; the thrombocyte count is normal; the blood coagulation time may be 4 times normal. Blood does not coagulate in cases of death from suffocation, tetanus, heat stroke, freezing, burning, electricity, or poisoning with CO, H_2S, and HCN. A. S.

Formation of profibrin under physiological conditions. K. APITZ and A. THELEN (Z. ges. exp. Med., 1938, **103**, 417—426).—Profibrin in plasma, a sol. precursor of fibrin, is only formed *in vitro* in the presence of large amounts of thrombin; the serum-proteins normally exert a strong anti-thrombin action. *In vivo*, profibrin is only formed following injections of large amounts of thrombokinase, thrombin, or snake venom (*Vipera Russelli*; 1 mg.). A. S.

Blood coagulation. VII. Protamines and blood clotting. VIII. Isolation of a lipoid inhibitor of clotting from the spleen in a case of Niemann-Pick disease. E. CHARGAFF (J. Biol. Chem., 1938, **125**, 671—676, 677—680; cf. A., 1938, III, 7, 90).—VII. Aq. heparin at p_H 2—11 with aq. salmine sulphate gives an immediate almost ash-free ppt. (cf. A., 1935, 1144) which has no effect on blood coagulation. The ppt. is only slightly acted on by trypsin at 38° and p_H 9·2 in 48 hr. The hydrolytic product is heparin [Ba salt different from that described by Charles and Scott (A., 1936, 1534)] with a much higher anticoagulant activity than the original. Synthetic anticoagulants which are strongly acidic are completely inactivated by salmine; Na oxalate and citrate are unaffected. Salmine added to heparinised plasma considerably decreases the clotting time, but has no effect on inactivated chicken plasma. The kephalin–salmine complex (A., 1938, II, 516) has no effect on the clotting time of inactivated chicken plasma; salmine antagonises the effect of kephalin on coagulation time.

VIII. Acetone extracted sphingomyelin with no anticoagulant activity from the spleen of a case of Niemann–Pick disease. Methyl alcohol–$CHCl_3$ (3 : 1) extracted crude sphingomyelin which, after extraction with ether and ligroin–alcohol, yielded a brown powder with a high anticoagulant activity. J. L. D.

Blood coagulation. J. SCHWANTKE (Angew. Chem., 1938, **51**, 626—633).—A review. W. McC.

Degradation of fibrinogen by hydrotropic substances. L. JÜHLING and E. WÖHLISCH (Biochem. Z., 1938, **298**, 312—319; cf. A., 1938, III, 780).—Urea added to plasma (ox, horse, pig) in concns. below 15% does not cause decomp. of the fibrinogen. Na hippurate, benzoate, salicylate, and thiocyanate act in the same way as urea. Decomp. of fibrinogen by addition of urea occurs also in fibrinogen solutions if these are prepared by shaking plasma with 0·9% aq. NaCl instead of $Ca_3(PO_4)_2$ before pptg. the fibrinogen. In plasma, the fibrinogen is probably bound to an inactive profibrinogenase which is converted into active fibrinogenase when inhibitors, which are also present, are removed by addition of urea. Fibrinogenase also decomposes fibrin from the blood of pig and horse but not ox; no decomp. occurs if the fibrin is first heated to 80°. Serum contains no profibrinogenase. Fibrinogen is decomposed by the fibrinolysin of pig fibrin but is attacked only occasionally and slightly by that of horse fibrin. W. McC.

Use of manetol as a styptic. E. ADAM (Münch. med. Wschr., 1938, **85**, 1589—1591).—Manetol is a filtrate of spinal cord substance, containing large amounts of phospholipins and kephalin. It arrests hæmorrhage on local or intramuscular administration. A. S.

Use of a globulin substance derived from beef plasma as a local hæmostatic in hæmophilia. F. J. POHLE and F. H. L. TAYLOR (J. clin. Invest., 1938, **17**, 677—682).—Globulin substance, prepared from citrated cell-free beef plasma by isoelectric pptn. at p_H 6·0, has properties similar to that prepared from normal human plasma, except that it has slightly greater clot-accelerating powers for hæmophiliac blood *in vitro*. The oral administration of beef-glubulin substance to adult hæmophiliacs was without effect on the coagulation of the blood in the doses employed, but the globulin applied locally in the form of a dry powder was an effective hæmostatic in hæmophilia. C. J. C. B.

Treatment of hæmophilia with female sex hormones. A. KOCSIS and A. HASSKÓ (Dtsch. med. Wschr., 1938, **64**, 1284—1286).—Oral, subcutaneous, or intramuscular administration of follicle hormone arrests hæmorrhage in cases of hæmophilia. Severe bleeding from tooth sockets may be stopped by local application of follicle hormone. Blood coagulation time *in vitro* is considerably increased by addition of 500 mouse units of follicle extract. The hæmostyptic action is due to the luteolipin. A. S.

Treatment of essential thrombopenia (Werlhof) with phenylhydrazine. E. JACOBSON (Schweiz. med. Wschr., 1938, **68**, 991—992).—19 out of 28 cases of Werlhof's disease were cured with phenylhydrazine hydrochloride (total amount 0·7—1·5 g.; 0·1 g. per day). A. S.

Vitamin-*C* content of thrombocytes. G. VON LUDÁNY and K. VON MÉGAY (Klin. Woch., 1938, **17**, 1228—1229).—Thrombocytes obtained from fasting dogs under pernocton anæsthesia showed a vitamin-*C* content of 24—36 mg.-%, *i.e.*, considerably higher than that of dog's liver (17—19 mg.-%). E. M. J.

Transfers of water and solutes in the body. J. P. PETERS (Harvey Lect., 1937—38, S. **33**, 112—142).

Change in blood volume during recovery from anæmia. M. MITSUFUJI (Japan. J. Med. Sci., 1938, IX, **5**, 253—254).—Blood vol. and cell count increase during recovery from anæmia. J. P.

Blood volume changes in health and hæmorrhage and after various infusions. J. D. ROBERTSON (Lancet, 1938, **235**, 634—637).—A review. C. A. K.

Blood volume after severe hæmorrhage from stomach and duodenum. T. I. BENNETT, J. DOW, F. P. L. LANDER, and S. WRIGHT (Lancet, 1938, **235**, 651—655).—The blood vol. was determined by the Congo-red dye method in 122 cases of severe hæmorrhage from the stomach and duodenum. During recovery the plasma vol. was rapidly restored to normal (usually within a few hr.) but the cell vol. only reached normal vals. after a few weeks. The initial increase of plasma vol. lowered the hæmoglobin concn., which may therefore be misleading without knowledge of cell vol. C. A. K.

Effect of hypertonic solutions on gastric secretion and intraocular pressure. R. L. NOBLE and J. D. ROBERTSON (J. Physiol., 1938, **93**, 430—437).—30% NaCl and 50% glucose solutions of equal osmotic pressure injected intravenously both cause a dilution in hæmoglobin (cat, starved 24 hr., "nembutal" anæsthesia) which rapidly returns to normal; intraocular pressure is markedly lowered and remains so for some hr. Gastric acidity and vol. of juice evoked by histamine are inhibited and may remain so for some time. 9% NaCl and 50% glucose solutions of equal osmotic pressure both cause a similar transitory dilution in hæmoglobin; they have little or no effect on intraocular pressure or gastric secretion. Dialysis is not a satisfactory explanation of the formation of the aqueous humour; a secretory process may play some part in controlling intraocular pressure. J. A. C.

Action of blood on keto-acids. A. ROSSI (Arch. Sci biol., Napoli, 1938, **24**, 73—82).—Whole blood, red cells, and plasma can each convert acetoacetic acid into acetone *in vitro*, in the presence or absence of O_2. They have no action on β-hydroxybutyric acid. Enzymes play no part since blood retains its activity after boiling. Within limits the acid disappears the more quickly the lower is the p_H. R. S. C.

Pharmacology of blood-glycogen. V. H. STAUB and G. GOLANDAS (Schweiz. med. Wschr., 1938, **68**, 969—971).—Fasting blood-glycogen has a mean val. of 9 mg.-% in man and rabbits and 12·6 mg.-% in dogs; plasma and serum contain 3 mg.-% in the 3 species. When dogs and rabbits were starved for 144—170 hr., blood-glycogen increased. It is also increased in man and rabbits following administration of carbohydrates. The glycogen content of venous blood in diabetics is increased. Intravenous injection of glycogen in 20% solution increases the plasma vol. in dogs by 14—30%. Injection of 0·5—1 unit of insulin lowers the blood-glycogen of rabbits by 40%; adrenaline (0·5 mg. in fasting rabbits, 1·0—1·5 mg. subcutaneously in dogs) increases the blood-glycogen. Thyroxine has no effect. Blood-glycogen is diminished in rabbits with P-damaged liver, but adrenaline has less effect; insulin has the same effect on blood-glycogen as in normals. A. S.

Determination of saccharoids and the relationship of the saccharoid content of the blood to diet and drugs. L. S. SMELO, F. M. KERN, and D. L. DRABKIN (J. Biol. Chem., 1938, **125**, 461—470).—The saccharoid content of the blood, *i.e.*, the total reducing power of deproteinised filtrates (expressed as glucose) less true glucose, is better determined by the direct method, which involves removal of glucose by yeast followed by determination of reducing power, than by the indirect method, viz., as the difference between the reducing power of a blood filtrate containing both saccharoids and glucose and a filtrate containing glucose alone. The errors liable to occur in the latter method are discussed. The saccharoid content of dog's blood is not affected by changes in the diet, and is relatively const. for long periods of time. Fasting results in moderate reduction of the saccharoid content, but administration of insulin or adrenaline is without effect. W. O. K.

Hyperglycæmia and increased lactic acid content of the blood in rabbits poisoned with carbon monoxide. S. ISIMARU (Japan. J. Med. Sci., 1938, IV, **11**, 115—140).—The blood-sugar and -lactic acid rise and the alkali reserve falls. If the splanchnic nerves are cut, these changes are less pronounced. The increases are due chiefly to increased production of adrenaline. Anaërobic production of lactic acid in the tissues accounts for a small part only of the increase in blood-lactic acid. W. McC.

Effect of alkalis on the increase in blood-sugar and -lactic acid and on the decrease in alkali reserve caused by carbon monoxide poisoning in rabbits. S. ISIMARU (Japan. J. Med. Sci., 1938, IV, **11**, 151—176).—In normal rabbits intravenous injection of Na_2CO_3, $NaHCO_3$, Na_2HPO_4, or NaOH

causes slight increase in blood-sugar and -lactic acid and increase in the alkali reserve. The increases in these contents produced by CO poisoning are diminished if Na_2CO_3, $NaHCO_3$, Na_2HPO_4, or NaOH is injected at the same time and the decrease in the alkali reserve is also diminished. W. McC.

Unsaponifiable fraction of human serum. U. GRAFF (Biochem. Z., 1938, **298**, 179—196).—The cholesterol and residual unsaponifiable content of serum were determined in diseased men. Withholding or feeding fat does not affect the ratio quantitatively. Quant. examination of the unsaponifiable fraction of mixed or single human sera by the Liebermann-Burchard reaction gave a val. of 4·5—26·5%. The absorption spectra of the unsaponifiable fraction in various diseases show wide divergences over the range 280—360 mμ. C. C. N. V.

Lipin content of the blood in deficiency diseases and during demyelinisation of the nervous system. E. F. GILDEA (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 284—297).—The process of acute demyelinisation of the nervous system is accompanied only occasionally by a rise in the total serum-fatty acid content, and not by one in cholesterol or phosphatide. Malnutrition alone accounts adequately for a low lipin content of the blood in deficiency diseases. A. M. B.

Serum-cholesterol fluctuations during the menstrual cycle. F. M. OFFENKRANTZ and A. M. STANIEL (Amer. J. clin. Path., 1938, **8**, 536—546).—16 healthy women showed (although there were wide fluctuations for each subject) a lowered total serum-cholesterol at the onset of the menses with a sharp elevation at the end of the bleeding phase. The percentage of free cholesterol was higher at the onset than at the termination of the flow. C. J. C. B.

Blood-ammonia and the deaminases of adenosine and adenylic acid. E. J. CONWAY and R. COOKE (Nature, 1938, **142**, 720).—An account is given of the origin of NH_3 in shed blood, which is attributed to (1) deamination of adenosine, (2) adenyl pyrophosphate breakdown, and (3) dephosphated and deaminated vegetable adenylic acid. Evidence is adduced for these statements. W. F. F.

Choline-esterase activity of blood serum in disease. A. T. MILHORAT (J. clin. Invest., 1938, **17**, 649—657).—The choline-esterase activity of serum was unrelated in a large group of cases to the type of clinical syndrome or to age, sex, body-wt., muscular mass, and body temp. Convulsions and prolonged fasting have no effect on serum esterase activity, which was normal in myasthenia and muscular wasting. The esterase activity differed widely amongst the subjects but was const. for periods of weeks in most. However, in patients with debility, the esterase level was often low (1/5 to 1/10 normal) and changed concomitantly with the clinical state of the patient. C. J. C. B.

Biological researches on blood-catalase. H. WERNER (Sang, 1938, **12**, 832—845).—In cirrhosis of the liver, there is an increase in the blood-catalase; hepatectomy causes a lowering. Injection of catalase caused only a transient increase in the blood level; poisoning with KCN after such injections had little effect on the level. C. J. C. B.

Physiological degradation of blood-pigment. K. BINGOLD (Naturwiss., 1938, **26**, 656—659).—The author's work is reviewed with special reference to the rôle of H_2O_2, catalase, and pentduopent in the degradation of blood-pigments. W. O. K.

Determination of organic acid-soluble blood-phosphorus ("ester-P"). G. DE TONI (Klin. Woch., 1938, **17**, 1194—1195).—Citrated blood is hæmolysed with water to make a 1 : 10 solution. 10 c.c. are added to 5 c.c. of Michaelis' veronal buffer solution and 5 drops of toluene. The whole is left at 37° for one week, after which time the blood-phosphatase has hydrolysed the ester-P and the determination of P in the usual manner gives ester-P and inorg. P. E. M. J.

Blood-glutathione in experimental fever. F. GENTILE and G. SCOZZARI (Arch. Fisiol., 1937, **37**, 585—598).—Fever was produced in rabbits by intravenous injection of yeast autolysates. Coincident with the rise in temp. there was a decrease of reduced, and a smaller increase of oxidised, glutathione. S. O.

Hypercreatinæmia. L. CORNIL, D. OLMER, J. DUNAN, and J. VAGUE (Presse méd., 1938, **46**, 713—714).—A rise of blood-creatine, unaccompanied by a corresponding rise of creatinine, was found in spirochætal infections of kidney and liver, malignant diptheria in man, and experimental diphtheritic hepato-nephritis in dogs, following ligature of the hepatic artery in dogs, extensive burns, injections of neoarsphenamine, muscular fatigue, and fever, progressive muscular atrophies, Parkinsonism and allied disorders, and endocrine cachexia. G. SCH.

Simplified determination of blood-urea. F. L. HAWK and J. E. ANDES (Amer. J. clin. Path., Tech. Suppl., 1938, **8**, 153—157).—A direct nesslerisation technique is given for the determination of blood-urea-N. The procedure is carried out on the tungstic acid filtrate but without the use of gum ghatti to prevent pptn. of the coloured material. C. J. C. B.

Apparatus for determination of blood-urea. C. A. SAGASTUME and V. OLIVA (Rev. Fac. Cienc. Quím. La Plata, 1936, **11**, 21—26).—The ureometer employed for the hypobromite method incorporates a rod with which the reactants can be agitated. F. R. G.

Ultramicroscopic particles showing Brownian movement in serum and bile. Y. YANO (Folia pharmacol. japon., 1938, **25**, 40).—In rabbits, guinea-pigs, and rats, particles are present on normal feeding, less after starvation, and more following fat feeding (max. after 5 hr.). On electrophoresis the majority of the particles go neither to the cathode nor to the anode. Ether stopped the movement. F. JA.

Minerals in blood in cases of typhoid fever in children. J. M. VALDÉS, B. A. MACOLA, and A. S. SEGURA (Rev. Soc. argent. Biol., 1938, **14**, 184—194).—In 61 cases of typhoid, serum-Na and -K were normal; a rise occurred in convalescence. A less

marked increase in Mg also occurred. Serum-Ca and -P were below normal and returned to normal in convalescence. In patients with cardiac insufficiency serum-Na was high, -K low, -Ca and -P very low, and -Mg did not vary. J. T. L.

Variations in blood-calcium after hysterectomy with and without ovariectomy. B. A. MACOLA and P. MARTÍNEZ ESTEVE (Rev. Soc. argent. Biol., 1938, **14**, 195—206).—In 16 women hysterectomy and ovariectomy raised serum-Ca from 10·29±0·226 to 11·66±0·43 mg.-%. In 14 cases in which hysterectomy alone was performed -Ca decreased from 11·35±0·287 to 10·73±0·273 mg.-%. The difference between the rise of -Ca in the first series (8·42%±3·21) and the fall in the second (4·95%±1·65) was 13·37%±3·60, which is statistically significant. J. T. L.

Blood-calcium and -phosphate in a case of scleroderma. G. STOLFI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 421—423).—The vals. of the diffusible serum-Ca, blood-PO_4''', and P : Ca ratio did not indicate hyperfunction of the parathyroid gland although hypercalcæmia was present. F. O. H.

Normal concentration of inorganic phosphorus in blood of lactating dairy cows and factors affecting it. A. H. VANLANDINGHAM, H. O. HENDERSON, and G. A. BOWLING (J. Dairy Sci., 1938, **21**, 112—113).—Over 200 blood samples taken from 22 Holstein cows during 2 years were analysed. Inorg. P did not change during the first lactation but fell during the last months of gestation before the 2nd lactation period and remained low during the first 3 months of the 2nd lactation. This was repeated in the 3rd lactation period. The mean inorg. P contents during the 1st, 2nd, and 3rd periods were 4·95, 4·81, and 4·34 mg.-%. Inorg. P was lower in winter and spring than in the rest of the year. W. L. D.

Serum-iron and hæmocatheresis. I. Effect of muscular fatigue on serum-iron. P. BAER (Boll. Soc. ital. Biol. sperim., 1938, **13**, 439—441).—Muscular fatigue in normal or splenectomised dogs is accompanied by an increase in serum-Fe; determinations of hæmoglobin, erythrocytes, and water indicate that this is not due to dehydration. F. O. H.

Chloræmia. C. INDA (Rev. Fac. Cienc. Quim. La Plata, 1936, **11**, 47—51).—Cl′ in a no. of blood samples was determined by Whitehorn's method (A., 1921, ii, 272), which is preferred to other methods. F. R. G.

Level and determination of iodine in blood. Relation of the level to basal metabolism especially in myxœdema and exophthalmic goitre. G. BIILMANN (Skand. Arch. Physiol., 1938, **77**, Suppl. 12, 84 pp.).—I (not less than approx. 0·35 μg. in 2 c.c. of blood) is best determined by Höjer's method (A., 1929, 614). For material containing much org. matter a modification of Leipert's method (A., 1937, III, 452) is superior and equally accurate. Blank determinations must always be made. Approx. 38% of the I of blood is in org. combination (bound to protein). In the healthy individual the org. I level remains almost const. and is not affected even by prolonged administration of KI. The remainder of the I of blood exists in the form of salts and the level is greatly influenced by dietary and environmental factors. The total and org. I contents of 100 c.c. of normal blood are approx. 13 and 5 μg. respectively. In persons free from thyroid disease the level of the org. I of the blood is raised by thyroxine only when administration is prolonged. In myxœdema the org. I content of the blood is low but is increased to the normal val. by giving sufficient thyroxine to restore normal B.M.R. In exophthalmic goitre it is high if the B.M.R. is high and decreases if the B.M.R. is diminished by treatment. Results of determinations of the org. I content of blood are used to develop an equation showing the relation between the content and the B.M.R. W. McC.

Determination of lead in the blood after mobilising it, with a view to diagnosis. J. TEISINGER (Presse méd., 1938, **46**, 676—678).—Teisinger's micropolarographic method for the determination of Pb in blood gave normal vals. of 0·5—0·8 mg.-%. In Pb poisoning the Pb level is considerably higher. KI and Na_2CO_3 mobilise Pb from the depots, particularly in recent cases. Parathormone was ineffective in the human cases but effective in Pb-poisoned rabbits. G. SCH.

Experimental alterations in blood-potassium. R. TRUSZKOWSKI and R. L. ZWEMER (Acta Biol. Exp., 1938, **12**, 1—12).—10% KCl solution was injected intraperitoneally in normal and adrenalectomised cats and blood-K was determined, using the authors' method (A., 1937, III, 192). Adrenalectomy impairs the elimination of K from the blood. If a hyperpotassæmia is maintained for many hr. by successive injections of KCl, symptoms occur which resemble those of corticoadrenal insufficiency. Injections of adrenal cortex extracts lower the blood-K in normal and adrenalectomised cats; the fluctuations of blood-K are particularly marked in the latter condition. A. S.

Concentration of ammonia, *in vivo* and *in vitro*, in the internal medium of invertebrates. I. *Anodonta*. M. FLORKIN and R. HOUET (Arch. int. Physiol., 1938, **47**, 125—132).—The circulating blood of *Anodonta* contains more NH_3 than human blood. The changes *in vitro* are different from those shown by mammalian blood; instead of a rapid rise followed by a slow prolonged rise the *Anodonta* show a rapid rise followed by a decrease. H. E. R.

Functional significance of the lymphatic system. C. K. DRINKER (Harvey Lect., 1937—38, S. **33**, 89—111).

New spindle-shaped acid-fast body in human lymph nodes. Y. HAMAZAKI (Virchow's Arch., 1938, **301**, 490—522).—After fixation with heavy metal salts and staining with the author's carbol-fuchsin–I method, acid-fast spindle-shaped bodies are seen in the nuclei of the lymphocytes and particularly in those of the reticular cells of peritoneal lymph nodes. These bodies are found in normal individuals, are increased in no. in various diseases accompanied by cachexia, and may be connected with nucleic acid metabolism. H. W. K.

Lymphatic system of palatal tonsil. H. MUKASA (Fukuoka Acta med., 1938, **31**, 133—136).—The lymphatic drainage of the palatal tonsil of the dog was investigated by injecting trypan-blue or India ink into the nasal and oral mucosæ, and into the tonsil. No afferent lymphatic vessels were demonstrated. The efferent vessels drain into the cervical lymph glands. Dyes injected into the nasal and oral mucosæ appear in the tonsil only if stasis is produced in the cervical glands, thus causing the retrograde flow of lymph into the tonsil. W. D'A. M.

(c) VASCULAR SYSTEM.

Comparative anatomy of the heart cartilage. K. MATUMOTO (Keijo J. Med., 1938, **9**, 114—169).—The heart cartilage is present in one species of fishes, some amphibia, reptilia, most birds, and some mammals, but not in man. It develops from connective tissue and is usually situated within the base of the heart (so-called skeleton of the heart). Its shape and size vary greatly. It is always of the hyaline variety. In most animals it develops in postembryonic life, in birds somewhat earlier. Calcification and ossification occur. The significance of the heart cartilage is unknown. F. JA.

Action of *X*-rays on tissue cultures. G. GOTO (Japan. J. Med. Sci., 1938, IX, **5**, 271).—*X*-Rays inhibit the growth of a culture of chick heart muscle. J. P.

Vagus stimulation and chemical transmission of nervous impulses. J. WALAWSKI and B. ZAWADZKI (Acta Biol. Exp., 1938, **12**, 119—121).—Intravenous injections of eserine (0·15 mg. per kg. body-wt.) and of ergotamine (1 mg. per kg.) into dogs under chloralose anæsthesia or into decerebrate dogs increase the *T* wave of the electro-cardiogram; this enlarged *T* wave is reduced by cutting the vagi. Acetylcholine (5 μg. per kg.) increases the *T* wave; 10—100 μg. per kg. lower the *T* wave, previously potentiated by eserine or ergotamine. A. S.

Influence of hypnosis on the pulse rate. B. STOKVIS (Schweiz. med. Wschr., 1938, **68**, 764—766).—Hypnosis lowers pulse rate and systolic blood pressure in normal subjects and in patients with essential hypertension. The suggestion of rest during hypnosis produces a further decrease of the pulse rate; suggestions of muscular exercise or of emotions (fear, joy, anger) increase the pulse rate. A. S.

Cardio-inhibitory effect of excitation of the depressor nerve in bi-vagotomised dogs. H. HERMANN, F. JOURDAN, and R. HOMET (Compt. rend. Soc. Biol., 1938, **127**, 1489).—The phenomenon can be explained on a cholinergic basis as well as by a reduction in tone of the accelerator nerves. J. H. T.

Relatively refractory period of the heart. III. Reversibility and antagonism. B. LUEKEN and E. SCHÜTZ. (Z. Biol., 1938, **99**, 186—197).—The relation between action potential and refractory period of the frog's heart (tested with 2 rectangular current pulses) was studied. Cooling from 20° to 10° lengthens the action potential to 2—2·8 sec., the relation between action potential and refractory period remaining unaltered. The decline of the electric change is accompanied by recovery of excitability. Deviations, in some cases, are attributed to the damaging effects of the low temp. $H^{\cdot}$, $K^{\cdot}$, and acetylcholine make the relative refractory period outlast the action potential, the latter being often shortened. The effects are reversible. Ca, adrenaline, or *l*-suprarenine prolongs the action potential; the abs. refractory period ends when the action potential begins to decline. The recovery of excitability is very rapid, the relative refractory period ending before the action potential has disappeared. During alterations by cold, $H^{\cdot}$, $K^{\cdot}$, and acetylcholine, abnormal wave forms followed stimulation during the relative refractory period. B. K.

Heart sounds in normal and pathological conditions. E. BRAUN-MENENDEZ (Lancet, 1938, **235**, 761—767).—The heart sounds were recorded by a Frank capsule and optical registration in normal and pathological conditions. The significance of the 4 heart sounds is described. C. A. K.

Contribution of the auricles to ventricular filling in complete heart block. K. JOCHIM (Amer. J. Physiol., 1938, **122**, 639—645).—From ventricular vol. curves recorded simultaneously with aortic pressure pulses in a dog with complete heart block, an analysis is made of the dynamics of each auricular beat. The effective auricular contribution is found to increase slowly as the auriculo-ventricular interval decreases. When it equals auricular systole, the auricular contribution begins to increase rapidly, reaching a max. at an interval equal to half the duration of auricular systole and falling off sharply to zero as the interval further decreases. M. W. G.

Thyroidectomy for cardiac pain. G. BOURNE and J. P. ROSS (Lancet, 1938, **235**, 815—817).—Thyroidectomy produced improvement in 9 out of 12 patients with cardiac pain. Possible explanations are discussed. C. A. K.

Thyroidectomy in heart disease. F. VON SCHÜRER (Wien. klin. Wschr., 1938, **51**, 1009—1014).—Total or subtotal thyroidectomy was performed in 30 patients with severe angina pectoris, heart failure, and raised basal metabolic rate. Very good results were obtained in 11 cases, 3 patients improved, 16 patients did not respond favourably. The operation is not indicated where serious organic changes of the heart muscle exist. A. S.

(A) Determination of cardiac output in man at brief intervals by a modified ethyl iodide method. (B) Cardiac output and oxygen consumption of nine surgical patients before and after operation. J. C. SNYDER (J. clin. Invest., 1938, **17**, 563—569, 571—579).—(A) A modification of Starr and Gamble's ethyl iodide method for the study of cardiac output in man is described and a shorter, less laborious method for the collection and analysis of air samples is presented. The changes permit a duplicate determination of cardiac output to be made in 12 min. and additional determinations every 6 min. thereafter. The new method is somewhat less accurate than the old.

(B) In 9 patients studied by the above method, the average cardiac output in the period of recovery from etherisation was decreased by 41% of the pre-operative level. Return to normal required 1—4 days. A patient receiving only local anæsthesia had a raised cardiac output immediately after the operation. Changes in O_2 consumption were occasionally large, but not consistent. C. J. C. B.

Circulation in constrictive pericarditis before and after resection of the pericardium. H. J. STEWART, G. J. HEUER, J. E. DEITRICK, N. F. CRANE, R. F. WATSON, and C. H. WHEELER (J. clin. Invest., 1938, **17**, 581—589).—Rest in bed, medical therapy, or cure by operation brought the cardiac output per min. and per beat, the cardiac index, the venous pressure and circulation time to or towards normal in cases of chronic constrictive pericarditis to a degree similar to that of the clinical improvement. The symptoms and signs are attributed to obstruction to the inflow into the heart and interference with cardiac emptying. The cardiac output per min. and per beat thus fall and venous congestion develops. When the heart's action is freed by resection of part of the pericardium the circulatory functions tend to return to normal vals. C. J. C. B.

Paroxysmal tachycardia. S. LAUTER (Münch. med. Wschr., 1938, **85**, 1430—1432).—A review. A. S.

Determination of origin of ventricular extrasystoles. L. VON UNGHVÁRY (Klin. Woch., 1938, **17**, 1115—1117).—Using a modified Goodman apparatus every extrasystole is assigned to the angle of its electrical axis. The projection of lead I is the horizontal or the diameter 0—180° ("±180°"), lead II 60—240° ("−120°"), and lead III 120—300° ("−60°"). To determine the site of origin of an extrasystole the angle of the electrical axis of the *R* wave is subtracted from that of the extrasystole, when ±0° corresponds with a focus in the base of the heart, ±180° with the apex, negative and positive vals. of the intervals 0—60° with the basal parts, 60—120° the middle parts, and 120—180° the apical parts of the right and left heart respectively. E. M. J.

Permanent abnormally short auriculo-ventricular conduction time with normal ventricular complexes. A. CLERC, ROBERT-LÉVY, and C. CRISTESCO (Arch. Mal. Coeur, 1938, **31**, 569—582).—A *P–R* interval shorter than 0·12 sec. is found occasionally with and without abnormally wide ventricular complexes. It is not known whether a functional or an anatomical abnormality is the cause. G. SCH.

Phonocardiographic observations in bradycardia from auriculo-ventricular dissociation. C. LIAN, G. MARCHAL, and J. WELTI (Arch. Mal. Coeur, 1938, **31**, 669—681).—In some cases of auriculo-ventricular block a double auricular sound, in others a single one or none at all, was registered. The ventricular first sound was accentuated when auricle and ventricle contracted simultaneously. In bundle branch block the 2nd sound was often duplicated. In prolonged electric systole the 2nd sound coincides with the ascending part of *T*. G. SCH.

Planography, a new method of registering an electrocardiogram derived from two leads simultaneously. R. SULZER and P. W. DUCHOSAL (Arch. Mal. Coeur, 1938, **31**, 682—685).—An electric arrangement is described connecting a cathode-ray tube with four electrodes, designed to register the electric fluctuations of four points in a plane during a cardiac cycle G. SCH.

Distribution of electric potentials arising in the heart over the body surface, studied by planography. R. SULZER and P. W. DUCHOSAL (Arch. Mal. Coeur, 1938, **31**, 686—696).—The planogram is the registration of the excursions of the cathode ray during one cardiac cycle when it is under the influence of several (4) electrodes arranged in one of the planes of the body (horizontal, vertical, sagittal). The electrodes are first arranged in the natural axes in each plane and then shifted by 45°. Before and after this shift the planograms taken are similar as long as no electrode in either lead is near the heart. When one electrode comes close to the heart it results in a markedly different planogram, but when the amplification of the electrode near the heart is reduced this difference disappears. It is therefore the result of the excentric position of the heart in the body. Beyond a certain point the exact distance of the electrode from the heart ceases to matter. G. SCH.

Electrocardiographic observations on animals exposed to low temperatures. W. TOMASZEWSKI (Arch. Mal. Coeur, 1938, **31**, 730—737).—In anæsthetised rabbits dying from cold the heart rate slows considerably even after bilateral vagotomy. Auriculo-ventricular conduction time increases, and intra-ventricular conduction is disturbed, *S–T* is prolonged and depressed, *T* becomes small and sometimes inverted. These alterations are, up to a point, reversible. G. SCH.

Ventricular fibrillation and smallest partial systoles. R. LUTEMBACHER (Presse méd., 1938, **46**, 821—824).—After toxic doses of digitalis or allied glucosides regular systole of the frog's heart disappears and partial contractions of at first large and in the end minute fractions of the muscle appear and are made visible by filming the contours of the isolated organ. They are rapid and inco-ordinated and may alternate with normal contractions or isolated contractions of base or apex. They are thought to lead to fibrillation. G. SCH.

Clinical importance of electrocardiography. W. TRENDELENBURG (Dtsch. med. Wschr., 1938, **64**, 1501—1503, 1539—1542).—A review. A. S.

Electrocardiogram in various types of asphyxia. I. Asphyxia by closing the respiratory passage. G. MOTTA (Boll. Soc. ital. Biol. sperim., 1938, **13**, 214—215).—Characteristics of cardiographic records (rabbit, guinea-pig, dog) are described. F. O. H.

Rhythmic activity of cardiac muscle. II. Variations of the relations between mechanical response and rhythm due to differences in temperature. V. KRUTA (Arch. int.Physiol., 1938,

47, 35—62).—The effects due to differences in temp. were studied on the isolated left auricle of the guinea-pig. At each temp. different frequencies were used. The variations of the optimal frequency show a van't Hoff–Arrhenius coeff. of about 2·8. The duration and frequency of the contractions were studied. The various manifestations of the mechanical response vary with the temp. in different degrees and in different manners. H. E. R.

Movements of heart and large vessels, observed on the fluorescent screen. E. ATTINGER (Schweiz. med. Wschr., 1938, **68**, 713—717).—Direct observation of the movements of the heart and the large vessels, using a sensitive fluorescent screen (hectophan screen), yields the same results as kymography. A. S.

Influence of asphyxia on formation of new vessels. C. CHAMPY and J. LOUVEL (Arch. Mal. Coeur, 1938, **31**, 705—717).—A circular patch of guinea-pig mesentery was asphyxiated by ligature of its major vessels. Newly formed vessels grew towards the centre of this zone. Balloons of thin rubber or collodion were filled with O_2 or CO_2, and introduced into the peritoneal cavity of a guinea-pig. Within 3—4 days the balloons containing CO_2 were surrounded by vascular adhesions while the balloons containing O_2 provoked no reaction. Rubber bags containing O_2 or CO_2 were tied around the paws of guinea-pigs under equal pressure. The CO_2 caused dilatation of existing vessels and new formation of capillaries; the O_2 produced no reaction. 24 hr. after injection of CO_2 into the peritoneal cavity many capillary buds were seen where the gas had been in contact with the peritoneum; a similar injection of O_2 caused blanching of the peritoneum. G. SCH.

Resting state of circulation. K. WEZLER (Verh. Schweiz. Physiol., 1938, **13**, 31—33).—Diastolic blood pressure $(p_d) = V_s \cdot W(1 - e^{SE/W})/S(1 - e^{60E'/FW})$, where V_s = stroke vol., S = duration of systole, F = heart rate per min., E' = elasticity coeff., and W = peripheral circulatory resistance. This formula applies over a wide range of variations of the individual factors. A. S.

"Separator method" [for study of circulation]. IV—VI. P. WOLFER (Arch. exp. Path. Pharm., 1937, **187**, 506—532; 1938, **189**, 211—233, 234—242).—For the principles underlying the "separator method" for analysis of the circulation see Physiol. Abs., 1932, **17**, No. 2988.

IV. An analysis is made of a caffeine–atropine curve. The vals. obtained for the filling of the coronary system by direct plethysmographic measurements correspond with the vals. derived by means of the separator method from the pressure curves of the ventricle and the carotid.

V. A further mathematical analysis of the separator method. Two new magnitudes are introduced by means of which the factor of peripheral resistance enters into the calculation of the coronary flow.

VI. A simple mathematical relationship exists between peripheral resistance and the blood flow through the carotid ("carotid amplitude"). H. O. S.

Improvement of cerebral circulation by vaso-active substances. P. SCHENK (Dtsch. med. Wschr., 1938, **64**, 1361—1363).—A review. A. S.

Significance of the cutaneous blood vessels for the general circulation. P. W. SPRINGORUM (Klin. Woch., 1938, **17**, 11—13). F. W. L.

Accuracy of the thermostromuhr method for measuring blood flow. H. BARCROFT and W. M. LOUGHRIDGE (J. Physiol., 1938, **93**, 382—400).—Experiments with carefully selected pieces of calf, goat, sheep, or dog vein and with blood vessels in the living goat or dog indicate that physiological changes in blood temp. may affect the accuracy of the thermostromuhr method. The significance of the error depends on several factors and especially on the junction temp. difference caused by the heating current. The error in measuring the flow through the femoral vein after adrenaline would have been 150, 43, 10, and 2% for junction temp. difference of 0·05°, 0·1°, 0·3°, and 1·0° respectively. A method is given for finding the significance of the error. J. A. C.

Blood-flow regulation in heat-treated skin. P. W. SPRINGORUM (Pfluger's Archiv, 1937, **238**, 644—650).—Dilatation of skin vessels produced by warming can be decreased by intravenous injection of adrenaline, but cannot be further increased by acetylcholine or histamine. M. A. B.

Thoraco-abdominal vaso-pressor reflexes. C. HEYMANS and J. J. BOUCKAERT (Ann. Physiol. Physicochim. biol., 1938, **14**, 556—561; cf. Physiol. Abs., 1937, **22**, No. 1169).—The pressure-receptors exist mostly in the mesenteric intestinal vessels and accessorily in the region of the thoracic aorta, acting through the spinal cord; they are absent in the kidneys, spleen, and hind limbs in the dog. C. C. N. V.

Local application of nicotine to carotid sinus. A. PI SUNER and F. DOMENECH-ALSINA (Ann. Physiol. Physicochim. biol., 1938, **14**, 617).—Nicotine paralyses the pressure receptors in the carotid sinus of the dog. C. C. N. V.

Action of various gases on the carotid sinus. Z. BIELIŃSKI (Acta Biol. Exp., 1938, **12**, 165—167).—Air, O_2, or CO_2 was introduced under varying pressure into a carotid sinus prep. in the dog. Similar tracings were obtained as with changes of fluid pressure within the carotid sinus. A. S.

Changes with age in the blood pressures in adult men. W. H. LEWIS, jun. (Amer. J. Physiol., 1938, **122**, 491—505).—The systolic, mean, and pulse pressures, but not the diastolic pressure, show a significant positive relation to age; the former increased gradually from 40 to 62 years and rapidly from 62 to 85 years in normal men. The mean and modal systolic pressures increase with age and do so in a more marked degree after the 65th year. M. W. G.

Action of low temperature on the blood vessels of rabbits. Y. OKUDA, A. HIRAMA, and M. NITSU (Japan. J. Med. Sci., 1938, IX, **5**, 284—285).—Low temp. (−30° or −40°) produce contraction of the arteries of the hind limbs in rabbits. J. P.

Action of salicylcholine and trimethylacetylcholine on respiration and circulation. A. SCHWEITZER, M. WEIZMANN, and S. WRIGHT (Cardiologia, 1938, **2**, 193—207).—Trimethylacetylcholine and salicylcholine raise the blood pressure in unatropinised cats. This pressor effect is still obtained after atropinisation, section of the vagi and elimination of the carotid sinuses, and destruction of the medulla oblongata and the spinal cord; it is abolished by large doses of nicotine. Both compounds produce a triple response on respiration: initial stimulation, depression, secondary stimulation. The initial stimulation is due to a stimulation of the chemo-receptor endings in the vaso-sensory zones; it may still be obtained after elimination of the chemo-receptors when high transection of the midbrain is performed. The depression of breathing is unaffected by denervation of the vaso-sensory zones; it is due to (1) reflex inhibition via presso-receptors produced by the rise of blood pressure, (2) inhibition of peripheral neuromuscular transmission, (3) depression of the spinal cord, and (4) depression of the respiratory centre. The secondary stimulation of breathing is due to a stimulation of the respiratory centre. A. S.

Labyrinth and regulation of blood pressure. H. MIES (Z. Biol., 1938, **99**, 141—146).—Reflex regulation of the blood pressure was studied in rabbits 1 to 125 days after uni- or bi-lateral labyrinthectomy. No significant changes, as compared with normals, were found. B. K.

Action of lactic acid on arterial blood pressure. R. NATOLSKI (Acta Biol. Exp., 1938, **12**, 126—129). —Intravenous injection into dogs under chloralose anæsthesia of Na, K, or Ca lactate lowers the arterial blood pressure; this was also observed after cutting the vagi or section of the spinal cord. The blood pressure was raised in animals with vagi and spinal cord cut. The fatal dose is 0·6 g. per kg. body-wt. of Na lactate, 0·1 g. of Ca lactate, and 0·05 g. of K lactate. Death occurs from cardiac failure and vasomotor centre depression. The depressor action of lactate is more marked in decerebrate dogs. A rise of blood pressure was observed after section of the vagi; this pressor effect is converted into a fall by a previous injection of ergotamine. A small fall of pressure was observed in the spinal dog. A. S.

Identification of a dilator substance in red blood cells. A. FLEISCH and A. STUDER (Verh. Schweiz. Physiol., 1938, **13**, 16—17; cf. A., 1938, III, 376). A. S.

Vitamin-*C* balance in man. IV. K. WACHHOLDER (Klin. Woch., 1938, **17**, 5—10).—Subjects with a daily max. intake of 120—140 mg. of vitamin-*C* oxidised 65—115 mg. The usage increases by 60 mg. when the intake is raised to 270—300 mg. The usage likewise declines with lessened intake even when this is insufficient for the maintenance of saturation. F. W. L.

Vascular spasm produced *in vitro*. A. MOUGEOT (Presse méd., 1938, **46**, 853—855).—A review. G. SCH.

Vascular diseases. G. W. SCUPHAM, G. DE TAKÁTS, T. R. VAN DELLEN, and W. C. BECK (Arch. intern. Med., 1938, **62**, 482—539).—A review. C. A. K.

Blood in thromboangiitis obliterans. G. M. ROTH, E. V. MACLAY, and E. V. ALLEN (Arch. intern. Med., 1938, **62**, 413—422).—Blood-urea, serum-Ca, -protein, -lecithin, and -P, blood vol., hæmatocrit val., and plasma-fatty acids and -cholesterol were all normal in thromboangiitis obliterans. C. A. K.

Diffuse arterial disease with hypertension. E. F. ROSENBERG, N. M. KEITH, and H. P. WAGENER (Arch. intern. Med., 1938, **62**, 461—481).—In 2 cases of hypertension examined clinically and post mortem, one showed marked arteriolar changes and sustained hypertension, the other with diffuse arterial changes showed mild and variable hypertension. C. A. K.

Periarteritis nodosa. Clinico-pathological study with special reference to the nervous system. J. W. KERNOHAN and H. W. WOLTMAN (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 655—684).—Five cases of periarteritis nodosa are fully reported. The primary lesion is a patchy hyaline necrosis of the media of the small arteries. The periarteritis is secondary to this, as are multiple small aneurysms which are, however, exceptional. Later there is proliferative endarteritis, which causes most of the symptoms. These include hypertension and multiple infarction of many organs. Both the central and peripheral nervous system are commonly involved by the process of patchy infarction. A. M. B.

Results of operation of the sympathetic in spontaneous gangrene. Y. KAWAGUCHI (Japan. J. Med. Sci., 1938, IX, **5**, 393—394).—Periarterial sympathectomy was performed in 38 cases: 17 were cured, 10 improved, no effect was obtained in 11 cases. Sympathetic ganglionectomy was carried out in 22 cases. 11 were cured, 4 improved, no effect and death occurred in 7 cases. J. P.

Specificity of vasoconstrictor action of venous blood from the ischæmic kidney. B. A. HOUSSAY and A. C. TAQUINI (Rev. Soc. argent. Biol., 1938, **14**, 86—93).—One renal artery (in dogs) was partly obstructed and the other kidney removed. After hypertension had been established, blood was taken from the renal vein, the right and left ventricles, the suprahepatic, jugular, mesenteric, and splenic veins, citrated, diluted 1 : 10 with Ca-free Ringer's solution, and perfused through a Läwen–Trendelenburg prep. in toads. In all cases (10 experiments) the vasoconstrictor effect of the blood from the ischæmic kidney was considerably greater than that coming from other territories. There was some relationship between the constrictor activity found and the degree of hypertension present. In another series one kidney was rendered ischæmic and the other left normal. The vasoconstrictor effect of blood from different territories was in the following decreasing order: ischæmic kidney, right ventricle, left ventricle, normal kidney. The normal kidney thus eliminates or destroys the hypertensive factor; to a smaller degree the lung does the same. This mechanism prevents a continuous rise in concn. of the

hypertensive factor in the blood, into which it is being constantly delivered by the ischæmic kidney. J. T. L.

Experimental hypertension induced by renal ischæmia. H. GOLDBLATT (Harvey Lect., 1937—38, S. **33**, 237—275).

Surgical treatment of arterial hypertension. W. DENK (Wien. klin. Wschr., 1938, **51**, 979—982).—Bilateral splanchnectomy and partial resection of the adrenal gland relieves the subjective symptoms in many severe cases of arterial hypertension. Permanent lowering of the blood pressure as a result of the operation does not occur. A. S.

Vasopressor substances in essential hypertension and the kaolin hypertension of the dog. H. VOIGT (Klin. Woch., 1938, **17**, 1148—1151).—Kaolin hypertension of dogs is due to a vasopressor substance which is absent after adrenalectomy. It is also present in human essential hypertension. E. M. J.

Rôle of the thyroid in arteriosclerosis. H. HANDOVSKY (Acta brev. neerl. Physiol., 1938, **8**, 45—46).—0·6 mg. of calciferol per kg. body-wt. was fed daily to dogs for 40 days. The following changes occurred: hypercalcæmia, hypercholesterolæmia, marked increase of blood pressure, and necrosis of the arterioles of the kidney. Nephrosclerosis and sclerosis of the aorta were never observed. After removal of the thyroid and parathyroid glands, nephrosclerosis and sclerosis of the aorta occurred in addition to the other symptoms (no sclerosis of the kidney arterioles). No aortic sclerosis developed if the dogs, following thyroidectomy and parathyroidectomy, were treated with subcutaneous injections of thyranon (a thyroid prep. containing 0·2 mg. of I per c.c.). A. S.

Treatment of essential hypertension. P. MARTINI (Münch. med. Wschr., 1938, **85**, 1409—1414).—Satisfactory results were obtained with a NaCl-free diet, continued over many months. Blood pressure is lowered and many symptoms of the disease disappear. A. S.

Œdema formation associated with incompetence of the valves of the communicating veins of the leg. H. E. HOLLING, H. K. BEECHER, and R. R. LINTON (J. clin. Invest., 1938, **17**, 555—561).—Œdema develops more readily in the legs of patients with varicosities than in normal individuals. This tendency is increased when the valves of the communicating veins are incompetent. The O_2 tension of the blood in varices of the great saphenous system with and without ulceration was not lowered. C. J. C. B.

(d) RESPIRATION AND BLOOD GASES.

Jacket respirator for treatment of poliomyelitis. A. F. BURSTALL (Brit. Med. J., 1938, II, 611—612).—The apparatus consists essentially of an Al cuirass with a rubber bag on its inner surface. It encloses the trunk of the patient from neck to waist. C. A. K.

Proprioceptive reflexes of the diaphragm. A. CARDIN (Arch. int. Physiol., 1938, **47**, 102—112).—Phrenectomy at any point along the nerve alters the motility, amplitude, and mucous secretion of the nostril on the operated side. The afferent fibres of the phrenic exercise an inhibiting effect on the tone and amplitude of movement of the nostril. These afferent fibres are comparable with those which affect the tone and amplitude of contraction of the diaphragm. H. E. R.

Stereomicroscopic study of the surface of the lung. M. JOANNIDES (Arch. Surg., Chicago, 1938, **37**, 1—7).—Using a Zeiss surface stereomicroscope, lungs prepared with Kaiserling's solution were studied. Direct observation was also employed in living frogs. The terminal bronchioles are seen as cochlea-shaped tubes; this is illustrated in stereophotographs together with other appearances of the normal lung obtained by this method. G. C. K.

Vowel vibrations and vowel production. E. W. SCRIPTURE (Nature, 1938, **142**, 619).—The vowel vibrations are not produced by resonance. W. F. F.

Characteristics and individual variations in human speech. Electro-acoustical methods of detection and physiopsychological evaluation of the results. A. GEMELLI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 321—323).—Methods of examining voice characteristics are discussed. F. O. H.

Changes in the residual air and the interrelation between residual air, vital and total capacity in cases with artificial pneumothorax. T. KIKUTI (Tohoku J. exp. Med., 1938, **33**, 512—524). F. JA.

Tests of respiratory efficiency and their correlation with radiological appearances in the lungs. E. M. KILLICK (Brit. J. Radiol., 1938, **11**, 401—404).—A report of findings in patients with silicosis and asbestosis and in electric arc welders with lung disease. The tests employed are almost identical with those described by Moncrieff (M.R.C. report, 1934). W. F. F.

Collapse of the lung produced by bronchial obstruction. G. ODA (Japan. J. Med. Sci., 1938, IX, **5**, 319—320).—Rabbit lungs after complete bronchial obstruction, when observed through the thin diaphragm from the abdomen, appeared wrinkled and dark brown. The collapse is complete 2—4 hr. after blocking the bronchi and the lung recovers 10 min. after removing the obstruction. J. P.

Experiments on pulmonary atelectasis. Y. TAKEDA and K. IKEDA (Japan. J. Med. Sci., 1938, IX, **5**, 320—321).—Ventilation after ligature of the chief bronchus in rabbits increases CO_2 output; O_2 consumption and CO_2 content of blood decrease. Four types of histological changes of the atelectatic lung are described. J. P.

Results of evulsion of phrenic nerve on respiratory movements. S. OSUGI (Japan. J. Med. Sci., 1938, IX, **5**, 324—325).—Uni- or bi-lateral evulsion of the phrenic nerve is followed by increased movements of the thoracic wall, temporary atelectasis of the

inferior lobes, and emphysema of the superior lobes of the lungs. J. P.

Resection of lung for bronchiectasis. P. SANTY and M. BÉRARD (Presse méd., 1938, **46**, 825—828).—In a child aged 10 the left lung was resected successfully for unilateral bronchiectasis of 5 years' standing. The previously marked clubbing of the fingers disappeared almost completely within a few months after the operation. G. SCH.

Radiological chest volume during artificial pneumoperitoneum treatment. A. L. BANYAI (Radiology, 1938, **31**, 48—51).—Measurements on 40 patients, involving 400 *X*-ray observations, show that artificial pneumoperitoneum produces elevation of the diaphragm and reduction of lung vol., except in cases of extensive pleural adhesions. W. F. F.

Use of helium for pneumothorax fillings. SCHEDTLER (Klin. Woch., 1938, **17**, 1153—1154).—The pneumothorax needs refills at the same intervals as with the usual gases. E. M. J.

Disturbance of vago-sympathetic equilibrium and therapeutic intervention on the sympathetic in pulmonary tuberculosis. L. MICHON, J. CHAIZE, and H. MOLLARD (Presse méd., 1938, **46**, 865—868).—Exacerbation of pulmonary tuberculosis is accompanied frequently by increased sympathetic tone indicated by disappearance of the oculo-cardiac reflex and its reappearance during periods of inactivity. Infiltration of the sympathetic chain on the affected side with novocaine or alcohol was practised in a few cases, arresting the spread of the infiltration and the tendency to hæmorrhages for months at a time. G. SCH.

Radiographic studies of the excretion of dusts from the lungs. A. E. BARCLAY and K. J. FRANKLIN (Brit. J. Radiol., 1938, **11**, 405—413).—The lungs of anæsthetised cats were insufflated with $Bi_2(CO_3)_3$ and powdered Pb glass. The animals recovered quickly. As the dust was expelled from the lungs by ciliary action it was swallowed and could be seen passing through the alimentary canal. The time taken for the lungs to become completely clear of the dust was up to 40 hr., except in old lethargic cats. In no case, in the 60 studied, did the dust penetrate to the alveoli on insufflation, but in 10 cases it penetrated after several days, setting up an inflammatory condition. Dust mixed with various fluids and introduced into the trachea passed into the alveoli, whence it was excreted slowly over periods of weeks. W. F. F.

***X*-Ray studies of excretion of dusts from the lungs.** A. E. BARCLAY, K. J. FRANKLIN, and R. G. MACBETH (Amer. J. Roentgenol., 1938, **39**, 673—685).—A detailed study of the work reported in the preceding abstract. W. F. F.

Physiology and pharmacology of coughing. T. GORDONOFF (Ergebn. Physiol., 1938, **40**, 53—100).

Insulin shock treatment of bronchial asthma. H. BARTELHEIMER (Dtsch. med. Wschr., 1938, **64**, 1254—1255).—Attacks of asthma were stopped by experimental hypoglycæmia. A. S.

Treatment of bronchial asthma with pyrifer. O. HARDECK (Schweiz. med. Wschr., 1938, **68**, 1099).—A repeated artificial increase of body temp. by intravenous injections of pyrifer (mixture of various kinds of killed coli bacilli) is recommended for the treatment of bronchial asthma. A. S.

Vasomotor rhinorrhœa with asthma associated with menstruation. A. S. HOSEASON (Brit. Med. J., 1938, II, 703—704).—Vasomotor rhinorrhœa occurring just before the period was the cause of asthma during menstruation in 2 girls aged 14 and 16 years. The rhinorrhœa is attributed to swelling of the nasal mucous membrane produced by œstrogenic hormone. C. A. K.

Fœtal respiratory movements. B. E. BONAR, C. M. BLUMENFELD, and C. FENNING (Amer. J. Dis. Child., 1938, **55**, 1—11).—Intrauterine fœtal respiratory movements were observed and recorded by cinematography in animals after spinal section. Narcotic drugs depress the movements. A. C. F.

Isolation of the carotid sinus presso-receptive respiratory reflex. C. V. WINDER (Amer. J. Physiol., 1938, **122**, 306—318).—The carotid body of the anæsthetised dog was embolised; the isolated carotid segment was perfused and aortic pressure controlled with circulating aortic blood from the animal; pulmonary ventilation was controlled during open pneumothorax; vago-sympathetic aortic nerves were severed to eliminate secondary respiratory reflexes and changes in cerebral circulation; respiratory movements were recorded plethysmographically. A real carotid sinus presso-receptive influence on respiration exists which is consistently one of inhibition. There is a quant. reflex relationship between the abs. endosinual pressure-stimulus and breathing activity. M. W. G.

Analysis of regulation of breathing. A. FLEISCH and J. TRIPOD (Schweiz. med. Wschr., 1938, **68**, 951—953).—Proprioceptive respiratory reflexes still occur in cats after section of the vagi and both sympathetic trunks in the neck, of the spinal cord at *C*7, and of the posterior roots *C*3—*C*7. The afferent pathways of these reflexes are unknown. A. S.

Dual pulmonary circulation in pathologic conditions of the lungs. D. A. WOOD and M. MILLER (J. Thorac. Surg., 1938, **7**, 649—670).—The distribution of the bronchial and pulmonary arteries in the human lung was studied post-mortem by injections of a Bi paste. In conditions causing increased pulmonary venous pressure, numerous anastomoses develop between the bronchial and pulmonary arteries. In chronic inflammatory conditions of the lung the bronchial arteries become dilated. In primary carcinoma of the lung the bronchial arteries form a rich vascular bed surrounding and involving the tumour; they are not involved in metastatic growths. Widened communications between the bronchial and pulmonary circulations may play a part in producing right ventricular hypertrophy and failure. F. J. S. G.

Carbon dioxide inhalation in pulmonary tuberculosis. A. L. BANYAI (Tubercle, 1938, **19**, 468—469).—The administration of a mixture of 10%

CO_2 + 90% O_2 intermittently to cases with viscid sputum was frequently more efficient as an expectorant than the ordinary expectorant drugs. Its effect is attributed to the greater respiratory dilatation of the bronchioles. F. J. S. G.

Acclimatisation of the human organism to low atmospheric pressures. F. GOEBEL and S. MARCZEWSKI (Acta Biol. Exp., 1938, **12**, 87—89).—Dogs were put in low-pressure chambers at a pressure of 210 mm. Hg (10,000 m.) for 10 hr. per day over periods of 2 months. Blood p_H fell from 7·35 to 7·05, alkali reserve was reduced from 40·4 to 32·8 ml. of CO_2 %, O_2 capacity and the no. of red blood cells increased considerably. Intravenous injections of 50—100 mg. or oral administration of 0·5 g. per kg. body-wt. of NH_4Cl in normal dogs produced increased red cell count and O_2 capacity. The adaptation of these dogs to conditions of low barometric pressure took place much more quickly. A. S.

Variation of the blood gas content in rabbits poisoned with peptone, and the adrenals. Y. TANEITI (Tohoku J. exp. Med., 1938, **33**, 489—495).—In rabbits with bilateral adrenalectomy or splanchnic nerve section there was a reduction of blood-CO_2 following peptone poisoning. F. JA.

Parkinsonism from carbon monoxide poisoning. W. PLATH (Dtsch. med. Wschr., 1938, **64**, 1543).—A man suffering from chronic CO poisoning developed Parkinson's syndrome in the course of 17 years. A. S.

Oxygen and carbon dioxide contents of blood of schizophrenic patients. J. M. LOONEY and H. FREEMAN (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 276—283).—The O_2 and CO_2 contents of arterial and venous blood have the same mean val. in schizophrenic patients as in normal controls; by statistical analysis a different distribution in the 2 groups is claimed as demonstrated. A. M. B.

Oxygen affinity of hæmoglobin in splenectomised bullfrogs. F. H. MCCUTCHEON (J. exp. Biol., 1938, **15**, 431—436).—Removal of the spleen from frogs decreases the O_2 capacity of the hæmoglobin and correspondingly increases the "unloading capacity." Hæmoglobin in solutions obtained from frog's spleen often has a higher O_2 capacity than that in solutions prepared from blood from the general circulation. It is suggested that the frog's spleen modifies the O_2 transport properties of the blood. J. M. R.

Oxygen therapy. R. V. CHRISTIE (Lancet, 1938, **235**, 876—882).—Methods of O_2 administration are discussed and a new nasal mask is described. C. A. K.

Biological actions of hæmatoporphyrin-Nencki. J. HÜHNERFELD (Wien. klin. Wschr., 1938, **51**, 945—948).—A review. A. S.

Distribution coefficients of porphyrins between ether and hydrochloric acid.—See A., 1938, II, 461.

Echinochrome and spinochrome.—See A., 1938, II, 448.

Interferometric studies at high altitudes. W. WILBRANDT (Schweiz. med. Wschr., 1938, **68**, 965).—O_2 consumption and CO_2 production were determined with a gas-interferometer (Zeiss) in the Jungfrau railway at 2000—3500 m. and in a low atm. pressure chamber. O_2 consumption and CO_2 production increase considerably during the ascent; the basal metabolic rate is increased at high altitudes. The R.Q. is temporarily raised. A. S.

Gaseous metabolism of man at high altitudes. B. STEINMANN and W. WILBRANDT (Verh. Schweiz. Physiol., 1938, **13**, 30—31). A. S.

Influence of cystine–cysteine on respiration. H. NAKAYAMA (Japan. J. Med. Sci., 1938, III, **5**, 233—267).—Cystine–cysteine is a factor in the regulation of respiration and is closely related to the excitability of the afferent vagus endings. In the rabbit, an increase in the blood-cystine–cysteine in the early stage of breathing air of reduced O_2 tension is concerned in the compensating mechanism of tissue respiration, producing hyperpnœa and increasing the irritability of the afferent vagus fibres. The action of intravenously injected cystine is peripheral. The "respiratory *X*" substance of Haggard and Henderson may be closely allied to cystine. T. F. D.

(e) MUSCLE.

Muscular rigidity caused by ammonia and alkalis. R. FERRARI and P. FORNAROLI (Arch. Sci. biol., Napoli, 1938, **24**, 1—10).—No shortening occurs in a frog's gastrocnemius perfused with Ringer's solution in which NaCl is replaced by NH_4Cl. With perfusion fluids containing aq. NH_3 or NaOH, rigidity occurs when the p_H exceeds 10·5 or 12 respectively, and is greater the higher is the p_H. It is concluded that NH_3 rigidity is not caused by $NH_4^{\cdot}$ or OH', but by undissociated NH_4OH or NH_3 mols. R. S. CR.

Rigidity of muscle poisoned with iodoacetic acid. P. FORNAROLI and R. FERRARI (Arch. Sci. biol., Napoli, 1938, **24**, 20—25).—Frog's gastrocnemius muscles were perfused with Ringer's fluid of varying p_H containing 0·01% of iodoacetic acid, and stimulated with single shocks at 3-sec. intervals. Rigidity develops only when the p_H exceeds 3·6, and increases in degree with increase of the p_H. The amount of work performed before the muscle becomes exhausted is greater at low than at high p_H. R. S. CR.

Seasonal variations in the chemical composition of muscle in *Bufo arenarum*, Hensel. P. MAZZOCCO (Rev. Soc. argent. Biol., 1938, **14**, 236—245).—The muscles of the hind legs were analysed. In summer the water content increased, fat and glycogen were lower, and ash increased slowly. In autumn and winter water diminished, fat and glycogen increased; ash diminished during winter. J. T. L.

Energy-yielding reactions in muscle contraction. D. M. NEEDHAM (Enzymologia, 1938, **5**, 158—165).—A lecture. J. N. A.

Action of arsenate in glycolysis. R. K. PILLAI (Biochem. J., 1938, **32**, 1961—1973).—Adenyl pyro-

phosphate in muscle extract containing no adenyl-pyrophosphatase forms adenylic acid and PO_4''' in the presence of AsO_4''', cozymase, phosphoglycerate, and NaF. The activation of hexose diphosphate by AsO_4''' occurs in two stages: (1) oxido-reduction between triose phosphate and pyruvate (or acetaldehyde) and (2) the dephosphorylation of phosphoglycerate. (1) and (2) are activated by stoicheiometric amounts of adenylic acid and PO_4''', which are esterified simultaneously and then broken down again, in the presence of AsO_4''', by the phosphoglycerate formed from triose phosphate. The reaction may involve reduction of the phosphoglycerate to triose phosphate and formation of a cozymase pyrophosphate as an intermediate. Creatine phosphate can break down similarly in presence of AsO_4''', cozymase, $Mg^{\cdot\cdot}$, phosphoglycerate, and NaF without adenylic acid. The AsO_4'''-activated breakdown of adenyl pyrophosphate might prevent esterification of carbohydrate and account for the inhibition of glycolysis observed with AsO_4'''. T. F. D.

Thermoelectric studies on heat production of sympathectomised skeletal muscle. N. SCHEINFINKEL (Schweiz. med. Wschr., 1938, **68**, 965—968).—The temp. of the muscles of the forelegs of rabbits was measured with thermoelements after unilateral sympathectomy. The temp. of the intact side increased more than that of the sympathectomised leg after cooling the animal or breathing air containing 6% of CO_2. A. S.

Salt fish. III. Equilibrium moisture coefficients of salt fish muscle. D. LEB. COOPER (J. Fish. Res. Bd. Canad., 1938, **4**, 136—140).—Sorption isotherms of salt-fish muscle determined by the quartz spiral balance showed that the material was isohygrometric between activity 0·30 and 0·754 and temp. 15° to 35°. Above 0·754 the system acted as a saturated solution of NaCl. R. L. N.

Effect of acetylcholine and eserine on neuromuscular excitability of the toad. V. H. CICARDO (Rev. Soc. argent. Biol., 1938, **14**, 297—303).—The excitability of the sciatic nerve and gastrocnemius of *Bufo arenarum*, Hens., was determined by Lapicque's condenser discharge method before and after injecting acetylcholine into the sciatic artery. During the contracture produced by larger doses, rheobase and chronaxie increased; this hypo-excitability was prolonged by eserine. After the contracture produced by doses of 1—10 μg. had passed there was no change in the excitability of muscle or nerve; larger doses (100 μg.) increased the rheobase and chronaxie. Doses of 3—5 mg. diminished even more the muscular excitability and increased rheobase and chronaxie of nerve; curarisation was then observed. Small doses (300 μg.) of eserine diminished the rheobase in the nerve, without altering chronaxie or modifying muscular excitability. Larger doses (2—3 mg.) increased the rheobase and chronaxie of nerve, and more so of muscle, producing curarisation. J. T. L.

Choline-esterase activity of the gastrocnemius muscle after section of the dorsal region of the spinal cord. E. MARTINI and C. TORDA (Boll. Soc. ital. Biol. sperim., 1938, **13**, 442—443).—The choline-esterase activity of the muscle (rat) decreases to a min. val. approx. 7 days after the operation and subsequently increases to levels above normal. These changes are similar to those simultaneously occurring in choline-esterase and reflex activity of the cord. F. O. H.

Choline-esterase activity of rat muscles following destruction of the cerebellum. E. MARTINI and C. TORDA (Boll. Soc. ital. Biol. sperim., 1938, **13**, 445—447).—Destruction of the cerebellum is followed by a decrease in the activity of the anterior tibialis muscle to the same level as that of the gastrocnemius of the hind limbs and a decrease of the activity of the extensor digitorum to approx. the same level of the biceps of the fore limbs, the content of gastrocnemius and biceps remaining practically unchanged. Destruction of the cerebral cortex has no significant effect on the choline-esterase activity of the above muscles. F. O. H.

Choline-esterase at the end plates of voluntary muscle after nerve degeneration. R. COUTEAUX and D. NACHMANSOHN (Nature, 1938, **142**, 481).—The relation between the muscle vol. and enzyme concn. was observed after nerve section (sciatic) in the guinea-pig. There is a high enzyme concn. at the end plates of muscle. W. F. F.

Rôle of potassium in the phenomena of excitation. A. REGINSTER (Arch. int. Physiol., 1938, **47**, 24—34).—There is no relation between the quantity of K lost and the tension developed in the muscles. The quantity of K liberated depends on the no. of stimuli applied. It is suggested that the liberation of K is associated with the phenomena of excitation and not with the liberation of energy. H. E. R.

Dissociation of the organic complex of potassium of muscle in the phenomena of excitation. A. REGINSTER (Arch. int. Physiol., 1938, **47**, 71—75).—Direct excitation of a muscle with degenerated nerve causes a liberation of K from the org. complex of K. This liberation occurs even when the nerve to the muscle has been curarised. It is suggested that the liberation of K takes place at the stage between the liberation of acetylcholine and the contraction. H. E. R.

Relation of contracture to increment in resting heat production of muscle under influence of potassium. C. G. SMITH and D. Y. SOLANDT (J. Physiol., 1938, **93**, 305—311).—Two phases of increased metabolism are demonstrated in frog's sartorius muscle when treated with K (concn. that of normal Ringer's solution ×1—60): the first is associated in time with the twitching which occurs during the first 4 min. after immersion; the second appears later while the muscle is inactive. The amount of heat liberated in the first 4 min. increases with the increase in the no. and strength of the twitches induced as the K concn. is raised above normal × 4. The rate at which resting metabolism rises to a max. and subsequently falls becomes progressively more rapid and the level attained is increased as the concn. is raised from 4 to 60 times that of Ringer's solution. J. A. C.

Action of various magnesium salt concentrations on frog muscle. L. LUBINSKA and H. ROSENBERG (Acta Biol. Exp., 1938, **12**, 183—191).—The chronaxie of a frog's nerve-muscle prep. increases with concn. of Mg in the suspension fluid, beyond the dose necessary to suppress neuro-muscular transmission. A. S.

Action of strychnine on the nerve-muscle preparation. J. KONORSKI and L. LUBIŃSKA (Acta Biol. Exp., 1938, **12**, 13—21). Local application of strychnine (0·03—0·2% solution) on the nerve or muscle of sciatic-gastrocnemius prep. in frogs increases the rheobase and diminishes chronaxie. In the case of nerve, the change of chronaxie appears later than that of the rheobase; with muscle, both changes occur simultaneously and are proportional to the degree of curarisation. A. S.

Electrical reactions in myasthenia. V. NERI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 374—375).—Characteristic effects of faradic stimulation of muscle and nerve in myasthenia, which vary with the intensity of the disease, are described. F. O. H.

Influence of myasthenia sera on the action of acetylcholine and its joint reaction with eserine. T. YOSHIDA (Folia pharmacol. japon., 1938, **26**, 18—19).—The serum of myasthenia patients taken 30 min. after the administration of prostigmine, when the symptoms seemed slight, was less effective in diminishing the action of actylcholine on isolated loops of rabbit intestines than that taken before the treatment. F. JA.

Physiology and therapy of muscle diseases. E. PICHLER (Wien. klin. Wschr., 1938, **51**, 832—835).—A review. A. S.

Physiology of hollow muscle tonus, especially in the propelling muscles of invertebrates resembling hollow organs. H. J. JORDAN (Ergebn. Physiol., 1938, **40**, 437—533).

Variations in osmotic pressure of the blood during fatal asphyxia by drowning. Application to forensic medicine. V. M. PALMIERI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 482—484).—Variations in the osmotic pressure of the blood from the left and right sides of the heart (dog) at periods up to 3 days after death are given and discussed. F. O. H.

Mechanism of muscular activity. J. I. FRENKEL (Compt. rend. Acad. Sci. U.R.S.S., 1938, **20**, 129—132).—On the basis that muscular activity consists of the formation of lateral bonds between the curling myosin mols. by an unknown chemical substance, the energy relations of the contraction and relaxation of muscle are worked out. W. F. F.

Experiments on current reversal B. ZAWADZKI (Acta Biol. Exp., 1938, **12**, 96—98).—The contractions of directly stimulated frog's muscle disappear after some time; further contractions are obtained if the direction of the current is reversed ("Wendungseffekt"). This phenomenon is explained by changes of permeability of the muscle membrane at cathode and anode. A. S.

Current of rest of muscle. Mechanism of the action of eserine-acetylcholine and of adrenaline on striated muscle. E. MARTINI and C. TORDA (Boll. Soc. ital. Biol. sperim., 1938, **13**, 352—373).—The current of rest of muscle [between tendon (negative) and longitudinal surface (positive) of frog's gastrocnemius] diminishes during perfusion with Ringer's solution and increases on cessation of perfusion. Perfusion with acetylcholine-eserine or adrenaline solutions increases the p.d. With HCN-poisoned muscle, acetylcholine-eserine has no effect but the increase due to adrenaline persists, whilst with bromoacetate-poisoned muscle, adrenaline has no effect and acetylcholine-eserine increases the p.d. only in presence of Na lactate. These phenomena are related to the increase of muscle-glycolysis by adrenaline and of oxidation of muscle-lactic acid by acetylcholine-eserine. F. O. H.

Stimulation of single muscle fibres. I. Conditions for submaximal contractions. M. SUGI (Japan. J. Med. Sci., 1938, III, **5**, 157—173).—Single fibres of the toad sartorius muscle and of frog basihyoid membrane were stimulated with the $Hg-Hg_2Cl_2$ micro-electrode and observed under the microscope. T. F. D.

Changes of reaction in muscle during contraction. M. DUBUISSON (Ann. Physiol. Physicochim. biol., 1938, **14**, 522—523).—By means of the glass electrode (cf. Physiol. Abs., 1937, **22**, No. 3930) it was found that normal or iodoacetic acid-poisoned muscle during the first 20—100 stimuli or the first 2—5 tetani of 2 sec. undergoes progressive alkalinisation which is greater with higher initial acidity of the muscle. Determination of the phosphagen hydrolysed and of the lactic acid produced can be correlated perfectly with the p_H change in normal muscle. In iodoacetic acid-poisoned muscle a similar concordance is obtained between p_H changes, hydrolysis of phosphagen, and acidity of esterification of phosphates. C. C. N. V.

Lactic acid formation in skeletal muscle pulp. W. KUTSCHER (Verh. Schweiz. Physiol., 1938, **13**, 18—19).—O_2 inhibits glycolysis in skeletal muscle pulp (ox). Lactic acid is formed in muscle pulp of guinea-pigs under aërobic conditions; this process is slower than under anaërobic conditions. The smaller are the particles of the muscle pulp the less is the anaërobic glycolysis. Glycolysis in ox muscle pulp is independent of the size of the particles. If 0·001M-HCN is added to guinea-pig's muscle with low aërobic and much anaërobic glycolysis, the aërobic formation of lactic acid is increased to the level of the anaërobic. A. S.

Pasteur-Meyerhof reaction in muscle metabolism. E. LUNDSGAARD (Harvey Lect., 1937—1938, S. **33**, 65—88).

(f) NERVOUS SYSTEM.

Behaviour of Donaggio's neuro-fibrils following experimental poisoning with dried thyroid preparations. G. OGGIONI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 415—416; cf. A., 1938, III, 887).—Experiments previously performed on guinea-pigs and rabbits are repeated on cats. The characteristic

lesions of motor cells in the grey matter of the spinal cord are described. F. O. H.

Changes in lipin composition of nerves from arteriosclerotic and diabetic subjects. L. O. RANDALL (J. Biol. Chem., 1938, **125**, 723—728).—The lipins of the femoral, sciatic, and posterior tibial nerves of normal subjects show no significant differences, whilst those of the peripheral nerves of arteriosclerotics and diabetics show decreases in cholesterol and phospholipins and increases in neutral fat. The posterior tibial nerves show the greatest, and the femoral the smallest, change. P. G. M.

Permeability of nerves to ions by measuring the concentration potentials. J. VAN HEUVERSWYN (Arch. int. Physiol., 1938, **47**, 76—91).—The permeability to ions varies with the p_H. The differences in permeability to anions and cations is most marked at physiological vals. of p_H. At p_H 2·5—3 the membrane is as permeable for Cl as for K, Na, or Mg. At lower p_H it is more permeable to anions. Between p_H 6 and 8 there are important alterations in permeability to K. H. E. R.

Injuries of the sciatic nerve and nutritive disturbance of the hind leg. K. MATSUOKA (Japan. J. Med. Sci., 1938, IX, **5**, 393).—Section of the sciatic nerve in rabbits produces ulcers in the paralysed leg, dilatation of the femoral artery, and sclerotic changes in the posterior tibial veins. J. P.

Decrease of the calibre of a nerve fibre does not increase the chronaxie. L. LAPICQUE and A. PEZARD (Ann. Physiol. Physicochim. biol., 1938, **14**, 582—583).—The chronaxie of the nerve to the sartorius does not differ by more than 10% when measured at widely differing sites. C. C. N. V.

Action of different levels on reflex excitation of the spinal cord in guinea-pigs. A. N. CHAUCHARD and P. CHAUCHARD (Compt. rend. Soc. Biol., 1938, **127**, 287—291).—Changes in chronaxie occurred after transection at different levels. J. H. T.

Choline-esterase activity of the lumbar region of the spinal cord after section at the thoracic region. E. MARTINI and C. TORDA (Boll. Soc. ital. Biol. sperim., 1938, **13**, 447—449).—The choline-esterase activity of the spinal cord (rat) at the lumbar segments is greater than that at the cervical segments. Following section at the 7th—9th thoracic vertebra, the activity of the lumbar segments becomes less than that of the cervical segments, especially at about the 10th day after the operation. F. O. H.

Myelography with thorotrast and subsequent removal by forced drainage. W. A. NOSIK and O. A. MORTENSEN (Amer. J. Roentgenol., 1938, **39**, 727—730).—In dogs and monkeys, forced cerebrospinal drainage by the introduction of hypotonic saline intravenously was employed to provide irrigation of the subarachnoid space after the introduction of thorotrast. Most of the thorotrast is removed by this procedure and no signs of meningeal irritation developed in animals so treated. W. F. F.

Heat production of spinal cord during reflex excitation and its distribution in different regions. H. J. TRURNIT (Z. Biol., 1938, **99**, 108—114).—The heat production of the frog's spinal cord is essentially the same whether elicited by electric or natural stimulation of afferent nerves. Following stimulation of the sciatic nerve most of the heat is liberated in the caudal part of the cord. Direct electric stimulation also causes largest heat production in the caudal part. B. K.

Components of heat production in the frog's spinal cord. Excitation and stimulation. H. J. TRURNIT (Z. Biol., 1938, **99**, 115—131).—The heat production of frog's spinal cord caused by stimulating the sciatic nerve with repetitive shocks is analysed. The galvanometer curve due to continuous nerve stimulation at 70 per sec. has 2 distinct components, a rapid initial outburst of heat which soon fatigues (after ½—1 min.), superimposed on a slowly rising level which goes on rising without fatigue. The former effect is attributed to heat production by the ganglion cells, the latter to the less fatiguable nerve tracts. Comparison with the results of direct stimulation of the spinal cord suggests that the applied current has direct effects which differ from those of transmitted excitation. B. K.

Unilateral asymmetry of heat liberation in frog's spinal cord. H. J. TRURNIT (Z. Biol., 1938, **99**, 132—140).—Heat production of the spinal cord due to stimulation of the sciatic nerve is greater if the motor innervation is intact than if the leg muscles are curarised or their nerves cut. The difference is attributed to proprioceptive impulses from the active muscles. The heat response is greater during stimulation of the right than of the left sciatic (both nerves being severed from their muscles). Comparison between unilateral and bilateral nerve stimulation indicates that impulses arriving simultaneously from both sides produce an initial gradually disappearing inhibition in the spinal cord. Curare has a central paralysing action shown by diminished heat production of the spinal cord. B. K.

Effect of experimental temporary vascular occlusion on the spinal cord. L. L. TUREEN (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 455—464).—The aorta of cats was occluded for periods of from 15 to 90 min. The effect of this on the histology of the spinal cord as revealed by micro-incineration was studied. The results suggest that cells sublethally injured, after a transitory stage of demineralisation, become excessively mineralised. A. M. B.

Effect of benzedrine sulphate on the Argyll-Robertson pupil. A. MYERSON and W. THAU (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 780—788).—The light reflex may be partially restored for a time to the Argyll-Robertson pupil by the intraocular instillation of benzedrine sulphate, or when this drug is administered by other routes. A. M. B.

Characteristics of the post-rotatory, ocular manifestations [nystagmus] in the plane transverse to the orbit. Experiments in mammals subjected to low temperature. M. INNOCENTI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 452—453).—Observations in *Macacus rhesus* are discussed. F. O. H.

Fright reaction after section of the facial, trigeminal, and cervical sympathetic nerves. M. B. BENDER and M. A. KENNARD (J. Neurophysiol., 1938, **1**, 431—435).—The denervated cranial muscles in monkeys react by a slow contraction when the animal is frightened. This reaction is neither abolished nor diminished by cutting other cranial nerves or by extirpation of the entire ipselateral cervical sympathetic chain, thus excluding the possibility that the reaction is due to a local secretion of acetylcholine. The effect is attributed to a general secretion of acetylcholine-like substances with secondary diffusion through the blood stream. This is confirmed by injections of acetylcholine. S. CR.

Postural neck reflexes in the labyrinthectomised monkey and their effect on the grasp reflex. J. F. FULTON and R. S. DOW (J. Neurophysiol., 1938, **1**, 455—462).—Tonic neck reflexes can be demonstrated in labyrinthectomised monkeys which have been subjected to complete removal of areas 6 and 4 on both sides of the cortex. Rotation of the neck then has a marked influence on the grasp. Any enhancement of grasp is always associated with increase in flexor posture. S. CR.

Relation of the cerebral cortex to the grasp reflex and to postural and righting reflexes. I. BIEBER and J. F. FULTON (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 433—454).—The labyrinthine and righting reflexes are normally suppressed by the cortex. In monkeys and baboons bilateral ablation of areas 6*a* and 4 must be carried out to release them. Any operation less than this fails to release the reflexes. When the full operation is performed the animal assumes the thalamic posture and the grasp reflex also appears. This varies with the position of the body in space. Stretch of the digital tendons is its most effective stimulus; skin receptors are unessential. If the thalamic animal grasps a firm object it will automatically bring itself from the lateral to the upright position. The grasp reflex is therefore a part of the righting reflex. A. M. B.

Nucleus lateralis medullæ. G. A. BLAKESLEE, I. S. FREIMAN, and S. E. BARRERA (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 687—699).—This nucleus constitutes a relay station between ascending proprioceptive pathways and the cerebellum. A. M. B.

Decerebration in the dog by complete temporary anæmia of the brain. H. KABAT and C. DENNIS (Proc. Soc. Exp. Biol. Med., 1938, **38**, 864—865).—The vertebral arteries are ligatured, and 1—2 weeks later the carotids are compressed by a blood-pressure cuff around the neck, a tube being placed in the trachea. After 15—20 min. the cerebrum is permanently destroyed while the brain-stem reflexes are present. Blood pressure is 130 mm. Hg. V. J. W.

The hypothalamus; morphological, functional, chemical, and surgical aspects. W. E. LEG. CLARK, J. BEATTIE, G. RIDDOCH, and N. M. DOTT (Edinburgh & London, 1938, 211 pp.).—The book is an amplification of lectures delivered by the authors under the auspices of the W. R. Henderson Trust. Clark describes the structure and connexions of the hypothalamus in lower vertebrates, mammals, and man. Beattie discusses functional aspects with particular reference to bodily reactions to cold and heat, the relation of the hypothalamus to the hypophysis, sham rage, and sleep. Riddoch considers hypothalamic clinical syndromes and intracranial diseases giving rise to hypothalamic symptoms. Dott treats surgical aspects fully. The subject-matter is discussed in an authoritative and stimulating manner. There are 100 valuable illustrations which are beautifully reproduced, a good select bibliography, and satisfactory indices. S. W.

Autonomic and motor localisation in the hypothalamus. L. ECTORS, N. L. BROOKENS, and R. W. GERARD (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 789—798).—When the lateral wall of the third ventricle is stimulated in the hemidecerebrate cat the effects observed are: rage, fear, and pain in that order of stimulation rostro-caudally. Stimulation of the anterior region also raises the blood pressure and increases the depth of respiration. A. M. B.

Rôle of the thalamus in vision. O. PÖTZL (Wien. klin. Wschr., 1938, **51**, 1001—1003).—The polar and ventral nuclei of the pulvinar thalami were found to be destroyed in a patient who developed a hemiplegia 5 years previously. Degeneration was found of the cells in layer II, III, IV of the area parastriata (Economo) of the occipital lobe. The patient had a left-sided hemianopia and peculiar disturbances of vision (metamorphopsy). A. S.

Electrical activity of the subcortical region [of the brain]. V. L. GIORCELLI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 324—333).—Records are given for the changes in potential of the subcortical region in cats, conscious and under the influence of various narcotics. Differences from corresponding data for the cortex are indicated. F. O. H.

Results of treatment of athetosis by section of extra-pyramidal tracts in the spinal cord. T. J. PUTNAM (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 258—272).—23 patients with athetosis were treated by section of the anterior columns, in which the extra-pyramidal tracts are considered to run, in the upper cervical cord. 9 were considerably improved, 3 died, while the remainder were somewhat improved. This procedure produced no permanent changes in the reflexes and no incontinence or paralysis. A. M. B.

Symptomatological value of distal, unipolar, electrical stimulation in dystony of extra-pyramidal origin. V. NERI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 376—381).—In cases of, *e.g.*, Parkinson's disease, unipolar (cathodic) stimulation of the arm produces a vibratory flexion of fingers and hand, whilst in normal persons, a more rapid and smooth flexion of fingers, hand, and forearm is produced. The effect of diffusion of nervous impulses of extrapyramidal origin on muscular tone in such diseases is discussed. F. O. H.

Treatment of Parkinson's disease with benzedrine. M. DRESSLER (Schweiz. med. Wschr., 1938, **68**, 1031—1032).—Benzedrine, in addition to scopol-

amine, is strongly recommended for treatment of postencephalitic disturbances. A. S.

Symmetrical degeneration of the neostriatum in Chinese infants. W. J. C. VERHAART (Arch. Dis. Childh., 1938, **13**, 225—234).—4 Chinese children, aged 6½—8 months, died after suffering for a short period from unsp. cerebral disturbances with coma. Only the eldest showed increased tone of the muscles of the limbs. Post-mortem all showed an extensive symmetrical degeneration of the striatum and fatty degeneration of the liver. C. J. C. B.

Action of dyes on the threshold for galvanonarcosis and galvanic convulsions. F. K. KÖLLENSPERGER (Arch. exp. Path. Pharm., 1938, **189**, 575—580).—Methylene-blue and neutral-red lower the threshold for galvanonarcosis in frogs and raise the threshold for galvanic convulsions; Congo-red has no effect on galvanonarcosis, but has a protective effect on the convulsions brought about by ascending currents. H. BL.

Mechanism of locomotion in the leech (*Hirudo medicinalis*, Ray). J. GRAY, H. W. LISSMANN, and R. J. PUMPHREY (J. exp. Biol., 1938, **15**, 408—430).—The movements of the intact leech depend on the patterns of exteroceptive stimulation reaching the nerve cord via the suckers of the ventral surface of the body. If such patterns be present, the animal walks but cannot swim, if absent the animal can swim but cannot walk. The frequency of the ambulatory rhythm is normally determined by the rhythmic adhesion of the suckers. Decapitated leeches exhibit only an ambulatory rhythm in response to strong stimulation. Both intact and decapitated preps. swim readily when released from all tactile stimuli. The frequency of the swimming rhythm is affected by changes in the viscosity of the medium and by tension applied longitudinally to the body. The rhythm can be accelerated or suppressed by appropriate exteroceptive stimulation. The whole nerve cord exhibits a marked electrical rhythm so long as it is in organic connexion with a limited region of the body displaying mechanical swimming movements; the frequencies of the mechanical and electrical rhythms are identical. No electrical rhythm, comparable with that which might be expected to be characteristic of ambulation or swimming, was detected in the isolated central nervous system. J. M. R.

Immobilisation of locomotor movements in the earthworm *Lumbricus terrestris*. H. O. J. COLLIER (J. exp. Biol., 1938, **15**, 339—357).—Head stimulation may arrest a peristaltic wave travelling in any part of the earthworm's body. The response is reflex, depending on the continuity of the nerve cord between the point of stimulation and the region of the wave. A similar reflex arrest of anti-peristalsis occurs in response to mechanical or chemical stimuli in the caudal half of the body; the anti-peristaltic wave is not arrested while travelling in the cephalic third of the body; the reflex can be obtained in worms with the cephalic or caudal third of the body cut off. Arrest of an anti-peristaltic wave by the development of a peristaltic wave (spontaneous immobilisation of anti-peristalsis) can be observed in the spontaneous reversal of the direction of crawling; it is dependent on the continuity of the nerve cord between the new peristaltic wave and the immobilised anti-peristaltic wave. J. M. R.

***X*-Ray delineation of the central nervous system with thorotrast. IV.** K. KOSHIMIZU (Japan. J. Med. Sci., 1938, IX, **5**, 276—278).—Thorotrast injected into the subarachnoidal space produces dilatation of the blood vessels, hæmorrhage into the brain substance, ventricles, and choroidal plexus, opacity of the cerebrospinal fluid, the appearance of thorotrast and leucocytes in the perivascular spaces, and degeneration of the cells in the hippocampus. J. P.

Symptomatological importance of electrical sensitivity. V. NERI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 394—406).—Regions of the skin sensitive to electrical stimulation owing to their proximity to nerve tracts are described and their utilisation in the diagnosis of nervous diseases is discussed. F. O. H.

Local and distant action of short waves on the nervous system. F. BALDI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 315—320).—Application of short-wave irradiation (λ 6 m.) between electrodes applied to the hind leg of rabbits produces polypnœa, tachycardia, cyanosis, convulsions, and finally death. Local effects include changes in the myelin sheath of the nerve-fibres. F. O. H.

Cytochrome content of the nervous system. S. HUSZÁK (Biochem. Z., 1938, **298**, 137—140).—In the dog, a strong indophenol-oxidase reaction and cytochrome absorption spectrum are given by the cerebral cortex and central nuclei but not by the white matter. The absorption spectrum of cytochrome was observed constantly in the smaller medullary nuclei. No indophenol-oxidase reaction was given by the peripheral ganglia (dog, horse). Human substantia nigra has a marked indophenol-oxidase reaction and gives the *b* and *c* absorption bands of cytochrome and a diffuse band at 600—630 mμ. C. C. N. V.

Synchronised impulse discharges from receptors in deep tissues in response to vibrating stimulus. F. ECHLIN and A. FESSARD (J. Physiol., 1938, **93**, 312—334).—Vibrations of a tuning fork stimulate the "stretch" receptors in muscle and tendon when the base of the fork is applied to a neighbouring bone (cat, rabbit, frog), or its prongs are brought in contact with a tendon. The "stretch" receptors give rise to afferent discharges composed of rhythmic series of composite waves synchronised to the rate of the vibrating stimulus. The individual composite waves are the result of the summation of impulses from many receptors; the number of receptors participating rises with an increase in the amplitude of the stimulating vibrations (tension remaining const.). When the stimulus rate reaches a certain level, a stretch receptor produces a single impulse in response to each vibration, up to a certain high-frequency level. Bone serves as a transmitting medium and causes many of the tendons fastened to it to be stretched sufficiently to stimulate the receptors in muscle and tendon at each vibration. Discharges

from "stretch" receptors are incapable of giving rise to a sensation of pain. J. A. C.

Incidence of mild degrees of atrophy in the fasciculus gracilis. D. DUNCAN (Arch. Path., 1938, **26**, 664—675).—In 8 out of 62 cadavers Weigert-stained sections of the spinal cord showed a striking pallor of the fasciculus gracilis compared with the fasciculus cuneatus; 21 others showed a detectable difference. The appearance was attributed to loss of nerve fibres and was more frequent and marked in the spinal cords of persons who died of pulmonary tuberculosis. (8 photomicrographs.) C. J. C. B.

Cutaneous localisation in man. E. GELLHORN, J. MEHLMAN, and M. KAPLAN (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 327—332).—Painful and thermal stimuli are more accurately localised when the stimulus contains a tactile element than when it does not. A. M. B.

Cortical representation of somatic sensibility. P. BARD (Harvey Lect., 1937—38, S. **33**, 143—169).

Potential records from the optic cortex of the cat. G. H. BISHOP and J. O'LEARY (J. Neurophysiol., 1938, **1**, 391—404).—Responses of the optic cortex of the cat to single stimuli applied to the optic nerve consist of three overlapping series of potential waves differing in their time relations, and separable by simple differential procedures. The most rapid series consists of three or more spikes of the order of duration of axon spikes. A slower series of two or three waves shows a duration of 5 to 10 m-sec. for each wave. The still slower series has the dimensions and characteristics of the spontaneous alpha rhythm. These results are correlated with anatomical and histological knowledge and a possible pathway for each impulse is assigned. S. CR.

Sensory cortical representation of the vagus nerve. P. BAILEY and F. BREMER (J. Neurophysiol., 1938, **1**, 405—412).—Stimulation of the central end of the cat's vagus nerve increases the electrical potentials of the orbital surface of the frontal lobe of the cerebral cortex. Both lobes are activated, but the effect is slightly greater contralaterally. This is the only area affected and the electrogram is very sensitive to alterations in blood pressure. A slightly lowered blood pressure gives results suggestive of sleep; further lowering depresses the responses probably owing to anoxæmia. S. CR.

Functional organisation in the face-subdivision of the sensory cortex of the monkey (*Macaca mulatta*). J. G. DUSSER DE BARENNE, W. S. MCCULLOCH, and T. OGAWA (J. Neurophysiol., 1938, **1**, 436—441).—The changes produced by local strychnine application on the electrograms of the sensory cortex suggest a direct functional relation between the various areas of the face subdivision. Strychnine on the arm area had no effect on the face area, but in the contrary case stimulation of the face area was found to suppress the activity of some of the arm area. S. CR.

Cerebrospinal fluid pressure and blood pressure. I. T. SUENAGA (Japan. J. Med. Sci., 1938, IX, **5**, 294—295).—Cerebrospinal fluid pressure in urethanised rabbits varies directly with blood pressure. J. P.

Blood- and cerebrospinal fluid sugar in mental disease. E. P. JOHNS and G. H. STEVENSON (Amer. J. Psychiat., 1938, **95**, 117—130).—In control patients the mean cerebrospinal fluid sugar was 62% of the fasting blood-sugar. This relationship was not much altered in schizophrenia or manic-depressive psychosis. In general paresis the ratio was low for untreated and nearer normal for treated patients. G. D. G.

Alcohol in the cerebrospinal fluid. F. N. RIKLIN (Schweiz. Arch. Neurol. Psychiat., 1938, **41**, 173—192).—Alcohol was given by mouth and its concn. determined in intervals of 10—20 min. in the blood, lumbar and cisternal fluid. The alcohol concn. in cisternal fluid more closely parallels that in the blood than the concn. in the lumbar fluid. The first symptoms of intoxication (the tested persons were patients with general paralysis or schizophrenia) were observed after 43 min., when the concn. in the blood was 0·099%, in the cisternal fluid 0·085%, and in the lumbar fluid 0·045%; they disappeared after 160 min., when the respective concns. were 0·080%, 0·099%, and 0·095%. K. STERN.

Action of human cerebrospinal fluid on blood pressure. E. FENZ and F. ZELL (Klin. Woch., 1938, **17**, 1046—1047).—Intravenous injection of cerebrospinal fluid from normal subjects in cases of hypertension, diabetes, or acromegaly does not raise the blood pressure. E. M. J.

Histological changes in the brain in hydrochloric acid poisoning. C. VELTEN (Beitr. pathol. Anat., 1938, **101**, 60—65).—Severe degenerative changes in the nerve cells of the whole central nervous system were observed in a woman who died 12 hr. after having taken 200 ml. of household HCl. Similar changes were found in poisoning with other caustics; they are attributed to absorption of breakdown products of coagulated protein. H. W. K.

Influence of ligature of the carotid artery on brain changes caused by anoxæmia. H. J. HOPPE (Beitr. path. Anat., 1938, **101**, 14—22).—Guinea-pigs, exposed to atm. pressures of 250—300 mm. Hg, showed severe degenerative changes in the nerve cells of the 4th ventricle, the basal ganglia, and the cerebellum. Unilateral or bilateral ligature of the common carotid artery did not aggravate these changes. H. W. K.

Anoxæmic changes in the central nervous system, caused by breathing gas mixtures poor in oxygen at normal atmospheric pressure. W. ROTTER (Beitr. path. Anat., 1938, **101**, 23—31).—Guinea-pigs, exposed to a mixture of 6—7% O_2 and 93—94% N_2 under normal atm. pressure (O_2 tension 55 mm. Hg) lived longer than those exposed to atm. air at a pressure of 265 mm. Hg (O_2 tension 55 mm. Hg). The former group of animals showed more pronounced permanent changes in the central nervous system than the latter, but no changes in heart and kidneys. H. W. K.

Effect of subarachnoid administration of histamine on rate of absorption of isotonic saline

solution in dog. T. H. B. BEDFORD (J. Physiol., 1938, **93**, 423—429).—In dogs under ether or amytal anæsthesia, the subarachnoid administration of histamine has no influence on the rate of absorption of Tyrode solution from the subarachnoid space; the systemic blood pressure is also uninfluenced. While control experiments showed ether to be without effect, amytal even when administered by stomach causes a progressive reduction in the rate of absorption. J. A. C.

Mechanism of migraine headache and action of ergotamine tartrate. J. R. GRAHAM and H. G. WOLFF (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 757—763).—The headache of migraine is produced by abnormal distension of cranial arteries inside and outside the bony envelope. The termination of the headache by ergotamine tartrate is due to the drug in the small dose used constricting these arteries, thus reducing the amplitude of their pulsations. Adrenaline acts similarly. Histamine headache is the result of arterial dilatation which permits distension and pulsation of the cranial arteries to a degree that is painful. A. M. B.

Central lesions in hypoglycæmia; possibilities of irrevocable damage from insulin shock. A. B. BAKER (Arch. Path., 1938, **26**, 765—776).—In 2 cases of hypoglycæmia, cerebral petechiæ, large areas of encephalomalacia, demyelinisation and cyst formation, and diffuse, generalised glial proliferation and extensive gliosis around the areas of softening were present. (4 photomicrographs.) C. J. C. B.

Cardiazol and insulin in schizophrenia. S. W. GILLMAN and D. N. PARFITT (Lancet, 1938, **235**, 663—665).—Fits induced by cardiazol or insulin do not affect the ultimate prognosis in schizophrenia. C. A. K.

Variations of autonomic tone in schizophrenics during insulin-shock treatment. W. NAGEL (Verh. Schweiz. Physiol., 1938, **13**, 26—27). A. S.

Velocity of blood flow in schizophrenia. J. E. FINESINGER, M. E. COHEN, and K. J. THOMSON (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 24—36). —The circulation time in 55 schizophrenics was studied by the NaCN method. The average arm to carotid circulation time was 14·9 sec. (range 11—26 sec.). The crude pulmonary circulation time was 10·8 sec. (range 9—16 sec.). All these vals. are within normal limits. A. M. B.

Results of non-specific treatment in dementia præcox. C. O. CHENEY and P. H. DREWRY (Amer. J. Psychiat., 1938, **95**, 203—217).—By "non-sp." is meant treatment without use of insulin, cardiazol, etc. Of 500 dementia præcox patients 64% were unimproved at the end of their hospital residence (average one year), 16% were improved, 14% were much improved, and 7% recovered. Patients with catatonia have a better chance of continuing improvement after leaving hospital than those with other kinds of schizophrenia. G. D. G.

Pharmacological "shock" treatment of chronic schizophrenia. I. M. ROSSMANN and W. B. CLINE, jun. (Amer. J. Psychiat., 1938, **94**, 1323—1336).—The results of insulin treatment of 52 patients, at least half of whom appeared to be hopelessly psychotic, were: recovered 11%, much improved 29%, improved 42%, unimproved 17%. G. D. G.

Hypoglycæmic treatment of 55 cases of schizophrenia. D. RUSLANDER (Amer. J. Psychiat., 1938, **94**, 1337—1345).—The results were: 12 recovered (apparently), 19 much improved, 15 improved, 9 unimproved. The catatonic form responded best. Epileptic seizures during the treatment have in most cases proved beneficial. G. D. G.

Blood chemical changes occurring in the treatment of psychogenic mental disorders by metrazol convulsions. S. MAURER, H. O. WILES, C. M. MARBERG, B. SKORODIN, and M. L. FISHER (Amer. J. Psychiat., 1938, **94**, 1355—1362).—During and after the tonic convulsion there is a marked acidosis, lactic acid production, fall in blood-CO_2, and increase in serum-inorg. P. During the clonic convulsion the conversion of lactic acid into glucose raises the blood-sugar. G. D. G.

Insulin treatment of schizophrenia. H. STECK (Schweiz. med. Wschr., 1938, **68**, 1177—1179).—61% of patients submitted to insulin shock treatment within 6 months of the onset of acute schizophrenic symptoms were cured. A. S.

Plethysmographic changes on the arm in schizophrenics after cardiazol therapy. O. VERGAGNI (Klin. Woch., 1938, **17**, 1188—1191).—These tend to return to normal. E. M. J.

Sakel's pharmacologic shock treatment for schizophrenia. J. P. FROSTIG (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 219—231).—Directions as to the details of insulin-shock treatment are given tentatively. A. M. B.

Insulin shock therapy in schizophrenia. H. H. REESE and A. VANDER VEER (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 702—716).—The val. of insulin therapy is supported by a report of a small series of cases. A. M. B.

Variation of circulation time in normal and in schizophrenic subjects. H. FREEMAN (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 488—493).—The circulation time was studied by the NaCN method in 30 psychotic patients and in 30 normal individuals. The mean for the first group was 23·2 sec., for the second 19·1; there was a greater range of variability in the psychotic group. It is concluded that on the average schizophrenic patients have an abnormally slow and a highly variable rate of blood flow. A. M. B.

Insulin shock treatment of schizophrenic patients. S. KATZENELBOGEN, H. E. HARMS, and D. A. CLARK (Arch. Neurol. Pyschiat., Chicago, 1938, **39**, 1—13).—Individual detailed clinical records are given of 15 patients who underwent insulin therapy for schizophrenia. There are considerable differences between individuals in their reactions to insulin, the therapeutic response, and the degree of hypoglycæmia necessary to produce a reaction, but similar relation-

ships of reactions were observed for the same patient in different phases of treatment. A. M. B.

Vesical activity in schizophrenic states associated with catalepsy. E. S. TAUBER, L. G. LEWIS, and O. R. LANGWORTHY (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 14—23).—Smoked drum tracings of the intravesical pressure were obtained from 9 persons suffering from catatonic schizophrenia. The resting pressure was high, abnormal waves of muscular contraction were observed, the bladder had a greater capacity than normal, the urethral sphincters withstood unusually high intravesical pressures, and the patients showed no ability to produce voluntary bladder contraction at the end of filling. All these abnormalities paralleled the catalepsy in degree. A. M. B.

Histopathologic changes in the brain in experimental hyperinsulism. A. WEIL, E. LIEBERT, and G. HEILBRUN (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 467—481).—Less than 70 units of insulin injected into rabbits in a month produced no histopathologic changes; 70—150 units produced mild changes, while 200—400 produced severe histological damage to the neurones. The histological picture differed in animals that died during seizures from that seen in others killed subsequently. The pathological changes are attributed to intracellular anoxæmia. A. M. B.

Protamine-zinc-insulin. Its unsuitability for hypoglycæmic shock therapy. H. H. REESE and A. VANDER VEER (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 232—241).—Protamine-Zn-insulin is unsuitable for shock treatment chiefly because of the variability of response and the danger of further seizures in the "after-shock" period. A. M. B.

Hypoglycæmia: neurologic and neuropathologic studies. F. P. MOERSCH and J. W. KERNOHAN (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 242—257).—The most characteristic changes in the central nervous system accompanying fatal hypoglycæmia are multiple petechial hæmorrhages and degeneration of nerve cells and astrocytes. A. M. B.

Action of insulin in non-schizophrenic psychological disturbances. J. E. STAEHELIN (Schweiz. med. Wschr., 1938, **68**, 1175—1177).—Insulin shock therapy is recommended for the treatment of chronic alcoholism, hallucinations, tics, and drug addiction. The withdrawal symptoms are greatly alleviated. A. S.

Metrazol shock treatment of the "functional" psychoses. A. A. LOW, I. R. SONENTHAL, M. F. BLAUROCK, M. KAPLAN, and I. SHERMAN (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 717—736).—66 patients with various psychoses were treated with pentamethylenetetrazole. This treatment is superior to others both for schizophrenia and for manic-depression. A. M. B.

Cardiazol convulsion therapy in non-schizophrenic reaction states. L. C. COOK and W. OGDEN (Lancet, 1938, **235**, 885—887).—Cardiazol convulsion therapy was successfully used in cases of acute mania and psychotic depression. C. A. K.

Rabies vaccine in the treatment of epilepsy. I. FINKELMAN, A. J. ARIEFF, and M. A. SCHILLER (Amer. J. Psychiat., 1938, **94**, 1363—1368).—There was no crit. change in the frequency or severity of the seizures as a result of treatment with rabies vaccine. G. D. G.

Effect of induced hypercalcæmia on excessive psychomotor activity. T. M. CUTHBERT (Lancet, 1938, **235**, 612—616).—Cases of excessive psychomotor activity were successfully treated by hypercalcæmia induced by parathormone + Ca lactate + NH_4Cl + vitamin-*D*. C. A. K.

Experimental encephalitis produced by intravenous injection of various coagulants. P. F. A. HOEFER, T. J. PUTNAM, and M. G. GRAY (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 799—810).—Coagulant agents of various types (such as organ extracts) introduced intravenously can produce multiple thrombi in the central nervous system and elsewhere. In some experiments the central lesions resemble histologically those seen in human encephalomyelitis. A. M. B.

Histological types of meningiomata and a comparison of their behaviour in tissue culture with that of certain normal human tissues. J. O. W. BLAND and D. S. RUSSELL (J. Path. Bact., 1938, **47**, 291—309).—The cultural characters of 14 meningiomata were compared with those of fœtal leptomeninges and dura and adult granulation tissue. While the cultures of all the tissues studied have the features of those of fibroblasts, those of fœtal leptomeninges differ usually and those of meningiomata not uncommonly in forming epithelioid but not true epithelial sheets; this supports the theory of the arachnoid origin of dural meningiomata. A striking resemblance was found between cultures of meningiomata, fœtal leptomeninges, and fœtal dura on the one hand and cultures of human fœtal mesenchyme on the other, both showing great polymorphism. A similar polymorphism is shown by the endothelioid cells of the leptomeninges in pathological conditions other than neoplasm: they may form macrophages which store dyes or engulf particulate matter and they may form fibroblasts with fibroglial fibrils. It is concluded that the leptomeninges are composed of cells which approximate to the undifferentiated mesenchymal cells with embryonic potentialities of the polyblastic system of Maximow. [28 photomicrographs.] C. J. C. B.

Medulloblasts of the infant brain. C. R. TUTHILL (Arch. Path., 1938, **26**, 791—799).—In 46 infant brains, medulloblasts occur in the cerebral marginal layer and in the first cortical layer during the first month, in the 2nd cortical layer and claustrum to 2 years, and in the parolfactory area to 18 months. At various times during the 1st year they disappear from the periventricular recesses, remaining longest in the angle of the inferior horn of the lateral ventricle. The persistence of medulloblasts in the perivascular spaces of the vessels in the nucleus caudatus, the internal capsule, and the edge of the putamen in the first weeks and in the upper and lower parts of the centrum ovale for 2 months suggests that the medulloblasts travel along the perivascular spaces

and are developed in their vicinity. [4 photomicrographs.] C. J. C. B.

Phosphatases of brain. F. CEDRANGOLO and A. RUFFO (Arch. Sci. biol., Napoli, 1938, **24**, 59—69).—From ox brain two phosphatases can be extracted, one sol. and the other insol. in 50% alcohol. They differ in optimum p_H and in the effect of Mg on their activity. R. S. C.

Processes occurring in the brain. M. H. FISCHER (Boll. Soc. ital. Biol. sperim., 1938, **13**, 291—296). F. O. H.

Reflex activity of cortical centres under the action of conditioned stimuli. G. MARTINO and A. ALIBRANDI (Arch. Fisiol., 1937, **37**, 533—548).—After establishing conditioned closing of the left eye-lids to optical stimuli (Boll. Soc. ital. Biol. sperim., 1936, **11**, 763), the threshold of the corresponding (right) cortical centre to faradic stimulation is decreased; on application of strychnine to the centre epileptic fits are set up. S. O.

Experimental reflex epilepsy and vagotomy. G. BALDACCI (Arch. Fisiol., 1937, **37**, 566—584).—The production of experimental epilepsy in dogs (Pflüger's Arch., 1921, **188**, 287) is not affected by section of the vagi. S. O.

Influence of posture on responses elicitable from the cortex cerebri of cats. J. W. WARD (J. Neurophysiol., 1938, **1**, 463—475).—By means of a unipolar electrode which can stimulate the same point on the cortex cerebri of an unanæsthetised cat over a period of several weeks it was shown that the positions of the head and of the leg responding to the stimulus were of importance in influencing the result. It is argued that stimulation of the motor cortex does not necessarily produce sp. movements, but causes the limb to assume a position sp. for the cortical point excited. Some of the results were recorded on a kymograph so that measurements could be taken. S. CR.

Minerals in normal and in pathologic brain tissue studied by micro-incineration and spectroscopy. L. ALEXANDER and A. MYERSON (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 131—149).—Spectroscopy demonstrated that normal cerebral grey matter is richer than white in Fe, Ca, Na, and Mg. Normal white matter is richer in P. The brain of the new-born infant is poorer in Fe but richer in most other elements than that of the adult. In Pb encephalitis more Pb is found in the grey than in the white matter. In foci of ischæmic softening and multiple sclerosis the tissue itself is demineralised, the missing mineral being contained in hyper-mineralised scavenger and glial cells. A. M. B.

Gerstmann syndrome. J. M. NIELSEN (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 536—560).—In this syndrome there is inability to name the fingers correctly, agraphia, and confusion of right with left. In one case verified post-mortem the lesion was in the left parietal lobe. A comparison is drawn with other cases of "sensation of absence of a side." A. M. B.

Electro-encephalography. III. H. H. JASPER and H. L. ANDREWS (Arch. Neurol. Psychiat., Chicago, 1938, **39**, 96—115).—Using standard paired leads in normal people it is possible to differentiate 5 cerebral regions by their electro-encephalograms: frontal, precentral, parietal, occipital, and temporal. The alpha rhythm was readily blocked by non-visual stimuli, and was detected from other than the occipital regions. A. M. B.

Electro-encephalogram of man and its significance. H. BERGER (Boll. Soc. ital. Biol. sperim., 1938, **13**, 263—270). F. O. H.

Electrical activity of the cerebral cortex and the physiological problem of sleep. F. BREMER (Boll. Soc. ital. Biol. sperim., 1938, **13**, 271—290). F. O. H.

Interpretation and significance of electrical phenomena in the human brain. A. GEMELLI (Boll. Soc. ital Biol. sperim., 1938, **13**, 297—308). F. O. H.

Electrical activity of the cerebral cortex and the theory of synchronism of the neurones. M. GOZZANO (Boll. Soc. ital. Biol. sperim., 1938, **13**, 348—351).—Changes in the electric potentials of cerebral cortex (rabbit) treated with strychnine are described and their bearing on Adrian's theory of synchronism of the neurones is discussed. F. O. H.

Distribution of disturbance-patterns in the human electro-encephalogram, with special reference to sleep. A. L. LOOMIS, E. N. HARVEY, and G. A. HOBART, III (J. Neurophysiol., 1938, **1**, 413—430).—A new recording device with 6 completely independent amplifier systems has made it possible to study six different regions of the brain simultaneously. The potential distribution of the right and left halves of the human cortex is fundamentally alike in pattern, while that of the front, top, and back may be different. Beta rhythm is predominantly front and top while alpha rhythm is predominantly back and top. In the drowsing state of sleep the patterns reflect those of the person awake, but as sleep deepens all persons show fundamentally similar patterns. A disturbance during sleep, whether resulting in the return of the alpha rhythm or the appearance of large 7 a sec. potentials or a large potential change described as the *K* complex, affects all regions of the head to some extent. The cortex thus seems to act as a whole. S. CR.

Electrical symptoms of disturbances of the pyramidal tract. V. NERI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 382—393).—Clinical observations on the effect of electrical stimulation on persons suffering from diseases of medullary origin are discussed. F. O. H.

Correlations of the central nervous system as determined by cathode polygraphy. P. RIJLANT (Boll. Soc. ital. Biol. sperim., 1938, **13**, 309—314). F. O. H.

Heterotopic transplantation of the optical and olfactory vesicles in axolotl larvæ. J. SZEPSENWOL (Rev. Soc. argent. Biol., 1938, **14**, 288—295).—The axolotl larvæ (*Amblystoma mexicanum*) were

operated at the 28—39 stage of Harrison and daily observations were made, by $AgNO_3$ impregnation of serial sections. The optical vesicle was transplanted with or without its pedicle to the vicinity of the rhombencephalon. The vesicle differentiated but the nerve did not establish connexions with the posterior cerebral vesicle nor with the cranial ganglia; the cells of the retina or the pedicle acted as centres in the absence of the anterior cerebral vesicle. The olfactory vesicle transplanted to the auditory region or any other part differentiated normally; the efferent fibres were usually short and ended in the vicinity of the vesicle; they did not connect with the posterior cerebral vesicle. J. T. L.

Heterotopic transplantation of fragments of the anterior cerebral vesicle of amphybian larvæ. J. Szepsenwol (Rev. Soc. argent. Biol., 1938, **14**, 335—338).—In *Amblystoma punctatum* and *A. mexicanum* fragments of anterior cerebral vesicle were transplanted into the vicinity of the ear or the rhombencephalon. They differentiated normally and generally received the nerves from the transplanted optical and olfactory organs. The efferent fibres were very short and ended in the vicinity of the transplant. The fibres form the cranial ganglia (Vth, VIIth, IXth, and Xth nerves) never connected with these heterotopic anterior vesicles, though sometimes coming into close contact with them; they always connected with the rhombencephalon, which alone attracted the fibres of these ganglia. The heterotopic anterior vesicle, when transplanted near a traumatised posterior vesicle, became fused with it, but did not lose its individuality. In a few cases efferent fibres from the anterior vesicle penetrated into the rhombencephalon and became mixed with the descending tracts. J. T. L.

Extensive injury of the cranial roof as a possible factor in epilepsy of the auditorily-stimulated type. A. Clementi (Boll. Soc. ital. Biol. sperim., 1938, **13**, 212—214).—Experiments on dogs are described. F. O. H.

Skin-galvanic reaction in disturbances of the autonomic nervous system. K. W. Essen (Dtsch. med. Wschr., 1938, **64**, 1205—1208).—The skin-galvanic reaction is slowed down in approx. 70% of patients with disturbances of the autonomic nervous system. Administration of sympatol-strychnine, luminal, and other barbiturates restores the reaction to normal. A. S.

Pathways through the sympathetic nervous system in the bullfrog. G. H. Bishop and J. O'Leary (J. Neurophysiol., 1938, **1**, 442—454).—The course of the fibres in the sympathetic nerves of the bullfrog whose cells of origin lie in the dorsal root ganglia, but which appear not to send central processes into the roots, was investigated. The fibre pathways through the sympathetic system were traced by reconstruction from serial sections and by physiological recording of action currents. Nerve degeneration experiments were carried out on roots, rami, and trunk. In general the "white" rami from a given level do not have synapses in the ganglia of that level. The "grey" rami of the 4th and 5th levels consist almost entirely of myelinated fibres. The splanchnic nerve is made up of rami from the 3rd to 7th levels, the 5th contributing about half the total. A small white ramus at the 5th level is traced into the dorsal root ganglion and studied. S. Cr.

Significance of the anastomotic fibres between cerebrospinal nerves and the autonomic system. E. Luna (Boll. Soc. ital. Biol. sperim., 1938, **13**, 34—35).—A histological method is described. The results of an examination of the anastomosis between the ganglion nodosum of the vagus and the superior cervical ganglion of the cat are discussed. F. O. H.

Physiology and surgery of pelvic autonomic nervous system in women. G. Halter (Wien. klin. Wschr., 1938, **51**, 894—895).—Intrathecal anæsthesia or anæsthesia of the hypogastric nerves increases and regularises uterine peristaltic movements. Subcutaneous injection of adrenaline increases uterine tone and inhibits motility; pilocarpine has no effect. Hypogastric anæsthesia blocks pain sensation. A. S.

Pain sensation and autonomic nervous system. A. Auersperg (Wien. klin. Wschr., 1938, **51**, 1076—1080).—A review. A. S.

Rôle of the sympathetic nerve in accidental injuries of the face and fractures of the upper jaws. M. Dechaume (Presse méd., 1938, **46**, 714—715).—After injuries to the soft parts of the face persistent œdema, const. pain, and vasomotor disturbances disappeared after injections of novocaine (without adrenaline) around the 7th nerve. Maxillary fractures united more readily with this treatment, which is held to abolish adverse sympathetic influences. G. Sch.

Rheumatism and sympathetic nervous system. H. Iselin (Schweiz. med. Wschr., 1938, **68**, 709—711, 758—760).—A review. A. S.

Infiltration of stellate ganglion under *X*-ray guidance. A. Malherbe (Presse méd., 1938, **46**, 770—771).—Description of a new technique. G. Sch.

Anatomy of lumbar sympathetic chain. A. Delmas and R. Polge (Presse méd., 1938, **46**, 884).—In 85% of human beings not more than three lumbar sympathetic ganglia exist. The 1st and 3rd are surgically almost inaccessible, and are situated at the level of the 1st and the 5th vertebra respectively. The accessible part of the lumbar sympathetic is 11 cm. long and 0·5 cm. away from the middle horizontal line. The 2nd ganglion is 3—4 cm. long and 0·7—5·0 cm. wide. To ensure that a ganglion has been removed at least 5 cm. of the chain must be resected. G. Sch.

Oncometric demonstration of release of sympathin into blood in sympathetic excitation in the dog. H. Hermann, F. Jourdan, G. Morin, and J. Vial (Ann. Physiol. Physicochim. biol., 1938, **14**, 552—555).—Peripheral sympathetic excitation liberates a vasoconstrictor substance into the blood stream of the adrenalectomised chloralosed dog. Central excitation of the vagus or superior laryngeal nerves,

electrical stimulation of the medulla or puncture of the floor of the 4th ventricle, asphyxia, or occlusion of the encephalo-medullary circulation gave similar results as shown in the denervated spleen and kidney. The renal or splenic constrictions disappear after injection of F. 883 or F. 933 but are reinforced by cocaine. These results persist after denervation of the liver and the hepatic artery and therefore cannot be due to the hepatic vasoconstrictor substance described by Cannon and Uridil. C. C. N. V.

Effect of previous stimulation on the responsiveness of the cat's nictitating membrane sensitised by denervation. F. A. SIMEONE (Amer. J. Physiol., 1938, **122**, 650—658).—Cats were used, usually under dial anæsthesia; the nictitating membrane was denervated by excision of the superior cervical ganglion or by resection of the preganglionic cervical sympathetic trunk. Isotonic records were made. Injection of adrenaline (2 mg.) subcutaneously 3 times a day for 5 days increased the sensitivity of the normal membrane to test doses of adrenaline (2—5 μg.), but decreased the responsiveness of the previously sensitised membrane. A single injection of adrenaline usually potentiated the responses to test doses of adrenaline (2 μg.) in the denervated but not the normal membrane. Tetanisation of the preganglionically denervated membrane does not decrease responses to adrenaline but in the normal membrane may increase them. Responses to single max. condenser discharges applied directly to membrane are decreased immediately after tetanisation of the preganglionically denervated membrane. M. W. G.

(g) SPECIAL SENSES.

Electro-physiology of the sense organs. E. D. ADRIAN (Boll. Soc. ital. Biol. sperim., 1938, **13**, 257—262). F. O. H.

Smooth muscle of periorbita and the mechanism of exophthalmos. C. E. BRUNTON (Brit. J. Ophthal., 1938, **22**, 257—268).—From cats and dogs, the orbital walls and contents were removed and decalcified. The periorbital fascia contained elastic, collagenous, and smooth muscle fibres arranged circularly. In these animals, the muscular elements are the final mechanism for proptosis. In human orbits, smooth muscle fibres were present, particularly in the postero-lateral part of the periorbital membrane. These fibres are regarded as a possible mechanism for exophthalmos, while the orbital muscle fibres bridging the inferior orbital fissure could not produce this effect. E. E. P.

Permeability of the cornea. M. KLEIN and J. SÁRKÁNY (Brit. J. Ophthal., 1938, **22**, 401—417).—The permeability of the cornea (of pig *in vitro* and of rabbit *in vivo*) was investigated in respect of Cl′, I′, and NO_3', and for the passage of water between fluids of different osmotic pressure. The corneæ were permeable to passage of these materials in either direction. The limitations of the techniques adopted are discussed. E. E. P.

Apparatus for measuring the curvature of the eye-ball in animals. W. ZAKRZEWSKI (Acta Biol. Exp., 1938, **12**, 57—63).—The max. margin of error, using this apparatus in small animals, is 15%. A. S.

Presence and significance of vitamin-B_1 in the lens. F. P. FISCHER (Arch. Ophtal., Paris, 1938, **2**, 108—115).—Vitamin-B_1 was estimated fluorimetrically as thiochrome after treatment of the minced lens with ferricyanide. Ox lenses contained no free thiochrome but 0·001 μg. of -B_1, while (25, bulked) cataract lenses showed no -B_1 content. Ox (and a few normal human) lenses contained a small percentage of pyruvic acid while 22 human cataract lenses contained uniformly higher concns. E. E. P.

Growth and transformation *in vitro* of the iridescent portion of the choroid coat (tapetum). J. A. VINNIKOV (Compt. rend. Acad. Sci. U.R.S.S., 1938, **20**, 211—213).—A description is given of the histological appearances in pig embryos and in newborn and adult rabbits, both albinos and normally pigmented animals. W. F. F.

Technique for studying the action of pharmaceutical substances on the iris. R. WIECHMANN (Boll. Soc. ital. Biol. sperim., 1938, **13**, 454—456).—The sensitivity of a previously described method (A., 1938, III, 568) is increased by using the isolated iris in place of the intact iris. F. O. H.

Nature of the aqueous humour. J. D. ROBERTSON (Brit. J. Ophthal., 1938, **22**, 79—82).—A reply to Duke-Elder (*ibid.*, 1937, **21**, 577). E. E. P.

Hydrogen-ion concentration of vitreous humour. N. OYAMA (Tohoku J. exp. Med., 1938, **33**, 586—592).—The p_H of vitreous humour aspirated from the living eye was determined in 20 albino rabbits after 24 hr. dark adaptation; escape of CO_2 was avoided. The mean val. was 7·41±0·01. F. JA.

Structure of vitreous humour. A. PISCHINGER (Wien. klin. Wschr., 1938, **51**, 1028—1029).—Fine threadlike structures were observed in the natural vitreous humour of cattle, using dark ground and oil immersion. A. S.

Effect of nicotine on the action potential of the retina. W. HIMMELMANN and H. U. ROSEMANN (Z. Biol., 1938, **99**, 147—157).—The action potential of the retina (enucleated frog's eye) during illumination and its alteration by nicotine were studied. Nicotine reduces (only temporarily if in dil. solution) the amplitude of the positive wave (*b*-wave, on-effect). The normal dip in the potential curve during illumination (between *b* and secondary *c*-wave) is abolished by nicotine so that the action potential begins in the form of a rectangular pulse. To inhibit the positive off-effect (*d*-wave), greater concns. of nicotine are required. The initial negative variation (*a*-wave) and the secondary *c*-wave are not altered by nicotine. The changes are irreversible and independent of the state of adaptation of the eye. B. K.

Practice of dark adaptation. J. B. FELDMAN (Arch. Ophthal., N.Y., 1938, **19**, 882—901).—A review with observations on cases of dys-adaptation and recoveries in a group treated with vitamin-*A*. E. E. P.

Rod-cone dark adaptation and vitamin-*A*. S. HECHT and J. MANDELBAUM (Science, 1938, **88**, 219—221).—Measurements of dark adaptation are described in 4 normal persons under conditions of vitamin-*A* deficiency and adequacy. The responses for rod and for cone vision follow the same trends with change in the diet. It is concluded that -*A* is related to cone vision, possibly to iodopsin (visual violet). W. F. F.

Rotating pendulum and the state of adaptation of the eye. J. F. SCHOUTEN (Nature, 1938, **142**, 615—616).—A discussion of notes by Lythgoe and Crawford (A., 1938, III, 338; Nature, 1938, **142**, 792). W. F. F.

Dark adaptation of lightly pigmented and albinotic eyes. E. BUNGE and W. HEYN (Klin. Monatsbl. Augenheilk., 1938, **100**, 178—186).—The course of dark adaptation in 8 human albinos was normal. Differences in the curve between dark- and fair-haired normals were slight. E. E. P.

Light eyes and glare sensitivity. H. R. DESILVA and P. ROBINSON (Science, 1938, **88**, 299).—The eyes of persons with lightly pigmented irises (light-eyed persons) are not as sensitive under illumination of low intensity as those of dark-eyed persons; also they are more sensitive to glare than those of the dark-eyed individuals. W. F. F.

Colour sensations produced by ultra-violet light. A. G. GAYDON (Proc. Physical Soc., 1938, **50**, 714—720).—The author's eye, the cryst. lens of which has been destroyed, is sensitive to ultra-violet light to fairly low intensities, the sensation for 3600—3100 A. being blue and not violet. The sensations produced by very faint ultra-violet light on the dark-adapted retina are discussed. N. M. B.

Control of photo-pigmentary responses in eyeless catfish. U. WYKES (J. exp. Biol., 1938, **15**, 363—370).—Eyeless *Amiurus nebulosus* and *Fundulus heteroclitus* show a pigmentary response to changes in intensity of illumination. The melanophores contract in the darkness and expand in bright light. The contraction in darkness was not obtained in areas denervated by section of spinal nerves nor in the posterior part of the body after section of the cord; it is therefore under the control of nervous reflexes through the brain. Melanophore contraction can be produced by electrical stimulation of the cord at very low frequencies. The response remained in pineal-ectomised animals. J. M. R.

Cerebral influence on acuity of peripheral vision. F. SINGEISEN (Schweiz. Arch. Neurol. Psychiat., 1938, **41**, 193—199).—In a patient with retinal infarction due to embolism of the central retinal artery a small area in the upper temporal quadrant was preserved, owing to a rare anastomosis from a cilio-retinal vessel. During monocular vision this eye could perceive only a faint glimmer. During binocular vision with fixation double vision occurred, the distinct second picture being perceived by the diseased eye. K. S.

Nature of the visual process. S. HECHT (Harvey Lect., 1937—38, S. **33**, 35—64).

Effect of sympathomimetic drugs on retinal pigment adaptation in the frog. S. KYO (Japan. J. Med. Sci., 1938, IV, **11**, 141—150; cf. Hasama, A., 1930, 1472).—As regards their power to cause adaptation of the retinal pigment of the frog (*Rana nigromaculata*) substances related to adrenaline form the series: adrenalone > ephedrine > 3 : 4-dihydroxyphenylalanine > phenylethanolamine > sympatol > tyramine > phenylethylamine. Thus the power is increased by oxidation in the benzene ring or in the β-position in the side-chain of phenylethylamine. Support is provided for the view that power to cause the adaptation is an indicator of sympathomimetic action. W. McC.

Rôle of the optic nerve in retinal pigment adaptation in the frog. T. OKAMOTO (Japan. J. Med. Sci., 1938, IV, **11**, 177—190; cf. A., 1938, III, 569).—Dark or light adaptation of the frog's retinal pigment is not affected by section of the optic nerve or tract. If the optic nerve of a light-adapted frog is stimulated on one side and the frog is then kept in the dark for 5 hr., the retinal pigment on the stimulated side remains light-adapted whilst on the other side it becomes dark-adapted. Stimulation beyond the chiasma has no such effect. If picrotoxin or nicotine is injected in the dark into dark-adapted frogs in which the optic nerve has been cut on one side during light adaptation, the pigment on both sides remains light-adapted. The results indicate that adaptation of the pigment is controlled partly by adrenaline and partly by a nervous impulse. W. McC.

A binocular illusion. J. D. MORTON (Nature, 1938, **142**, 537).—An illusion is described in which a "suspended image" is seen behind the pattern viewed. W. F. F.

Visual image produced by a photoflash bulb. R. L. IVES (Nature, 1938, **142**, 540).—An optical illusion is described. W. F. F.

Relationship between the concentration of an extract of *Calliphora* and the number of facets in the eye of the Bar mutant of *Drosophila melanogaster*. S. CHEVAIS and A. G. STEINBERG (Compt. rend., 1938, **207**, 433—435; cf. A., 1937, III, 216; Beadle and Law, A., 1938, III, 285).—Increasing concns. (1·7—15%) of *Calliphora* extracts incorporated in a nutrient medium at 25° for larvæ of *D. melanogaster* result in large increases in the no. of facets (cf. Ephrussi *et al.*, *ibid.*, 285) in the eyes of the male and female. The effect on the female is less marked than on the male. A simple relationship appears to exist between the concn. of extract and the no. of facets. J. L. D.

Facet number and the v^+ hormone in the Bar eye of *Drosophila melanogaster*. S. CHEVAIS, B. EPHRUSSI, and A. G. STEINBERG (Proc. Nat. Acad. Sci., 1938, **24**, 365—368).—Eye discs from Bar larvæ fed on a nitrogenous extract of *Calliphora* larvæ were implanted into vermilion hosts. The increased Bar eyes developed the same pigmentation as eyes from Bar larvæ fed on the standard medium. No relationship was apparent between facet no. and the ability of the eye to form the v^+ hormone. A. G. P.

Physical constants of the ossicles of the human ear. O. STUHLMANN, jun. (Physical Rev., 1937, [ii], **51**, 688).—Data are recorded. L. S. T.

Auditory apparatus and auditory hallucinations. E. V. SEMRAD (Amer. J. Psychiat., 1938, **95**, 53).—100 patients with auditory hallucinations were studied with the audiometer. 19 suffered from toxic deafness, 10 from catarrhal and 2 from nerve deafness. G. D. G.

Current of action of auditory stimulation of the labyrinth. P. TULLIO and P. STORTI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 407—408).—The rhythmic nature of the current produced from two electrodes, one in the ampulla (without damaging the crista acoustica and possibly in contact with the ampullary nerve) and the other on some other part of the body, on stimulation by sound is described. The current is inhibited by treatment of the ampulla with cocaine. F. O. H.

Acoustic isolation of one ear. J. MIODOŃSKI (Acta Biol. Exp., 1938, **12**, 64—65).—Sounds above a certain amplitude, produced in the external canal of the ear of labyrinthectomised subjects, are transmitted through the bone to the healthy labyrinth of the opposite side. A. S.

Topographic relations of ganglion cells to the endolymphatic and perilymphatic sense organs of the vertebrate inner ear. J. K. WESTON (Proc. K. Akad. Wetensch. Amsterdam, 1938, **41**, 847—854). —In vertebrates in the inner ear sensory areas, which are in intimate relation to a perilymphatic channel, are in close proximity to their ganglion cells. A. S.

Measuring instrument for judging smelling power. A. TASMAN (Chem. Weekblad, 1938, **35**, 707).—The apparatus described by Wagenaar (A., 1938, III, 896) is adversely criticised. From experience on 300 persons in Utrecht it is found that only those breathing equally through both nostrils give reliable results. The instrument sponsored by the Dutch military authorities is recommended as being the most reliable. S. C.

Measuring instrument for smelling power. M. WAGENAAR (Chem. Weekblad, 1938, **35**, 758—759).—A reply to Tasman's criticism (preceding abstract). S. C.

(h) DUCTLESS GLANDS, EXCLUDING GONADS.

Induction of brooding behaviour in the jewel fish. G. K. NOBLE, K. F. KUMPF, and V. N. BILLINGS (Endocrinol., 1938, **23**, 353—359).—Broodiness was judged by failure to eat young fish introduced into the tank and by characteristic fin movements. Any fish which has spawned can be made broody by corpus luteum extract, proluton, or prolactin. Pituitary extract and thyroid are less effective. Fish which have never spawned do not react at all, but castrates and males have a lower threshold than females. V. J. W.

Internal secretion and dermatology. A. MATRAS (Wien. Klin. Wschr., 1938, **51**, 869—875).—A review. A. S.

Organotherapy. W. LANGDON-BROWN (Brit. Med. J., 1938, II, 773—776).—A review. C. A. K.

Hormones and surgery. R. FRIEDRICH (Wien. klin. Wschr., 1938, **51**, 1117—1121).—A review. A. S.

Precocious puberty with a report on a case of pineal syndrome. A. V. NEALE (Arch. Dis. Childh., 1938, **13**, 241—248).—A boy aged 9 showed strong muscles, abundant pubic hair and on the upper lip, and external genitals of adult size. There was bilateral papillœdema and a ventriculogram suggested a tumour at or near the site of the pineal gland. Deep *X*-ray treatment cured the eye changes although the genital signs remained as before. C. J. C. B.

Incidence of enlarged thymus following the prenatal use of iodised salt. S. W. DONALDSON and H. A. TOWSLEY (Amer. J. Roentgenol., 1938, **39**, 908—915).—In 1455 cases comprising 1304 new-born infants and 151 children of ages between 2 weeks and 5 years, thymus size was studied by *X*-ray photography. An enlargement of the mediastinal shadow and narrowing of the trachea occurring together were regarded as evidence of hyperplasia of the gland. With this criterion, it was found that there is a 55% decrease in the incidence of thymic enlargement since the introduction of iodised salt. W. F. F.

Effect of prepuberal castration on the thymus and lymphatic nodes of male albino rats. H. CHIODI (Rev. Soc. argent. Biol., 1938, **14**, 74—85).—92 male rats were castrated at 30 days age and killed at different ages up to 250 days; the thymus was compared with those of 92 litter mate controls. The abs. wt. of the thymus increased up to 100 days in the operated and up to 80 days in the controls; then a rapid decrease was seen up to 120 days in both groups; afterwards a gradual decrease took place. The thymus wt. per 100 g. body-wt. decreased in both groups from the 45th day onward, more rapidly up to 120 days, and gradually thereafter. The curve for the castrates was parallel, but at a higher level than the corresponding one in the controls. No differences were observed between both groups in respect of histological aspect or intensity of involution. This last began a little later, but was at first more marked in the castrates. The gonads play no significant rôle in the physiological involution of the male albino rat thymus. Prepuberal castration produced a slight increase in wt. in the lymph nodes studied; involution started in both groups at 160 days of age (later than in the thymus). J. T. L.

Effect of sexual hormones on the thymus. H. CHIODI (Rev. Soc. argent. Biol., 1938, **14**, 309—315).—Male and female rats were castrated at 35—45 days; at 80 days age 0·5 and 1·5 mg. of testosterone propionate were injected subcutaneously daily for 11 days. Others received 10 units of œstrone during 6 days or 25 units during 11 days. All showed a considerably smaller thymus than controls injected with oil. The reduction in wt. was proportional to the dose of hormone given, but was unrelated to sex. Normal animals of both sexes, treated with the same doses of male and female hormones, also showed a reduction in thymus wt. There was considerable

destruction of thymocytes, an almost complete loss of the epithelial cells, and an increase in connective and adipose tissue. The effect of the female and male hormones was identical. These alterations cannot be considered as identical with those caused by accidental involution. J. T. L.

Effect of thyroidectomy and adrenalectomy on the thymus of castrated albino rats. H. CHIODI (Rev. Soc. argent. Biol., 1938, **14**, 322—329).—Male and female rats were castrated at 30—40 days age; the thyroid was removed at 50—70 days age and the animals were killed at varying intervals up to 2 months after thyroidectomy. The abs. and relative wt. of the thymus of thyroidectomised rats was considerably less than that of operated but not of thyroidectomised controls. Adrenalectomy performed at 80 or 120 days age in castrated rats of both sexes did not influence significantly the wt. of the thymus 30 days after operation. J. T. L.

Antithyroid substances. E. KEESER (Klin. Woch., 1938, **17**, 1100—1103).—Linoleic acid and Na oleate inhibit the metabolic action of thyroid extract. Dogs given antithyroidin (Mœbius) or Elityran excrete an antithyroid substance in the urine. The urine of man contains a petrol-sol. fraction which acts synergistically with thyroidin and an ether-sol. fraction which inhibits the action of Elityran on metabolism. E. M. J.

Iodine metabolism in South Baden. H. JÄGER (Dtsch. Arch. klin. Med., 1938, **182**, 300—310).—I excretion in urine is decreased in the population living in districts where goitre is endemic. A. S.

Calcium and phosphorus balance (A) following therapeutic radiation of the hyperplastic thyroid gland, and (B) in hyperthyroidic patients treated with iodine. F. S. HANSMAN and W. A. C. FRASER (J. clin. Invest., 1938, **17**, 543—554).—Untreated hyperthyroidism is generally but not invariably associated with a negative Ca and P balance. There is no relationship between the level of the basal metabolism and the amount of Ca and P excreted. The oral administration of Lugol's I has no sp. effect on Ca and P metabolism but irradiation of the thyroid in hyperthyroidism causes profound changes, which are independent of the activity of the thyroxine-producing mechanism. In the majority of patients, Ca and P equilibrium or a positive Ca or P balance occurs 2 months or more after the irradiation. It is suggested that in hyperthyroidism there is an associated hyperparathyroidism and that the hyperplastic parathyroid glands are radio-sensitive. C. J. C. B.

Pathogenesis of endemic cretinism. J. EUGSTER (Schweiz. med. Wschr., 1938, **68**, 820—821).—Mothers of cretins nearly always show clinical changes in the thyroid. They are very fertile and reach an old age. A. S.

Chemistry of thyroid hormone. I. ABELIN (Schweiz. med. Wschr., 1938, **68**, 803).—A review. A. S.

Micro-determination of thyroxine in the thyroid of the new-born. W. W. PALMER, J. P. LELAND, and A. B. GUTMAN (J. Biol. Chem., 1938, **125**, 615—623; cf. A., 1935, 772).—Butyl alcohol extracts of dried thyroid gland (4—7 mg.) are prepared by a slight modification (described) of Foster's technique (A., 1934, 566). The thyroxine-I in the extract is determined by a modification (described) of Trevorrow and Fashena's method (A., 1936, 914). In 17 glands from humans (7-month fœtus to 12-day infant) the thyroxine-I was 0—0·2 mg. per g. of dry wt. and total I 0·035—0·654 mg. per g. The ratio thyroxine-I/total I is 20·0, approx. the same (25·2) as that for the glands of adults (Foster, *loc. cit.*). J. L. D.

Effect on the thyroid gland of perfusate of rabbit's ear treated with ultra-violet rays. B. HASAMA (Z. Biol., 1938, **99**, 163—168).—Electric potential changes were recorded from the surface of the thyroid gland in rabbits. Intravenous injection of perfusate of rabbit's ear causes a negative potential change if the ear was treated for a few hr. with ultra-violet rays. This indicates increased hormone production due presumably to a substance formed in the skin under the influence of the radiation. B. K.

Hypothyroidism as a cause of disease of the hip. B. BENJAMIN and P. R. MILLER (Amer. J. Dis. Child., 1938, **55**, 1189—1211).—Two conditions predisposing to coxa vara sometimes occur in hypothyroidism: (i) the normal interdigitating junction between bone and cartilage is replaced by a flat disc-like epiphyseal union which does not withstand normal stresses and therefore gives rise to a slipped epiphysis; (ii) osteochondrosis of the femoral head which results in irregular epiphyseal growth. A. C. F.

Influence of adrenal cortex extract on thyroxine metamorphosis of tadpoles and axolotls. K. A. BOCK (Klin. Woch., 1938, **17**, 1311—1314).—Metamorphosis is accelerated. E. M. J.

Treatment of a cretin with anterior pituitary extract. G. DE M. RUDOLF (Endocrinol., 1938, **23**, 364—366).—After a mastoid operation a cretinous infant failed to respond to thyroid treatment or to anterior pituitary extract, both of which seemed to aggravate his hypothyroid symptoms. He responded to administration of antuitrin-G and developed normally. V. J. W.

Experiments on Graves' disease. F. BLUM (Schweiz. med. Wschr., 1938, **68**, 889—892).—A review of experiments on the production of Graves' disease in rabbits and goats by a prolonged diet of cabbage. A. S.

Diastolic blood pressure and hyperthyroidism. K. HITZENBERGER (Wien. klin. Wschr., 1938, **51**, 711—713).—A spontaneous sound on auscultation of the brachial artery is heard if 0·5 mg. of adrenaline is subcutaneously injected into hyperthyroid patients. This sound disappears if Lugol's solution is administered. A. S.

Treatment of hyper- and hypo-thyroidism. N. VON JAGIĆ (Wien. klin. Wschr., 1938, **51**, 725—728).—A review. A. S.

Carcinoma cervicis uteri in a case of hyperthyroidism. B. BELONOSCHKIN (Klin. Woch.,

1938, **17**, 1117—1120).—Ra and *X*-ray treatment is effective in such cases. E. M. J.

Congenital lack of parathyroid glands. R. RÖSSLE (Schweiz. med. Wschr., 1938, **68**, 848—849).—An infant who died from tetany at the age of 12 weeks had no parathyroid glands. A. S.

Action of the parathyroid glands on calcium metabolism. T. ISHIHARA (Japan. J. Med. Sci., 1938, IX, **5**, 260).—Blood- and bone-Ca is lowered in parathyroidectomised dogs; it is increased by parathyroid extract. Continuous administration of the extract produces changes in the bones similar to those of osteitis fibrosa. J. P.

Parathyroid hormone and the action of ultra-violet rays on thrombocytes. G. TOYODA (Japan. J. Med. Sci., 1938, IX, **5**, 265).—Ultra-violet irradiation produces thrombocytosis in rabbits. This action is increased by parathyroidectomy and reduced by the administration of parathyroid extracts. J. P.

Relation of food intake to development of parathyroid tetany in rats. J. H. JONES (Amer. J. Physiol., 1938, **122**, 722—728).—Parathyroidectomised rats fed the dry portion of the Steenbock stock diet containing an additional 1% of $CaCO_3$ were usually protected against tetany. If after 2—3 weeks on the high-Ca diet the animals were deprived of food most of them developed tetany within 24 hr. Most animals fasted immediately following operation developed tetany within 24 hr.; the mortality rate was high among the younger animals. Sucrose gave partial protection. If the conditions tending to produce tetany are brought on slowly, tetany is not prevented. M. W. G.

Tetany, heredity, and pregnancy. E. RISAK (Wien. klin. Wschr., 1938, **51**, 1004—1006).—In a woman who suffered from tetany the fits disappeared during pregnancy and reappeared 2 months after delivery. Serum-Ca was 10 mg-% and -P 3·3 mg.-%. Tetany was observed in several members of her family. A. S.

Chemical and therapeutic research in tetany. R. LERICHE and A. JUNG (Presse méd., 1938, **46**, 897—899).—8 cases of spontaneous tetany and 3 of parathyroid tetany were studied. Serum-Ca was normal in 7 spontaneous and 1 postoperative cases. Urinary Ca was generally low, fæcal Ca was normal or moderately increased, and the Ca balance always positive. Implantation under the skin of a piece of bone in 3 cases of tetany with low serum-Ca abolished the attacks in 2 and modified them in one without affecting the level of serum-Ca. In animal experiments the amount of Ca disappearing from an implanted bone of 1·0—1·5 g. dry wt. was less than 1 mg. per day. Bilateral resection of the middle cervical ganglion and denervation of the carotid sinus cured permanently 4 cases of spontaneous tetany and abolished symptoms in one case for 9 months, without affecting the serum-Ca level. G. SCH.

Tetany in the new-born. O. LLOYD (Arch. Dis. Childh., 1938, **13**, 275—276).—An infant delivered by Cæsarian section showed symptoms of tetany on the 10th day which continued till the 24th day. On the 17th day the serum-Ca was 5·8 mg.-% and the electrical reactions showed anode opening circuit more than cathode closing circuit; when the current was allowed to flow for 1—2 sec. the limb went into a typical Trousseau position. C. J. C. B.

Hamilton and Highman test for parathyroid hyperfunction in chronic nephritis, toxic goitre, and Paget's disease of bone. D. R. GILLIGAN, M. C. VOLK, and S. L. GARGILL (J. clin. Invest., 1938, **17**, 641—647).—Parathyroid hyperfunction was not indicated by the Hamilton and Highman test (J. clin. Invest., 1936, **15**, 99) in 13 of 14 cases with chronic renal insufficiency. In 4 cases the parathyroid glands were found on post-mortem examination to be enlarged and showed "secondary" hyperplasia. One of these patients had renal rickets. The parathyroid function test was positive in some cases of thyrotoxicosis and Paget's disease. The test is of doubtful val. C. J. C. B.

Calcinosis universalis. S. E. GOULD and F. T. RAIFORD (Amer. J. Roentgenol., 1938, **39**, 741—746).—A case is reported in detail showing extensive multiple calcification of tissues at *X*-ray biopsy and post-mortem, and having a normal blood-Ca level, pituitary chromophobe adenoma, and atrophy and fatty infiltration of parathyroid gland. W. F. F.

Bone diseases and internal secretion. H. CHIARI (Wien. klin. Wschr., 1938, **51**, 821—825).—A review. A. S.

Surgery of bone disease, due to disturbances of internal secretion. A. WINKELBAUER (Wien. klin. Wschr., 1938, **51**, 1049—1053).—A review. A. S.

Treatment of generalised calcinosis with abnormalities of growth and development by thymectomy and parathyroidectomy. R. LERICHE and A. JUNG (Presse méd., 1938, **46**, 809—811).—This is a report of an unusual case, the clinical aspect and the treatment of which do not conform to any well known picture. G. SCH.

Adrenal topography in the guinea-pig. R. WHITEHEAD (J. Path. Bact., 1938, **47**, 347—348).—In Bloch's study of the post-natal development of the guinea-pig adrenal (Arch. path. Anat., 1921, **232**, 232) the juxtamedullary zone of the cortex was mistaken for part of the medulla. C. J. C. B.

Histological changes in endocrine glands after adrenalectomy. E. SILVESTRONI (Arch. Fisiol., 1937, **37**, 455—514).—Observations were made on albino rats 6 months after adrenalectomy. The anterior lobe of the pituitary increases in vol. and the no. of cells with large nuclei is greater. The islets of Langerhans hypertrophy and show signs of increased activity. No major changes occur in the gonads. S. O.

Influence of adrenalectomy on anterior pituitary ketogenesis in rats. I. A. MIRSKY (Science, 1938, **88**, 332—333).—In the absence of the adrenal glands, administration of anterior pituitary extract is relatively ineffective in producing ketonuria. The blood-ketone of adrenalectomised animals is slightly but significantly greater than that of normals. W. F. F.

Action of a K-poor and a salt-rich diet on the muscular efficiency of adrenalectomised rats. L. WATERMAN (Acta brev. neerl. Physiol., 1938, **8**, 58—59).—The survival time and the muscular efficiency of adrenalectomised rats are increased by a K-poor and NaCl-rich diet. A. S.

Vitamin-B_1 and adrenal cortex. L. LASZT (Verh. Schweiz. Physiol., 1938, **13**, 17—21).—Vitamin-B_1 lack produces in the rat the same symptoms as extirpation of the adrenal cortex. -B_1 produces its effects only in the presence of the adrenal cortical hormone, and vice versa. The pyruvic acid content of blood of B_1-avitaminous rats is increased to approx. 10 mg.-%; administration of -B_1 reduces it to its normal level (4—5 mg.-%). Blood-pyruvic acid of normal or -B_1-deficient rats is increased after adrenalectomy to 14 mg.-%; normal pyruvic acid concns. are restored only when -B_1 and cortin are given simultaneously. A. S.

Disturbance of fat absorption following adrenalectomy in cats. L. LASZT and F. VERZÁR (Verh. Schweiz. Physiol., 1938, **13**, 21—23).—30—40 g. of milk or butter were given to adrenalectomised cats. Most of the fat was excreted in the fæces. The free flavin content of liver, kidney, and heart is increased in adrenalectomised cats; these cats are unable to form "yellow respiratory enzyme." A. S.

Potassium in blood and tissues of adrenalectomised toads. A. D. MARENZI and O. FUSTINONI (Rev. Soc. argent. Biol., 1938, **14**, 118—122).—The adrenals were destroyed by diathermo-coagulations; in controls the kidney was cauterised without injury to the adrenals. K was determined by Marenzi and Gerschman's technique after HNO_3–$HClO_4$ calcination. 48—72 hr. after adrenalectomy there is a 24% decrease in serum-Na and a 34% increase in -K. The concn. of K decreased in heart (28%), liver (37%), brain (16%), and sciatic nerve (22%); it was not altered in muscle (gastrocnemius). J. T. L.

Blood of adrenalectomised toads. O. FUSTINONI and S. A. PARODI (Rev. Soc. argent. Biol., 1938, **14**, 215—221).—The adrenals were destroyed in toads by diathermo-coagulation; observations were made 48 and 96 hr. later. The red cell count and hæmoglobin concn. were lowered. The total quantity of hæmoglobin (determined by bleeding and washing out the vascular system) was normal. No changes occurred in the white cell count. Coagulation time and bleeding time were prolonged; sedimentation rate was unchanged. Total plasma-proteins were diminished, the albumin/globulin ratio was higher, and non-protein-N was increased. J. T. L.

Potassium in tissues of adrenalectomised rats. A. D. MARENZI (Rev. Soc. argent. Biol., 1938, **14**, 275—283).—The adrenals of rats were extirpated and the animals killed 4, 8, 25, and 60 days after operation. (Adrenalectomy was not fatal owing to the presence of many accessory glands.) In the liver and heart, the K concn. diminished markedly (max. decrease 25 days after operation). In muscle and brain no alteration in K concn. was observed. Glycogen decreased in muscle and liver. K increased and Na and glucose decreased in the blood. All these changes disappeared by the 60th day after operation. Injection of cortico-adrenal extract for 8 days after operation prevented the changes in blood and tissues; normal figures were found except in muscle and brain, where slightly higher vals. for K were seen. The amount of K lost by liver and heart is much larger than that retained in the blood of adrenalectomised rats. J. T. L.

Asthenia of adrenal insufficiency in toads. O. FUSTINONI (Rev. Soc. argent. Biol., 1938, **14**, 304—308).—In *Bufo arenarum* after diathermo-cauterisation entailing total destruction of both adrenals, asthenia appeared a few hr. before death, which occurred on the 4th—11th day after operation. Asthenia following hypophysectomy appeared 12—25 days after operation and persisted for several days, increasing gradually in severity. Adrenal asthenia began with slowing of the postural (righting) reflexes, without loss of sensation or paralysis; reflexes were easily fatigued and their rheobase increased. Rarely spontaneous convulsions occurred. The chronaxie and rheobase of nerve and muscle were unaltered to the premortal stage, when they increased. Fatigue curves obtained by stimulation of the muscle or nerve were similar to those of normal controls, even when asthenia was marked. Muscle-glycogen showed little variation from the normal; basal lactic acid and lactic acid formed during tetanisation were normal. Lactic acid removal was somewhat delayed. K decreased in muscle and more markedly in the central and peripheral nervous system. J. T. L.

Blood-potassium and suprarenal glands. A. D. MARENZI (Endocrinol., 1938, **23**, 330—338).—Adrenalectomy in the dog causes in the plasma a decrease of Na and Cl and an increase of K and P. Intravenous injection of K causes a greater increase in blood-K than in controls and the return to normal is slower. Blood-K is not affected by removal of the abdominal sympathetic or splanchnics. V. J. W.

Action of adrenal extracts in cases of acute adrenal insufficiency. J. HORAK (Wien. med. Wschr., 1938, **88**, 775—777). A. S.

Biological control of extracts of adrenal cortex. E. CUBONI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 435—437).—Favourable results were obtained by applying the Bomskov–Bahnsen method (A., 1935, 538) to young rats. F. O. H.

Constituents of the adrenal cortex. XVIII—XX.—See A., 1938, II, 498.

Isolation of progesterone and 3 : 20-*allo*-pregnanolone from ox adrenals.—See A., 1938, II, 497.

Isolation of progesterone and *allo*pregnanolone from the adrenal. D. BEALL and T. REICHSTEIN (Nature, 1938, **142**, 479).—The latter substance has no obvious biological activity. W. F. F.

Effect of deoxycorticosterone and its esters. K. MIESCHER, W. H. FISCHER, and E. TSCHOPP (Nature, 1938, **142**, 435—436).—Survival times of 9—25 days were obtained with a single 10-mg.

dose of different esters, compared with a 6·5-day survival of control animals. W. F. F.

Gonadotropic hormone content of adrenal cortex. F. HOFFMANN (Endokrinol., 1938, **20**, 225—230).—The adrenal cortex of cows and bulls contains a high concn. of gonadotropic substance. Sheep cortex is less active; the cortex of ox and pigs is inactive. There is an inverse relationship between gonadotropic and cortin content of the adrenal cortex. A. S.

Clinic and therapy of diseases of the adrenal gland. O. SATKE (Wien. med. Wschr., 1938, **88**, 859—863).—A review. A. S.

Pigmented adenoma of the adrenal. M. R. BAKER (Arch. Path., 1938, **26**, 845—852).—An unusual adenoma of the adrenal gland found post-mortem is described, which contained a brown pigment giving all the staining reactions of melanin. [3 photomicrographs.] C. J. C. B.

Action of adrenaline on the thyroid. F. J. LANG and T. WENSE (Schweiz. med. Wschr., 1938, **68**, 834—835).—Rats were injected repeatedly subcutaneously with adrenaline. A slight increase of the colloid content of the thyroid gland and proliferation of the epithelium were observed. A. S.

Adrenaline hyperglycæmia in scorbutic animals. M. KASAHARA, Y. NISHIZAWA, H. HORIE, and S. HIRAO (Klin. Woch., 1938, **17**, 1260).—Adrenaline hyperglycæmia does not occur in scorbutic guinea-pigs unless ascorbic acid is injected at the same time. E. M. J.

Unusual results following the injection of epinephrine. G. DE M. RUDOLF (Endocrinol., 1938, **23**, 366—367).—Two subcutaneous injections of 0·29—0·59 mg. of adrenaline were given to general paralytics at intervals of 7—36 days. The second injection caused a smaller rise and a greater fall of blood pressure than did the first. V. J. W.

Amino-acids and sensitisation to adrenaline. T. ISHIHARA (Folia pharmacol. japon., 1938, **26**, 14—16).—Experimental evidence is given that various amino-acids decrease the threshold val. for adrenaline and for sympathetic stimulation. F. JA.

Interpretation of inhibitory effects of adrenaline. Z. M. BACQ and P. HEIRMAN (Ann. Physiol. Physicochim. biol., 1938, **14**, 476—479).—Oxidation of a dil. solution of adrenaline causes successively loss of pressor action, development of adrenochrome, sudden loss of colour accompanied by marked vasodilator activity and cardiac inhibition which lasts several hr. and is rapidly lost to be followed by pptn. of melanin. This vasodilator substance (adrenoxine) is derived similarly from dil. solutions of sympathin, tyramine, hydroxytyramine, and epinine. It does not inhibit the intestine nor is its action modified by atropine, ergotamine, ergotoxine, yohimbine, or F. 933, but is augmented by cocaine. The inhibitory actions of adrenaline are attributed to the presence of a phenolase in the muscle cells which converts adrenaline into adrenoxine. (Cf. Physiol Abs., 1937, 876.) C. C. N. V.

Innervation of the hypophysis. A. T. RASMUSSEN (Endocrinol., 1938, **23**, 263—278).—At least 50,000 non-medullated fibres descend from the hypothalamus into the infundibulum but the ultimate fate of these could not be determined. Two groups of fibres enter the anterior lobe, but become associated with large vessels and are probably vasomotor, most of the anterior lobe being apparently devoid of nerves. V. J. W.

Acromegaly. F. R. B. ATKINSON (Endokrinol., 1938, **20**, 245—257).—A review of papers published in 1935—7. [B.] A. S.

Pituitary tumours. I. COSTERO and H. BERDET (Rev. med. Hosp. Gen., Mexico, 1938, **1**, 3—12).—A morphological and embryogenic classification based on a study of 135 cases. Oligochromic and megalocytic forms of chromophilic adenomas are described for the first time. S. O.

Suprasellar tumour in a dog. E. G. WHITE (J. Path. Bact., 1938, **47**, 323—326).—A suprasellar tumour in a dog, considered to be a craniopharyngioma of unusual structure, is described. The animal showed during life a syndrome resembling dystrophia adiposogenitalis in man. [6 photomicrographs.] C. J. C. B.

Simmonds' disease. W. C. MEYER (Dtsch. Arch. klin. Med., 1938, **182**, 351—368).—Symptoms found in cases of Simmonds' disease are: arterial hypotension (systolic pressure 90 mm. Hg), hypoglycæmia (sometimes hypoglycæmic shock), basal metabolic rate diminished (to −60%), hypochloræmia (to 448 mg.-%), diminished body temp. Excellent results were obtained with grafts of fresh calf pituitary into the rectus abdominis muscle. A combined treatment with anterior pituitary and adrenal cortex hormones is recommended. A. S.

Pituitary dwarfism; response to treatment. C. H. LAWRENCE and A. HARRISON (Endocrinol., 1938, **23**, 360—363).—Marked improvement resulted from the administration 3 times weekly of 1 c.c., and later 2 c.c., of antuitrin-S and antuitrin-G. V. J. W.

Relation of the pituitary gland to glucose absorption. O. FITZGERALD (Verh. Schweiz. Physiol., 1938, **13**, 14—16).—Impairment of adrenal cortex function after hypophysectomy in rats is held responsible for the diminution of glucose absorption from the intestine. Injections of Eucortin increase the absorption of glucose. A. S.

Anterior pituitary and fat metabolism. J. H. BURN (Schweiz. med. Wschr., 1938, **68**, 932—934).—A review. A. S.

Effect of prolan on the Marsh-Buffalo adenocarcinoma. F. BISCHOFF and M. L. LONG (Endocrinol., 1938, **23**, 327—329).—Prolan sufficient to cause 200—300% hypertrophy of the ovary caused no change in the onset or incidence of the carcinoma to which this strain of mice is subject. V. J. W.

Reliability of present methods for characterising two gonadotropic hormones, follicle-stimulator and luteiniser. F. J. SAUNDERS and H. H. COLE (Endocrinol., 1938, **23**, 302—317).—Addition of $ZnSO_4$ to follicle-stimulating hormone

augmented its activity more than addition of luteinising hormone, which itself had about the same augmenting effect as casein or egg-white. The ovarian response to follicle-stimulating hormone depends to a large extent on the intervals at which it is administered and the dosage at each, and on whether injection is intravenous or subcutaneous. V. J. W.

Changes in the hypophysis and the ovaries of rats chronically treated with an anterior pituitary extract. J. B. COLLIP, H. SELYE, and J. E. WILLIAMSON (Endocrinol., 1938, **23**, 279—284).—Rats received injections of pig pituitary twice daily for 13 weeks. By this time the ovaries, which at first increased in size, become atrophied and "wheel cells" appear, while "signet ring cells" and vacuoles can be seen in the hypophysis. The ovaries resembled those seen in hypophysectomised animals, and, as in such animals, pregnancy urine extract caused only theca luteinisation but no follicle maturation or corpus luteum formation. V. J. W.

Gonadotropic hormone and the level of blood-phosphorus in the hen. M. LASKOWSKI (Biochem. J., 1938, **32**, 1176—1180).—A more detailed account of work already noted (A., 1938, III, 486). E. M. W.

Dualism of gonadotropic anterior pituitary hormones. E. TSCHERNE (Wien. klin. Wschr., 1938, **51**, 1072—1076). A. S.

Assay of thyrotropic hormone. E. M. MASON (Nature, 1938, **142**, 480—481).—The thyroid gland of the grass snake *Tropidonotus natrix* is readily affected by subcutaneous injections of small amounts of anterior pituitary thyrotropic hormone, showing hyperplasia and colloid loss. The histological picture is very const., and makes this reptile a suitable subject for biological assay. W. F. F.

Extraction and assay of hormones of cattle and sheep pituitaries. A. J. BERGMAN and C. W. TURNER (J. Dairy Sci., 1938, **21**, 167—168).—The anterior lobe of cattle and sheep pituitaries was used as a source of hormones. The lobes are ground and dried with acetone and then assayed for the various hormones. Up to 90% of inert material is removed by extraction with alcohol at p_H 9—10. This initial extract is carefully assayed. The lactogenic hormone is then removed and further purified until the potency is increased from 500 in the original tissue to 6600 units per g. The fraction containing the other hormones contains the thyrotropic hormone conc. 80 times, the gonadotropic hormone 40 times, and the carbohydrate metabolism hormone 33 times. Methods of assay are indicated. W. L. D.

Concentration of anterior lobe and pituitary-like hormones with the ultra-centrifuge. A. A. SEVERINGHAUS, L. LEVIN, and J. A. CHILES, jun. (Endocrinol., 1938, **23**, 285—291).—Pregnant mare serum, menopause urine, and a flavianate extract of ox hypophysis were subjected to a centrifugal force of 150,000—200,000*g* for 4—6 hr. The gonadotropic hormones of the serum and urine were conc. in the lowest layer, but no concn. was found of the thyrotropic hormone of the pituitary. V. J. W.

Is the pituitary factor active in protein metabolism identical with the growth hormone? K. E. PASCHKIS (Endocrinol., 1938, **23**, 368—370).—If two administrations of 50 g. of gelatin are given to a normal subject at an interval of 3 hr., the blood-amino-N increases after the first but not after the second. This reaction was found to be normal in two cases of pituitary dwarfism, but in cases of hypopituitarism the increase after the second dose is as great as or greater than that after the first. V. J. W.

Diagnosis and therapy of pituitary disturbances. R. FLECKSEDER (Wien. klin. Wschr., 1938, **51**, 1093—1096).—A review. A. S.

Treatment of female endocrinopathies. J. KOTZ and E. PARKER (Radiology, 1938, **31**, 66—72).—Records of 115 cases treated by irradiation of the pituitary and organotherapy. W. F. F.

Treatment of dystrophia adiposogenitalis. A. MARGITAY-BECHT (Endokrinol., 1938, **20**, 241—245).—Satisfactory results were obtained in several cases with lutocrescin, a mixture of gonadotropic substances of the anterior pituitary, pregnancy blood, and placenta. A. S.

Diabetes insipidus. W. FALTA (Münch. med. Wschr., 1938, **85**, 1425—1428).—A review. A. S.

Water metabolism of *Bufo arenarum*, Hensel. V. Effect of pituitary extracts. R. Q. PASQUALINI (Rev. Soc. argent. Biol., 1938, **14**, 260—274).—Posterior pituitary lobe extracts had an antidiuretic activity on normal toads. Small doses did not modify cutaneous absorption of water, large doses increased it (this is considered a toxic, not a physiologic, effect). Polyuria in the hypophysectomised toads was controlled by injection of bovine posterior lobe extract, or the emulsion of posterior lobe of toad pituitary. The extracts did not change renal glomerular activity; with larger doses (especially when given intravenously) the circulatory stoppage was always of shorter duration than the antidiuretic effect. During the oliguria, insulin injected intraperitoneally was eliminated as in the controls. The oliguric effect of posterior pituitary extract in hypophysectomised toads is due to increased reabsorption by the tubules. J. T. L.

Peptic ulcer treated by posterior pituitary extract. M. H. METZ and R. W. LACKEY (Texas Sta. J. Med., 1938, **34**, 214—220).—Posterior pituitary preps. were used in the treatment of 42 cases of peptic ulcer, with satisfactory clinical results in 40. Intranasal posterior pituitary powder proved the most satisfactory mode of administration. R. L. N.

Electrocardiographic and blood pressure changes induced by posterior pituitary extract (postlobin-V), and the influence of ephedrine thereupon. K. I. MELVILLE (J. Pharm. Exp. Ther., 1938, **64**, 86—110).—In anæsthetised and unanæsthetised dogs, pituitary extract caused a fall in blood pressure and alterations in the *T* wave of the electrocardiogram. These effects were not prevented by vagotomy, but were abolished by previous administration of ephedrine. The cardiac slowing caused by pituitary extract was less marked after vagotomy;

it was accentuated by ephedrine in the intact animal, but prevented in vagotomised animals. Alterations of the T wave and slowing caused by pituitary extract are the result (apart from vagal reflex effect) of coronary constriction, since they are eliminated by the antagonistic effect of ephedrine. E. M. S.

Effect of hypophysectomy on the restoration of the liver following partial hepatectomy in rats. C. C. FRANSEEN, A. M. BRUES, and R. L. RICHARDS (Endocrinol., 1938, **23**, 292—301).—66% of the liver wt., consisting of the median and anterior lobes, was removed in normal and hypophysectomised rats. Extent of liver restoration was determined by autopsy after varying times up to 12 days. Restoration was slightly greater in the normal rats, but this may be because they ate more food. V. J. W.

(Para-)amyloidosis of the islets of the pancreas. N. GELLERSTEDT (Beitr. path. Anat., 1938, **101**, 1—13).—In all cases of so-called hyaline degeneration of the islets amyloid was found; it is therefore suggested that the condition be called amyloidosis. Amyloidosis was found in 46·3% of 110 post-mortem examinations of persons of 50—90 years of age. The highest incidence was between 60 and 80 years. There was no definite relationship between diabetes mellitus and amyloidosis of the islets. H. W. K.

Deposition of glycogen in the liver of the depancreatised and normal dog under insulin. L. HÉDON and A. LOUBATIÈRES [with P. CRISTOL and P. MONNIER] (Ann. Physiol. Physicochim. biol., 1938, **14**, 548—551).—Insulin produces a deposition of glycogen in the liver of the depancreatised animal, even during fasting, if it is in good condition. In the normal animal insulin always lowers liver-glycogen unless the animal is previously starved and small doses of insulin are given, when slight rises of liver-glycogen were observed. C. C. N. V.

Treatment of diabetes mellitus. H. BARTSCH (Wien. klin. Wschr., 1938, **51**, 952—955).—A review. A. S.

Diabetes and pregnancy. T. ANTOINE (Wien. klin. Wschr., 1938, **51**, 1045—1046).—A review. A. S.

Slow continuous infusions of insulin in diabetes. A. BAUDOUIN, J. LEWIN, and E. AZÉRARD (Presse méd., 1938, **46**, 729—732).—Continuous intravenous infusion of insulin was carried out in healthy and diabetic subjects. The min. dose to depress the blood-sugar level noticeably within 3 hr. in healthy subjects is 0·01—0·02 unit per hr. per kg. body-wt. Assuming that insulin secretion by the pancreas ceases completely under this regime the hourly hormone production of a man weighing 60 kg. would be the equiv. of 6 μg. of cryst. insulin. In diabetics with blood-sugar levels of 200—300 mg.-%, 0·2—0·3 unit per hr. and kg. body-wt. is required to bring the blood-sugar level down to normal vals., the maintenance dose thereafter being 0·01 unit in two cases, and 0·1 in a third. Insulin depresses blood-sugar immediately; the ketones disappear more slowly. Therapeutic results were excellent. G. SCH.

Splanchnicectomy and diabetes. H. CHABANIER, J. BRÉHANT, and R. DONOSO (Presse méd., 1938, **46**, 753—755).—In a male patient, 58 years old, glycosuria and acetonuria could, for many months, not be controlled by 390 units of insulin, with 90 g. of carbohydrates, daily. Higher doses of insulin provoked hypoglycæmia. Blood-sugar level was 260 mg.-%. Immediately following left splanchnicectomy the glycosuria and ketonuria could be controlled by the previous regime, and subsequently it was possible gradually to reduce insulin to 160 units; the blood-sugar fluctuated between 63 and 173 mg.-%. G. SCH.

Caloric value of the diet and carbohydrate administration in the treatment of diabetes. J. WEGIERKO (Wien. klin. Wschr., 1938, **51**, 713—718).—A review. A. S.

Insulin resistance. A. MARBLE (Arch. intern. Med., 1938, **62**, 432—446).—A case of diabetes + rheumatoid arthritis (woman aged 35) required 240—675 units of insulin daily. There were also marked general enlargement of lymph glands and enlargement of liver and spleen, but no evidence of endocrine disorder. There was lipodystrophy at the site of injections. C. A. K.

Rôle of epinephrine in the lack of response to insulin in diphtheria intoxication. C. BEAMER and G. S. EADIC (Amer. J. Physiol., 1938, **122**, 627—630).—Insulin failed to lower the blood-sugar in rabbits poisoned with diphtheria toxin (1·25—1·5 m.l.d. per kg. subcutaneously); after 0·65 mg. of ergotamine per kg. subcutaneously insulin was as effective as in the normal animal. Adrenaline (0·1 c.c. of 1 : 1000 solution intravenously) had a smaller effect on the blood-sugar. It was concluded that the toxin markedly lowers the threshold for stimuli which induce the secretion of adrenaline. M. W. G.

Large doses of insulin and hæmorrhage. C. FORTI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 205—207).—*m*-Cresol (typical of antiseptics used in insulin preps.) provokes chronic convulsions in *Bufo vulgaris*; injection of 2 c.c. of 0·5% solution into the heart causes death. With rabbits, hypoglycæmia and convulsions due to injection of 30 I.U. of insulin per kg. are of slower onset than those due to 6—10 units; the symptoms are also retarded and/or alleviated by removal of blood (21—28 c.c. from the heart) or by feeding. F. O. H.

Experiences with protamine-zinc-insulin. C. R. CONSTAM (Schweiz. med. Wschr., 1938, **68**, 556—559).—It is difficult to diagnose and to deal with hypoglycæmic symptoms following injection of protamine-Zn-insulin. Diabetics accustomed to insulin should not be transferred to protamine-Zn-insulin. It should not be given in large doses to out-patients. A. S.

Protamine-zinc-insulin. F. NEUHOFF and S. RABINOVITCH (Arch. intern. Med., 1938, **62**, 447—460).—Protamine-Zn-insulin was given to 12 diabetics. When the drug was given at 7.0 a.m. the min. blood-sugar level occurred after 20 hr., when it was given at 10.0 p.m. this level occurred after 5 hr. Difficulties in use are described. C. A. K.

Duration of action of zinc-protamine-insulin. R. S. AITKEN (Lancet, 1938, **235**, 768—770).—The max. effect of Zn-protamine-insulin (measured by its action on glycosuria in diabetics) occurs within 3—6 hr. of injection, the total duration of effect, with doses of 15—100 units, ranging from 15 to 60 hr. C. A. K.

Clinical experience with various depot-insulins. K. BECKMANN and J. WEITZSÄCKER (Klin. Woch., 1938, **17**, 1321—1325).—The relative merits of the different preps. are discussed. E. M. J.

Action of depot-insulin in diabetics. W. BECKERT (Münch. med. Wschr., 1938, **85**, 1594—1596).—60 diabetics were treated with depot-insulin. An improvement of the carbohydrate tolerance was observed in 55% of the cases. The no. of injections was reduced in 23% and the total amount of insulin could be diminished in 31%. 23% of the patients showed reactions at the site of injection. A. S.

Experiences with various types of depot-insulin. R. AMMON (Dtsch. med. Wschr., 1938, **64**, 1388—1392).—22 diabetics were treated with depot-insulin-Bayer (surfen-insulin), protamin-Zn-insulin, and deposulin. All preps. have prolonged effects. Local irritation at the site of injection was observed in a no. of cases. A. S.

Peroral insulin therapy combined with organic dyes. F. LASCH and E. SCHÖNBRUNNER (Klin. Woch., 1937, **17**, 1177—1180).—Insulin can be successfully given by mouth when combined with org. dyes (to inhibit enzyme) and saponin to promote absorption. Dosage must be 3 times that with subcutaneous injections. The dyes produced no ill-effects but the saponin sometimes caused nausea or vomiting. E. M. J.

(j) REPRODUCTION, HEREDITY, AND EXPERIMENTAL EMBRYOLOGY.

Question of seasonal sterility among Eskimos. W. L. WHITAKER (Science, 1938, **88**, 214—215).—A review of evidence, concluding that there is probably no seasonal sexual sterility. W. F. F.

Fertility and intelligence of college women. R. R. WILLOUGHBY (Science, 1938, **88**, 281—282).—Intelligence as judged by score in intelligence tests on 108 subjects is not related to fertility judged by live births. W. F. F.

Heredity and fecundity. I. Relationship between constitutional type and fecundity in large families of the Sassari people. II. Relationship between number of sons and brothers in large families of the Sassari people. L. TOMICI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 224—225, 225—226).—Statistical data are given and discussed. F. O. H.

New chemical contraceptive. J. R. BAKER, R. M. RANSON, and J. TYNEN (Lancet, 1938, **235**, 882—885).—Hg phenyl acetate and nitrate are highly spermicidal. The former kills in concn. of 1/1024% in acid and 1/256% in alkaline media, and is 512 times as active as quinine bisulphate and Chinosol. It has been made up in gelatin gels and in pastes, and clinical trials have been very successful. C. A. K.

Plasticity of tissues, hormones, and sex. W. DANTSCHAKOFF (Ergebn. Physiol., 1938, **40**, 101—163).

Wilms' embryoma, a clinico-pathological study. R. O. STERN and G. H. NEWNS (Arch. Dis. Childh., 1938, **13**, 193—209).—A review of 26 cases. C. J. C. B.

Sex hormones and their effect on conditioned responses in the rudd (*Leuciscus leuciscus*). F. L. VANDERPLANK (J. exp. Biol., 1938, **15**, 385—393).—Œstrone inhibited an artificially conditioned response. Prolan and progesterone had no effect on conditioned responses. Progesterone, although foreign to the Pisces, terminates the inhibition brought about by previous injections of œstrone. Progesterone usually causes death within 2—3 hr.; this can be prevented by œstrone. The effects of the sex hormones in the fish show no sex differences. J. M. R.

Hormones and gynæcology. O. KOLLER (Schweiz. med. Wschr., 1938, **68**, 1089—1092, 1119—1123).—A review. A. S.

Administration of hormones by subcutaneous implantation of tablets. R. DEANESLY and A. S. PARKES (Lancet, 1938, **235**, 606—609).—Œstrone, œstradiol, testosterone, and testosterone propionate were effectively administered by subcutaneous implantation of tablets, in the mouse, rat, guinea-pig, and rabbit. C. A. K.

Biological test for sex-hormonal function. B. BABUDIERI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 428—429).—The Foà-Kurloff bodies (albumin-lipin secretions of the giant lymphocytes) increase or diminish (with respect to the lymphocyte or leucocyte count) numerically in guinea-pigs according to the increase or diminution, respectively, in the amount of folliculin or testosterone in the circulating blood; the count of these elements thus forms a possible test for sex-hormonal function. F. O. H.

Sex-hormonal activity of guinea-pigs in various (A) physiological and (B) pathological conditions. B. BABUDIERI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 430, 431—432).—(A) The no. of Foà-Kurloff bodies (cf. preceding abstract) in guinea-pigs is practically zero at birth and increases during sexual maturation; it is increased during pregnancy, reaching a max. val at parturition, subsequently falling to normal vals.

(B) The no. (in guinea-pigs) is diminished by castration. Ligature of the vas deferens produces successively a transient increase, a return to normal vals., and finally a slow increase to vals. slightly above normal. Thyroid preps. increase, whilst scorbutic diets firstly increase and then, before death, decrease, the no. The early stages of tuberculosis are associated with vals. above normal. F. O. H.

Colour reactions and chemical tests for sex hormones. W. ZIMMERMANN (Klin. Woch., 1938, **17**, 1103—1107).—A review. E. M. J.

Bitterling tests for sex hormones. E. GLASER and F. RANFTL (Klin. Woch., 1938, **17**, 1120—1124).—

Growth of the bitterling's ovipositor is elicited by both female and male sex-hormones. The "wedding-dress" of the male bitterling can be produced by the injection of equal amounts (0·5 μg.) of proviron, testoviron, and proluton in saturated aq. solution, which is 1/3000 of the min. effective dose in oily solution. Combined injections of male and female hormones have an additive action on the ovipositor, but the female hormone antagonises the male in the "wedding-dress" test of the bitterling. E. M. J.

Diffusing factors. Active preparations from mammalian testicle and their biological assay. J. MADINAVEITIA (Biochem. J., 1938, **32**, 1806—1813).—Methods for biological assay and concn. of the diffusing factor (Hoffman and Reynals, A., 1931, 382), using hæmoglobin as indicator, are described. The activity is rapidly destroyed above 37° and at p_H below 4 or above 10. *meso*-Inositol has been isolated from the concentrate but has no diffusing activity. H. G. R.

Effect of prepuberal castration on the thymus and lymphatic nodes of female albino rats. H. CHIODI (Rev. Soc. argent. Biol., 1938, **14**, 222—228).—After ovariectomy (at 30 days of age) the thymus (at 45—200 days of age) weighed more than in litter mate controls. The age–wt. curve is similar in thymectomised and controls, but is at a higher level in the former. The greatest abs. wt. was at 60 days in both groups; after that a rapid decrease occurred up to 120 days and a more gradual one subsequently. Castration did not influence the rapidity or degree of this decline in wt.; the gonads do not influence the physiological involution of the thymus, but inhibit its general growth. The wt. of the submaxillary, cervical, and axillary lymph nodes was greater in thymectomised animals than in the controls; the age–wt. curve was similar in both. Involution began at 160 days of age. J. T. L.

Effect of prepuberal castration on the weight of endocrine glands in albino rats. H. CHIODI (Rev. Soc. argent. Biol., 1938, **14**, 246—252).—Rats were castrated at 30 days of age; the wt. of the endocrine glands was determined at intervals between 45 and 200 days. The hypophysis hypertrophied in male castrates, but not in females. The thyroid weighed less absolutely and relatively in male castrates and less relatively in female castrates than in the controls. The adrenals weighed more in male and less in female castrates than in the controls. The testes grew rapidly up to 60 days age, then more slowly up to 150 days; the ovary reached its highest wt. at 70 days. The rapid increase in wt. of the gonads precedes that of the thymus by 20 days in males and 10 days in females. The physiological involution of the thymus coincides with the increase in wt. of the hypophysis, thyroid, and adrenals, not with that of the gonads. J. T. L.

Resistance of human spermatozoa to extreme cold. F. JAHNEL (Klin. Woch., 1938, **17**, 1273—1274).—A few spermatozoa survive prolonged exposure to −196° (liquid N_2) or −269·5° (liquid He) and show motility after thawing. They do not survive much shorter exposures to temp. −10° to −20°. Similar reactions are shown by spirochætes and trypanosomes. E. M. J.

Treatment of male impotence. K. TSIMINAKIS (Wien. klin. Wschr., 1938, **51**, 898—899).—Oral or subcutaneous administration of erugon is recommended. A. S.

Bacterial hydrogenation of androstenedione and testosterone. L. MAMOLI and G. SCHRAMM (Ber., 1938, **71**, [*B*], 2083—2086; cf. A., 1938, III, 660).—Androstenedione and testosterone are unchanged by an aq. extract of stallion's testes containing $CHCl_3$ or toluene; in the absence of a sterilising agent putrefaction occurs with consequent production of *epi*ætiocholanediol and ætiocholanedione respectively. The results are not due to restriction of the action of a hydrogenase by the preservative and the supposition of the existence of a testis hydrogenase is unjustified. H. W.

Biological formation of ætiocholane derivatives. A. ERCOLI (Ber., 1938, **71**, [*B*], 2198; cf. Mamoli *et al.*, A., 1938, II, 414).—Androstenedione does not appear to be reduced by *B. fluorescens* or *B. coli*, to the former of which dehydroandrosterone is indifferent. H. W.

Bacterial oxidation of dehydroandrosterone.—See A., 1938, II, 414.

Effects of compounds of androsterone–testosterone series on ovariectomised mice. C. W. EMMENS (J. Physiol., 1938, **93**, 416—422).—*trans*-Androstenediol, androstanediol, testosterone, androstenedione, androsterone, and *trans*-dehydroandrosterone cause increase in wt. of the uterus (ovariectomised mouse) in that descending order of activity; *trans*-androstenediol, androstanediol, testosterone, and *trans*-dehydroandrosterone cause increase in vaginal size, only the first-named causing complete cornification; androstenedione causes mucification, testosterone slight mucification. The order of activity in causing hypertrophy of the female preputial glands is: androstanediol, testosterone, *trans*-androstenediol, androstenedione, androsterone, and *trans*-dehydroandrosterone; this is not the order of activity of the same substances in the capon comb growth or castrate male rat tests. J. A. C.

Effect of testosterone propionate on the *X*-zone of the mouse adrenal. W. F. STARKEY and E. C. H. SCHMIDT, jun. (Endocrinol., 1938, **23**, 339—344).—The "*X*-zone" which disappears in adult males can also be caused to disappear in immature or castrate males and in females by administration of male hormone. V. J. W.

Chemistry and biology of male sex hormones F. C. KOCH (Harvey Lect., 1937—38, S. **33**, 205—236).

Influence of male sex hormones on cultures of iris epithelium. T. KUBO (Folia pharmacol. japon., 1938, **26**, 17—18).—Only very low concns. of the male sex hormones have a slight growth-promoting effect, which is much smaller than that of follicle hormones. With increasing concns. an inhibiting effect develops. Those male hormones in which C atom 17 of the phenanthrene ring has an

OH group were more active than those with O in this position. F. JA.

Action of male sex hormones in capons. W. SCHOELLER and M. GEHRKE (Klin. Woch., 1938, **17**, 694—699).—Androsterone, androstanediol, testosterone, and their esters when injected into capons in doses of 0·05 to 1 mg. have a powerful though markedly graded action on the comb's growth. The most striking results are obtained by the introduction of cryst. testosterone or its propionate subcutaneously, giving a 500% comb growth in 21—35 days with 2-mg. crystal. The dose to maintain a capon comb brought to the size of that of a normal 8 month old cock by weekly injections of 1 mg. of testosterone propionate is 0·05—0·06 mg. of hormone per day. E. M. J.

Maximum growth rate of capon comb. C. W. EMMENS (J. Physiol., 1938, **93**, 413—415).—Massive prolonged dosage of Brown Leghorn capons is obtained by intramuscular implantation of tablets of compressed testosterone propionate (5—16 mg. per bird). With this method the combs attain a size equal to that of normal cocks in a little over 40 days. J. A. C.

Involution of the comb of young, castrated cocks and extracts of normal and hypertrophic prostate glands. S. FERDINANDO (Boll. Soc. ital. Biol. sperim., 1938, **13**, 230—231).—Intramuscular injection of extracts of normal prostate (but not of hypertrophic prostate or of muscle) inhibits the involution. F. O. H.

Œstrogens of the testis and of the adrenal in relation to the treatment of enlarged prostate with testosterone propionate. C. W. EMMENS and A. S. PARKES (J. Path. Bact., 1938, **47**, 279—283).—Testosterone propionate inhibits the œstrogenic activity, in the typical Allen–Doisy test, of adrenal and testis extracts and also the androgen *trans*-androstenediol. C. J. C. B.

Effect of extracts of prostate gland on the rabbit's myometrium. S. FERDINANDO (Boll. Soc. ital. Biol. sperim., 1938, **13**, 233—234).—The (aq. NaCl) extracts (from dogs) have a hormone-like action (which is not abolished by boiling) on the uterus. F. O. H.

Contractility of the ovary. A. CARDIN (Boll. Soc. ital. Biol. sperim., 1938, **13**, 234—237).—The presence of smooth muscle-fibres (controlled by parasympathetic nerves) in the ovary (cow, horse, dog) is demonstrable *in vitro* by means of chemical and electric stimuli. These fibres, which are contracted by a principle (not prolan) of the anterior pituitary gland, are concerned in the movements of the ovarian follicles. F. O. H.

Effect of sympathectomy on gestation and lactation in the cat. F. A. SIMEONE and J. F. ROSS (Amer. J. Physiol., 1938, **122**, 659—667).—Different degrees of sympathectomy were performed in cats. Gestation, parturition, and lactation were studied in those groups of animals where successful mating was obtained. The incidence of abortion was high in animals that became pregnant shortly after sympathetic denervation of the internal genitalia. The incidence of stillbirths was high in animals that became pregnant long after sympathectomy. Lactation was impaired in only a few of the operated animals; this may have been secondary to loss of local vasomotor control but the exact mechanism is not clear. M. W. G.

Persistent action of a single administration of a hormone. N. BROCK and H. DRUCKEY (Klin. Woch., 1938, **17**, 23—24).—Collodion sacs containing either cryst. œstrone or an oily solution were implanted in the abdomen of 6 rats, fed on a vitamin-*A*-rich diet. With the first a prolonged œstrus set in persisting for 14 months, but with the oily solution the action lasted only 4—6 days. F. W. L.

Interruption of early pregnancy by orally active œstrogens. A. S. PARKES, E. C. DODDS, and R. L. NOBLE (Brit. Med. J., 1938, II, 557—559).—Oral administration of ethinylœstradiol or diethylstilbœstrol to rats and rabbits prevents implantation of the blastocyst or may terminate established pregnancy; the former compound is the more active. The actions are attributed to an inhibition of the effects of progesterone. C. A. K.

Determination of female sex hormone excretion in urine with the nipple test. H. E. FIERZ, W. JADASSOHN, and E. UEHLINGER (Schweiz. med. Wschr., 1938, **68**, 1056—1057).—Drops of urine are applied to the nipple of guinea-pigs and its size measured. The excretion of sex hormone in the urine of women is largest in the middle of the menstrual cycle. A. S.

Influence of female sex hormones on cultures of iris epithelium. T. KUBO (Folia pharmacol. japon., 1938, **25**, 37—38).—Coverslip cultures were used. An increasing growth-promoting effect was observed up to a certain concn. of the hormones. In too high concns. growth was inhibited and the cells showed signs of damage. The follicle hormones were more effective than the corpus luteum hormone. F. JA.

Recent advances in the knowledge of female sex hormones. L. KRAUL (Wien. med. Wschr., 1938, **88**, 999—1003).—A review.

Annual cycle of responsivity of castrated albino mice to œstrone injection. J. DUSZYŃSKA (Nature, 1938, **142**, 673—674).—Evidence is presented for an annual cycle in response to injected œstrogenic substances. W. F. F.

Hypophyseal tumours induced by œstrogenic hormone. B. ZONDEK (Amer. J. Cancer, 1938, **33**, 555—559).—Injection of 240 infantile rats with œstrogenic hormone caused eunuchoid dwarfing. In males the pituitary became enlarged after 4 months' treatment, in females it remained apparently normal. Hypophyseal tumours occurred in 29 out of 35 rats surviving 8 months. The tumours caused hypoglycæmia and consequent lowering of body temp. The enlarged pituitaries contained the same total amount of gonadotropic hormone as the controls. E. B.

Œstrogenic substances in honey. E. DINGEMANSE (Acta brev. neerl. Physiol., 1938, **8**, 55—58).—Honey was diluted with water and boiled with

benzene, dried, and suspended in oil. The prep. was injected into castrated female mice. Another prep. was obtained by distillation, ether extraction, and drying with Na_2SO_4. Several samples of bee honey contained 400 units of a volatile œstrogenic substance. These substances may belong to the œstrogenic propylenephenol group. A. S.

Action of œstrone, testosterone propionate, and pregnyl on the growth of the rat's tail. L. H. LEVIE (Acta brev. neerl. Physiol., 1938, **8**, 53—55).—The growth of the intact male rat's tail is inhibited by œstrone, testosterone propionate, or gonadotropic hormone from pregnancy urine (pregnyl); œstrone exerts the most powerful action. The action of testosterone and pregnyl on the growth of the tail is abolished by castration. Testes and seminal vesicles of the intact rat are enlarged by testosterone propionate; the action on the seminal vesicles is maintained after castration. A. S.

Antagonism of comb growth substances and œstrogenic hormones and progesterone. O. MÜHLBOCK (Acta brev. neerl. Physiol., 1938, **8**, 50—52).—The comb of a capon is enlarged by 15% when 0·4 μg. of testosterone per day is locally administered over periods of 4 days, or when 100 μg. of androsterone per day are injected intramuscularly. This effect is abolished if 500 μg. of œstrone, œstradiol, or progesterone are simultaneously administered. The comb may even be reduced in size. A. S.

Acute paradoxical action of œstrone. J. G. H. BOKSLAG (Acta brev. neerl. Physiol., 1938, **8**, 46—48).—One injection of œstrone (3000 units) into rats of 35 g. wt. produces enlargement of the seminal vesicles without simultaneous changes in the size of the testes. A. S.

Asthma and menstruation. F. CLAUDE and R. A. VALL (Presse méd., 1938, **46**, 755—759).—In 50% of cases of bronchial asthma the attacks are exacerbated premenstrually and are alleviated with the onset of the flow, whether the latter be regular or not. Ovaries, thyroid, hypophysis, and the fluctuations of tonus of vagus and sympathetic all play a part. G. SCH.

Effects of certain gonadal and gonadotropic hormones on the gestation period of the rat. C. A. BUNDE (Endocrinol., 1938, **23**, 345—352).—Pituitary extract, follicle-stimulating hormone, or luteinising hormone inhibits parturition, and a subminimal dose of extract with an addition of hæmin has the same effect. Pregnant mare serum has less effect, and progestin and methyl alcohol extracts of corpus luteum have none. V. J. W.

Gonadotropic hormone of pregnant mare serum. F. BISCHOFF (J. Biol. Chem., 1938, **125**, 697—702).—The hormone is more stable in acid than in alkaline solution towards acetylation, iodination, and reaction with β-naphthaquinonesulphonate and diazobenzenesulphonate. It is only partly (25—75%) inactivated by formaldehyde in acid or alkaline solution, H_2O_2 in acid solution, and methyl sulphate (even in alkaline solution). It closely resembles the corresponding urinary hormone in all its chemical reactions, and it cannot be split into two fractions by $(NH_4)_2SO_4$ pptn. P. G. M.

Qualitative test of different gonadotropic substances in mixtures. P. DE FREMERY (Acta brev. neerl. Physiol., 1938, **8**, 48—49).—An antibody is formed if gonadotropic substance from pregnancy urine (pregnyl) is injected daily into rats for several weeks. This antiserum abolishes, on injection into infantile rats, the action of gonadotropic pregnancy urine substances in a mixture with anterior pituitary gonadotropic hormone. The remaining action of the pituitary hormone may be potentiated by administration of $ZnSO_4$ (Maxwell's reaction). A. S.

Action of gonadotropic hormone from pregnant mare's serum and prolan on human ovaries. H. SIEGMUND (Wien. klin. Wschr., 1938, **51**, 1014—1017).—Gonadotropic substance from serum of pregnant mares stimulates the growth of human ovaries. Gonadotropic substance from urine of pregnant women was inactive. A. S.

Factors concerned in the duration of pregnancy. F. S. SNYDER (Physiol. Rev., 1938, **18**, 578—596).

Appearance of the pregnancy-reaction in mares. E. CUBONI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 433—435).—The reaction (a green fluorescence produced by the action of H_2SO_4 on the material extracted by benzene from the acidified urine) in mares is given at or after the 4th month of pregnancy. The reaction is applicable to mules, but not cows or women. F. O. H.

Pregnancy tests. P. WERNER (Wien. klin. Wschr., 1938, **51**, 773—776).—A review. A. S.

Histological study of the endometrium during pregnancy. A. C. BRODERS and J. R. MCDONALD (Amer. J. clin. Path., 1938, **8**, 547—562).—A picture comparable with the late differentiative phase of the menstrual cycle is usually present during early uterine pregnancy and less commonly in extra-uterine pregnancy. Decidual tissue was found in the uterus in 5 of 27 cases of extra-uterine pregnancy. [7 photomicrographs.] C. J. C. B.

Masculinity of stillbirths and abortions in relation to duration of uterogestation and to stated causes of fœtal mortality. A. CIOCCO (Human Biol., 1938, **10**, 235—250).—The incidence of male stillbirths, in a part of the U.S.A., is significantly greater than that of females. Malformations, and albuminuria together with stillbirth, occur more often in females, difficult labour and malpresentation more often in males. W. F. F.

Sensitivity of endometrium during lactation in the rat. R. A. LYON and W. M. ALLEN (Amer. J. Physiol., 1938, **122**, 624—626).—Mature albino rats were studied in which during lactation the right horn of the uterus was stimulated by multiple perforations with a needle from the 1st to the 19th day post partum. The endometrium remains sensitised from the 4th to 16th days after delivery; the sensitivity rapidly diminishes on the 17th day and is absent subsequently. M. W. G.

Experiments on relation between thyroid gland and lactation in rat. S. J. FOLLEY (J. Physiol., 1938, **93**, 401—412).—Thyroidectomy (with

the associated parathyroidectomy) in lactating rats causes a marked decline in lactation as judged by the growth rates of sucklings; such rats show no obvious signs of tetany. Thyroidectomised female rats mate and become pregnant; just before parturition many exhibit tetany which disappears on injection of parathormone; parturition is normal but lactation is subnormal. Rats thyroidectomised during lactation, and subsequently treated with thyroxine and parathormone, lactate no better than untreated thyroidectomised rats. Injection of anti-thyroglobulin serum into lactating rats has very little effect on lactation. J. A. C.

X-Ray examination of the normal breast. J. GERSHON-COHEN and A. STRICKLER (Amer. J. Roentgenol., 1938, **40**, 189—201).—In 142 normal girls and women, *X*-ray appearances of the breasts were studied just before the onset of menstruation and some 14 days later. No structural changes associated with the menstrual cycle were demonstrable; the pre- and post-menstrual changes seen support the thesis of a pre-menstrual œdema in the stroma. Differences with age are discussed in detail. W. F. F.

Secretion of milk fat. I. Effect of inanition on the lipins of the lactating cow. J. A. B. SMITH. **II. Effect of inanition on yield and composition of milk fat.** J. A. B. SMITH and N. N. DASTUR (Biochem. J., 1938, **32**, 1856—1867, 1868—1876).—I. The lipins of the erythrocytes are only slightly affected by a 12-day fast, whilst plasma-lipins are reduced by 40—50% and persist for some weeks at these levels even after food is given. The actual composition is unaffected in either the plasma or the erythrocytes in starvation, although plasma-fatty acids are more unsaturated in cases of milk fever.

II. The fatty acids of milk up to and including C_{14} decrease by, whilst oleic acid increases by, about 80% following inanition. It is suggested that the lower fatty acids are normally by-products in the synthesis of oleic acid, which synthesis proceeds almost to completion when the total fat production is diminished, as during inanition. P. G. M.

Milk and fat production of dairy cows as influenced by thyroxine and anterior pituitary extracts. N. P. RALSTON and H. A. HERMAN (J. Dairy Sci., 1938, **21**, 120—121).—Monthly injections of 10—15 mg. of thyroxine have given a 10—20% increase in milk yield, the max. being 5—6 days after injection, which continues up to the 12th day, then returning to pre-injection level. Cows declining in lactation give the greatest increase. Fat % was much increased and there was a slight increase in solids-not-fat. Large doses of pituitary extracts are required to increase yield, smaller doses affecting cows more in early lactation. W. L. D.

Production of a gonadotropic substance (prolan) by placental cells in tissue culture. G. O. GEY, G. E. SEEGAR, and L. M. HELLMAN (Science, 1938, **88**, 306—307).—Continuous culture of human placental tissue was achieved, and the presence of prolan was demonstrated by positive findings in an Aschheim-Zondek test with rats. W. F. F.

Supply of iron to the fœtus. W. NEUWEILER (Schweiz. med. Wschr., 1938, **68**, 843—845).—The source of the fœtal Fe is the serum-Fe of the mother, which passes easily through the placenta. The Fe content of fœtal blood is higher than that of the mother. There is no stable relation between hæmoglobin concn., red cell count, and serum-Fe. Great variations of the serum-Fe were observed in different cases. A. S.

Placental interchange. II. Comparison of the total base concentration of the fœtal and maternal blood at parturition. H. E. THOMPSON, jun., and W. T. POMMERENKE (J. clin. Invest., 1938, **17**, 609—612).—In 30 parturient women and their respective newborn children, the mean maternal base per l. of plasma was 144±2·5 m.equiv., infant arterial plasma 147·5±3·5 m.equiv., infant venous plasma 146·8±3·2 m.equiv. The mean difference between maternal and infant arterial plasma was 2·2 m.equiv. Differences between the mean infant arterial and mean venous vals. are less than the experimental error. Correlation of vals. obtained with previous history, age parity, or sex of the infant was not apparent. In mothers the plasma total base concn. increased during the puerperium. C. J. C. B.

Catalase during the development of *Bufo vulgaris*. A. FRIGGERI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 478—480).—During the period from deposition of the egg to the initiation of blood circulation in the embryo, the catalase content tends slightly to decrease; after this period and up to the time of completion of absorption of the yolk, the content markedly increases. F. O. H.

Mineral metabolism during the development of the chicken. K. BIALASZEWICZ and H. GLOGOWSKA (Acta Biol. Exp., 1938, **12**, 50—56).—Fluid is secreted into the allantois of the chick until the 13th day of development. Reabsorption of fluid then takes place. During the secretion period Na salts predominate, and these are later partly reabsorbed; the Ca content does not change. Only slight variations in the K content occur up to the 18th day, when a sudden diminution of K and N takes place. A. S.

Effects of *X*-rays on the gonads of the developing chick. J. M. ESSENBERG and A. ZIKMUND (Radiology, 1938, **31**, 94—103).—*X*-Ray dosage of 80 r. or less is followed by rapid recovery; dosage of 600 r. is rarely followed by recovery. Marked resistance to irradiation was found in embryos prior to incubation and in chicks during the first 6 days after hatching. Ovaries are less resistant than testes. The gonads of chicks are more resistant to *X*-rays than those of mammals. W. F. F.

Distribution of evocator in the unfertilised egg. C. H. WADDINGTON (J. exp. Biol., 1938, **15**, 382—384).—Coagulated nuclei or cytoplasm from ovarian eggs of *Triton alpestris* or *T. taeniatus* were implanted into the blastocoel of newt gastrulæ. Inductions were obtained with both nuclei and the cytoplasm. It is suggested that the concn. of evocator is lower in the cytoplasm than in the nucleus. J. M. R.

Formation of the egg of the domestic fowl. R. M. CONRAD and H. M. SCOTT (Physiol. Rev., 1938, **18**, 481—494).

Chemical nature of the pellucid membrane of mammalian eggs. M. ALOISI and D. CAVALLINI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 477—478).—Colour reactions indicate the presence of a glycoprotein. No abnormality could be detected in the membrane of rats suffering from avitaminosis-*E*.
F. O. H.

Regulation of amphibian gastrulæ with added ectoderm. C. H. WADDINGTON (J. exp. Biol., 1938, **15**, 377—381).—Gastrulæ were cut in half along the frontal plane, and the greater part of a second gastrula, from which the dorsal and ventral regions had been removed, was inserted in the plane of the cut. Complete regulation occurred in many cases, leading to the production of abnormally large embryos. The extent of the invagination of mesoderm is determined by an interaction between the presumptive mesoderm and presumptive ectoderm.
J. M. R.

Protein synthesis and structure of genes. S. EDLBACHER (Schweiz. med. Wschr., 1938, **68**, 959—961).—A review. A. S.

Morphogenetic function of a vestigial organ in the chick. C. H. WADDINGTON (J. exp. Biol., 1938, **15**, 371—376).—The pronephros opposite any given somite in the chick is determined just before the early neural plate stage at that level, and thereafter develops independently of the somite or lateral plate mesoderm. The Wolffian duct, which is first formed by the union of the pronephric tubules, grows backwards by the multiplication of its cells. If this elongation is checked by a transverse cut made posterior to the end of the duct, the duct does not appear behind the cut. In the absence of the Wolffian duct, the mesonephros appears only as small patches of tissue with no lumen. The Wolffian duct thus induces the mesonephros, which, however, has a feeble power of self-differentiation. Hence an organ which is vestigial in the sense that it has lost its physiological function may be retained in ontogeny because it still fulfils the morphogenetic function of providing a stimulus essential for the development of other, physiologically more important structures.
J. M. R.

(k) DIGESTIVE SYSTEM.

Work involved in secretion. E. HOLZLÖHNER and F. SEELICH (Klin. Woch., 1938, **17**, 1169—1171).—A review. E. M. J.

Histolysis of the salivary gland of *Calliphora vomitoria*. L. PIROCCHI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 437—438). F. O. H.

Relationship of chloride content and p_H of saliva to type of strength of stimulation. E. J. BIEŃKA (Acta Biol. Exp., 1938, **12**, 93—95).—Two phases of salivary secretion following stimulation of the mucous membrane of the mouth in dogs with Pavlov salivary fistulæ were distinguished; (i) an initial ample flow of saliva succeeded by (ii) a phase of diminished secretion. Max. salivary secretion is produced by alkali, acids, and powdered substances which stimulate mechanically. Carbohydrates, protein, and milk (amongst food substances) produce the richest flow of saliva. Acid substances produce a more alkaline saliva and vice versa. The saliva of phase (i) is richer in Cl and is more acid than the saliva of phase (ii) but is independent of the kind of stimulation. A. S.

Occurrence of acetylcholine in gastric juice. E. BLOCH and H. NICHILES (Amer. J. Physiol., 1938, **122**, 631—638).—Human and canine gastric juice constantly contains small amounts of acetylcholine as shown by the usual biological tests. Human and canine gastric juice contains a second substance which lowers the blood pressure after atropine and contracts the isolated strip of intestine, and is identical with or closely related to Euler and Gaddum's substance *P*. A toxic substance which relaxes the isolated strip of intestine and renders it irresponsive to acetylcholine and histamine, and depresses or abolishes the response of the leech to acetylcholine, was also found in gastric juice. M. W. G.

Physiological and pathological relation of the stomach to other organs. G. HOLLER (Wien. med. Wschr., 1938, **88**, 769—772).—A review. A. S.

Basal gastric secretion in peptic ulcer. Relation of acidity to healing of ulcer. A. L. BLOOMFIELD and L. F. FRENCH (J. clin. Invest., 1938, **17**, 667—670).—The average basal acidity in 11 cases of duodenal ulcer was approx. twice as high as in 9 cases of gastric ulcer. There was no correlation between the degree of acidity and the rapidity of healing of either duodenal or gastric ulcer. C. J. C. B.

Vitamin-*C*–histidine treatment of gastric and duodenal ulcers. M. DEMOLE and P. GUYE (Schweiz. med. Wschr., 1938, **68**, 1028—1030).—13 cases suffering from gastro-duodenal ulcer did not respond to histidine. 10 patients were cured when -*C* was added to the histidine treatment (0·209 g. of histidine hydrochloride and 0·176 g. of *l*-ascorbic acid per 5 c.c.). A. S.

Physiology of gastric motility. II. K. GOETTE and K. GROSSER (Dtsch. Arch. klin. Med., 1938, **182**, 288—299).—Gastric motility was examined in healthy subjects, using the Ba meal and *X*-rays or balloon recording. The individual gastric pressure is const.; it varies in different subjects from 2·5 to 15 cm. H_2O. Peristalsis does not influence gastric pressure; small pressure variations up to 1 cm. H_2O were sometimes recorded preceding deep peristaltic waves. There are irregular pressure variations up to 2·5 cm. H_2O of 1—1½ min. duration which are independent of peristalsis or the rhythm of the discharge of the gastric contents into the duodenum. Normally, the stomach empties itself in consequence of the peristalsis and the opening of the pylorus, not as a consequence of pressure variations within the stomach. A. S.

Action of low barometric pressure and breathing of various gas mixtures on gastric secretion. F. KRAJEWSKI (Acta Biol. Exp., 1938, **12**, 66—69).—Secretion and acidity of gastric juice in fasting dogs (isolated small stomach; Heidenhain–Pavlov method)

after administration of vegetable juice and following subcutaneous injection of histamine are diminished at low barometric pressure (307 mm. Hg) equiv. to 7000 m. height; secretion is unchanged if pure O_2 is breathed and slightly increased if 10% of CO_2 is added. A. S.

Oxyntic cells in a gastric carcinoma. R. D. WRIGHT (J. Path. Bact., 1938, **47**, 352—353).—In the case described, certain of the tumour cells were deeply acidophil and possessed some of the features of the oxyntic cells of the stomach. C. J. C. B.

Development of peptic ulcers. G. SEI (Japan. J. Med. Sci., 1938, IX, **5**, 252—253).—Peptic ulcers develop after gastro-jejunostomy mainly if the exclusion of the pylorus is accompanied by disturbances of neutralisation of the gastric juice by regurgitation of alkaline fluid. J. P.

Action of various substances on secretion of gastric juice. M. GORO (Japan. J. Med. Sci., 1938, IX, **5**, 341—342).—Gastric secretion is diminished in dogs by oral administration of a 10% solution of mono- or poly-saccharides, but is stimulated by a 1—2% solution of polysaccharides. Oral administration of 150 c.c. of a 10% solution of casein, peptone, or proteose stimulates the secretion of HCl. J. P.

Liver function in dogs after gastric resection. A. INOUE (Japan. J. Med. Sci., 1938, IX, **5**, 344).—Liver function (fructose tolerance) is slightly depressed after a Billroth II operation, but not after a Billroth I or gastrectomy. J. P.

Mesenteric chyladenectasis with steatorrhoea and features of Addison's disease. L. E. GLYNN and M. L. ROSENHEIM (J. Path. Bact., 1938, **47**, 285—290).—A case of mesenteric chyladenectasis with polyserositis is described in which the outstanding features were steatorrhœa, wasting, anæmia, and pigmentation. Attention is drawn to the association of apparent lymphatic obstruction with steatorrhœa and to features suggestive of Addison's disease. (3 photomicrographs.) C. J. C. B.

Cœliac disease and its ultimate prognosis. S. V. HAAS (J. Pediat., 1938, **13**, 390—399).—Cœliac disease is due primarily to carbohydrate intolerance and can be cured by a milk-free and low-carbohydrate diet. The differentiation between true cœliac disease and other steatorrhœas can be made by the response to such a diet. The prognosis under proper treatment is excellent as to life and future health. C. J. C. B.

Pharmacology of eserine in relation to the external secretion of the pancreas. L. LUIGI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 484).—Intravenous injection of small doses (less than 0·1 mg. per kg.) of eserine into dogs increases pancreatic secretion; doses of approx. 0·1 mg. have little effect whilst large doses inhibit the secretion. The stimulatory action of eserine appears to be of both vagal and secretin-stimulatory origin. F. O. H.

Action of bile on the movements of the small intestine. T. KAIHO (Japan. J. Med. Sci., 1938, IX, **5**, 332—333).—Introduction of bile into the abdominal cavity produces at first anæmia and contraction of the intestines, then hyperæmia and atonia for 1—5 hr. Normal peristalsis returns after 7—24 hr. J. P.

Emptying of stomach and small intestine. M. HOSHIMURA (Japan. J. Med. Sci., 1938, IX, **5**, 342).—The action of *Sesamum indicum*, sesamé oil, spinach, raw burdock, sea-plants, agar, raw and cooked poppy-seed, fins of sharks, nests of swallows, walnuts, sunflower-seed, gelatin, animal C, tincture of jalap resin, dadogen, prostigmine "Roche," and peristaltin on the emptying of the stomach and the small intestine was investigated. J. P.

Intestinal secretion in dogs with fistulæ. I—III. S. KOGA (Japan. J. Med. Sci., 1938, IX, **5**, 353—355).—A complete fistula of the small intestine stimulates the secretion of gastric juice in dogs. This is prevented by chloralose-narcosis, the administration of physiological NaCl solution or liquid paraffin, but not by atropine. A duodenal fistula initially stimulates and subsequently diminishes the secretion of bile in rabbits. J. P.

Hepato-intestinal circulation and appearance of Jolly's bodies. F. HASHIGUCHI and N. YOSHIDA (Japan. J. Med. Sci., 1938, IX, **5**, 371—372).—Howel–Jolly bodies increase in dogs with bile fistulæ after extirpation of the spleen, but decrease after administration of bile or cholic acid. J. P.

Rate of absorption of solutions of peptones and amino-acids. G. GALLO and V. ALIERI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 188—190).—The rate of absorption of amino-acids (glutamic acid, alanine, asparagine) is unchanged or, in some cases, slightly decreased by admixture with peptone. That the rate of absorption of amino-acid or peptone from their mixtures is inversely proportional to its concn. in the mixture is confirmed. F. O. H.

Absorption of peptone from a Vella fistula in normal and depancreatised dogs. V. MARTINI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 198—199).—Absorption of peptone is diminished by approx. 20% after pancreatectomy. F. O. H.

Relationship between rate of secretion and constituents of the intestinal secretion. N. BEREND (Acta Biol. Exp., 1938, **12**, 117—118).—The secretion of isolated intestinal loops was examined in 3 dogs (Thiry–Vella preps.); the alkalinity and Cl content of the secretion decrease with increasing rate of secretion. A. S.

***In-vivo* observations of the ileo-cæcal sphincter.** G. G. PALMIERI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 416—419).—The appearance of the sphincter and its reaction to digital exploration in a woman, aged about 50 years, are described. F. O. H.

X-Ray kymography of the normal colon. R. A RENDICH and L. A. HARRINGTON (Amer. J. Roentgenol., 1938, **40**, 173—179). The act of defæcation was studied in 39 normal male subjects. The colon and rectum move downward when increase of intra-abdominal pressure occurs; there is elongation and narrowing of the rectum; the rectal and anal changes precede movement in the colon; when propulsion is advanced irregular segmental contraction of the lower bowel occurs. W. F. F.

(l) LIVER AND BILE.

Liver function tests in dogs with an Eck fistula. L. SARKADY and J. MARTIN (Klin. Woch., 1938, **17**, 1283—1286).—Liver function is depressed after the operation though no histological changes are present in the liver. The bilirubin test and Takata reaction showed the greatest deviations. The galactose or fructose tests and the combined test (using insulin, glucose, and water) were less sensitive. The serum complement is lowered. Sedimentation rate, fibrinogen content, and Widal reaction are normal. E. M. J.

Use of rose-Bengal as a liver function test. M. NAVILLE (Schweiz. med. Wschr., 1938, **68**, 674—676).—Rose-Bengal is injected intravenously (1·5 mg. per kg. body-wt.), and the amount of dye in plasma is determined colorimetrically after 45 min. The substance is quantitatively excreted in the bile and, in normal subjects, has disappeared from the blood after 45 min. A delayed excretion from the blood indicates a disturbance of liver function. A. S.

Effect of stimulation of the labyrinth on the electric potential changes of the liver. B. HASAMA (Z. Biol., 1938, **99**, 169—177).—Electric potential changes were recorded from the surface of the liver in rabbits. Stimulation of the vestibular apparatus (rotation or application of warm and cold water) causes a negative potential change accompanied by hyperglycæmia and hypocalcæmia. These effects disappear after labyrinthectomy, application of ergotamine, or division of the splanchnic nerves. B. K.

Insulin and the oxidation of ethyl alcohol by excised diabetic liver tissues. B. B. CLARK, R. W. MORRISSEY, and J. F. FAZEKAS (Science, 1938, **88**, 285—286).—Liver tissue was taken from pancreatectomised cats at the height of the consequent diabetes. In 17 observations on liver from 7 animals an average alcohol oxidation of 3·1% was found, whereas in 19 observations on liver from 8 normal animals an average of 23·5% of the alcohol was oxidised. Liver from diabetic animals maintained on insulin showed an oxidation of 36%. W. F. F.

Theory and practice of liver therapy. R. DUESBERG (Münch. med. Wschr., 1938, **85**, 1435—1438).—A review. A. S.

Hæmolytic jaundices. M. NETOUSEK (Presse méd., 1938, **46**, 675).—Subcutaneous injections into dogs of tolylenediamine in doses of 0·02—0·04 g. per kg. body-wt. per day produced within a week marked bilirubinæmia of the direct type owing to considerable destruction of liver parenchyma. There was no damage to mesenchymal elements. 0·01 g. per kg. produced similar liver damage but no bilirubinæmia. Previous work on phenylhydrazine poisoning is reviewed. G. SCH.

Nitrogenous constituents of the liver of *Gadus morrhua*. D. ACKERMANN and H. FUCHS (Z. Biol., 1938, **99**, 178—181).—Free amino-acids (lysine, arginine, histidine) were isolated from the liver of *G. morrhua*. Choline and betaine were also present. B. K.

Isolation of uracil from liver. D. W. WOOLLEY (Science, 1938, **88**, 239).—7 mg. of uracil was extracted from each 1 g. of liver. W. F. F.

Significance of glycogen in the nuclei of liver cells. B. WALTHARD (Schweiz. med. Wschr., 1938, **68**, 866—867).—Glucose enters the nuclei of liver cells in acidotic conditions and is transformed into glycogen. The function of this nuclear glycogen is unknown. A. S.

Cytochemical detection of lactoflavin in the liver and variations provoked by *cyclo*pentyldinitrophenol. M. CHÈVREMONT and S. COMHAIRE (Compt. rend. Soc. Biol., 1938, **128**, 1167—1169).—A cytochemical method for detecting free or the phosphoric ester of lactoflavin is described. Injection of *cyclo*pentyldinitrophenol is followed by an increase in lactoflavin in the liver. H. G. R.

Detoxicating hormone of liver (yakriton). LXIV. Mercuric nephritis in individuals with different liver power of detoxication. J. ASANO and M. HASEGAWA. **LXV. Effect of yakriton on mercuric nephritis.** J. ASANO (Tohoku J. exp. Med., 1935, **27**, 95—98, 99—108). LXIV. Rabbits of high NH_3-detoxicating power survived $HgCl_2$ poisoning longer than did those of low NH_3-detoxicating power.

LXV. Yakriton is effective in detoxicating kidney poisons. Hg nephritis is more severe than U nephritis. CH. ABS. (*p*)

Inorganic constituents of the liver during fasting. S. KOLODNY-LAZARD and A. MAYER (Ann. Physiol. Physicochim. biol., 1938, **14**, 265—270).—The water and ash contents of the liver of rabbits before and after fasting to certain wt. losses were determined. In 2-kg. animals with the same wt.-loss there is a larger loss of org. and inorg. material on starvation than in 3-kg. animals; starvation up to 25—33% loss of body-wt. leads to an increased loss of inorg. constituents over org. C. C. N. V.

Gas-containing gallstones. B. KOMMERELL and C. WOLPERS (Klin. Woch., 1938, **17**, 1124—1125).—"Hollow" gallstones do not contain fluid but gas, in one case O_2 0·5%, CO_2 6%, and inert gases. E. M. J.

Compensatory activity of the extra-hepatic bile ducts after operations and inflammations. G. BÜTZOW (Klin. Woch., 1938, **17**, 1151—1153).—In a case of external biliary fistula and absent gall bladder the bile was light yellow and contained 25 mg.-% of bilirubin. After drinking 300 c.c. of Mergentheim spring water the bile became more conc. (120 mg.-% bilirubin). E. M. J.

Tauro*apo*chenodeoxycholic acid from the bile of hens.—See A., 1938, II, 492.

(m) KIDNEY AND URINE.

Urea clearance test of renal function. P. VALLÉRY-RADOT, P. DELAFONTAINE, and J. F. PORGE (Presse méd., 1938, **46**, 698—699).—In 61 cases Ambard's const., Van Slyke's urea clearance test, the phenolsulphonephthalein test, and Volhard's concn. test were carried out. In 75%, including all normal cases,

the Ambard and Van Slyke tests gave corresponding results; in 25% the results were conflicting. In all but one of these an abnormal Ambard occurred with a normal Van Slyke and, mostly, normal other tests. G. Sch.

Action of cyanide and oxygen lack on glomerular function in the perfused frog's kidney. L. V. Beck, R. T. Kempton, and A. N. Richards (Amer. J. Physiol., 1938, **122**, 676—687).—Arteries which do not supply glomeruli as well as those which do are reached by arterial perfusion fluid. The true renal arteries and arterioles may be constricted by CN′ or asphyxia, whilst the extra-renal arterial vessels dilate; the net result may be restriction of glomerular perfusion with consequent decrease in glomerular capillary pressure and oliguria with little change in total arterial perfusion flow. Oliguria from CN′ or asphyxia can be regarded as due to lessened filtration. CN′ increases the permeability of the frog's glomerulus and exposure to dil. solutions of CN′ increases the permeability of tubule cells to water. M. W. G.

Sodium ferrocyanide as renal function test in experimental nephritis. G. Waga (Tohoku J. exp. Med., 1938, **33**, 496—511).—$Na_4Fe(CN)_6$ (0·1 g.) when injected intravenously into 120 normal rabbits was non-toxic. When used in 100 rabbits with experimental nephritis of various types as a test of kidney function (the rate of excretion being determined) it was a trustworthy indicator, but not superior to the usual tests. F. Ja.

Sulphur compounds. I. Thiosulphate test for renal activity. I. Yamada (Sei-i-Kwai Med. J., 1936, **55**, 67—91).—Rate of excretion of $Na_2S_2O_3$ following injection of 5 c.c. of 5% solution varies in different animals but is const. for the same animal. In nephritis the rate of excretion varies in parallel with the phenolsulphonephthalein test. Data for rabbits are given. Ch. Abs. (p)

Control of renal blood flow and glomerular filtration in normal man. H. Chasis, H. A. Ranges, W. Goldring, and H. W. Smith (J. clin. Invest., 1938, **17**, 683—697).—Observations were made on the effect of water diuresis, juniper oil, adrenaline, theophylline, caffeine, and $NaNO_2$, and typhoid vaccine pyrexia on the diodrast, phenol-red, and inulin clearances of normal man. The renal blood flow is controlled predominantly by the efferent glomerular arterioles, which are normally partially constricted. Since, with such efferent control, an increase or decrease in renal blood flow is accompanied by an inverse change in filtration pressure, the filtration fraction varies inversely as, and the filtration rate tends to be independent of, the renal blood flow. C. J. C. B.

Effects of unilateral nephrectomy on renal blood flow and oxygen consumption of unanæsthetised dogs. S. E. Levy and A. Blalock (Amer. J. Physiol., 1938, **122**, 609—613).—Renal blood flow was determined by temporary blockage of the vena cava above and below the entrance of the renal veins and passage of the renal blood through a cannula inserted down the external jugular vein. Removal of one kidney is followed by a slowly progressive increase in blood flow of the remaining kidney, most rapid in the first month and reaching approx. the combined flow of the two kidneys in 3 months. The renal arterio-venous difference in O_2 content is little affected by unilateral nephrectomy. O_2 consumption per g. kidney usually runs parallel with changes in renal blood flow. M. W. G.

Fluid exchange. XIX. Permeability of kidney epithelium to creatinine in normal and pathological toad kidneys. T. Shoji and K. Takeda. **XX. Filtration and re-absorption of trypan-blue in normal and pathological toad kidneys. XXI. Influence of ephedrine on urine secretion.** K. Takeda (Tohoku J. exp. Med., 1935, **26**, 592—602; **27**, 38—50, 51—65).—XIX. Intact kidney epithelium is impermeable to creatinine. Prolonged perfusion with Ringer's solution produces slight, and cantharides, $HgCl_2$, and U marked, increase in permeability.

XX. Cantharides poisoning damages the regulating mechanism of the glomeruli and $HgCl_2$ injures the re-absorption system of the epithelium.

XXI. When injected into the renal artery ephedrine (1 in 100,000) has an oliguretic effect. Injection of 1 in 10,000 solution into the renal portal vein is necessary to decrease the oliguria. Ch. Abs. (p)

Difference in the weight of the left and right kidneys. L. L. MacKay and E. M. MacKay (Growth, 1937, **1**, 309—311).—The wts. of the kidneys were compared in 930 albino rats. The right kidney is 3% heavier than the left in males and 3·9% heavier in females. W. F. F.

Pregnancy and renal complications. A. Powilewicz (Presse méd., 1938, **46**, 838).—Intravenous injection of 250 g. of serum containing 30% of glucose produces a rise of temp., chills, rise of blood-urea, and rise of Ambard's const. in patients with poor kidney reserve. G. Sch.

Lipoid nephrosis. F. D. Murphy, L. M. Warfield, J. Grill, and E. R. Annis (Arch. intern. Med., 1938, **62**, 355—376).—From a clinical and pathological study of 9 cases for long periods it is concluded that lipoid nephrosis is an entity distinct from all forms of chronic glomerulonephritis. C. A. K.

Renal excretion at low urine volumes and the mechanism of oliguria. L. C. Chesley (J. clin. Invest., 1938, **17**, 591—597).—In normal and pathological subjects it was found that when the urine vol. fell below a crit. limit of 0·35—0·5 c.c. per min., urea, creatinine, inorg. P, total N, total non-N solids, and total solids become maximally conc. Further reduction in urine vol. does not increase the concn. The plasma clearance of endogenous creatinine, and the excretion of the other substances studied, show a quant. linear dependence on the urine vol. in the minimal range. It is suggested that these urine vols. vary with glomerular filtration. This implies that a const. and perhaps max. proportion of the filtered water is reabsorbed by the tubules. C. J. C. B.

Vitamin-B_1 and diuresis. C. Fiorio (Klin. Woch., 1938, **17**, 1054—1056).—Vitamin-B_1 is a diuretic in cases in which Volhard's water test gives a pathological response (except in nephrosclerosis).

Urinary NaCl and urea are proportionately increased. Luminal may inhibit the diuresis in certain cases. E. M. J.

Development of the mucosa in the human [urinary] bladder. G. ANDREASSI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 432—433).—The intra-uterine development of the mucosa is described and the possible glandular function of the epithelial invaginations near the base of the bladder discussed. F. O. H.

Determination of glucosuria. C. A. SAGASTUME and H. GIOVAMBATTISTA (Rev. Fac. Cienc. Quím. La Plata, 1936, **11**, 7—10).—Hg salts employed to ppt. substances which interefere with determination of glucose by Fehling's solution can be eliminated by powdered Zn, the solution being brought to p_H 5—5·5 by adding 30% NaOH followed by 10% tartaric acid until methyl-red turns red. Zn is preferred to pptd. Cu as this oxidises readily. The solution should finally be tested for freedom from Hg. F. R. G.

Histidine excretion in urine. W. TSCHOPP and H. TSCHOPP (Biochem. Z., 1938, **298**, 206—226).—Histidinuria was investigated in 300 subjects by Kapeller-Adler's method (A., 1934, 1050). Histidinuria may occur in healthy subjects of both sexes but is particularly frequent in hepatic and allergic conditions. It occurs almost constantly in pregnancy for which, however, it does not afford a sp. test. The literature on histidinuria is reviewed. C. C. N. V.

Measurement of fluorescence by absolute colorimetry. II. Determination of porphyrin in urine: a method suitable for clinical purposes. A. THIEL (Biochem. Z., 1938, **298**, 436—445; cf. A., 1938, III, 161).—By means of the fluorescence photometer, especially adapted for the purpose, the porphyrin content of urine (not less than 2·55 μg. in 5 c.c. of 5% HCl) is determined (error approx. 2%) without the use of a standard solution for comparison. The intensity of fluorescence is not proportional to the porphyrin content and results are deduced from tabulated data. W. McC.

Quantitative tests for the main urinary pigments using the Pulfrich photometer. A. SATO (Klin. Woch., 1938, **17**, 1108—1111). E. M. J.

Urobilinuria and alcoholism. R. DE MONTMOLLIN (Schweiz. med. Wschr., 1938, **68**, 1165—1166).—Considerable urobilinuria was found in patients suffering from chronic alcoholism with mental disturbances. A. S.

Determination of mercury in urine. A. O. GETTLER and R. A. LEHMAN (Amer. J. clin. Path., Tech. Suppl., 1938, **8**, 161—164).—A modification of the Winkler method is described. C. J. C. B.

Determination of minute quantities of gold in urine. A. R. JAMIESON and R. S. WATSON (Analyst, 1938, **63**, 702—704).—When Pollard's method (A., 1937, I, 533) is applied to urine, filtration is difficult and incomplete, but is improved by adding 7% NaCl and boiling. The full procedure and an apparatus for removing Cl_2 and NOCl in a current of air are described. E. C. S.

Analysis of urinary calculi. T. J. DOMANSKI (Amer. J. clin. Path., Tech. Suppl., 1938, **8**, 157—161). C. J. C. B.

(n) OTHER ORGANS, TISSUES, AND BODY-FLUIDS. TUMOURS.

Problems of physiology. W. R. HESS (Schweiz. med. Wschr., 1938, **68**, 945—947). A. S.

Growth norms from birth to the age of five years: children reared with optimal pediatric and home care. J. G. PEATMAN and R. A. HIGGONS (Amer. J. Dis. Child., 1938, **55**, 1233—1247).—Height–wt. norms prepared from 1112 children between birth and 5 years old under optimal living conditions show divergence from the standard curves after the first 3 months. A. C. F.

Interpretation of certain infantile growth curves. C. B. DAVENPORT (Growth, 1937, **1**, 279—283).—A discussion. W. F. F.

Body proportion in the growing infant. H. THOMPSON (Growth, 1938, **2**, 1—12).—Growth, as measured by total wt. and by lengths of body-parts, was studied in 101 infants from 8 to 56 weeks of age. The Huxley relative growth law is not obeyed for head circumference, thorax circumference, and sole-pubes length relative to total length. W. F. F.

Heights and weights in a girls' public school. R. JACOB (Nature, 1938, **142**, 436—437).—The girls are taller and heavier than their predecessors. W. F. F.

Quantitative theory of organic growth. L. VON BERTALANFFY (Human Biol., 1938, **10**, 181—213).—A theoretical study of growth, supported by a detailed analysis of growth in *Lebistes reticulatus*. From the growth equations, numerical vals. of postulated metabolic consts. are calc. The significance of these is discussed in relation to protein metabolism in man. W. F. F.

Possible genetic mechanism in heterogenic growth of limbs of cattle. G. PONTECORVO (Nature, 1938, **142**, 437—438).—In 6 breeds of cattle the growth of fore limbs, as measured by height at withers, shows negative allometry relative to growth of the trunk, measured from shoulder to ischium. In the relative growth equation $y = bx^a$, vals. of α for the six breeds lie close together in the range 0·74—0·78. W. F. F.

Case of biological periodicity. A. M. WEINBERG (Growth, 1938, **2**, 81—92).—The possibility of periodic concn. changes in metabolising cells is shown for a hypothetical case involving two coupled reactions with two substances. W. F. F.

Adaptability of healthy and diseased man. P. H. ROSSIER (Schweiz. med. Wschr., 1938, **68**, 881—883).—A review. A. S.

Pieces of liver and lung restored to life under the skin of an axolotl. N. N. SINAKEVITSCH (Compt. rend. Acad. Sci. U.R.S.S., 1938, **19**, 557—560).—Liver and lung preps., 11 months after implantation under the skin of axolotls, show normal histological characteristics of the tissues. E. M. W.

Osmotic pressure of organs. VII. Intravenous injection of hypertonic solutions of various pharmaceutical substances. VIII. Variations in osmotic pressure of organs and blood at varying periods after intravenous injection of distilled water. I. SIMON (Arch. Farm. sperim., 1938, **66**, 41—49, 50—58; cf. A., 1938, III, 519).—VII. Previously published data are reviewed. Methyl and ethyl alcohol form a group of substances characterised by their marked lowering of the osmotic pressure of the brain. The remaining substances examined (NaCl, Na_2SO_4, glycerol, hexamethylenetetramine, urea, glucose, sucrose, uroselectan) show the greatest lowering of osmotic pressure in muscle, heart, and liver. In all cases, the effect on the osmotic pressure of the blood is small.

VIII. Injection of water (80 c.c. per kg.) into rabbits diminishes within 1 hr. the osmotic pressure of brain, heart, muscle, kidney, and liver, followed by an increase (at first rapid and then decreasing in rate) to vals. above normal (especially liver and muscle) at approx. 24 hr. after injection.

F. O. H.

Evidences of disturbed prenatal and neonatal growth in bones of infants aged one month. L. W. SONTAG (Amer. J. Dis. Child., 1938, **55**, 1248—1256).—Temporary thickening may be seen in *X*-ray pictures near the periphery or around the central nucleus of the tarsal bones one month after birth. The local cause is thought to be slowing of the osteoblastic invasion into the cartilage. The general cause dates from birth but its exact nature is unknown.

A. C. F.

Mechanical resistance of bone tissue at various places in the same bone. G. MAJ (Boll. Soc. ital. Biol. sperim., 1938, **13**, 413—415).—Data for the mechanical strength and porosity of various parts of the metacarpus and metatarsus of ox are tabulated and discussed. F. O. H.

Correlation of bone volume and soft tissue volume in the human finger tip. G. E. BURCH and W. A. SODEMAN (Human Biol., 1938, **10**, 295—298).—In a group of 37 normal males, the correlation coeff. of bone vol. (calc. from *X*-ray appearance) with bloodless soft-tissue vol. (calc. from a cast, with plethysmographic allowance for blood) is $-0{\cdot}869 \pm 0{\cdot}027$. W. F. F.

Dental caries. II. H. KLEIN, C. E. PALMER, and M. KRAMER (Growth, 1937, **1**, 385—394).—An account is given of the age distribution of eruption of the permanent teeth in 4416 school children. The normal probability function is employed to describe the variations found. W. F. F.

Phase angle of normal human skin. A. BARNETT (J. Physiol., 1938, **93**, 349—366).—A three-electrode technique measures the phase angle of the skin as between 64° and 78° at 15,300 cycles with a mean val. of 71·3° and a standard deviation of 2·85°. Impedance measurements over the frequency range 2000—41,800 cycles confirm the phase angle vals. found with this new phasemeter. The phase angle of the skin is shown by direct measurement to remain const. with frequency. J. A. C.

Histoculture of the skin of adult frogs. A. HADJIOLOFF (Compt. rend. Soc. Biol., 1938, **128**, 1100—1102).—Histoculture of various elements of frog's skin in several media is described. H. G. R.

Thermodynamic studies on epithelial currents. I. Influence of temperature on resting currents of frog skin and criticism of the membrane theory. II. The low reaction velocity and progress of the action current. III. Energy used by action current. K. MOTOKAWA (Japan J. Med. Sci., 1938, III, **5**, 95—110, 111—124, 175—196).—I. The resting potential of the frog's skin between 0° and 30° is given by $E = a + bT$, where E is the potential, T the abs. temp., and a and b are consts.

II. The measured latent period needs a correction shown by the formula $L = L_0 + Kt/V$ where L is the measured and L_0 the corr. latent period, t the half-life period, and V the max. potential of the action current. This corr. latent period shows the same dependence on temp. and the same temp. coeff. as the half-life period.

III. The max. potential of the action current of the frog skin is influenced in a characteristic way by temp. It shows a max. val. between 10° and 16°. The form of the action current is independent of temp. when the max. potential and the half-life period are reduced. The energy of the action current amounts to $1{\cdot}61 \times 10^{-8}$ g.-cal. per g. of skin for a single stimulation and is given by $\log_n (E + \epsilon) = a + b/T$, where E is the energy, T the abs. temp., and ϵ, a, and b are consts.

T. F. D.

Site of difference of potential in the frog's skin. K. MOTOKAWA (Japan. J. Med. Sci., 1938, III, **5**, 67—93).—The inner surface of frog's skin is more sensitive in an electro-motor sense than the outer surface towards hypotonic solutions. Li salts influence only the outer surface. The site of the difference of potential is the epidermal layer. T. F. D.

Relative thickness of mouse skins treated with sulphydryl or disulphoxide compounds and dibenzanthracene. S. P. REIMANN and N. CHATALBASH (Growth, 1937, **1**, 247—249).—Increase in skin thickness is mice in found after daily inunctions for 3 weeks with 0·5% thiocresol, 0·3% dibenzanthracene, and 0·5% cystine disulphoxide. W. F. F.

Amino-acid content of cow and chimpanzee hair. W. D. BLOCK and H. B. LEWIS (J. Biol. Chem., 1938, **125**, 561—570).—The hair of cows of the same breed and history contains 10·97—11·65% of cystine in animals of 3—4 months and 13·26—13·58% in animals of 61—87 months. Chimpanzee hair contains 15·5% of cystine (average of 3 adults).

E. M. W.

Wool wax. IV. Two new alcohols in wool wax. V. Isolation of cholesterol from wool wax. T. KUWATA and M. KATUNO (J. Soc. Chem. Ind. Japan, 1938, **41**, 227—228B, 228—229B; cf. A., 1937, II, 47).—IV. The unsaponifiable matter of wool wax. sol. in methyl alcohol and acetone at −10°, acetylated, distilled (210—225°/10 mm.), and saponified yields *lano-octadecyl alcohol*, $C_{18}H_{38}O$, m.p. 42—43° (*phenylurethane*, m.p. 79·5—80°). The unsaponifiable matter sol. in methyl alcohol, but insol. in acetone at

—10°, similarly treated, yields *lanyl alcohol*, $C_{21}H_{42}O_2$, m.p. 79·5—80° (*bisphenylurethane*, m.p. 97°).

V. The unsaponifiable matter of wool wax yields to hot methyl alcohol cholesterol (sol. hot, insol. cold), which is further purified by recrystallisation from ethyl acetate. J. D. R.

Relation between water and dry substance in the body of the rat, before and after birth. B. HAMILTON and M. M. DEWAR (Growth, 1938, **2**, 13—23).—The ratio between the relative growth rates of water and dry substance in the body of the rat is approx. const. from 14 days (fœtal age) to birth. The vals. for water and dry substance both conform to a time law of the form $y = ct^p$, from which Huxley's law $y = bx^k$ is derivable. From birth to the cessation of growth the Huxley relative growth law is satisfied, approx., between water and dry substance. W. F. F.

Osteomalacia of spine following abuse of laxatives. E. MEULENGRACHT (Lancet, 1938, **235**, 774—776).—Osteomalacia was seen in a man aged 71 who had taken Carlsbad salts daily for 35 years. The condition was attributed to deficient Ca absorption produced by the formation of insol. $CaSO_4$. C. A. K.

Seasonal variation of reduced glutathione of organ tissues of rabbits. F. MURATA (Sei-i-Kwai Med. J., 1936, **55**, 92—101).—Data for spleen, liver, adrenals, testicles, lungs, kidneys, heart, bone marrow, and muscle are given. In August vals. for all organs (notably spleen) decrease, with the exception of those for kidney, heart, and bone marrow. CH. ABS. (*p*)

Reaction of connective tissues to lipins and other foreign bodies. E. H. TOMPKINS (Amer. J. Syphilis, 1936, **20**, 22—36).—Effects of injection into guinea-pigs of P in olive, poppyseed, and mineral oils, cystine and methylene-blue in mineral oil, lecithin, agar, and N_2 are examined histologically. CH. ABS. (*p*)

Röntgenographic study of collagens. G. CHAMPETIER and E. FAURÉ-FREMIET (J. Chim. phys., 1938, **35**, 223–232).—Similar diagrams are given by collagen from the connective tissues of mammals and fish. The calc. fibre period is 9·77—9·88 A., of which the amino-acid residue occupies 3·25—3·3 A. Collagen pptd. from solution gives the same spacings as does the natural fibre. E. S. H.

Behaviour of lipins and cells of cultures towards lipin solvents. A. HADJIOLOFF (Compt. rend. Soc. Biol., 1938, **128**, 1098—1100).—The effect of immersion in various lipin solvents on the lipin and cells of tissues is described. H. G. R.

Component glycerides of an ox depot fat. T. P. HILDITCH and S. PAUL (Biochem. J., 1938, **32**, 1775—1784).—Separation into fractions with varying solubility in acetone indicates the following mol.-%: oleopalmitostearin 32, palmitodiolein 23, oleodipalmitin 15, stearodiolein 11, fully saturated glycerides 17 (cf. A., 1935, 233, 645). H. G. R.

Shell strength of hen eggs. R. G. BASKETT, W. H. DRYDEN, and R. W. HALE (J. Min. Agric. N. Ireland, 1937, **5**, 132—142).—Shell strength was influenced more by individual characteristics of hens than by differences in accepted methods of feeding and management, and had little effect on keeping quality. A. G. P.

Sulphur in eggs. H. W. MARLOW and H. H. KING (Poultry Sci., 1936, **15**, 377—380).—The S of yolks and whites of eggs is in a reduced org. form, very largely methionine and cystine. The properties of the S compounds in the two fractions of the white are similar. A. G. P.

Iron and copper content of the egg. Variation according to age of the fowl. E. LESNÉ, P. ZIZINE, and S. BRISKAS (Compt. rend. Soc. Biol., 1938, **128**, 935—936).—The Fe and Cu contents of the egg decrease with the age of the fowl. The amount of these metals in the yolk is greater than that in the white, which contains practically no Fe. H. G. R.

Iodine content of oyster shells. C. K. DEISCHER and W. M. MCNABB (J. Franklin. Inst., 1938, **226**, 527—531).—Granulated, undried shells from the Gulf of Mexico, analysed by a modification of the method of McHargue *et al.* (B., 1932, 617), contain 500 parts per billion of I, but no I′ sol. in water or alcohol. The dried shells contain 200—300 parts per billion. W. McC.

Content of methylglyoxal-like substance in urine of healthy mothers with positive and negative Arakawa's reaction. R. ORIMO (Tohoku J. exp. Med., 1938, **33**, 545—557).—The methylglyoxal-like substance in urine was much more frequently and in larger amounts identified in lactating mothers with milk negative to Arakawa's reaction than in Arakawa-positive mothers although clinically almost all mothers were "healthy." F. JA.

Relation between urea content in human milk and Arakawa's reaction. G. SUGIHARA (Tohoku J. exp. Med., 1938, **33**, 558—566).—Urea content of human milk shows great individual variations and is not related to the result of Arakawa's reaction. F. JA.

Urine-chloride of infants nursed with human milk of different Arakawa's reaction. M. ISHII (Tohoku J. exp. Med., 1938, **33**, 567—575).—There is an abnormal Cl′ retention in the body of babies fed with Arakawa-negative milk. F. JA.

Influence of vitamin-B_1 on Arakawa's reaction and inorganic sulphate content of human milk. K. YOSHINO (Tohoku J. exp. Med., 1938, **33**, 576—585).—The inorg. SO_4'' content of human milk decreased in most cases on administering vitamin-B_1, whereas Arakawa's reaction showed only a slow improvement. Human milk poor in inorg. SO_4'' (about 2—5 mg.-%) can generally be regarded as a "good milk." F. JA.

Diffusion of trimethylamine oxide from the udder. W. L. DAVIES (J. Dairy Res., 1938, **9**, 323—326).—0·25 g. of *tert.* N as trimethylamine oxide was injected into two opposite quarters of a cow's udder and its appearance in the urine was followed. During the 3rd and 4th hr. after injection large amounts of the oxide were excreted in the urine, max. concn. being given at the end of 3 hr. In a period of

8·3 hr., 76% of the oxide was recovered in the urine, while only 2% remained in the udder. W. L. D.

Composition of blood and milk of lactating cows during inanition, with a note on an unidentified constituent present in certain samples of abnormal milk. J. A. B. SMITH, G. R. HOWAT, and S. C. RAY (J. Dairy Res., 1938, **9**, 310—322).—Cows were starved for 12 days and yields and milk composition determined. Yield decreased to ⅓ in ten days, with a rapid drop in the first 3 days. Protein increased by 20% by the 9th day with little change in the N distribution. Fat rose rapidly with fall of yield, one val. of 9·4% being obtained, but the yield of fat fell to less than half in 12 days. Lactose decreased and Cl′ increased considerably. One cow suffering from milk fever during the fasting period gave milk showing greater fluctuations in composition than that from normal fasting cows. The sum of the separately-determined constituents fell short of the determined solids not fat by 0·3—2% of the milk, but the nature of the undetermined substance was not discovered. Inanition is accompanied by changes in blood composition which are related to the changes in milk composition. W. L. D.

Relation between curd tension and curd size. L. A. CHAMBERS and I. J. WOLMAN (J. Dairy Sci., 1938, **21**, 164).—The total curd surface presented for gastric digestion has been measured, and curd tension is found to be an index of the rate of gastric clearance since more surface area is exposed in soft curds. The dilution of milk is an exception, since, although curd tension is reduced, the curd gives the same surface area as the undiluted milk. W. L. D.

Milk of large cetaceans. B. A. ZENKOVITSCH (Compt. rend. Acad. Sci. U.R.S.S., 1938, **20**, 203—205).—Analysis of milk of various species of whales are recorded. In general the fat contents are high, especially in those species which migrate north with their young early in the season. A. G. P.

Insensible perspiration in children. IV. The influence of salt. G. J. GINANDES and A. TOPPER (Amer. J. Dis. Child., 1938, **55**, 1176—1184).—Administration of 0·23—0·65 g. of salt per kg. body-wt. to 9 children aged 6—10 years caused an immediate decrease of 15—31% in the insensible perspiration. Basal metabolism was unaltered, but no increase of body temp. was found. Compensatory heat loss by other channels presumably occurs. A. C. F.

Effect of supramaximum temperatures on the development of *Rana pipiens*. L. HOADLEY (Growth, 1938, **2**, 25—48).—When eggs of *R. pipiens* or *R. sylvatica* are raised to slightly supramax. temp., closure of the blastopore is delayed, with the result that a tail bud is formed at the dorsal margin of the open blastopore. The subsequent development in such cases is an atypical closure of the blastopore accompanied by extrusion of yolk material and resulting in a degree of microcephaly. Other associated developmental abnormalities are seen, including trunk modifications. A small percentage of larvae showing delayed closure recover and become essentially normal. Temp. affects morphogenetic and embryonic segregational processes differently. W. F. F.

Neural induction by means of inorganic implantation. Y. K. OKADA (Growth, 1938, **2**, 49—53).—The development of neural tissue or even of a neural plate is induced, in embryos of urodelan *Triturus pyrrhogaster*, through the implantation of mineral materials such as fuller's earth, SiO_2, and $CaCO_3$. W. F. F.

Localisation of ·SH and ·S·S· in *Obelia geniculata*. S. S. CHAPMAN (Growth, 1937, **1**, 299—307).—The nitroprusside test (modified Hopkins method) was used for free ·SH in animals in active growth. Free ·SH was found in all regions of active proliferative development, the material being conc. in the endoderm. W. F. F.

Developmental growth and nucleic acid components. VI. Adenine. F. S. HAMMETT. **VII. Hypoxanthine.** F. S. HAMMETT and T. STEELE. **VIII. Xanthine.** F. S. HAMMETT and M. R. PORTER (Growth, 1938, **2**, 55—61, 63—70, 71—80).—VI. In *Obelia geniculata*, organisation was enhanced, initiation retarded, and other developmental phases slightly affected by adenine sulphate in concns. of from $M/2 \times 10^5$ to M/6250.

VII. Growth was enhanced and differentiation retarded with concns. of hypoxanthine of from $M/2 \times 10^5$ to M/12,500.

VIII. Growth initiation and proliferation were enhanced and differentiation and organisation were retarded by concns. of xanthine of from $M/2 \times 10^5$ to M/12,500. W. F. F.

Nucleic acids.—See A., 1938, II, 509.

Function of branchial bodies in cephalopods. M. MITOLO (Arch. Sci. biol., Napoli., 1938, **24**, 33—58).—Death occurs within a day or two of removal of both branchial bodies. The life of such animals cannot be prolonged by injection of extracts of the bodies. Sea-water extracts increase the force and frequency of the contractions of arterial ventricle and venous hearts. They have no action on a frog's heart. R. S. CR.

Effects of light intensity and shade of background on melanin content of *Gambusia*. F. B. SUMNER and P. DOUDOROFF (Proc. Nat. Acad. Sci., 1938, **24**, 459—463; cf. A., 1937, III, 252).—The melanin content of the mosquito fish (*Gambusia affinis*) like that of the goby fish is approx. inversely proportional to the albedo of the tank in which the fish has been kept. The abs. intensity of the light has practically no effect on melanin content. (Albedo = ratio of reflected to direct light.) J. N. A.

Chemical nature of proliferation-promoting factors from injured cells. J. R. LOOFBOUROW, E. S. COOK, and M. M. STIMSON (Nature, 1938, **142**, 573—574).—The correlation of spectrographic and chemical data on "wound hormone" shows the presence of P, pentose, guanine, and adenine. The substance is possibly similar to co-enzyme or cozymase. W. F. F.

β-*l*-Aspartyl-*l*-histidine as a possible biological precursor of *l*-carnosine.—See A., 1938, II, 459.

Protamine salts of phosphatides. Problem of lipoproteins.—See A., 1938, II, 516.

Cancer theories and mixed tumours. M. BORST (Schweiz. med. Wschr., 1938, **68**, 811).—A review. A. S.

Transplantability of induced and spontaneous tumours occurring in mice of pure inbred strains. M. R. LEWIS and E. G. LICHTENSTEIN (Growth, 1937, **1**, 375—383).—Dibenzanthracene-induced tumours in mice of pure breed are 100% transplantable into mice of the same strain. No immunity in the same strain could be induced, even after mice had remained resistant to grafts of tumours from another strain. The spontaneous mammary gland tumours were strain-sp. W. F. F.

Susceptibility of mice to spontaneous, induced, and transplantable tumours. H. B. ANDERVONT (Publ. Health Rep., Washington, 1938, **53**, 1647—1665).—8 strains of highly inbred mice in which the incidence of spontaneous mammary cancer in breeding females varied from less than 5% to 100% were tested for susceptibility to the induction of pulmonary and subcutaneous tumours by injection of methylcholanthrene and 1 : 2 : 5 : 6-dibenzanthracene. Those strains which developed pulmonary tumours spontaneously were most susceptible to induced lung tumours. There was no correlation between incidence of spontaneous mammary tumours and susceptibility to induced subcutaneous tumours or to the growth of transplantable tumours (S37 and 180) in different strains. No strain was resistant to all types of tumour. E. B.

Incidence of induced subcutaneous and pulmonary tumours and spontaneous mammary tumours in hybrid mice. H. B. ANDERVONT (Publ. Health Rep., Washington, 1938, **53**, 1665—1671; cf. preceding abstract).—Mice of a pure line (C_3H), which are very susceptible to the induction of subcutaneous tumours, were mated with mice of two resistant strains, *I* and *Y*. The hybrid offspring were injected with 1 : 2 : 5 : 6-dibenzanthracene and were found to be of intermediate susceptibility. The C_3H–*I* hybrids were more susceptible to lung tumours than the C_3H–*Y* hybrids. The females derived from C_3H females and *I* males developed spontaneous mammary cancer while those from *I* females and C_3H males did not. E. B.

Changes in the lymph glands of tumour-bearing mice. D. PARSONS (Nature, 1938, **142**, 480).—Widespread neoplastic changes in the lymphoid tissue were found affecting the glands of axillæ, groin, lumbar and mesenteric regions. Portions of glands grafted from mice affected with the tumour (*Mal. Fil.* 6) induce tumours at the site of inoculation. W. F. F.

Unusual occurrence of a high incidence of spontaneous mammary tumours in the Albany strain of rats. W. R. BRYAN, G. H. KLINCK, and J. M. WOLFE (Amer. J. Cancer, 1938, **33**, 370—388).—After 6 years of normal sexual and reproductive behaviour, a colony of rats showed a decrease in fertility, a large increase in the occurrence of mammary tumours (50·9%), mainly benign, and abnormal sexual cycles in the females. E. B.

Anterior pituitary gland in tumour-bearing rats. J. HEIMAN (Amer. J. Cancer, 1938, **33**, 423—442).—In the pituitaries of male and female rats bearing spontaneous, induced, or transplanted tumours, there is a decrease of acidophil, an increase in the small chromophobe cells, and an increase in large degranulated cells. Male and female rats fed with 2-amino-5-azotoluene and rats with induced subcutaneous benzpyrene tumours showed an increase in chromophobes, very few basophils, and an increase in degranulated cells. Tumour-bearing females did not produce litters after the appearance of tumours. Rats immune to tumour growth showed a normal differential cell count. E. B.

Neoplasm. IV. Clasmatosis in the melanoblast. C. G. GRAND (Amer. J. Cancer, 1938, **33**, 394—400).—In tissue cultures of the Harding and Passey mouse melanoma macrophages, fibrocytes, and melanoblasts migrate away from the parent fragment of tumour. The melanoblasts eliminate melanin by the pinching off of clumps of granules from the dendrites; the fragments are ingested by the macrophages. E. B.

Effect of "anti-cancer preparations" on malignant tissues grown *in vitro* and *in vivo*. A. GOLDFEDER (Amer. J. Cancer, 1938, **33**, 560—567).—Experiments with so-called "anti-cancer agents" Ensol, Schmidt vaccine, and Jacob's hormone extract showed that these preps. do not inhibit the growth of tumour cells in tissue culture or the sarcoma 180 in mice. E. B.

Specific immunisation against malignant experimental tumours. L. GROSS (Presse méd., 1938, **46**, 776—777).—Experiments were made with sarcoma in mice, epithelioma in rabbits, and Rous sarcoma in chickens. The tumours were injected intracutaneously. Some animals in each series died, in some tumours developed which were subsequently resorbed, and in a third group no tumour developed. A second injection of a large dose of the same tumour by the most fatal route known for each species killed the animals that had not responded at all to the first injection but never affected those that had resorbed their intracutaneous tumours. G. SCH.

Effect of heavy colloidal metals on growth of transplanted tumours and their radiosensitivity. IV. Effect of colloidal bismuth and lead on radiosensitivity. V. Effect on rabbit sarcoma and rabbit principal organs. T. KIKUCHI (Japan. J. Obstet. Gynecol., 1936, **19**, 35—50).—The increased radiosensitivity of implanted Kato rabbit sarcoma after injection of Pb or Bi results from the direct action of the metals on the tumour cells and the generation of secondary rays. CH. ABS. (*p*)

Chemotherapy of cancer. II. Effect of aldehydes and glucosides. E. BOYLAND and E. H. MAWSON (Biochem. J., 1938, **32**, 1982—1987).—Citral and heptaldehyde, given orally, inhibited the growth of spontaneous tumours in mice. Heptaldehyde had no effect on grafted tumours. Tumour growth was retarded by oral administration of citral, phloroglucinaldehyde, and 3 : 4-dimethoxybenzalde-

hyde. This action may be due to peroxide formation. T. F. D.

Isotopic constitution of potassium in normal and tumour tissue. A. LASNITZKI and A. K. BREWER (Nature, 1938, **142**, 538—539).—The concn. of the $^{41}_{19}K$ in ashed bone (including marrow) was about 1·7% above that in ordinary KCl. In other tissues it was about normal, but in Jensen rat sarcoma it was 1—1·3% low. W. F. F.

Production of experimental cancer of the lung in mice. M. G. SEELIG and E. L. BENIGNUS (Amer. J. Cancer, 1938, **33**, 549—554).—Carcinogenic tars were introduced into the lungs of mice by substituting a layer of soot for the usual sawdust bedding. The lungs became quickly coated with black particles, and the mortality was low compared with other methods of application to the lungs. E. B.

Development of an epithelioma in man after working with benzpyrene. E. KLAR (Klin. Woch., 1938, **17**, 1279—1280).—Experiments were made for 3 months on mice in which a solution of benzpyrene was painted on the skin by means of a long-handled paint-brush; a powder was also used which did not, however, leave a glass tube. A subcutaneous nodule was then noted on the dorsal surface of the experimenter's left forearm. This was excised a year later and proved on section to be a benign calcifying epithelioma. The author is unaware of any possible auto-inoculation. E. M. J.

Cytological changes in the skin of mice during the application of carcinogenic agents. R. C. PAGE (Arch. Path, 1938, **26**, 800—813).—Cholanthrene or methylcholanthrene in 0·3% solution in benzene applied thrice weekly to the back of mice caused an immediate increase in the size of the cell, nucleus, and nucleolus (most marked in the nucleolus). Squamous carcinoma appeared in 18 and 7 weeks respectively with the 2 compounds. (6 photomicrographs.) C. J. C. B.

Experimental production of tumours in the brains of white rats. A. WEIL (Arch. Path., 1938, **26**, 777—790).—Injections of lard solutions of 1 : 2 : 5 : 6-dibenzanthracene and of methylcholanthrene caused typical granulomas, which were also produced by injections of lard alone. One carcinoma was also produced by the dibenzanthracene–lard mixture. Crystals of cholesterol or of dibenzanthracene–cholesterol produced no malignant reaction, while injections of solutions of styryl 430 produced, after 4 months, neoplastic transformation of the different tissues which had come in contact with the dye. (12 photomicrographs.) C. J. C. B.

Experimental tar tumours in dogs. R. D. PASSEY (J. Path. Bact., 1938, **47**, 349—351).—Applications of tar once weekly to 9 dogs for a period of 7 years resulted in the appearance of skin tumours in 3, none of which appeared before the end of the 6th year. One tumour was undoubtedly and another probably a malignant melanoma; the 3rd, which was deeply pigmented, awaits microscopic confirmation. C. J. C. B.

Carcinogenesis. V. Methyl derivatives of 1 : 2-benzanthracene. M. J. SHEAR (Amer. J. Cancer, 1938, **33**, 499—537).—Subcutaneous injection with one or more doses of 10 out of 21 polycyclic compounds produced tumours in pure strain mice. 5 : 10-Dimethyl- and 10-methyl-1 : 2-benzanthracene were about as active as cholanthrene and methylcholanthrene. Skin painting with 10-methyl-1 : 2-benzanthracene produced tumours more slowly than injection. 5 : 9-Dimethyl-1 : 2-benzanthracene was also as active as cholanthrene; 9-methyl-1 : 2 benzanthracene was active but had a longer latent period. 4 : 10-Ace-1 : 2-benzanthracene and its 1′ : 2′ : 3′ : 4′-tetrahydro-derivative were carcinogenic. 20-Ethylcholanthrene produced a high % of tumours but acted more slowly than cholanthrene. E. B.

Carcinogenic activity, structure, and chemical reactivity of polynuclear aromatic hydrocarbons. L. F. FIESER (Amer. J. Cancer, 1938, **34**, 37—124).—A crit. review and attempt to evaluate the relative carcinogenic action of different compounds. A comprehensive list of carcinogenic hydrocarbons is given. E. B.

Experimental production of sarcoma with radium and mesothorium. E. UEHLINGER and O. SCHÜRCH (Schweiz. med. Wschr., 1938, **68**, 860—861).—Ra or Ms-Th (0·0001—0·005 mg. in 0·2 g. of vaseline) was introduced into various bone marrow cavities, spleen, liver, stomach wall, and testis of rabbits. Sarcoma appeared 18 months later. The action of Ra is due to the combined effect of α-, β-, and γ-rays. The Ms-Th tumours produced by β- and γ-rays were not different from the Ra sarcoma. Carcinomata were not produced. The change from benign connective tissue proliferation into tumours occurs suddenly. A. S.

Polarographic sero-reaction for cancer. R. BRDIČKA (Nature, 1938, **142**, 617—618).—The polarographic changes in the serum in cancer are due to proteolytic degradation of serum-proteins leading to the splitting of cystine-containing products of high mol. wt. W. F. F.

Polarographic serum determinations in relation to Brdička's carcinoma reaction. C. TROPP (Klin. Woch., 1938, **17**, 1141—1148).—The reliability of the test (which is not yet sp.) is increased by elimination of the "protein error." The evaluation in easily made by co-ordinating % protein and polarographic protein degree in mm. The polarographic degree is not directly proportional to total protein-S. Of 59 carcinoma cases 90% showed a positive reaction with this modified technique. Advanced open tuberculoses and late pregnancy give a positive reaction, as do all diseases with a sedimentation rate of over 25 mm. E. M. J.

Polypeptides and the serological reaction for cancer. I. GRUNDLAND and H. BULLIARD (Compt. rend. Soc. Biol., 1938, **128**, 999—1002).—Flocculation in Aron's reaction (A., 1938, III, 126) is partly due to the presence of polypetides and not to a sp. principle. H. G. R.

Serochemical carcinoma reaction of Fuchs. T. YASUMASU (Japan. J. Med. Sci. 1938, IX, **5**, 259—260).—The non-protein-N of the serum of cancer patients is increased when incubated with normal

serum. 140 early cases of carcinoma were recognised by this method. J. P.

(o) NUTRITION AND VITAMINS.

Report by the Technical Commission on Nutrition on the work of its 3rd session (Nov., 1937). (Bull. Health Org., League of Nations, 1938, **7**, 460—502).

Essential substances in the diet. K. FELIX (Münch. med. Wschr., 1938, **85**, 1440—1442).—A review. A. S.

Effects of inanition on temperature regulation. G. CLARK (Amer. J. Physiol., 1938, **122**, 646—649).—Normal well-nourished cats when placed on an inadequate diet after a preliminary fasting period react normally to cold until the wt. loss considerably exceeds 30%; the rectal temp. then drops to extremely low levels. The responses to heat are not interfered with by wt. losses which cause abnormal responses to cold. M. W. G.

Peking diets. R. A. GUY and K. S. YEH (Chinese Med. J., 1938, **54**, 201—222).—Diets are of 2 distinct types: a whole-cereal–soya-bean diet which is excellent but liable to distortion by a paucity of fresh leafy vegetables, resulting in vitamin-*A* and -*C* deficiency; and a milled-cereal–pork diet which may easily be deficient, either through scarcity of pork and consequent shortage of good protein and -B_1, or again through lack of fresh leafy vegetables, or by a combination of both of these. W. J. G.

Nutritive value of carcases of sheep and goats. V. VILLEGAS, L. A. YNALVES, and A. M. GATAN (Philippine Agric., 1938, **27**, 52—58).—Analyses of edible parts of carcases are recorded, and food vals. are compared. A. G. P.

Nutritional factors in lactation. S. J. FOLLEY, E. W. IKIN, S. K. KON, and H. M. S. WATSON (Biochem. J., 1938, **32**, 1988—1999).—Rats can lactate normally on simplified diets (cf. Nakahara and Inukai, A., 1934, 930). Addition of liver extract or yeast to the diet did not affect lactation. A diet containing fish protein instead of casein produced satisfactory lactation. Stock rats failing to rear their first litters were found more likely to lose their second litters than rats which successfully raised their first litters. Subcutaneous implants of pig anterior pituitary gland, after the second parturition, had no effect on lactation. T. F. D.

Addition of vegetable soup and strained vegetables to diet of artificially fed infants. M. W. POOLE, B. M. HAMIL, T. B. COOLEY, and I. G. MACY (Amer. J. Dis. Child., 1938, **55**, 1158—1175).—No intestinal disturbance followed addition of vegetable soup to the diet in 215 infants aged 2—8 weeks. Since the basal diet was already adequate, no significant nutritional improvement was noted. Early addition of vegetable soup to the diet of a small no. of premature infants failed to prevent the development of nutritional anæmia. A. C. F.

Influence of various fodder supplements on production and nutritive value of winter milk. S. BARTLETT, A. G. COTTON, K. M. HENRY, and S. K. KON (J. Dairy Res., 1938, **9**, 273—309).—No significant differences were found in yield and fat and solids-not-fat contents of milk by feeding mangolds, artificially dried grass, sprouted maize, and kale as supplements in the winter rations of dairy cows. The colour and vitamin-*A* content of milk were increased by grass and kale only while none of the foods had any effect on the -*B* complex. The -B_2 complex was lowest with the maize and was variable with all foods. -*C* was also variable but highest with maize feeding. Compared by a variety of methods on rats, milks produced from all foods were of equal feeding val. and the methods used did not disclose the presence in milk of a new essential factor. W. L. D.

Urea as protein substitute in diet of young cattle. S. BARTLETT and A. G. COTTON (J. Dairy Res. 1938, **9**, 263—272).—21 heifers, aged 7—17 months and fed 0·127 lb. of urea daily for 142 days as a supplement to a ration low in protein, gave an extra daily live-wt. gain of 0·24 lb. Heifers on an extra equiv. of N as protein gave 0·40 lb. extra daily increase. It was concluded that young animals utilised urea-N in their metabolism but not with the same efficiency as protein-N. W. L. D.

Developmental growth and *l*-proline. F. S. HAMMETT and W. D. COLLINGS (Growth, 1938, **1**, 285—290).—The marine hydroid *Obelia geniculata* was used as a test animal. In the range of concns. affecting growth, differentiation is affected, proliferation retarded, and organisation unaffected by *l*-proline. W. F. F.

***l*-Hydroxyproline in developmental growth.** F. S. HAMMETT (Growth, 1937, **1**, 291—298).—In *Obelia geniculata* this compound accelerates proliferation and differentiation expression; both initiation and organisation tend to be retarded. W. F. F.

Effect of wine on urinary excretion. S. BELLUC, J. CHAUSSIN, H. LAUGIER, and T. RANSON (Compt. rend., 1938, **207**, 253—254).—Ingestion of 500 g. of a red wine (alcohol 12·5%) results in an increase in the excretion of NH_3 and uric acid and a marked diminution in that of urea. When water is substituted for wine, urea elimination is markedly increased. Ingestion of wine decreases the urinary p_H and causes diuresis. J. L. D.

Relationship of salt starvation to contagious necrosis and lameness in camels. E. F. PECK (Vet. Rec., 1938, **50**, 409—410).—Camels require 4—5 oz. of NaCl daily. The usual ration of 1—2 oz. per day produces a condition of salt-starvation, with which are associated contagious necrosis and lameness. M. A. B.

Effect of cobalt on pine disease in sheep. H. H. CORNER and A. M. SMITH (Biochem. J., 1938, **32**, 1800—1805).—Pine disease is a nutritional anæmia curable by $CoCl_2$. Fe, Cu, or Mn has no effect. H. G. R.

Cardiovascular and other lesions in calves fed diets low in magnesium. L. A. MOORE, E. T. HALLMAN, and L. B. SHOLL (Arch. Path., 1938, **26**, 820—838).—Calves fed low-Mg diets, so that their blood-Mg was reduced to a low level, showed a deposition of Ca salts in the yellow elastic fibres of the

endocardium, aorta, jugular vein and larger arteries, surface of the diaphragm and trabeculae, and capsule of the spleen. Degeneration and calcification of Purkinje fibres and various degrees of hepatitis and nephritis were also present. (19 photomicrographs.) C. J. C. B.

Mineral requirements of hens. H. EDIN and A. ANDERSSON (Medd. Centralanst. Försöksväs. Jordbruks. Husdjursavdel., 1936, **91**; Chem. Zentr., 1937, i, 458).—Addition of 2% of oyster shell or limestone grit to poultry food did not affect egg wt. or production, ash content of the shell, body-wt., or sp. food requirements. A. H. C.

Effect of supplementary iodine on egg size and quality. E. A. JOHNSON (Poultry Sci., 1936, **15**, 355—361).—Feeding KI (0·5—4·0 mg. daily) did not increase egg size, % of thick white, yolk index, wt. or colour of eggs, or shell thickness. A. G. P.

Effect of ingestion of iron and copper on the quantity of these metals in the hen's egg. E. LESNÉ, P. ZIZINE, and S. BRISKAS (Compt. rend. Soc. Biol., 1938, **128**, 937—939).—Ingestion of Fe decreases the Cu but does not affect the Fe content of the yolk, whereas ingestion of Cu decreases the Fe and increases the Cu. Simultaneous ingestion of Fe and Cu increases Fe but does not affect Cu. Cu in egg-white is not affected by ingestion of these metals. H. G. R.

Primary and secondary avitaminoses. F. VERZÁR (Schweiz. med. Wschr., 1938, **68**, 975—976).—A review. A. S.

Vitamin deficiency diseases. E. RISAK (Wien. klin. Wschr., 1938, **51**, 1054—1057).—A review. A. S.

Nature of vitamin-*A* in cod-liver oil. A. O. TISCHER (J. Biol. Chem., 1938, **125**, 475—477).—From a vitamin-*A* concentrate, obtained by mol. distillation of a Norwegian cod-liver oil, a vitamin-*A* ester has been isolated as its maleic anhydride adduct, m.p. 219—220° (cf. Hamans, A., 1935, 543), and identified as the palmitate. It is present to an extent of approx. 3% of the total esters. W. O. K.

Transformation of carotene into vitamin-*A* in pathological conditions. Therapeutic effects. R. H. MONCEAUX (J. Pharm. Chim., 1938, [viii], **28**, 297—302).—Earlier findings regarding the transformation of carotene into vitamin-*A* are reviewed. In many pathological conditions (*e.g.*, tuberculosis, cancer) there is a deficiency of the oxidising power of the serum. It is therefore more rational to utilise -*A* in preference to carotene for therapeutic purposes. P. G. M.

Vitamin-*A* in the serum in hepatic disease. F. LASCH (Klin. Woch., 1938, **17**, 1107—1108).—Vitamin-*A* concn. in serum is lowered in parenchymatous hepatic disease (cirrhosis, icterus, catarrhalis). E. M. J.

Action of vitamin-*A* and -B_1 on the growth of Jensen sarcoma. A. ZELLER (Verh. Schweiz. Physiol., 1938, **13**, 34—35).—Large doses of vitamin-*A* or -B_1 inhibit the growth of Jensen sarcoma in rats. A. S.

Treatment of gastric ulcers with vitamin-*A*. K. H. SPIZY (Wien. klin. Wschr., 1938, **51**, 753—757).—25 cases of gastric and 11 cases of duodenal ulcer were treated, in addition to diet and various drugs, with intramuscular injections of a vitamin-*A* prep. The duodenal ulcers did not respond. 15 patients with gastric ulcers were clinically and rœntgenologically cured; 7 improved and 3 did not respond. A. S.

Effect of avitaminosis-*A* on the blood picture of albino rats. O. D. ABBOTT and C. F. AHMANN (Amer. J. Physiol., 1938, **122**, 589—595).—Vitamin-*A*-deficient rats show constantly a low polymorphonuclear count, an increase in juvenile cells, and an increase of large lymphocytes over the small. M. W. G.

Antigen formation to vitamin-*A*. J. P. KLAPERZAK (Schweiz. med. Wschr., 1938, **68**, 1088).—No antibodies were formed as a result of repeated injection of β-carotene in rabbits. A. S.

Vitamin-*A* content of the grain of canary grass (*Phalaris canariensis*). Z. GŁÓWCZYŃSKI (Bull. Acad. Polonaise, 1938, **B**, 115—128).—30—60% of the grain in the diet of chicks prevents vitamin-*A*-deficiency. E. M. W.

Quantitative separation of carotenoids and vitamin-*A*. E. MARCUSSEN (Dansk Tidsskr. Farm., 1938, **12**, 217—225).—α- and β- Carotenes are separated chromatographically on a $Ca(OH)_2$ column from $CHCl_3$ solution, vitamin-*A* being adsorbed (if necessary) on Al_2O_3 placed below. -*A* and carotenoids are separated by an activated C column, using a solution in $CHCl_3$ + neutral oil and $CHCl_3$ as eluent. Conversion from Carr–Price blue units into international units is very unreliable when dealing with natural oils. M. H. M. A.

Spectrographic studies on the antimony trichloride reaction for vitamin-*A*. III. Relation of the spectral absorption of the blue solutions of oils to that of their concentrates. O. NOTEVARP and H. W. WEEDON (Biochem. J., 1938, **32**, 1668—1674; cf. A., 1938, III, 674).—Owing to inhibitory substances in the oil, there is no const. relation between the blue vals. measured optically or spectrographically of oils and their concentrates when the ordinary $SbCl_3$ reagent is used. With the Br reagent, the relation between both absorption and blue vals. is const., the blue vals. of the concentrate being higher than those of the oil. Prep. of the concentrate causes a loss in $E_{603/618\ m\mu}$ of about 10%, with a shifting of the band towards 618 mμ. A. L.

Rôle of thiamin in organic evolution. (A) H. P. KORSTCHAK. (B) R. R. WILLIAMS (Science, 1938, **88**, 282). W. F. F.

Polyneuritis during pregnancy and vitamin-B_1. A. HILDEBRANDT and H. OTTO (Münch. med. Wschr., 1938, **85**, 1619—1622).—A woman developed a severe polyneuritis with paraplegia and sensory disturbances in the early stages of a second pregnancy. The condition improved on large doses of vitamin-B_1 (1782 mg. during 5 months) and -*C*; the woman was cured after delivery of a healthy child. -B_1 was not, and -*C* was, excreted in the urine in small amounts. A. S.

B-vitamins and fat metabolism. I. Effects of thiamin, riboflavin, and rice-polish concentrate on body-fat. E. W. McHenry and G. Gavin (J. Biol. Chem., 1938, **125**, 653—660; cf. A., 1937, III, 364).—Young white rats fed on a basal diet and receiving daily supplements of thiamin, riboflavin, and a concentrate of rice polishings show the largest wt. increase when all three are administered (cf. Supplee *et al.*, A., 1937, III, 281, 404). Thiamin increases the total body-fat when the basal diet is almost fat-free. Riboflavin alone slightly decreases it whereas thiamin + riboflavin, thiamin + choline, or the three together do not increase it. Concentrates of rice polishings increase body-fat but it is uncertain whether vitamin-B_6 (cf. Supplee, *loc. cit.*) is partly responsible for the increase; the effect is augmented by thiamin. The increase in body-fat is out of proportion to the food intake or body-wt. J. L. D.

Vitamins and senility. W. Kollath and L. Giesecke (Arch. exp. Path. Pharm., 1938, **189**, 514—529; cf. *ibid.*, 1932, **168**, 437).—Rats fed on a diet deficient in vitamins and minerals die within 4 weeks. If 12 μg. of cryst. -B_1 and K_2HPO_4 are added, the animals survive for over 2 years without any signs of avitaminosis, but they do not attain adult size and develop many symptoms of premature old age, *e.g.*, emphysema, contracted kidney, cataract, œdema. H. Bl.

Vitamin-B_1, senility, and teeth. H. Euler and W. Kollath (Arch. exp. Path. Pharm., 1938, **189**, 530—538).—Rats fed with the diet described in the preceding abstract show disturbances of enamel formation and of vascularisation of the pulp, and later a tendency to paraplastic bone formation in the pulp or development of caries. H. Bl.

Passage of vitamin-B_1 into the cerebrospinal fluid (C.S.F.). M. Kasahara, T. Kakusui, and S. S. Nan (Klin. Woch., 1938, **17**, 1259).—Vitamin-B_1 appears in the C.S.F. of rabbits with meningitis (but not in normal rabbits) after intravenous injection as shown by the curative effect of this C.S.F. in pigeons' beri-beri. E. M. J.

Vitamin-B_1 and -B_2 contents of foods, particularly fish and fish products. G. Lunde, H. Kringstad, and A. Olsen (Norske Vidensk. Akad. Oslo, 1938, No. 7, 51 pp.).—The vitamin-B_1 and -B_2 contents of muscle, roe, milt, and liver of a series of fish have been determined and compared with those of various foodstuffs. With cryst. -B_1, both the bradycardia and thiochrome methods show that 1 international unit is equiv. to 3 μg. of aneurin hydrochloride. Methods for determining -B_2 by rat growth and by physico-chemical means are described. In the latter method, -B_2 is conc. by extraction and adsorption, interfering coloured substances are destroyed by oxidation, and finally the absorption spectrum is measured by means of a step-photometer. Fish roe, except that of herring, is rich in -B_1, whilst roe and liver are rich in -B_2. T. F. D.

Biological determination of vitamin-B_1 using (A) adult pigeons, (B) young rats, and determination of the comparative value of the international standard and of synthetic vitamin-B_1 hydrochloride. L. Randoin and P. Le Gallic (Compt. rend. Soc. Biol., 1938, **128**, 1052—1054, 1055—1057).—(A) The activity is measured by the no. of days during which the temp. of the bird is maintained at 41·5° or over.

(B) The method depends on measurement of the rate of growth of the animal. (A, B) One international unit is contained in $3{\cdot}1 \times 10^{-6}$ g. of the synthetic vitamin-B_1 hydrochloride. H. G. R.

Biological determination of vitamin-B_1 (thiamin) in *Rhizobium trifolii*. P. M. West and P. W. Wilson (Science, 1938, **88**, 334—335).—The vitamin-B_1 content of *R. trifolii* cells closely approximates to the amount known to be present in yeasts. W. F. F.

Determination of vitamin-B_1 content of body fluids. H. Otto and F. Rühmekorb (Dtsch. med. Wschr., 1938, **64**, 1511—1513).—5 c.c. of 1% $K_3Fe(CN)_6$ are added to 2 c.c. of the fluid to be tested. The mixture is shaken with 20 c.c. of *iso*butyl alcohol and centrifuged. The *iso*butyl alcohol is then dried with Na_2SO_4. The fluorescence of this prep. is compared with that of a standard of 100 μg.% of cryst. vitamin-B_1, prepared in the same way as the test fluid. A blank determination is made without $K_3Fe(CN)_6$. A. S.

Colorimetric determination of vitamin-B_1. H. Tauber (Mikrochim. Acta, 1938, **3**, 108—109).—The prep. (1 c.c.) is treated with 0·5 c.c. of 1% $K_3Fe(CN)_6$ and 1 c.c. of a fresh solution containing 30 g. of NaOH and 0·3 g. of KCN in 100 c.c. After shaking for 1 min., 1·5 c.c. of 20 wt.-% H_2SO_4 are added, and then 5 c.c. of Fe^{III} gum ghatti solution, the colour developed being compared with standards. Some org. reducing materials interfere with the test, but may be eliminated by oxidation with $KMnO_4$ or extraction of the vitamin-B_1 by adsorption on kaolin. The Fe^{III} gum solution is prepared by extracting 20 g. of gum ghatti in water, adding 5 g. of $Fe_2(SO_4)_3$ in 75 c.c. of 85% H_3PO_4 and 100 c.c. of water. About 8 c.c. of 1% $KMnO_4$ are added in small portions to oxidise reducing substances and any traces of Fe^{II} present. J. W. S.

Action of large doses of lactoflavin. W. Węsław and W. Wróblewski (Klin. Woch. 1938, **17**, 1158—1159).—The toxic action of "Bayer's" lactoflavin depends on the presence of acetmethylamide; pure lactoflavin has no toxic effects. 10% urea to prevent lactoflavin from crystallising is harmless. E. M. J.

Histological changes in the central and peripheral nervous systems during experimental avian beriberi. G. Solarino (Atti R. Accad. Lincei, 1938, [vi], **27**, 380—382).—Degenerative changes occurring in pigeons during beriberi are described. F. O. H.

Chronic alcoholism and pellagra, revealed by accidental insolation. G. Bickel (Schweiz. med. Wschr., 1938, **68**, 1159—1160).—A patient, suffering from chronic alcoholism, was exposed for several hr. to strong sunlight. He developed a severe dermatitis, diarrhœa, stomatitis, and porphyrinuria. Administration of nicotinic acid cured the patient in a few days. A. S.

Determination of nicotinamide in animal organs. P. KARRER and H. KELLER (Helv. Chim. Acta, 1938, **21**, 1070—1071; cf. A., 1938, II, 302).—1 kg. of the muscle of horse, ox, sheep, swine, and codfish contains 0·225, 0·212, 0·193, 0·206, and 0·075 mg. of nicotinamide respectively. Horse liver and kidney contains 1·05—1·45 mg. and 1·98—2·10 mg. per kg. respectively. H. W.

Chemistry of vitamin-B_6. A. ICHIBA and K. Michi (Sci. Papers Inst. Phys. Chem. Res. Tokyo, 1938, **34**, 1014—1017; cf. A., 1938, III, 597, 677, 743).—Vitamin-B_6 hydrochloride, m.p. 209—210° (decomp.) (*picrate*, m.p. 156°), from rice polishings contains neither methoxy- nor methylimino-groups. Aq. 0·001N solutions have absorption bands at 327, 293, and 246 mμ.; in methyl alcohol, the first band is absent. The hydrochloride is converted through the corresponding sulphate into the free *base*, m.p. 154—155°. Two previous preps. [Ohdake's, m.p. 204—205°, from rice polishings, and Kamada's, m.p. 208—209° (decomp.), from oryzanin] when purified are identical with -B_6 hydrochloride. J. L. D.

Effect of exposure to high temperatures on the ascorbic acid content of guinea-pig organs. E. MARTINI and C. TORDA (Boll. Soc. ital. Biol. sperim., 1938, **13**, 443—445).—Keeping guinea-pigs at 40—45° for 20—165 min. greatly diminishes the ascorbic acid content of liver, adrenals, and brain. The content of the adrenals during autumn is greater than that during summer. Injection of ascorbic acid (25 mg.) approx. doubles the survival time for guinea-pigs kept at 40—45°. F. O. H.

Stability of ascorbic acid in solution. J. LEIBOWITZ and K. GUGGENHEIM (Z. Vitaminforsch., 1938, **8**, 1—7).—Acids exert varying effects on the stability of ascorbic acid in solution according to the other substances present; *e.g.* 0·1N-AcOH, which in an aq. medium reduces the loss from 34 to 20% in 24 hr., has no appreciable effect in urine. 0·001M-KCN completely prevents loss in aq. solutions but in urine reduces it only from 53 to 35% and does not further increase the preservative action of 0·1N-HCl or -H_2SO_4. In PO_4''' and citrate buffers exposed to air, the loss of ascorbic acid is greater in acid than in alkaline solutions. Addition of 1 vol.-% of H_2SO_4 to urine completely preserves the ascorbic acid at room temp. for 48 hr. in the dark. KCNS and KI are without preservative action on ascorbic acid in urine. P. G. M.

Action of preservatives on the stability of ascorbic acid. W. KLODT and B. STIEB (Arch. exp. Path. Pharm., 1938, **189**, 509—513).—Addition of formic (0·25%), salicylic (0·1%), or benzoic acid (0·1%) to an aq. solution of synthetic ascorbic acid (5 mg.-%) retards the destruction of the vitamin; addition of the same substances to a lemon juice containing ascorbic acid in the same concn. has only a very slight preserving effect on the vitamin content. H. BL.

Reactions of ascorbic acid.—See A., 1938, II, 429.

Reduction value of urine after vitamin-*C* administration. G. ALBUS and W. SCHUCHARD (Klin. Woch., 1938, **17**, 1294).—The reducing activity of the urine fell in 13 of 21 persons after injection of 100 mg. of vitamin-*C*. The significance of this phenomenon is discussed. E. M. J.

Vitamin-*C* in treatment of whooping cough. D. GARDNER (Brit. Med. J., 1938, II, 742—744).—Vitamin-*C* had no influence on 21 cases of whooping cough. C. A. K.

Vitamin-*C* requirements in man. M. HEINEMANN (J. clin. Invest., 1938, **17**, 671—676).—At least 0·8 mg. of ascorbic acid per kg. body-wt. is used daily by healthy subjects saturated with this vitamin. Smaller amounts maintain a lower concn. in the body stores. To protect against scurvy, 0·4 mg. per kg. or even less daily is sufficient. Abnormally high requirements were observed in patients with active tuberculosis, or peptic ulcer. C. J. C. B.

Vitamin-*C* needs in man. RIETSCHEL (Dtsch. med. Wschr., 1938, **64**, 1382—1385). A. S.

Relation between plasma-ascorbic acid concentration and diet in the new-born infant. R. L. MINDLIN (J. Pediat, 1938, **13**, 309—313).—The average plasma-ascorbic acid concn. of 21 normal 2 weeks old infants was 1·0 mg.-%; in 19 artificially fed for 1 week, it averaged 0·4 mg.-%. Lower vals. resulted from longer periods of artificial feeding. The addition of sufficient ascorbic acid to the diet prevents the fall in plasma concn. invariably found after artificial feeding. C. J. C. B.

Effect of supplementary vitamin-*C* on the urinary output of this vitamin by tuberculous children. T. S. BUMBALO and W. W. JETTER (J. Pediat., 1938, **13**, 334—340).—The vitamin-*C* urinary excretion was studied in 10 tuberculous and 6 normal children, on a diet containing 55—65 mg. of -*C* daily. 50 mg. of synthetic -*C* was then added daily to the diet. Excretion rose immediately in the normal group, but the tuberculous group (average basic excretion 6·4 mg. per 24 hr.) required 750 mg. in 15 days to raise the excretion to 10 mg. per 24 hr. The max. output (23 mg. per 24 hr.) was obtained after giving 1200 mg.; subsequent feeding produced no further increase. On discontinuing the added vitamin, the excretion in tuberculous children fell to the original subnormal level. It is concluded that hypovitaminosis-*C* is present in active tuberculosis and that increased -*C* intake should be employed as a therapeutic measure. C. J. C. B.

Urinary output of vitamin-*C* of normal and sick children. Laboratory determination. T. S. BUMBALO (Amer. J. Dis. Child., 1938, **55**, 1212—1220).—Using a macro-modification of Harris and Ray's method, the urinary vitamin-*C* was found to be proportional to the -*C* intake provided that the body was saturated with -*C*. -*C* deficiency was found in all febrile conditions in children. In deficiency under treatment there is a marked lag between the -*C* intake and the urinary val. for several days. A. C. F.

Vitamin-*C* content of the blood in new-born infants. A. W. FLEMING and H. N. SANFORD (J. Pediat., 1938, **13**, 314—321).—In 123 infants the average vitamin-*C* val. in blood (of 2 determinations

on the 2nd and 8th day of life) was 0·753 mg. In 105 of the mothers the average was 0·884 mg., in 51 miscellaneous adults it was 0·99 mg. The vals. in 72 mothers and their infants were compared; the -*C* content of the infant's blood was directly related to the maternal val. and usually similar to it. The maternal -*C* val. had no influence on production of breast milk, on the infant's birth wt. or its subsequent progress. 7 infants suffering from cerebral hæmorrhage had -*C* vals. below 0·62 mg. In some mothers with a low or threshold -*C* val. the infant's -*C* val. may be below normal limits. C. J. C. B.

Incidence of hæmolytic streptococci in the tonsils of children as related to the vitamin-*C* content of tonsils and blood. A. D. KAISER and B. STAVIN (J. Pediat., 1938, **13**, 322—333).—In 94 children the vitamin-*C* content of the tonsils and blood was examined. The incidence of infection with hæmolytic streptococci was: blood and tonsil -*C* contents high, 21%; tonsil -*C* content low but blood -*C* val. high, 38%; tonsil -*C* content high but blood -*C* low, 42%; both blood and tonsil -*C* vals. low, 53%. Children thus should be given more than the min. amount of -*C* in the diets. C. J. C. B.

Exchange of vitamin-*C* between mother and breast-fed infant. W. NEUWEILER and J. HUBSCHER (Presse méd., 1938, **46**, 734—736).—During lactation mothers show a considerable deficit of ascorbic acid in the blood, which improves with the introduction of mixed feeding and disappears after weaning. G. SCH.

Relation between pregnancy, sex hormones, and vitamin-*C* content of tissues of guinea-pigs. B. GHOSH (J. Indian Chem. Soc., 1938, **15**, 449—454; cf. A., 1935, 416).—Effect of pregnancy and of injection of antuitrin-S on the onset of scurvy in guinea-pigs is studied. No delaying effect was observed. Injection of luteinising and follicular hormones into virgin guinea-pigs did not alter appreciably the vitamin-*C* content of the organs. A. T. P.

Hypovitaminosis during pregnancy. R. R. ROSNER (Schweiz. med. Wschr., 1938, **68**, 769—770).—A woman suffered during the last months of pregnancy from severe dermatitis herpetiformis (herpes gestationis). Vitamin-*C* deficiency was proved and the condition cleared up in a few days following treatment with ascorbic acid. A. S.

Effect of vitamin-*C* deficiency on immunity to diphtheria. M. PHILIPPE and J. BARATTE (Compt. rend. Soc. Biol., 1938, **128**, 592—593).—Diphtheria antitoxin formation is diminished in vitamin-*C*-deficient guinea-pigs. J. H. T.

Vitamin-*C* deficiency. A. MEYER (Klin. Woch., 1938, **17**, 1111—1115).—A review. E. M. J.

Lack of vitamin-*C* and fitness. G. LEMMEL (Münch. med. Wschr., 1938, **85**, 1381—1382).—General fitness is increased when the organism is saturated with vitamin-*C*. A. S.

Clinical and blood pictures in adult scurvy. G. H. JENNINGS and A. J. GLAZEBROOK (Brit. Med. J., 1938, II, 784—789).—One case of adult scurvy showed a megalocytic anæmia with other clinical and hæmatological features of pernicious anæmia. A second case showed an orthochromic, normocytic type of anæmia. Administration of vitamin-*C* cured both cases, after the former had failed to respond to liver or Fe. The clinical state improved more rapidly than the blood picture. C. A. K.

Clinical investigations on *C*-hypovitaminosis. J. DAÏNOW (Schweiz. med. Wschr., 1938, **68**, 784—785).—A review. A. S.

Detoxicating effect of ascorbic acid. J. LEIBOWITZ and K. GUGGENHEIM (Z. Vitaminforsch., 1938, **8**, 8—24).—Ascorbic acid exerts a detoxicating effect on KCN in bacteria and mammals, but the latter cannot be protected against KCN poisoning by injection of the vitamin. The bactericidal action of phenol is unaffected by ascorbic acid with which, like KCN, it forms a chemical compound. The results afford an explanation of the larger therapeutic dose of ascorbic acid required than of other vitamins, which act purely as catalysts. P. G. M.

Ascorbic acid content of diseased skin. H. ROTTER (Z. Vitaminforsch., 1938, **8**, 24—26; cf. A., 1937, III, 282).—The ascorbic acid content of diseased and healthy skin is compared by determining the time required for decolorisation of 2 : 6-dichlorophenolindophenol injected subcutaneously. Other substances, *e.g.* glutathione and cysteine, also decolorise the dye and may give rise to errors. P. G. M.

Vitamin-*C* content of the aqueous humour, lens, and vitreous humour of eyes of several animals. S. UTSUMI (Sei-i-Kwai Med. J., 1935, **54**, 2281—2288).—Data are recorded. CH. ABS. (*p*)

Variations in the oxygen consumption of ascorbic acid. F. STEIGERWALDT (Biochem. Z., 1938, **298**, 197—205).—The O_2 consumption of ascorbic acid in PO_4''' buffer at p_H 7·4 is reduced if the atm. contains 5% of CO_2 and the solutions contain HCO_3'. In an atm. of pure O_2, glutathione or tissue slices reduce the O_2 consumption. C. C. N. V.

Formation of ascorbic acid from mannose in plants and animals. T. TADOKORO and K. ITO (J. Agric. Chem. Soc. Japan, 1938, **14**, 1075—1079).—Practically no ascorbic acid is formed when mannose is incubated at 37° with the livers of -B_2 avitaminotic rats whose growth has ceased or with the livers of young rats whose growth has been inhibited by alcoholism. In each case injection of lactoflavin restores the activity of the liver. J. N. A.

Distribution of ascorbic acid in potatoes. K. PAECH (Biochem. Z., 1938, **298**, 307—311).—The ascorbic acid content of the skin and outer parts of new or stored potatoes is considerably less than that of the inner part. W. McC.

Volumetric determination of ascorbic acid. R. INDOVINA and F. MANFROI (Annali Chim. Appl., 1938, **28**, 347—353).—The sample is cleared by Hg^{II} acetate (Buogo, B., 1936, 391) and treated with 0·005N-KIO_3, part of which is reduced to KI by the ascorbic acid; the excess is determined by addition of KI and HCl and titration with 0·005N-$Na_2S_2O_3$. F. O. H.

Antirachitic vitamins. H. BROCKMANN (Ergebn. Physiol., 1938, **40**, 292—324).

Treatment and prophylaxis of after-effects of rickets. E. J. SCHMITZ (Münch. med. Wschr., 1938, **85**, 1622—1625).—A review. A. S.

Determination of vitamin-*D*. IV. Effect of seasonal variation. L. L. LACHAT and H. A. HALVORSON (Poultry Sci., 1936, **15**, 362—368).—Response of chicks to U.S.P. "reference" cod-liver oil varied with season. The resulting influence on recorded vals. of the vitamin-*D* potency of foodstuffs is discussed. A. G. P.

Vitamin-*E* and avian neurolymphomatosis. R. K. COLE (Science, 1938, **88**, 286—287).—Evidence from the treatment with vitamin-*E* (cold-pressed wheat-germ oil) of 31 fowls suffering from neurolymphomatosis gallinarum does not support the contention of Butler and Warren (A., 1938, III, 418) that quick recovery occurs. W. F. F.

Dosage and response in vitamin-*E* treatment. A. L. BACHARACH (Nature, 1938, **142**, 675).—A dosage response curve is proposed. W. F. F.

Standardisation of the rat for bioassay of vitamin-*E*. K. E. MASON and W. L. BRYAN (Biochem. J., 1938, **32**, 1785—1791).—Vitamin-*E* reserves of the offspring are negligible if the maternal diet contains min. quantities of -*E*. With -*E*-deficient diets, male rats show testicular degeneration between the 50th and 60th days of life and female rats invariably resorb during the first gestation, the male being the more delicate indicator of -*E* storage. H. G. R.

Vitamin-*E*. IV. Synthetic experiments in the coumaran and chroman series.—See A., 1938, II, 451.

Determination of the tocopherols in various initial materials.—See A., 1938, II, 466.

Properties of the antihæmorrhagic vitamin (vitamin-*K*). A. A. KLOSE, H. J. ALMQUIST, and A. MECCHI (J. Biol. Chem., 1938, **125**, 681—686; cf. A., 1937, III, 156, 497).—Attempts to form a phenylcarbimide, 3 : 5-dinitrobenzoate, benzoate, acetate, or allophanate do not diminish the vitamin potency. Bromination in benzene or reaction with HI in acetic acid destroys the activity, which is not restored by reduction with Zn dust and acetic acid, or by KI in alcohol. I and 3 : 5-dibromopyridine have no effect on -*K*. Conc. HNO_3 and $Na_2Cr_2O_7$ rapidly inactivate it at 100°. Reducing agents have no effect. Conc. H_2SO_4, P_2O_5, or anhyd. $AlCl_3$ inactivates it. Boiling methyl alcohol containing formaldehyde, boiling furfuraldehyde alone, or boiling CS_2 containing S has no effect. The mol. wt. of a "purified" concentrate is 525. Its chemical properties suggest that -*K* is an unsaturated hydrocarbon. J. L. D.

Vitamin-*K* deficiency of the chick. S. ANSBACHER (Science, 1938, **88**, 221).—Oral administration of vitamin-*K* restores the clotting time of the blood to normal in -*K*-deficient chicks, in 4—6 hr. The clotting time becomes abnormally long again in a short time. This procedure is proposed as the basis of a method of assaying -*K*. W. F. F.

Chick antidermatitis factor. D. W. WOOLLEY, H. A. WAISMAN, O. MICKELSEN, and C. A. ELVEHJEM (J. Biol. Chem., 1938, **125**, 715—721).—The vitamin is extracted from acidified, conc. liver extract by ether, the residue after removal of the ether being adsorbed from aq. solution on C and eluted by hot 90% ethyl alcohol. After removal of the alcohol, it is extracted by $CHCl_3$, the final product consisting of 2—4% of the starting material. Further purification by means of the Ba salt (sol. in ethyl alcohol) yields 275 mg. of active material from 100 g. of original extract. The vitamin can be reversibly inactivated by acetylation, thus indicating the existence of hydroxyl or amino-groups. The acetate undergoes mol. distillation at 100° without decomp.; it is also sol. in benzene, ether, and $CHCl_3$, in which the free vitamin is insol. P. G. M.

Evidence of a new growth factor required by chicks. E. L. R. STOKSTAD and P. D. V. MANNING (J. Biol. Chem., 1938, **125**, 687—696).—A detailed account of work already noted (A., 1938, III, 746).

Vitamin-*P* problem. I. ROBEZNIEKS (Z. Vitaminforsch., 1938, **8**, 27—31).—Methods for the detection of flavones are not sufficiently sp. to render the production of flavone-free diets a matter of certainty. P. G. M.

Effect of hesperidin (vitamin-*P*) on capillary fragility. H. SCARBOROUGH and C. P. STEWART (Lancet, 1938, **235**, 610—612).—Hesperidin (vitamin-*P*), given by mouth, reduced the no. of spontaneous hæmorrhages in cases of As and Bi poisoning (in syphilis); it also diminished the frequency of artificially produced hæmorrhages in patients with vitamin-*C* deficiency. C. A. K.

(p) METABOLISM, GENERAL AND SPECIAL.

Problems of biological chemistry. A. BUTENANDT (Angew. Chem., 1938, **51**, 617—622).—A review. W. McC.

Disturbances of metabolism after surgical operations. F. VON SCHÜRER (Wien. klin. Wschr., 1938, **51**, 797—799).—A review. A. S.

Growth and development. XLIV. Energetic efficiency of egg production: influence of live weight thereon. S. BRODY, E. M. FUNK, and H. L. KEMPSTER. **XLV. Energy metabolism levels during gestation, lactation, and post-lactation rest.** S. BRODY, J. RIGGS, K. KAUFMAN, and V. HERRING. **XLVI. Relation between heat increment of gestation and birth weight.** S. BRODY (Missouri Agric. Exp. Sta. Res. Bull., 1938, No. 278, 59 pp., No. 281, 43 pp., No. 283, 28 pp.).—XLIV. Up to a crit. live wt. (varying with breed) the energy efficiency of egg production is substantially independent of live wt.; when the latter exceeds the crit. val. efficiency declines. The gross energy efficiency of egg production is approx. half and the net val. approx. the same as that for milk production.

XLV. The additional heat production during gestation (Q) is related to the birth wt. (M) according to the equation $Q = 4400M^{1\cdot2}$. This relationship is discussed in relation to Dubner's law. The surface law is not applicable to pre-natal growth.

XLVI. Milk production and the R.Q. in rats rise and fall with fasting and refeeding. After a 2-day fast refeeding is promptly followed by an increase in lactation to the pre-fasting level. The resting energy metabolism during gestation is approx. the same as during sex rest. Data are examined with reference to the gestation metabolism of humans and of dairy cattle. A. G. P.

Influence of the upright posture on the metabolic rate. R. H. TEPPER and F. A. HELLEBRANDT (Amer. J. Physiol, 1938, **122**, 563—568).—Total metabolism was determined by indirect calorimetry in 75 healthy young females in the recumbent position and after passively assumed standing. The average increase on standing was 5·71 g.-cal. per sq. m. per hr. with marked variations from subject to subject. M. W. G.

Gas exchange of adrenal tissue *in vitro*. S. KODAMA (Tohoku J. exp. Med., 1935, **26**, 510—526).—Respiration of adrenal medulla was greater than that of the cortex. Vals. for the cortex but not of the medulla were increased by 0·2% of sugar. Aërobic glucolysis in the medulla was independent of sugar concn. Adrenaline-like substances were found in Ringer's solution after the respiration experiments, especially with the medulla. Respiration and adrenaline concn. diminished with lowered [O_2]. CH. ABS. (p)

Influence of some constituents of serum on gaseous metabolism of tissue *in vitro*. H. YAMAMOTO (Tohoku J. exp. Med., 1938, **33**, 525—544).—Warburg's method was employed and kidney cortex of rabbits used without and with Ringer perfusion (with and without glucose) prior to the experiments. Experimental fluids were serum, dialysed serum, and Ringer's solution without and with glucose in various concns. Glucose is one of the important factors responsible for increased tissue respiration *in vitro*, but is not the only factor, as tissue respiration in Ringer's solution containing glucose is lower than that in serum. F. JA.

Age and muscular exercise. J. MORI (Japan. J. Med. Sci., 1936, III, **3**, 309—365).—The more rapid panting of older subjects after exercise is ascribed to stimulation of the respiratory centre by acids accumulating in blood as a result of incomplete excretion. Urinary acidity increased more rapidly in young than in older subjects after exercise. The cardiac output, blood-CO_2, and decrease in residual blood-sugar and -N were greater in younger subjects. CH. ABS. (p)

Effect of muscular exercise on adrenaline secretion. M. WADA, M. SEO, and K. ABE (Tohoku J. exp. Med., 1935, **27**, 65—86).—Only very severe fatigue affected (increased) adrenaline secretion in dogs. CH. ABS. (p)

Protein metabolism in exercise and its modification by diet and hyperthyroidism. L. ASHER and S. GOLDSTEIN (Schweiz. med. Wschr., 1938, **68**, 804—806).—Total and non-protein-N, urea-N, and S excretion in urine were determined in 3 normal subjects. Total and non-protein-N excretion are increased by exercise during a period of mixed and protein-rich diet. S excretion is unchanged on a mixed diet, and diminished by exercise on a protein-rich diet. Urea excretion is diminished by exercise on both diets. It is concluded that protein metabolism during exercise (apart from the diet) is not increased; a non-protein N-substance is metabolised and increases the urinary N. A. S.

Dietary protein and the regeneration of serum-albumin. I. Method of assay and discussion of princfples. II. Comparison of the potency values of beef serum, beef muscle, and casein. A. A. WEECH and E. GOETTSCH (Johns Hopkins Hosp. Bull., 1938, **63**, 154—180, 181—185).—I. A healthy dog is fed a basal low-protein diet plus 10% casein for 6 days, after which serum-albumin is determined. The casein is removed from the diet and after 3 weeks the serum-albumin is again determined, and the period of regeneration is then started with the basal diet plus the protein to be tested. After 1 week the increase in serum-albumin is taken as a measure of the value of that particular protein for regeneration. Diet does not influence globulin formation.

II. Potency vals. in forming serum-albumin are: beef serum 0·801, beef muscle 0·475, and casein 0·388. T. F. D.

Cystinuria. VIII. Metabolism of crystalline ovalbumin. E. BRAND, G. F. CAHILL, and B. KASSELL. **IX. Metabolism of lactalbumin and of reduced lactalbumin.** B. KASSELL, G. F. CAHILL, and E. BRAND. (J. Biol. Chem., 1938, **125**, 415—422, 423—433).—VIII. In a cystinuric patient, cystine, cysteine, and methionine, fed as constituents of denatured ovalbumin, behave in the same way as the free amino-acids, the cystine which appears in the urine being derived essentially from methionine and cysteine (cf. A., 1937, III, 345). The distribution of S in denatured ovalbumin is tabulated.

IX. A method is described for the reduction of lactalbumin in which about 80% of the cystine is reduced to cysteine. When the reduced lactalbumin is administered to a cystinuric patient, a larger quantity of cystine is excreted than when a corresponding amount of lactalbumin is given. The result confirms the view that in a cystinuric, cysteine and methionine, but not cystine, give rise to urinary cystine and that during the digestion of protein, little or no cystine is reduced to cysteine. W. O. K.

Chemistry of the Proteins. D. J. LLOYD and A. SHORE (2nd Edn., J. & A Churchill, London, 1938, 532 pp.).—This is a new and thoroughly revised edition of a well-known monograph. The subject matter is handled under two headings: the constitutional chemistry of the proteins and the physical chemistry. Applications of protein chemistry to technology and industry have been omitted. The relations of the subject to general biochemistry, physiology, and pathology are dealt with thoroughly, clearly, and authoritatively. There are a full bibliography and excellent indexes. S. W.

Influence of the autonomic nervous system on the amount of cystine-cysteine in the liver. H. UEMURA (Japan J. Med. Sci., 1938, III, **5**, 125—155).—The highest cysteine val. among various tissues in the rabbit is found in the adrenal gland followed by

liver, small intestine, testis, spleen, blood, and muscle in descending order. The cysteine–cystine content of liver increases after atropine injection, vagotomy, or stimulation of the sympathetic nerve and decreases after pilocarpine or acetylcholine injection, sympathectomy, or stimulation of the vagus. T. F. D.

Significance of amino-acid synthesis in the animal organism. F. KNOOP (Klin. Woch., 1938, **17**, 1309—1310).—A review. E. M. J.

Methionine. G. TOENNIES (Growth, 1937, **1**, 337—370).—A review including an extensive list of references from 1892 to 1937. W. F. F.

Tyraminesulphuric acid [*p*-β-aminoethylphenyl H sulphate].—See A., 1938, II, 484.

Influence of pituitary on purine metabolism. III. Effect of adrenaline on purine metabolism of normal and hypophysectomised dogs. IV. Effect of insulin. E. YOKOYAMA (Sei-i-Kwai Med. J., 1936, **55**, 102—113, 114—124).—III. With normal dogs daily injections of adrenaline caused increased excretion of purine bases and other forms of N during the first week followed by a decrease in the second week and subsequent return to normal. With hypophysectomised dogs purine bases increased and other N diminished during 2 weeks.

IV. Daily injection of insulin into normal dogs increased the excretion of purine base, uric acid, and allantoin without affecting other forms of N; with hypophysectomised dogs purine bases increased, uric acid and NH_2-N diminished, other N fractions being unchanged. CH. ABS (*p*)

Uric acid synthesis in birds. G. LAZZARO (Arch. Fisiol., 1937, **37**, 515—532).—It is confirmed that the synthesis of uric acid by chicken liver slices is increased by addition of NH_4Cl or amino-acids, but is unaffected by urea, whether alone or together with various hydroxy-acids. The decreased capacity to synthesise uric acid shown by the liver from fasting animals is improved by lactic acid and glucose. S. O.

Creatine and creatinine. VIII. Effect of thyroxine injection on metabolism of creatine bodies. G. MORI (Sei-i-Kwai Med. J., 1935, **54**, 2289—2313).—Injection of thyroxine into rabbits increased the excretion of creatine and creatinine and temporarily increased the creatine content of muscle and other organs. The apparent total creatinine content of normal muscle is increased by peptic or tryptic digestion. This may be due to presence of colloidal creatine or of coagulable protein which prevents complete extraction of creatine. CH. ABS. (*p*)

Biological processes in the utilisation of amides, especially those of molasses and straw, by ruminants. III. W. KLEIN, H. SCHMIDT, and E. STUDT (Z. Zuchtung, 1937, **39**, 135—161).—Utilisation of amides by sheep is confirmed. Microorganisms in the rumen are concerned in the process and a "zymogen symbiosis" in rumen and intestine is postulated. A. G. P.

Elimination of amines in man. D. RICHTER (Biochem. J., 1938, **32**, 1763—1769).—The microdetermination of amines, utilising the picric acid colour reaction (cf., A., 1938, III, 605), is described. Whilst amines of the ephedrine series and mescaline are excreted unchanged (the rates of excretion have been measured), those of the general type $R{\cdot}CH_2{\cdot}NH_2$ are rapidly oxidised. H. G. R.

Histochemical investigation of lecithin metabolism in animals. II. Influence of lecithin feeding on the lipin content of the liver. J. ACKERMANN (Bull. Acad. Polonaise, 1938, **B**, 1—21; cf. A., 1937, III, 91).—Starvation of frogs in the summer greatly changes the microscopical picture of the liver-lipins, whilst analysis shows no variation in phosphatide or free cholesterol but a decrease in neutral fat and cholesteryl ester. Feeding with lecithin produces no change. E. M. W.

Influence of yeast-containing diets on the total fatty acids and cholesterol content of the livers of intact and partly nephrectomised rats. J. C. HORTENSTINE, A. CHANUTIN, and S. LUDEWIG (J. Biol. Chem., 1938, **125**, 455—459).—In intact rats, fed on diets containing 20% of yeast, the total fatty acid content of the liver is abnormally high, but with increase in the yeast content of the diet (up to 80%) there is a fall in the total fatty acid content of the liver. The livers of partly nephrectomised rats on yeast diets are normal in respect of fatty acid content. No consistent changes were observed in the free and esterified cholesterol contents of the livers of intact rats on the various yeast diets. W. O. K.

Sterols and Related Compounds. E. FRIEDMANN (Heffer & Sons, Cambridge, 1937, 100 pp.).—The book is based on a course of lectures delivered at Cambridge. The essentials of the subject are dealt with thoroughly in the min. compass. Constitutional questions, structural relationship, and biological properties are discussed equally satisfactorily. S. W.

Biological breakdown of fat. B. FLASCHENTRAEGER (Schweiz. med. Wschr., 1938, **68**, 961—962).—A review. A. S.

Source of liver fat using deuterium as indicator. H. M. BARRETT, C. H. BEST, and J. H. RIDOUT (J. Physiol., 1938, **93**, 367—381).—The D content of solutions of D_2O and water is determined by means of a small pyknometer and a torsion micro-balance of original design. It is confirmed that the principal, if not the only, source of excess fat which accumulates in the liver during fasting is the body depots. These depots also supply the fat found in the liver after administration of anterior pituitary extracts or exposure to CCl_4 vapour. When mice are placed on a diet low in protein and other lipotropic factors but rich in carbohydrate, the fat which accumulates in the liver is not derived from the depots but from the carbohydrate of the diet. When protein-rich diets are given to animals whose depot fat contains D, there is no transfer of fat from depot to liver and the D content of the depot fat remains const. for periods up to 14 days; under these conditions there is a decrease in D content of liver fat. J. A. C.

Conversion of fat into carbohydrate in the liver. F. CEDRANGOLO (Arch. Sci. biol., Napoli, 1938, **24**, 26—32).—After a period of starvation and phloridzin

poisoning, the glycogen content of dog's livers can be increased and the fat content decreased by administration of choline. R. S. CR.

Cerebral control of fat metabolism. I. MOLNAR and P. MARSOVSKY jun. (Orvosi Het., 1936, **80**, 336—338).—Increased cerebral pressure (by injection of kaolin suspension) lowered the fat contents of liver, kidneys, and musculature. CH. ABS. (p)

Injurious action of unsaturated fat acids. S. YONECHI (Tohoku J. exp. Med., 1935, **26**, 441—449).—Continuous excessive feeding of the acids to rabbits produced hæmolytic anæmia, increase in basophil erythrocytes in peripheral blood, and disturbance of intermediary water exchange and renal separation. CH. ABS. (p)

Glucose tolerance in obesity. D. EMBLETON (Brit. Med. J., 1938, II, 739—740).—In 500 obese subjects high glucose tolerance curves occurred in 73% of males and in 35% of females. The % of such curves increased with age rather than with wt. C. A. K.

Obesity of children. O. VON CHIARI (Wien. klin. Wschr., 1938, **51**, 900—903).—A review. A. S.

Therapy of obesity. R. BOLLER (Wien. klin. Wschr., 1938, **51**, 757—759).—A review. A. S.

Gaucher's disease in early infancy. Review of literature and report of a case with neurological symptoms. A. J. ABALLI and K. KATO (J. Pediat., 1938, **13**, 364—380).—2 groups of cases are described, those in which the disease begins before 6 months of age and those in which it begins after. It is in the first group only that neurological symptoms are frequently observed. (5 photomicrographs.) C. J. C. B.

One-hour, two-dose glucose tolerance test. M. COOPERSTOCK and J. M. GALLOWAY (Amer. J. Dis. Child., 1938, **55**, 1221—1232).—This method of estimating glucose tolerance was tested on 82 children. In 30 controls and 36 with non-diabetic conditions, a normal fasting level of blood-sugar, a steep rise in the first 30 min., and usually a fall after 60 min., were recorded. The rise was never greater than 80 mg. above fasting level. In the diabetic cases hyperglycæmic levels with increase of more than 80 mg. over fasting figure, and usually glycosuria, occurred at 60 min. A. C. F.

Karlsbad mineral water and carbohydrate tolerance. III. E. STRANSKY (Arch. exp. Path. Pharm., 1938, **189**, 547—554; cf. Physiol Abs., 1937, **22**, 1076).—A potato diet diminishes the sugar tolerance in rabbits; addition of Karlsbad water to the diet abolishes this effect. H. BL.

Disturbances of regulation of carbohydrate metabolism. L. LICHTWITZ (Schweiz. med. Wschr., 1938, **68**, 647—650).—A review. A. S.

Differentiation of the forms of glucose intoxication. M. WIERZUCHOWSKI and Z. BORKOWSKI (Acta. Biol. Exp., 1938, **12**, 168—173).—Glucose in 20% solution was transfused intravenously into dogs under amytal anæsthesia at the rate of 7 g. per kg. body-wt. per hr. The fluid retained amounted to 5% of the body-wt. at death. If the anæsthesia was deep enough, no convulsions appeared. Death occurred from respiratory arrest at a blood-sugar level of 4—5 g.-%. 90 g. of sugar are excreted in the urine per sq. m. body surface per hr. Œdema of various abdominal organs, effusions into the serous cavities, signs of acute kidney damage, and increased cerebrospinal fluid vol. were observed. If the animals worked a treadmill 11 g. of glucose per kg. body-wt. per hr. were transfused. Convulsions appeared at a blood-sugar level of 2·5 g.-%; death occurred at 2·72 g.-%. A. S.

Initial stages of glycogenolysis in muscle and heart. Z. AUGUSTIN (Z. physiol. Chem., 1938, **255**, 61—74; cf. Winter, A., 1937, III, 130).—Extract of fresh heart muscle (ox, calf, dog, horse, pig, rabbit) loses its power to hydrolyse glycogen, even in presence of PO_4''', if autolysed and subjected for varying periods to dialysis. The power is restored by adding muscle-adenylic or adenosinetriphosphoric acid (not by adding adenosine or yeast-adenylic acid) which cause binding of PO_4''' and production of Embden's ester, or inosic acid which causes production of P-free reducing saccharides but no binding of PO_4'''. If the dialysis is prolonged the power is restored by addition of muscle-adenylic acid but not by that of inosic acid. Extract of ox or calf heart contains also an amylase which hydrolyses glycogen, the effect being inhibited by PO_4''' but stimulated by Cl'. The difference in the modes of action of adenylic and inosic acid shows that the glycogen mol., but not those of its degradation products, undergoes phosphorylation. Extract of skeletal muscle of the calf probably contains the amylase and behaves like that of heart muscle but extract of skeletal muscle of the ox contains phosphorylase but no amylase and is not inactivated by dialysis. W. McC.

Effect of adrenaline on embryonic chick glycogen *in vitro* as compared with its effect *in vivo*. P. M. GILL (Biochem. J., 1938, **32**, 1792—1799).—Adrenaline diminishes liver-glycogen *in vivo* but has no effect on cultures *in vitro*, the effect probably needing factors obtained only in the whole body. Reduction of muscle-glycogen by adrenaline occurs only in the later stages of growth (after 18 days) and complete breakdown in liver cultures may be obtained after 1—6 hr. anaërobiosis. H. G. R.

Effect of glyceraldehyde on carbohydrate breakdown.—See A., 1938, II, 472.

Seasonal variations in carbohydrate metabolism of *Bufo arenarum*, Hens. P. MAZZOCCO (Rev. Soc. argent. Biol., 1938, **14**, 330—334).—Liver-glycogen concn. was higher at the end of the winter than in summer; a sharp drop occurred at the beginning of spring. Heart-glycogen was max. in summer and min. at the beginning of spring. Muscle-glycogen showed oscillations with a peak every 4 months, winter figures being usually higher than summer ones; the lowest were at the beginning of spring. Blood-sugar was also at a min. at the beginning of spring and higher in summer than in winter. J. T. L.

Effect of thyroxine on the carbohydrate metabolism of hypophysectomised rats. J. A. RUSSELL (Amer. J. Physiol., 1938, **122**, 547—550).—A more detailed account of work already noted (A., 1938, III, 190). M. W. G.

Carbohydrate oxidation in normal and diabetic cerebral tissues. Z. BAKER, J. F. FAZEKAS, and H. E. HIMWICH (J. Biol. Chem., 1938, **125**, 545—556).—The oxidation of glucose by slices of cerebral cortex of rats and of normal and depancreatised cats occurs when the oxidation of lactic acid and pyruvate is almost completely inhibited by nicotine. Nicotinic acid has a more marked differential effect than nicotine but nicotinic acid amide has little effect. Nicotine inhibits the oxidation of both glucose and lactic acid in testis and kidney. E. M. W.

Effect of insulin on aminoacidæmia in diabetes mellitus. O. MAESTRI and B. COSSU (Minerva med., 1936, I, 395—402).—Insulin lowered aminoacidæmia progressively in normal subjects and after a temporary increase in diabetics. CH. ABS. (*p*)

Diabetic limit of glucose combustion in the resting mammal. H. STEINHAUS and M. WIERZUCHOWSKI (Acta Biol. Exp., 1938, **12**, 174—177).—The following formulæ cover the events during continued intravenous transfusion of glucose in dogs, where V_{O_2} = rate of glucose oxidation, V_i = rate of administration in g. per kg. body-wt. per hr., t = time in hr., A and B are consts.: $V_{O_2} = A(1 - 10^{-BV_i})$; $V_{O_2} = [5/(t+1)][1 - 10^{-(6/(t+5)-0\cdot2)}V_i]$; for $V_i = \infty$ $V_{O_2} = 5/(t+1)$. A. S.

Diabetic traits in a strain of rats. V. V. COLE and B. K. HARNED (Endocrinol., 1938, **23**, 318—326).—In a colony of Yale strain rats glucose tolerance curves were determined after intraperitoneal injections of glucose. Up to 50 days of age these curves were normal. From 50 to 70 days 14%, from 70 to 90 days 50%, and after 90 days 70%, were diabetic. V. J. W.

Ketonæmia in diabetes and pregnancy. C. H. GRAY (Lancet, 1938, **235**, 665—667).—In normal adults the concn. of ketones in the blood was 1—2 mg.-%. In diabetics a positive Rothera reaction in the urine occurred alone at figures of 1·4 to 6·4 mg., and the $FeCl_3$ reaction was also positive with figures above this. Coma was associated with vals. above 35 mg.-%. Normal vals. were found in 3000 pregnant women. C. A. K.

Intermediate fat metabolism. III. Exogenous ketosis. IV. Ketosis and ketolysis. H. G. KRAINICK and F. MÜLLER (Klin. Woch., 1938, **17**, 1040—1042, 1275—1278).—III. The blood-ketone changes in 4 normal persons after a fat meal are described.

IV. Adrenaline hyperglycæmia is normally produced during ketosis resulting from a fatty meal or strenuous exercise; this mobilisation of glucose produces marked ketolysis. Such ketoses also show phases of spontaneous ketolysis preceded by a rise in the blood-sugar, the ketosis itself being apparently the stimulus which mobilises glucose. Phases of ketosis and ketolysis alternate until this mechanism fatigues and the ketosis finally increases. E. M. J.

Intermediary carbohydrate metabolism. C. N. H. LONG and A. WHITE (Ergebn. Physiol., 1938, **40**, 164—203).

Deuterium as indicator in the study of intermediary metabolism. XIV. Biological formation of deuteroamino-acids. G. L. FOSTER, D. RITTENBERG, and R. SCHOENHEIMER. **XV. Coprosterol formation. Use of compounds containing labile deuterium for biological experiments.** M. ANCHEL and R. SCHOENHEIMER (J. Biol. Chem., 1938, **125**, 13—22, 23—31; cf. A., 1938, II, 475; III, 684).—XIV. The cystine, tyrosine, arginine, histidine, proline, glycine, leucine, and glutamic and aspartic acid (but not the lysine) isolated by acid hydrolysis (boiling for 20 hr. with 10 parts of 20% HCl) from the proteins of mice which have been maintained on a diet of bread or oats, powdered milk, and yeast and given 2·34% D_2O in place of water as drink, contain D in amounts greater than those introduced *in vitro* by exchange from D_2O; the positions taken up by the D are different from those taken up when this type of exchange occurs.

XV (cf. A., 1935, 1407). When deutero-Δ^4-cholestenone (from Δ^5-cholestenone by boiling with alcohol, 80% D_2O, and NaOH) and deuterocoprostanone (from both of which alkali removes D) are consumed by man the fæces contain deuterocoprosterol from which D is not removed by treatment with alkali. The view that cholestenone and coprostanone are intermediates in the biological production of coprosterol is thus supported. Cholesterol from mice which have consumed deutero-Δ^4-cholestenone contains only traces of D possibly because D is removed during the conversion of the deutero-compound into cholesterol. W. McC.

Use of radioactive phosphorus in the study of the intermediate reactions of glycolysis. O. MEYERHOF, P. OHLMEYER, W. GENTNER, and H. MAIER-LEIBNITZ (Biochem. Z., 1938, **298**, 396—411; cf. A., 1938, III, 760).—The reactions in muscle extract to which radioactive Na phosphate has been added show that, during oxidation–reduction, the adenosine triphosphate involved in the reversibly coupled reactions, hydrogenation of cozymase and uptake of PO_4''' by adenine dinucleotide, takes up radioactive P which is transferred also to other PO_4''' acceptors. Measurement of the rate of uptake of radioactive P, when the coupled reactions are in equilibrium, indicates that at physiological concn., readily hydrolysable PO_4''' is converted within a few sec. into adenosine triphosphate. Cozymase, when acting simultaneously as H- and PO_4'''-carrier, takes up no radioactive P. Inorg. PO_4''' plays no part in the reactions which involve only transfer of PO_4'''. All the transfers of PO_4''' in which adenine nucleotide is involved, with the exception of that in which phosphopyruvic acid is dephosphorylated, are reversible. W. McC.

Metabolism of phosphorus during glycolysis and glycogenolysis. G. HEVESY, T. BARANOWSKI, A. J. GUTHKE, P. OSTERN, and J. K. PARNAS (Acta Biol. Exp., 1938, **12**, 34—39).—Radioactive P was

used as an indicator in Embden ester and phosphoglyceric, hexosediphosphoric, adenosinetriphosphoric, and adenylic acids. Embden ester from glycogen and dialysed rabbit's muscle extract is formed from inorg. PO_4'''. The H_3PO_4 group of Embden's ester is transferred to adenylic acid during glycogenolysis. P is transferred without an inorg. intermediary during the synthesis of adenosinetriphosphoric acid from adenylic acid and phosphoglyceric acid. A. S.

Influence of lactoflavin on action of light on pyruvic acid. H. SÜLLMANN (Klin. Woch., 1938, **17**, 1157—1158).—In the presence of lactoflavin, pyruvic acid in solution breaks down on exposure to light, but not under anaërobic conditions. E. M. J.

Oxalate metabolism in man and in animals. P. B. MÜLLER (Schweiz. med. Wschr., 1938, **68**, 964—965).—A review. A. S.

Biology of oxalic acid. P. B. MÜLLER (Verh. Schweiz. Physiol., 1938, **13**, 23—25).—30% of the oxalic acid given by mouth in rabbits was recovered in the fæces; 80% of intravenously administered oxalic acid was found in the fæces and urine. The oxalic acid content of whole blood of cattle, horse, sheep, and pig is 0·4 mg.-%. The excretion of oxalic acid is accelerated if $NaHCO_3$ is added to the diet. A. S.

Fate of hydrocyclic compounds in the organism. K. BERNHARD (Schweiz. med. Wschr., 1938, **68**, 962—964).—A review. A. S.

Action of cortical hormone and vitamin-*C* on calcium and phosphorus balance in dogs. H. LUCKE and J. WOLF (Arch. exp. Path. Pharm., 1938, **189**, 628—636).—Cortical hormone and vitamin-*C* both lead to a retention of Ca and P. Neither substance has any effect on the serum-Ca or -P. H. BL.

Examination of calcium salt absorption from the intestines, using the angiostomy method. J. SZULC (Acta Biol. Exp., 1938, **12**, 155—164).—A modification of London's angiostomy method was used in dogs. The Ca content of portal vein blood is increased after oral administration of $CaCO_3$, Ca malonate and gluconate, and especially after $CaCl_2$. A. S.

Rôle of the skeleton in the mineral metabolism of the body. M. B. SCHMIDT (Schweiz. med. Wschr., 1938, **68**, 856—558).—A review. A. S.

Sodium chloride metabolism in leprosy. H. S. LEE (Japan. J. Dermatol. Urol., 1936, **39**, 335—338).—In leprosy cases the NaCl content of 24 hr. urine was slightly below normal. CH. ABS. (*p*)

Iodine metabolism: significance of the rôle of the reticulo-endothelial system. I. Parenteral administration of iodine preparations. II. Oral administration. III. Discussion. T. YUZURIHA (J. Chosen Med. Assoc., 1935, **25**, 1059—1078, 1271—1284, 1494—1507).—I. Of the I administered to rabbits 50% was excreted in urine and the remainder was deposited in various organs, notably liver, spleen, bone marrow, and thyroid (least). Administration of thyroid powder or thyroxine causes more rapid elimination of I from blood and organs. With thyroidectomised rabbits the elimination of I is retarded. The reticulo-endothelial system is a more important factor in I metabolism than is the thyroid. CH. ABS. (*p*)

Application of radioactive isotopes in biological research. (A) J. K. PARNAS. (B) G. VON HEVESY (Enzymologia, 1938, **5**, 137, 138—157).—(A) Introduction.
(B) A lecture. J. N. A.

Deuterium in biological work. A. KROGH (Enzymologia, 1938, **5**, 185—189).—A lecture. J. N. A.

(q) PHARMACOLOGY AND TOXICOLOGY.

Sulphanilamides in tertian malaria. W. E. B. HALL (J. Pharm. Exp. Ther., 1938, **63**, 353—356).—Prontosil and Prontylin, given over periods up to 112 hr., had no effect within these intervals on 4 cases of tertian malaria. E. M. S.

Use of aminoazo dyes and derivatives of sulphanilamide in the treatment of undulant fever. A. RAVINA (Presse méd., 1938, **46**, 723).—A review. G. SCH.

Post-otitic pneumococcal and streptococcal meningitis treated with sulphanilamide compounds. C. HUBERT (Presse méd., 1938, **46**, 771—774).—4 successive cases of otogenic meningitis (3 streptococcal and one pneumococcal) were cured by sulphanilamide. The previous mortality rate was nearly 100%. G. SCH.

Action of sulphanilamide on leucocytes. C. J. C. BRITTON and J. HOWKINS (Lancet, 1938, **235**, 718—720).—Serial leucocyte counts were performed on 50 ambulant female patients receiving 1·5 g. of sulphanilamide daily for 14 days. Half the cases showed a polymorph leucopenia between the 7th and 20th day; a transient monocytosis also occurred. Minor toxic signs, seen in 70% of cases, were unrelated to changes in white cell count. C. A. K.

Treatment of tuberculosis in guinea-pigs with sulphanilamide. G. H. BUTTLE and H. J. PARISH (Brit. Med. J., 1938, II, 776—777).—Sulphanilamide diminished the severity of infection of guinea-pigs with a human strain of the tubercle bacillus. It had no effect in rabbits infected with a bovine strain. C. A. K.

Action of sulphanilamide on bacteria *in vitro*. L. K. WOLFF and H. W. JULIUS (Acta brev. neerl. Physiol., 1938, **8**, 29—32).—The growth of blood-agar cultures of hæmolytic streptococci and *B. coli* in urine is inhibited by the addition of sulphanilamide and the no. of bacteria decreases. The p_H of the urine does not influence the action of sulphanilamide on *B. coli*. A. S.

Action of sulphanilamide on tissue cultures. H. W. JULIUS (Acta brev. neerl. Physiol., 1938, **8**, 32—34).—Sulphanilamide was added to plasma cultures of fibroblasts from the heart of chick embryos. A concn. of the drug of 1 : 1000 failed to damage the cultures; 1 : 333 caused damage. 1 : 10,000 is the threshold of bactericidal activity of the drug towards streptococci growing in defibrinated horse blood.

Trypaflavine damages the tissue cultures in concn. of 1 : 106; this is its threshold concn. for bactericidal action on streptococci. Addition of 1 : 1000 sulphanilamide does not impair the phagocytic action of the tissue cultures towards 1 : 2000 trypan-blue; trypaflavine disturbs phagocytosis in concn. of 1 : 1,280,000. A. S.

Synergy in experimental chemotherapy of staphylococcal infections. S. P. De and U. P. Basu (Brit. Med. J., 1938, II, 564—565).—Sulphanilamide + combined antitoxic and antibacterial staphylococcal serum protected mice against intraperitoneal infection with *S. aureus*. Untreated controls showed 100%, and those given the drug or serum alone showed a 70%, mortality rate. C. A. K.

Treatment of urinary infections in the puerperium. J. C. Cuthbert (Lancet, 1938, **235**, 720—722).—A study of 106 cases of puerperal urinary infection showed that sulphanilamide and mandelic acid are both very effective in pure *B. coli* infections. The former acts well against hæmylotic streptococcal, the latter against *Streptococcus fæcalis*, infections. C. A. K.

Calcium mandelate and sulphanilamide in treatment of urinary infections. H. Droller (Brit. Med. J., 1938, II, 657—659).—From a study of 51 cases of urinary infection it is concluded that Ca mandelate is best for pure *B. coli* infections, and sulphanilamide for mixed infections, and in the presence of hæmolytic streptococci and *B. proteus*. C. A. K.

Treatment of inflammation of the bile ducts. F. Kazda (Wien. klin. Wschr., 1938, **51**, 1099—1100).—Satisfactory results in the treatment of cholangitis and acute cholecystitis were obtained with prontosil. A. S.

Puerperal sepsis. W. Schultz (Münch. med. Wschr., 1938, **85**, 1537—1541).—Disappointing results of treatment of puerperal sepsis with prontosil are reported. A. S.

Action of intrathecal injection of prontosil in encephalitis. F. Wilhelm (Dtsch. med. Wschr., 1938, **64**, 1513—1514).—A child of 2 years, with severe encephalitis, recovered after repeated intrathecal injections of prontosil. A. S.

Facial carbuncle treated with prontosil album. H. W. Barber (Lancet, 1938, **235**, 668—670).—A personal experience of the successful use of prontosil in the treatment of facial carbuncle is described. C. A. K.

Pneumococcal meningitis treated with M and B 693. G. C. K. Reid and S. C. Dyke (Lancet, 1938, **235**, 619—620).—A case of pneumococcal meningitis (a girl aged 7 years) was cured by oral administration of 2-(*p*-aminobenzenesulphonamido)-pyridine (M and B 693). C. A. K.

Pneumococcal septicæmia treated with M and B 693. S. C. Dyke (Lancet, 1938, **235**, 621).—A case of pneumococcal septicæmia was successfully treated by M and B 693. C. A. K.

Staphylococcal septicæmia treated by M and B 693. W. J. Fenton and F. Hodgkiss (Lancet, 1938, **235**, 667—668).—A case of septicæmia (*S. aureus*) was successfully treated by M and B 693. C. A. K.

Pneumococcal meningitis treated with M and B 693. K. Robertson (Lancet, 1938, **235**, 728).—A boy, aged 14 years, with pneumococcal meningitis was successfully treated with M and B 693. C. A. K.

Paralysis in pigeons after administration of sulphonamide derivatives and exercise. W. Engelhardt and O. Birkenmaier (Klin. Woch., 1938, **17**, 1325—1328).—Administration of Diseptal *A*, *B*, or *C* to pigeons which were exercised in a treadmill for 1 hr. daily led to paralysis of the legs and wings. This does not occur in animals kept in ordinary cages or non-medicated pigeons subjected to this exercise. E. M. J.

Relation between experimental anti-gonococcic therapeutic efficacity and microbicidal potency of sulphurated benzene derivatives. C. Levaditi and A. Vaisman (Comp. rend. Soc. Biol., 1938, **127**, 1428—1430).—A group of sulphurated benzene derivatives tested on mice showed that the therapeutic action *in vivo* and bactericidal action *in vitro* were parallel, and corresponded with the potency of the compound. 4-Sulphonamidobenzene-azo-3 : 5-diaminobenzoic acid (R IV), however, though possessing marked gonococcic microbicidal action, had no therapeutic potency. These facts suggest that the mechanism governing anti-streptococcal and anti-pneumococcal chemotherapy differs from that which controls anti-gonococcal and anti-meningococcal chemotherapy. J. H. T.

Sulphonamide therapy. A. Alder and N. Markoff (Schweiz. med. Wschr., 1938, **68**, 560—561).—Treatment with sulphonamide compounds should be immediately discontinued when the first symptoms of disturbances of the gastro-intestinal tracts or of the nervous system are observed. It should be restricted to streptococcal, staphylococcal, and *B. coli* infections. A. S.

Use of compounds related to *p*-aminobenzenesulphonamide in the treatment of certain infections in mice. M. McLeod (Biochem. J., 1938, **32**, 1770—1774).—Of ten compounds examined, 3-nitro-4-hydroxybenesulphonamide (toxicity low) and 4 : 4′-diacetamidodiphenyl sulphide are effective agents against streptococcal septicæmia and staphylococcal infection, respectively. No correlation between *in-vitro* and *in-vivo* action was observed. H. G. R.

Effect of *p*-aminobenzenesulphonamide on the oxygen consumption of tissue and certain pathogenic bacteria. H. I. Chu and A. B. Hastings (J. Pharm. Exp. Ther., 1938, **63**, 407—413).—Concns. of 0·66% of *p*-aminobenzenesulphonamide reduced the O_2 consumption of excised liver and muscle, and of various bacteria against which the drug has a known bacteriostatic effect. Concns. of 0·0132%, which correspond with therapeutic dosage, had no effect, except on the meningococcus group, in which O_2 consumption was definitely reduced. E. M. S.

Polyneuritis after administration of sulphonamide compounds in the pigeon and in man. H. HÜLLSTRUNG and F. KRAUSE (Dtsch. med. Wschr., 1938, **64**, 1213—1217).—Oral administration of diseptal B (D.B. 87) (3 g. per kg. body-wt.) produced severe peripheral neuritis in many pigeons, which was not prevented by vitamin-B_1. Equal amounts of uleron did not produce polyneuritis in pigeons. Polyneuritis in man was not observed after diseptal treatment, but after administration of uleron. Higher concns. in blood of diseptal than of uleron are found in man, if equal concns. of both substances are given by mouth. Pigeons with severe diseptal polyneuritis show no histological changes in the peripheral or central nervous system. A. S.

Toxic effects of uleron. E. PROBST (Münch. med. Wschr., 1938, **85**, 1551—1552).—Toxic effects (urticaria, generalised eczema, circulatory collapse, paræsthesia) following treatment with uleron were observed in 7 out of 14 patients. A. S.

Polyneuritis after uleron. C. T. VAN VALKENBURG and G. A. K. VAN DEM BORNE (Lancet, 1938, **235**, 889—890).—A man of 63 developed polyneuritis after taking 16 grams of uleron. Vitamin-B_1 deficiency may have been a contributing factor. C. A. K.

Treatment of epidemic meningitis with uliron. H. JANUSCHKE and H. DOPPEL (Dtsch. med. Wschr., 1938, **64**, 1360—1361).—An infant suffering from meningococcal meningitis was cured by intrathecal injection of anti-meningococcal serum and oral administration of uleron. A. S.

Septasine therapy. J. MÜLLER (Schweiz. med. Wschr., 1938, **68**, 655—656).—Excellent results in cases of streptococcal, coliform, and staphylococcal infections were obtained with septasine (benzylaminobenzenesulphonamide) and water-sol. "soluseptasine" (Na *p*-phenylpropylaminobenzenesulphonamidedisulphonate). Soluseptasine may be given per os, intravenously, intramuscularly, or intrathecally. No untoward effects were observed in 120 cases. A. S.

Septasine treatment of septic conditions in obstetrics and gynæcology. L. MERLIN (Schweiz. med. Wschr., 1938, **68**, 1080—1082).—Septasine and soluseptasine were successfully used in the treatment of streptococcal and *B. coli* infections. 4 cases out of 65 failed to respond; they were mixed infections with streptococci, staphylococci, and *B. coli*. The drugs are also recommended for prophylactic treatment of obstetric and gynæcological cases. A. S.

Unsaturated groups in therapeutics. G. EHRHART (Med. u. Chem., 1936, **3**, 366—374; Chem. Zentr., 1937, i, 660).—Regularities among individual classes of therapeutics are discussed and a simple synthesis of *iso*amylenylguanidine (Galegin) is described. A. H. C.

Chemotherapy of tuberculosis of the urinary system [with "rubrophen"]. J. FÖRSTER (Wien. klin. Wschr., 1938, **51**, 835—837).—Satisfactory results were obtained with oral and intravenous administration of the dye "rubrophen." Ulcers in the urinary bladder heal and the no. of bacilli in the urine decreases. A. S.

Treatment of kala-azar. E. BENHAMOU (Presse méd., 1938, **46**, 803—804).—A review. G. SCH.

Therapy and prophylaxis of malaria. M. MARTIN (Schweiz. med. Wschr., 1938, **68**, 905—909).—A review. A. S.

Changes in the blood after treatment with arsenobenzene compounds. C. MÉAN (Schweiz. med. Wschr., 1938, **68**, 785).—A report of several cases of hæmorrhagic purpura with severe anæmia, and agranulocytosis in the course of anti-syphilitic treatment. A. S.

Relationship between chemical constitution, trypanocidal and neurotoxic action of aromatic arsinic acids. E. A. H. FRIEDHEIM (Schweiz. med. Wschr., 1938, **68**, 826—828).—Arsinic acid derivatives (atoxyl, arsacetin, tryparsamide, hectine) are not lipin-sol., but they have experimentally and clinically strong neurotoxic actions. Phenylhydrazinearsinic acid and numerous derivatives are not neurotoxic although phenylhydrazine is very toxic (minute concns. break up hæmoglobin). Only acyl derivatives of phenylhydrasinearzinic acid have trypanocidal properties. Comparison of arsacetin (strongly neurotoxic and trypanocidal) with acetylphenylhydrazinearsinic acid (not neurotoxic, less trypanocidal) shows that the introduction of an NH group into the side-chain decreases the toxicity. A. S.

Therapeutic assay of neoarsphenamine with *Trypanosoma equiperdum*. C. A. MORRELL, C. W. CHAPMAN, and M. G. ALLMARK (J. Pharm. Exp. Ther., 1938, **64**, 14—42).—A method of assaying the therapeutic potency of neoarsphenamine preps., using rats infected with *T. equiperdum*, is described. The method avoids the counting of trypanosomes in the blood of individual rats. Reliable results are obtained 5 hr. after injection of the drug. The accuracy is known, and the limits of error are small. E. M. S.

Treatment of lambliosis with atebrin. K. HEILMANN (Münch. med. Wschr., 1938, **85**, 1626—1628).—13 patients with lambliosis were treated with atebrin (3 times per day 0·1—0·2 g. for 3 days). The lambliæ disappeared from the gastric juice, bile, and fæces. A. S.

Comparison of quinine and atebrin. O. T. BROSIUS (Ann. int. Med., 1938, **12**, 353—364).—Atebrin was compared with quinine on 200 malarial patients. It is pleasanter to take, reduces the duration of stay in hospital, and is non-toxic except for harmless yellow pigmentation of the skin. Relapse occurs as frequently with both drugs. C. A. K.

Analysis of 511 treated cases of paresis. R. A. MATTHEWS, R. S. BOOKHAMMER, and W. H. IZLAR (Amer. J. Psychiat., 1938, **94**, 1259—1275).—The results of treating 511 paretic patients with tryparsamide alone or with Bi were: remission 13·3%, great improvement 11·3%, no improvement 27%, death 34% (47% of the deaths occurred before sufficient treatment was given). Serological reversal

occurred in only a small percentage of patients and did not always accompany a remission. G. D. G.

Attempted suicide by ingestion of a quinine salt and of a barbiturate. E. CATTELAIN (J. Pharm. Chim., 1938, [viii], **28**, 158—159).—Quinine and gardinal are identified. The symptoms are described. J. L. D.

Action of hydrocupreine and hydrocupreidine on the urinary bladder of cats. K. VAN DONGEN (Acta brev. neerl. Physiol., 1938, **8**, 38—39).—Intravenous injection into cats of 0·5 mg. per kg. body-wt. of hydrocupreine or hydrocupreidine causes micturition within 1 min. The drugs increase the rate of contractions and the tone of the bladder. Max. contractions were observed with doses of 3—20 mg. per kg. The effect lasts 1 hr. The depth of respiration is markedly increased. These effects were not observed in rabbits. A. S.

Action of quinine derivatives on heart fibrillation. K. VAN DONGEN (Acta brev. neerl. Physiol., 1938, **8**, 37—38).—Quinine, hydroquinine, hydroquinidine, *epi*quinine, or hydrocupreidine abolishes ectopic rhythms and fibrillation, caused by adrenaline or $BaCl_2$ in rabbits and cats; *apo*quinine has only slight effects; very pure quinidine, hydrocupreine, and β-*iso*quinine have no effect on fibrillation. Refractory period and conduction time are increased by quinine, hydroquinine, hydroquinidine, *epi*-, *apo*-, and β-*iso*-quinine; they are not influenced by purest quinidine, hydrocupreine, and hydrocupreidine. A. S.

Action of acetylcholine on the blood pressure in the retinal artery in rabbits. E. FROMMEL and V. BISCHLER (Schweiz. med. Wschr., 1938, **68**, 1160—1161).—Subcutaneous injections of 0·02 g. of acetylcholine in rabbits lower considerably the retinal artery pressure (determined with Bailliart's ophthalmodynamometer); this depressant effect may last 1 hr. A. S.

Treatment of postencephalitis with German belladonna roots. W. HORN (Dtsch. med. Wschr., 1938, **64**, 1287—1289).—Satisfactory results were obtained with "Radix belladonnæ Teep," a mixture of the total alkaloids of the root. A. S.

Belladonna treatment of Parkinson's disease. L. DONATELLI and L. CISBANI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 456—457).—Comparative data for the total and biologically active alkaloid contents of Italian, Bulgarian, and Jugo-Slavian samples of belladonna are given and discussed. F. O. H.

Chronic nicotine toxicity. IV. Effect of nicotine-containing diets on histology and weights of organs of albino rats. R. H. WILSON, J. B. MCNAUGHT, and F. DEEDS (J. Ind. Hyg., 1938, **20**, 468—481).—As chronic feeding of toxic substances diminishes food intake, it is necessary to compare the body and organ wts. of chronically poisoned animals with those of animals whose food intake has been correspondingly diminished. Data as to body wt. and length, and wts. of spleen, liver, heart, kidneys, adrenals, and testes are given for groups of rats in varying degrees of inanition. Comparison of these figures with those for rats chronically poisoned with nicotine shows that the latter had a shorter body length and a greater liver and spleen wt. than the controls. There was no histological evidence of tissue damage by nicotine administered with the food. E. M. K.

Detoxication of nicotine by animal tissues. E. WERLE (Biochem. Z., 1938, **298**, 268—272).—Tissues were shaken for 3 hr. in Tyrode's solution containing nicotine and the nicotine removed from solution was determined pharmacologically. Under aërobic conditions, increasing amounts are destroyed by kidney, lung, and liver; muscle, spleen, brain, and intestinal mucosa are inactive. Boiling for short periods in Tyrode's solution completely destroys the detoxicating action of lung tissue, whilst a fraction of the liver's activity remains. The optimum p_H for detoxication is approx. 7. C. C. N. V.

Ethylenic amines and diamines.—See A., 1938, II, 480.

Differential analysis of ergot alkaloids. E. ROTHLIN (Schweiz. med. Wschr., 1938, **68**, 971—975).—Ergotoxine is 3 times as toxic in rabbits as ergotamine but only equally active on the rabbit's uterus. Ergotamine in doses up to 0·75 mg. per kg. body-wt. lowers body temp. in rabbits; 1·5 mg. and higher doses increase body temp. 0·5 mg. per kg. and larger doses of ergotoxine ergosine, and ergocristine increase the temp. Doses below 0·1 mg. per kg. of ergobasine produce hyperthermy. A. S.

Action of autonomic drugs and their effect on choline-esterase. E. ROTHLIN and J. BRÜGGER (Verh. Schweiz. Physiol., 1938, **13**, 27—29).—Ergotamine and ergobasine potentiate the action of acetylcholine on the rabbit's uterus in subthreshold concn.; they have no effect on the acetylcholine action on the seminal vesicle of guinea-pigs; eserine potentiates the acetylcholine effect. Pilocarpine does not potentiate the action of acetylcholine on the uterus and inhibits its action on the seminal vesicle. Ergotamine inhibits choline-esterase *in vitro* in 1000-fold higher concn. than eserine; the anticholine-esterase action of ergobasine is even weaker. A. S.

Diaphragmatic spasm caused by curarine. J. W. THORNTON (J. Physiol., 1938, **93**, 40—42P).—Simultaneous records of bronchial tonus and diaphragm movements in cats (anæsthetised with chloralose) indicate that curarine causes diaphragmatic spasm before the onset of the expected respiratory paralysis (diaphragmatic "loss of tone") and this occurs with doses smaller than those required to produce constriction of the bronchi (cf. A., 1938, III, 181). J. A. C.

Influence of piperidinomethylbenzdioxan (F. 933), of diethylaminomethylbenzdioxan (F. 833), and of yohimbine on the pupillary reaction to adrenaline and sympathetic excitation. T. C. R. SHEN (Ann. Physiol. Physicochim. biol., 1938, **14**, 621—622).—In the chloralosed dog, F. 833, F. 933, and yohimbine induce a transient mydriasis. F. 933 partly, but F. 833 and yohimbine completely, inhibit the action of adrenaline on the pupil and diminish the sympathetic pupillary reaction. The light reflex is feebly decreased by these substances. C. C. N. V.

Pharmacology of the optical isomerides of 3 : 4-dihydroxynorephedrine (corbasil). O. SCHAUMANN (Med. u. Chem., 1936, **3**, 383—392; Chem. Zentr., 1937, i, 656).—The *l*-form of corbasil has 1·6 times the activity of the racemate and 160—250 that of the *d*-form (urethanised cat or dog; 1200 times with isolated rabbit uterus). Differences in toxicity are recorded. The *l*-form resembles adrenaline, the *d*- an ephedrine after cocainisation. The similarity between the actions of the *d*-form of corbasil and β-3 : 4-dihydroxyphenyl*iso*propylamine is explained on Easson and Stedman's theory (A., 1933, 1077). A. H. C.

Assay of digitalis on rats and mice. J. KAWAHARA (Fukuoka Acta med., 1938, **31**, 139—140).—Digitalis leaves, freshly prepared tincture of digitalis, digitoxin, and ouabain were used. In rats the m.l.d. was determined by subcutaneous injection and by slow infusion (Hatcher and Magnus cat method), and the min. heart stimulating concn. by the Langendorff–Hukudas isolated rat heart method. In mice the m.l.d., killing within 24 hr., was found by subcutaneous injection and oral administration. The elimination rate was also determined in experiments in which the slow infusion method was used. Rats and mice are less sensitive to digitalis than cats and guinea-pigs; the rat is less sensitive than the mouse. The vals. obtained by subcutaneous injection, however, closely resemble those obtained by cat and guinea-pig methods and by 4-hr. frog method. The slow infusion method in the rat gives results comparable with those obtained by other methods, providing the digitalis is administered rapidly, since it is quickly eliminated. The vals. obtained by oral administration in the mouse are larger than those obtained by subcutaneous injection, save in the case of digitoxin. The rat heart was not suitable as a method of assay. W. D'A. M.

Action of digitalis on secretion of hydrochloric acid in the stomach. F. ŠVEC (Arch. exp. Path. Pharm., 1938, **189**, 600—605; cf. Physiol. Abs., 1937, **22**, No. 4866).—Therapeutic doses of digitalis substances cause a secretion of gastric HCl. H. BL.

Native glucosides of *Digitalis lanata*; their effects on cardiac efficiency and their toxicity. G. K. MOE and M. B. VISSCHER (J. Pharm. Exp. Ther., 1938, **64**, 65—85).—The native glucosides of *D. lanata*, digilanid *A*, *B*, and *C*, have been evaluated on a basis of therapeutic activity, by quant. study of their effect on cardiac efficiency in the heart lung prep. of dogs. The min. dose of digilanid *A* which increased efficiency was 1·0 mg., of *B* 2·0 mg., and of *C* 0·04 mg. Digilanid *C*, unlike *A* and *B*, in the lower doses which increased efficiency, did not cause irregularities in rhythm. The margin of safety with digilanid *C* is greater than with the other glucosides. E. M. S.

Action of digitalis in arrhythmias. E. EDENS (Münch. med. Wschr., 1938, **85**, 1415—1418).—A review. A. S.

Behaviour of the embryonic heart in solutions of ouabain. G. H. PAFF and J. R. JOHNSON (Amer. J. Physiol., 1938, **122**, 753—758).—The 48-hr. embryonic chick heart exposed to a 1 : 300,000 solution of ouabain shows heart block and ventricular and sino-atrial stoppage. Higher dilutions or lower temp. delay these effects. The reactions are reversible. The block produced by ouabain is due partly to decreased ventricular excitability. M. W. G.

Influence of amino-acids on the vascular effect of cocaine. T. ISHIHARA, T. YORIMITSU, and T. FUSE (Folia pharmacol. japon., 1938, **25**, 36—37).—Glycine, phenylalanine, tryptophan, and histidine, when employed in doses which in themselves are without any effect, increase the vasoconstrictor action of cocaine. F. JA.

Action of coramin on circulation. L. RIEOL (Schweiz. med. Wschr., 1938, **68**, 722—724).—Coramin is useful in the treatment of disturbances of the peripheral circulation and of collapse. A. S.

Use of veritol. W. IFF (Schweiz. med. Wschr., 1938, **68**, 1060).—Intramuscular or intravenous injection of veritol is strongly recommended for the treatment of acute circulatory collapse. A. S.

Urethanes as local anæsthetics. Alkyl *N-p*-aminobenzylcarbamates.—See A., 1938, II, 481.

Potentiation by egg-albumin of anæsthetic action of cocaine. S. ROSENKRANZ (Arch. exp. Path. Pharm., 1938, **189**, 555—556).—If a 40% aq. solution of cocaine hydrochloride is extracted with ether, more cocaine goes into the ether if egg-albumin is added to the solution; this may explain the potentiation of cocaine anasthesia by egg-albumin. H. BL.

Effect of chemical structure on local anæsthetic action of diothane analogues.—See A., 1938, II, 504.

Pyrazoline local anæsthetics.—See A., 1938, II, 506.

Effect of percaine on the myelinated fibres of the sympathetic nervous system. A. DONAGGIO (Boll. Soc. ital. Biol. sperim., 1938, **13**, 241—243).—Percaine in rabbits causes modifications of the cervical sympathetic nerves, appropriate staining methods indicating a spiciform structure. F. O. H.

Anæsthesia and allergic reaction. II. W. EICKHOFF (Virchow's Arch., 1938, **101**, 702—707).—Rabbits were anæsthetised with urethane and injected subcutaneously with 2 ml. of pig's serum. This was repeated 5 times at intervals of 5—6 days. These animals became less sensitised to the serum than did controls which were given the serum in a similar manner but without having been anæsthetised. On intravenous reinjection of the serum without anæsthesia on the 8th day after the last sensitising injection, the local allergic reaction (Arthus' phenomenon) and the general reaction (anaphylactic shock) were less pronounced in the experimental than in the control group. With avertin and pernocton Arthus' phenomenon was also inhibited, but the general reaction was very much aggravated. H. W. K.

Carbohydrate metabolism in anæsthesia. R. R. MACINTOSH and C. L. G. PRATT (Brit. Med. J., 1938, II, 695—697).—A review. C. A. K.

4 cases of polyneuritis after evipan anæsthesia. F. RUSCA (Schweiz. med. Wschr., 1938, **68**, 630—631).—4 cases of post-operative polyneuritis are reported which are attributed to intravenous evipan anæsthesia. A. S.

Symptoms and treatment of barbiturate intoxication and psychosis. F. J. CURRAN (Amer. J. Psychiat., 1938, **95**, 73—85).—A review, partly based on observations on 75 patients. G. D. G.

Hypnotic action of certain tertiary butyl aliphatic amides. A. D. BASS (J. Pharm. Exp. Ther., 1938, **64**, 50—54).—The hypnotic properties of a series of amides were compared in rabbits and rats. α-Bromo-*tert.*-butylacetdimethylamide was the most active, with a therapeutic index of 2. No compound was as effective as neuronal (α-bromodiethylacetamide), which was used as the standard of comparison. E. M. S.

Crotyl-substituted barbituric acid derivatives. E. E. SWANSON and W. E. FRY (J. Amer. Pharm. Assoc., 1938, **27**, 776—777).—The min. lethal and anæsthetic doses of 10 crotyl-substituted barbituric acid derivatives are tabulated; a general characteristic is a shorter duration of action when compared with the parent alkyl-substituted derivative. F. O. H.

Effect of sodium amytal, sodium barbital, and nembutal on the electrocardiogram. R. HAFKESBRING and W. MACCALMONT (J. Pharm. Exp. Ther., 1938, **64**, 43—49).—The effects of anæsthetic doses of amytal, barbital, and nembutal on electrocardiograms of dogs and cats were increase in heart rate and disappearance of pre-existing sinus arrhythmia. Neither tolerance nor cumulative effects developed after repeated injections. E. M. S.

Trichloroethanol, tribromoethanol, chloral hydrate, and bromal hydrate. G. LEHMANN and P. K. KNOEFEL (J. Pharm. Exp. Ther., 1938, **63**, 453—465).—Both trichloro- and tribromo-ethanol are potent hypnotics. The former causes proportionately less respiratory depression; as its effect is longer than that of chloral hydrate, it is unlikely that the alcohol is formed from the aldehyde in the body. Bromal hydrate has no hypnotic action; it actively constricts smooth muscle. E. M. S.

Effect of temperature on the lethal doses of morphine, strychnine, and digitoxin for the toad *Bufo arenarum*. C. LAMBRUSCHINI (Rev. Soc. argent. Biol., 1938, **14**, 353—356).—Toads at 3° are not sensitive to doses of morphine below 160 mg. per 100 g. When brought back to room temp. they all died, even when the drug had been injected 8 days previously; it had not been destroyed or eliminated. At 14—20° sensitivity of different animals was extremely variable and it was not possible to obtain a "toxicity curve." At 30° a typical "toxicity curve" was obtained; 50% of the animals died when injected with 95 mg. per 100 g. Similar observations were made with strychnine; the min. lethal dose was 15 mg. per 100 g. at 3°; at this temp. the drug was not destroyed or eliminated; at 14—20° great irregularities were observed; these were less marked at 30°, at which temp. 50% deaths occurred with 4—5 mg. per 100 g. At 15° digitoxin was only occasionally lethal, even with doses of 5—6 mg. per 100 g. At 30° some animals resisted doses of 3—4 mg.; 5 mg. per 100 g. killed all the animals. J. T. L.

Influence of the blood plasma of the chicken habituated to morphine and to heroin on the tissue cultures accustomed to these drugs. Y. NAKAZAWA (Folia pharmacol. japon., 1938, **26**, 1—13).—Morphine and heroin above a certain concn. injure fibroblast and epithelial cultures; both cell types can, however, easily be accustomed to both drugs by gradually increasing their concn. in the culture medium. When such cultures are transplanted into a medium containing, besides the necessary drug, plasma of a chicken habituated to the drugs instead of normal plasma, growth is markedly increased. Withdrawal of the drugs from the cultures accustomed to them causes considerable injury to the cells. This abstinence reaction cannot be prevented by the use of plasma from a chicken habituated to the drug. F. JA.

Effect of morphine on the skin and rectal temperatures of dogs as related to thermal polypnea. A. HEMINGWAY (J. Pharm. Exp. Ther., 1938, **63**, 414—420).—Panting was induced in normal dogs, heated by diathermy, within a limited range of skin and rectal temp. The threshold temp. at which panting occurred was lowered by the administration of morphine (10 mg. per kg.) before diathermy. Morphine sensitises the anterior hypothalamic region, of which panting is a function. E. M. S.

Effect on intestinal motility of *cyclo*propane anæsthesia alone and after morphine-scopolamine premedication. W. H. CASSELS, W. W. WEISEL, and W. B. YOUMANS (J. Pharm. Exp. Ther., 1938, **63**, 391—399).—In dogs with jejunal fistulæ, either normal or denervated, *cyclo*propane anæsthesia caused inhibition of rhythmic contractions and decrease in tonus. Post-anæsthetic recovery was rapid and complete. *cyclo*Propane did not lower the high tonus caused by premedication with morphine and scopolamine. E. M. S.

Morphine and respiration. L. BINET and M. V. STRUMZA (Presse méd., 1938, **46**, 769—770).—Morphine (7—13 mg. injected intravenously into chloralised dogs) diminishes the resistance of the respiratory centre to the depressant action of 2·9% O_2 in the inspired air. G. SCH.

Methods of assaying the content of morphine in opium and of cocaine in raw cocaine and in coca leaves. (Bull. Health Org., League of Nations, 1938, **7**, 429—450).

Significance of codeine as a habit-forming drug. P. WOLFF (Bull. Health Org., League of Nations, 1938, **7**, 546—580).

Pharmacology of stimulants. F. HAFFNER (Klin. Woch., 1938, **17**, 1310—1311).—Phenyl*iso*propylamine is twice as effective as caffeine in the action of antagonising chloral hydrate or alcohol on mice. Doses of 0·01 g. per kg. raise the rabbit's temp. by 1° for 4 hr. E. M. J.

Antianæsthetic effects of some convulsants in the albino mouse. A. M. HJORT, E. J. DE BEER, and D. W. FASSETT (J. Pharm. Exp. Ther., 1938, **63**, 421—431).—The antianæsthetic val. of a convulsant was based on the smallest dose which shortened the sleeping time to ½ that of the controls, in mice anæsthetised by a standard dose of hypnotic. Picrotoxin, metrazol, and benzedrine were effective; caffeine and ephedrine less so; strychnine was without effect. The toxicity of benzedrine was increased 5-fold by the anæsthesia; that of the other convulsants was either definitely decreased or slightly modified. E. M. S.

Bulbocapnine-benzedrine antagonism. E. SPIEGEL (J. Pharm. Exp. Ther., 1938, **63**, 438—442).—The cataleptic condition, produced in rats and cats by bulbocapnine, is abolished by benzedrine, and hyperactivity supervenes. When the drugs are reversed the antagonistic effect is slight. E. M. S.

Action of benzedrine ("Elastonon"). H. STORZ (Klin. Woch., 1938, **17**, 1280—1283).—60 persons were given 20 mg. of the drug; all, except 3, showed a rise in blood pressure (max. 30 mm. Hg) commencing after 30 min. and lasting 5—6 hr., and a rise of pulse rate of 20—30 per min. Blood-sugar and body temp. rarely rose. Higher dosage had no increased effect; repeated doses led to a fall of blood pressure to normal. Similar results were obtained in animal experiments. E. M. J.

Central analeptic substance with peripheral circulatory action. F. HAUSCHILD (Klin. Woch., 1938, **17**, 1257—1258).—"Pervitin" (β-methylamino-α-phenylpropane) has a marked stimulating action on the highest cortical centres and a pressor effect. The oral dose is only double the intraperitoneal dose. The mean lethal dose is 1/10th of that of ephedrine; it is active in 1/50—1/00th mean lethal doses. It also has a spasmolytic action. E. M. J.

Depressant action of mistletoe extracts on the blood pressure. A. JARISCH (Wien. klin. Wschr., 1938, **51**, 1032—1035).—Extracts of mistletoe act on the chemoreceptors of the aorta and the carotid body and lower the blood pressure and heart rate. A. S.

Influence of the concentration of alcohol on temperature, pulse rate, and respiration of dogs and rabbits. A. SZWABOWICZ (Acta Biol. Exp., 1938, **12**, 130—138).—Rectal and mouth temp. decrease if alcohol is given by mouth or *per rectum* in rabbits or dogs; temp. returns to or above normal when alcohol has disappeared from the blood. Pulse rate is increased and rate of breathing is diminished. Body temp. is increased if alcohol is administered intravenously. A. S.

Sub-threshold doses in therapeutics. E. BÜRGI (Schweiz. med. Wschr., 1938, **68**, 812—813).—A review. A. S.

Recent advances in the treatment of circulatory diseases. C. DIENST (Dtsch. med. Wschr., 1938, **64**, 1247—1249). A. S.

Use of telatuten in disturbances of the peripheral circulation. W. FISCHER (Wien. med. Wschr., 1938, **88**, 724—725).—Telatuten (*per os* and intravenously) was successfully used in severe cases of peripheral vascular disturbances (Raynaud's and Bürger's disease etc.), when lumbar ganglionectomy did not sufficiently improve the condition. A. S.

Heterocyclic derivatives related to aminomethylbenzdioxan.—See A., 1938, II, 510.

Determination of the combination of salicylic acid with blood. M. OBTULOWICZ (Arch. Dermat. Syphilis, 1936, **174**, 633—634; Chem. Zentr., 1937, i, 674).—Salicylic acid in ether is used to ppt. defibrinated oxalated, citrated, or heparinised blood and excess in the hæmolysed blood is determined colorimetrically by the $FeCl_3$ reaction. A. H. C.

Peroral and intravenous therapy with ascorbic acid–iron. H. FLEISCHHACKER and F. SCHÜRER-WALDHEIM (Wien. klin. Wschr., 1938, **51**, 776—780).—Intravenous Fe therapy with "Ferro 66" (ascorbic acid–Fe) is strongly recommended in all cases where lack of Fe is a dominating symptom of the disease. A. S.

Treatment of skin diseases in the climacteric. P. J. SCHWARZ (Schweiz. med. Wschr., 1938, **68**, 1076—1078).—Skin affections (acne, rosacea, eczema) during the climacteric were successfully treated by administration of procliman Ciba (folliculin 0·02 g., peristaltin 0·015 g., nitroglycerin 0·0002 g., amidopyrine 0·1 g., caffeine 0·05 g. per tablet) or folliculin alone. A. S.

Chemistry and pharmacology of *Malva silvestris*, L. I. Composition and vitamin content. II. Effect on blood composition and processes of cicatrisation. L. CALLEGARI and G. MONTOLIVO (Boll. Soc. ital. Biol. sperim., 1938, **13**, 201—202, 202—203).—I. The leaves (water 18·19%) of *M. silvestris* yield an aq. extract, containing 1·06% of mucilaginous substance but free from glucosides and alkaloids, which has no toxic action when subcutaneously injected into frogs, guinea-pigs, or rats. The leaves contain vitamin-*A*, -*B*, and -*C*.

II. Intravenous injection of aq. extracts of the leaves has no effect on the rate of blood coagulation (rabbit); a slight hyperglycæmic action, but no effect on blood-Ca, occurs. The extract has a cicatrising action (rabbit), possibly related to its vaso-constrictor activity (frog). F. O. H.

Mechanism of action of aphrodisiac and other irritant drugs. A. VIEHOEVER and I. COHEN (Amer. J. Pharm., 1938, **110**, 226—249).—The crustacean *Daphnia magna* was used as test animal. Yohimbine, cantharidin, capsaicin, and piperine caused pronounced and continued excitatory movement of the male genital organ, ejaculation of sperm also occurring with cantharidin. Heart action and respiration were depressed in certain concns., and inco-ordinated movements took place. W. F. F.

Rubrophen treatment of surgical tuberculosis. K. VON SAILER (Wien. med. Wschr., 1938, **88**, 808—811).—A review. A. S.

Experimental fever. M. BURSTEIN (Presse méd., 1938, **46**, 715—717).—In dogs weighing 17—20 kg.

the body temp. was raised by injections of dinitrophenol or by short-wave diathermy under chloralose anæsthesia. With body temp. above 42° anaphylactic and peptone shock were much modified, and were abolished at temp. above 44°. G. SCH.

Pharmacology of cysteamine and mercaptothiazoline. J. V. SUPNIEWSKI and M. SERAFIN-GAJEWSKA (Acta Biol. Exp., 1938, **12**, 142—154).—Cysteamine hydrochloride and mercaptothiazoline were synthesised (Gabriel's method). The fatal dose in mice on subcutaneous injection is 0·9 g. and 0·45 g., respectively, per kg. body-wt. Smaller doses increase the rate and depth of breathing in cats; larger doses arrest respiration. Blood pressure is lowered by splanchnic vasodilatation. Cysteamine constricts the skin and muscle vessels, increases the force of contraction of the rabbit's heart, and dilates the coronary arteries; the thiazoline has the reverse effects. Cysteamine produces diastolic, the thiazoline systolic, arrest of the frog's heart. The former increases, the latter lowers, blood-sugar. Bile secretion is diminished by both substances. They increase the mobility of the gut and of the urinary bladder. Medium concns. inhibit the activity of isolated smooth muscle, it is paralysed by large doses of cysteamine; mercaptothiazoline produces a contracture. A. S.

Intravenous methylene-blue in status convulsivus. L. KAJDI and C. V. TAYLOR (Amer. J. Psychiat., 1938, **94**, 1369—1376).—Intravenous injection of 1% methylene-blue solution in 22 instances of comatose status epilepticus resulted in rapid restoration of consciousness in 59% and complete control of the convulsions in 59%. G. D. G.

Pharmacology of substances abolishing cough. A. M. ERNST (Acta brev. neerl. Physiol., 1938, **8**, 34—37).—Lugol's I solution was injected into the pleural cavity of cats; coughing was set up by pinching the trachea. The min. doses to suppress the cough reflex on subcutaneous injection were: morphine 0·5 mg., opial 2 mg., codeine 3 mg., dicodide 0·25 mg., acedicon 0·25 mg. A. S.

Use of targesin in pædiatics. A. ERKENS (Dtsch. med. Wschr., 1938, **64**, 1514—1516).—Targesin (a Ca– colloidal Ag–diacetyltannin–protein compound) was successfully used in the treatment of affections of the mucous membranes of the mouth and the urinary bladder and in various diseases of the skin. A. S.

Use of targesin in diphtheria. E. WALLBRUCH (Münch. med. Wschr., 1938, **85**, 1551).—Local application of targesin to the nasal mucous membrane and pharynx diminishes the inflammation and leads to a rapid disappearance of diphtheria bacilli. A. S.

Chemotherapy of acute poliomyelitis. C. CONTAT (Schweiz. med. Wschr., 1938, **68**, 669—674).—35 cases of acute poliomyelitis were treated with oral administration of $KClO_3$. All the patients were cured without residual paralysis. Side-actions of the substance were not observed. $KClO_3$ is also recommended as a prophylactic. A graph is given showing the doses employed according to the age of the patients. A. S.

Aliphatic basic substituted quinoline compounds. F. SCHÖNHÖFER (Med. u. Chem., 1936, **3**, 64—68; Chem. Zentr., 1937, i, 603).—Simpler synthetic "modified quinine" compounds in which the basic residue is linked to the quinoline nucleus in various ways do not approach quinine in antimalarial activity. A. H. C.

Pharmacology of pyrrylcinchoninic acid. L. LUIGI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 485).—In guinea-pigs, doses of approx. 1·5 g. per kg. are innocuous orally, toxic intravenously, and lethal intraperitoneally; oral doses of 1 g. in man are harmless. The reddish-brown colour of the urine (and of uric acid separated from it) indicates excretion of pyrryl decomp. products. F. O. H.

Pharmacology of *Ustilago*. W. H. HUNT and M. R. THOMPSON (J. Amer. Pharm. Assoc., 1938, **27**, 740—752).—Aq. alcoholic extracts of ripe or unripe *U. maidis* (corn-ergot) have a depressor action (cat, dog) but do not inhibit the pressor action of adrenaline; they contract the uterus of pregnant and puerperal cats; with cats in early stages of pregnancy, abortion is produced. Isolated uterus (guinea-pig, rabbit) is contracted; the movements of rabbit's isolated intestine (normal or stimulated by histamine) are inhibited. Injection of large doses by various routes is lethal (cat) but enteral administration (non-pregnant rat) is tolerated. The activity, which occurs in the light petroleum-sol., resinous fraction, is not due to alkaloids or an acetylcholine- or histamine-like substance. F. O. H.

***Senecio vulgaris*.** J. VAN DER MEER (Pharm. Weekblad, 1938, **75**, 1169—1177).—Pharmacological tests with extracts of *S. vulgaris* root in water and in 30, 70, and 90% alcohol, on isolated uterus and on frog's heart are described. S. C.

***Kaempferia galango*, L.** H. LECLERC (Presse méd., 1938, **46**, 744).—A pharmacological review. G. SCH.

Effect of *Pluchea suaveolens* (lucero herb) on gastric secretion. C. BONORINO UDAONDO, H. ZUNINO, G. P. GOÑALONS, and A. R. BASILE (Bol. Acad. Nac. Med. Buenos Aires, 1938, 135).—A 10% infusion made at 60—70° (20 min. maceration, 8 min. heating) was given by mouth to patients with or without a gastric syndrome. A marked increase in HCl and total acidity occurred, comparable with that obtained by injection of histamine though usually less, and by Ehrmann's alcohol test (usually more). Pepsin secretion was also stimulated. J. T. L.

Pharmacology of cryptopine. F. P. LUDUEÑA (Rev. Soc. argent. Biol., 1938, **14**, 339—352).—The min. lethal dose of cryptopine in the guinea-pig was 160 mg. per kg. Doses of 5 mg. per kg. or less in the decerebrate cat produced variable results on the blood pressure; larger doses produced marked and prolonged hypotension. In the urethanised rabbit hypotension was also observed. In the chloralosed dog 5 mg. per kg. or less produced no effect or a slight increase in blood pressure. In the decerebrate cat and the urethanised rabbit an increase in respiratory rhythm and amplitude was observed. It produced a marked

stimulating effect on the uterus *in situ* of the cat, rabbit, and bitch, and on the isolated uterus of the guinea-pig, rat, and rabbit. A stimulating effect on the intestine *in situ* of cats and rabbits and an inhibitory effect on the isolated intestine of the rabbit were also observed. J. T. L.

Venom of *Scorpæna porcus*. A. LUMIÈRE and P. MEYER (Compt. rend. Soc. Biol., 1938, **127**, 328).—Extracts of stings of this species has the same lethal action on certain fishes as the sting itself; action on the guinea-pig is slight or absent. D. N.

Effect of diet in toxicological studies. I. A. MANVILLE, F. J. REITHEL, and P. M. YAMADA (J. Ind. Hyg., 1938, **20**, 492—493).—The content of a diet in detoxifying substances is important when assessing toxicities by animal experiments. The uronic anhydride content of common foods is shown to vary greatly, and uronic acids form many conjugation products. The toxicity of menthol varied according to the diet fed to the experimental animals, and according to their physical condition. E. M. K.

Arsenical poisoning in vineyard workers. W. FROHN (Münch. med. Wschr., 1938, **85**, 1630—1635).—Many vineyard workers, using an As-containing solution for spraying the vineyard, suffered from As poisoning. A. S.

Distribution of lead in the cat after intravenous injection of a colloidal lead preparation, and the effect of irradiation on this distribution. B. L. CRAWFORD, H. L. STEWART, C. E. WILLOUGHBY, and F. L. SMITH, 2nd (Amer. J. Cancer, 1938, **33**, 401—422).—Cats which received intravenous injections of colloidal Pb–Mn phosphate (0·4 mg. per kg. body-wt. every 5 to 7 days) showed an increase in Pb content of most organs and tissues. Few of the cats showed clinical symptoms of Pb posioning. Roentgen irradiation of a 2nd group of cats similarly treated with Pb showed an increase in toxic symptoms over the 3rd group having irradiation alone. The toxic effects of irradiation and Pb were additive. Irradiation did not produce a change in distribution of Pb content of treated cats, although the Pb distribution of uninjected cats was altered by irradiation. The sensitivity of some of the cats to Pb poisoning could not be accounted for by the distribution of Pb in the various organs. E. B.

Early diagnosis of acute and latent plumbism. F. L. SMITH, 2nd, T. K. RATHMELL, and G. E. MARCIL (Amer. J. clin. Path., 1938, **8**, 471—508).—In normal subjects the Pb content is 0 per 10 g. of blood serum, 0·002—0·011 mg. per 10 g. of cells and fibrin fraction, and 0·001—0·005 mg. per 10 g. of whole blood. In the acute or subacute plumbism the serum-Pb was increased; in the chronic inactive stage it was normal but there was an increase in the Pb in the whole blood and cells. In borderline cases, a definite diagnosis could be established by giving the patient acid therapy, when an increase in serum-Pb occurred. Daily hæmograms were useful in following the progress of a case. C. J. C. B.

Relative toxicity of salts of lead, zinc, and copper to the stickleback (*Gasterosteus aculeatus*, L.) and the effect of calcium on the toxicity of lead and zinc salts. J. R. E. JONES (J. exp. Biol., 1938, **15**, 394—407).—Lethal limits of concn. were determined for Pb, Zn, and Cu for the three-spined stickleback. Addition of Ca salts to solutions of $Pb(NO_3)_2$ or $ZnSO_4$ reduces the toxicity of these salts to *Gasterosteus*. A running supply of "hard" tap water containing approx. 50 mg. of Ca per l. as $Ca(HCO_3)_2$ is harmless to the minnow, *Phoxinus phoxinus*, L., and to the stickleback, when the max. amount of Pb that it can hold in solution (7×10^{-7} g. per c.c.) is added to it. This concn. of Pb in soft water is fatal to *Gasterosteus* in 38½ hr. In the presence of sufficient Ca, the interaction between the Pb, or Zn, and the mucus secreted by the fish (which is the essential feature of the toxic process) does not take place. The application of these results to the pollution of natural waters by effluents from Pb and Zn workings is discussed. J. M. R.

Physiological effects of small amounts of lead: evaluation of the lead hazard of the average individual. A. S. MINOT (Physiol. Rev., 1938, **18**, 554—577).

Placental transmission of selenium. B. B. WESTFALL, E. F. STOHLMAN, and M. I. SMITH (J. Pharm. Exp. Ther., 1938, **64**, 55—57).—Se passes through the mammalian placenta. The fœtal concn. is higher after administration of naturally occurring org. food Se to pregnant cats and rats than after inorg. Se. The fœtus is unaffected at birth. E. M. S.

Toxicity of some organic selenium compounds. H. D. ANDERSON, A. L. MOXON, and E. P. PAINTER (J. Pharm. Exp. Ther., 1938, **63**, 357—368).—The relative toxicity of ββ′-diseleno- and β-seleno-dipropionic acid, dibenzyl diselenide, β-seleninopropionic acid, and *n*-propylseleninic acid was determined in rats from the effect on growth, the development of gross liver lesions, and the degree of retention of Se in the organs. Se in these compounds is not as toxic as inorg. Se salts and naturally occurring Se in cereals. E. M. S.

Detoxication. II. (A) Conjugation of isomeric 3-menthanols with glycuronic acid and asymmetric conjugation of *dl*-menthol and *dl-iso*menthol in the rabbit. (B) *d-iso*Menthylglycuronide. R. T. WILLIAMS (Biochem. J., 1938, **32**, 1849—1855; cf. A., 1938, III, 602).—*d*-Menthol and *d-iso*menthol are conjugated to an extent approx. 50% greater than that of the corresponding *l*-compounds. Asymmetric conjugation takes place when the *dl*-mixtures are fed to rabbits. When *d-iso*menthol is fed, d-iso*menthylglycuronide*, m.p. 126°, $[\alpha]_D^{16}$ −43·2 in alcohol (NH_4 and *Cd* salts), occurs in the urine. P. G. M.

Fatal dinitro-*o*-cresol poisoning. M. NORDMANN and O. WEBER (Arch. Gewerbepath. Gewerbehyg., 1938, **8**, 441—448).—Clinical symptoms and *post mortem* findings are described. M. A. B.

Karyoclastic poisons; their influence on organisms and their significance in pathology. K. CHODKOWSKI (Protoplasma, 1937, **28**, 597—619).—A review. M. A. B.

Immunological connexion between burns and sepsis. W. H. HUGHES (Lancet, 1938, **235**, 670—672).—Blister fluid from burns contains a toxic substance which lowers the resistance of rabbits to staphylococci and of mice to streptococci and pneumococci. C. A. K.

Specificity of fungous allergy. F. M. RACKEMANN, T. G. RANDOLF, and E. F. GUBA (J. Allergy, 1938, **9**, 447—453).—The specificity of mould extracts was demonstrated by intradermal tests on 4 patients clinically sensitive to *Cladosporium fulvum*, Cke., as shown by asthmatic attacks when exposed to this species. Each patient showed little or no reaction to tests with other species of *Cladosporium*. Passive transfer of the skin tests to normal persons was carried out in all 4 cases. C. J. C. B.

Time of appearance of anaphylactic enzymes during the period of pre-sensitisation. F. MAIGNON and J. LE PENNEC (Compt. rend. Soc. Biol., 1938, **127**, 1080—1081).—The dialysate of the blood of dogs bled 3 days after intravenous injection of 10 c.c. of horse serum was injected intravenously into other dogs. After a test injection of 10 c.c. of horse serum these animals showed a toxic reaction. The dialysate of the blood of dogs bled 6 days after injection of horse serum produced no symptoms. The dialysate blood of sensitised dogs bled more than 12 days after the sensitising injection transmitted passive anaphylaxis, caused by the first enzymes after disappearance of the second. J. H. T.

Treatment of chronic rheumatic polyarthritis with gold. W. TSCHOPP (Schweiz. med. Wschr., 1938, **68**, 1136—1139).—Solganal B oleosum (Schering), a 2% oily suspension of Au, was injected intravenously in doses of 0·01—0·3 g. (total amount 3—4 g.) in cases of chronic rheumatic polyarthritis. Satisfactory results were obtained in 60—80% of the cases. The combination with sulphonamide preps. is particularly successful. A. S.

Treatment of wounds with silver iodide. F. KIRSCH (Dtsch. med. Wschr., 1938, **64**, 1289—1290).—A 1·5% AgI ointment ("Argiod") is recommended for treatment of extensive burns and varicose ulcers. A. S.

Menthyl hydrogen succinate and its heavy metal salts.—See A., 1938, II, 428.

Pharmacology of copper. III. Effect of excess of complex-former on the action of sodium copper pyrocatecholdisulphonate. B. CACCIAVILLANI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 419—421; cf. A., 1938, III, 228).—The annulment of the toxicity of the above Na Cu complex by the presence of approx. 17 mol.-equivs. of Na pyrocatecholdisulphonate occurs with the intact heart (rabbit) but not with the isolated heart (frog, rabbit). F. O. H.

Effect of sodium formaldehydesulphoxylate on rabbits poisoned by mercuric chloride. F. CAVALLI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 191—192).—With (lethal) doses of 2·17 mg. of $HgCl_2$ per kg. of body-wt., intravenous injection of a single dose of 1 g. per kg. of the sulphoxylate produces survival. With doses of $HgCl_2$ of 4·34 g. per kg., the toxicity is not diminished by single or continuous injection of the sulphoxylate; in some instances, the toxicity is enhanced, probably owing to the formation of a toxic reduction product of $HgCl_2$. F. O. H.

Variations in content of reduced glutathione in blood and tissues due to subcutaneous administration of sulphur dissolved in olive oil. S. GAJATTO (Boll. Soc. ital. Biol. sperim., 1938, **13**, 462—463).—The content in kidney, liver, and muscle is increased, whilst that in the blood is reduced. F. O. H.

Effect of intramuscular injection of precipitated sulphur in gum-arabic suspensions and in olive oil or petroleum on the body-temperature of rabbits. S. GAJATTO (Boll. Soc. ital. Biol. sperim., 1938, **13**, 458—460).—A slight increase occurs. F. O. H.

Changes in body-temperature of rabbits intramuscularly injected with carbon disulphide solutions of sulphur. S. GAJATTO (Boll. Soc. ital. Biol sperim., 1938, **13**, 460—462).—Solutions of S in CS_2 slightly increase body-temp. when allowance is made for the pronounced decrease due to the CS_2 alone. The pyrogenic action of S increases with its degree of dispersion. F. O. H.

Broncho-dilator action of magnesium and its antagonistic action (dilator action) against pilocarpine, histamine, and barium chloride. V. G. HAURY (J. Pharm. Exp. Ther., 1938, **64**, 58—64).—The action of Mg on bronchial musculature is studied by perfusion experiments on excised guinea pigs' lungs. E. M. S.

(r) INDUSTRIAL PHYSIOLOGY AND HYGIENE.

Physiology of work. E. ATZLER (Ergebn. Physiol., 1938, **40**, 325—436).

Response of body to work in health and disease. H. W. KNIPPING (Klin. Woch., 1938, **17**, 1097—1100). E. M. J.

Effect of exercise on blood, lymph, and muscle in relation to muscle soreness. R. W. BOGLE and F. H. SCOTT (Amer. J. Physiol., 1938, **122**, 569—584).—In normal and splenectomised dogs severe exercise (treadmill) produced an immediate concn. of blood due to loss of water from the blood stream; the spleen played no part in this phenomenon. Stimulation of frog's muscle to fatigue led to increase in water content of muscle; rabbits muscle took up much less water in similar conditions. Anæsthesia increases muscle water in rabbits. A special arrangement is described for human subjects by means of which the pronators of the forearm and hand can be exercised and the resulting changes in vol. of the forearm measured. An increase in arm vol. was demonstrated after such exercise which could not all be explained by active hyperæmia. Muscle soreness may come on and persist after the arm vol. has returned to normal. M. W. G.

Radiation as a factor in heating Canadian homes and in body heat loss. R. C. PARTRIDGE and D. L. MACLEAN (J. Ind. Hyg., 1938, **20**, 483—

491).—Measurements of air temp., using Hg thermometer with silvered bulb, relative humidity, air movement, radiation, with a globe thermometer, and wall and window temp., with a dermotherm, were made in 12 domestic dwellings of various types. The amount of radiation was small; 8% or less of the total radiation was supplied by objects in the room other than the walls. The heat loss, by radiation and convection, of a subject, clothed and unclothed, was estimated at various operative temp.
E. M. K.

Mechanism of heat loss and temperature regulation. E. F. Du Bois (Ann. int. Med., 1938, **12**, 388—395).—The modes of heat loss in normal men were recorded at rest, during exercise, and on exposure to different room temp. The large part played by evaporation from the skin surface in exercise and high temp. is emphasised. The balancing of heat loss and heat production is illustrated.
C. A. K.

Daylight in relation to climate and health. W. R. G. Atkins (Brit. Med. J., 1938, II, 565—569).—A review. C. A. K.

Protective action of bergamot oil and redoxon against light. G. Miescher (Schweiz. med. Wschr., 1938, **68**, 888—889).—The observation that local application of bergamot oil to the skin and peroral or intravenous administration of vitamin-*C* protects the skin from ultra-violet light erythema (Klin. Woch., 1937, 960) is not confirmed. A. S.

Calcium metabolism in relation to industrial injury. W. W. Watkins (Radiology, 1938, **31**, 59—65).—A review. W. F. F.

Factors which determine the diagnosis of silicosis. C. L. Sutherland (Brit. J. Radiol., 1938, **11**, 414—421).—An illustrated summary of diagnosis. W. F. F.

Silicosis in the pottery industry. J. F. Bromley (Brit. J. Radiol., 1938, **11**, 345—353).—A survey of the incidence of the disease in workers engaged in the different processes occurring in manufacture. W. F. F.

Silicosis in pottery workers. R. A. K. Harper (Brit. J. Radiol., 1938, **11**, 354—365).—A study of 12 cases typical of the disease as found in pottery workers. W. F. F.

Silicosis in grinders. J. L. A. Grout (Brit. J. Radiol., 1938, **11**, 366—370).—A brief review.
W. F. F.

Asbestosis. J. V. Sparks (Brit. J. Radiol, 1938, **11**, 371—377).—A review of the course of the disease and of the *X*-ray findings. W. F. F.

Pathological anatomy of pulmonary asbestosis. W. di Biasi (Arch. Gewerbepath. Gewerbehyg., 1937, **8**, 139—155).—Macroscopic and microscopic findings in a case of fatal asbestosis are described. The principal change was a diffuse fibrosis, increasing from the top of the lung downwards. The anatomical and histological changes observed in silicosis are entirely different from those in asbestosis. Formation of asbestosis bodies, their significance in the development of asbestosis, and the chemical or mechanical action of asbestos on the lungs are discussed. M. A. B.

Occupational diseases of the lungs in agricultural workers. R. Fawcitt (Brit. J. Radiol., 1938, **11**, 378—392).—Types of mycotic infection of the lungs with *X*-ray appearances are described.
W. F. F.

Ætiology, epidemiology, and control of lung affections in basic slag workers. M. Gundel and H. Fischer (Z. Hyg., 1937, **120**, 66—86).—The pneumonia of basic slag workers results from the invasion by pneumococci of lung tissues weakened by the action of the slag, and is not due solely to mechanical or chemical action of the slag.
M. A. B.

Radiological demonstration of pathological changes induced by certain industrial processes. J. F. Brailsford (Brit. J. Radiol., 1938, **11**, 393—400).—A brief review of cases. W. F. F.

Diagnosis and therapy of chronic benzene poisoning. G. Bormann (Arch. Gewerbepath. Gewerbehyg., 1937, **8**, 194—205).—No decrease in vitamin-*C* content was observed in the 24-hr. urine of benzene workers. Those showing symptoms of benzene poisoning had a decreased -*C* content in the blood, which was more pronounced the more definite were the symptoms. Treatment with -*C* preps. greatly improved the condition of an affected worker. Rabbits treated with -*C* showed greater resistance to benzene vapour than normally fed animals.
M. A. B.

Affections caused by carbon disulphide in the Andalusian olive oil industry. J. D. Gallego (Arch. Gewerbepath. Gewerbehyg., 1937, **8**, 124—138).—Affected workers showed, among other symptoms, lymphocytosis. Dogs and rabbits treated with CS_2 developed the same condition, which is probably characteristic of CS_2 poisoning.
M. A. B.

Affections due to organic mercury compounds. F. Koelsch (Arch. Gewerbepath. Gewerbehyg., 1937, **8**, 113—116).—Org. Hg compounds such as are used for seed-dressings may, by const. handling, produce (*a*) affections of skin and upper respiratory tract due to the mechanical action of the dust, (*b*) affections of the central nervous system due to absorption, coupled with local damage to the organs in which the compounds are decomposed and Hg is deposited. M. A. B.

Eczema in calico printing and its study by means of "functional skin tests." W. Heinze (Arch. Gewerbepath. Gewerbehyg., 1937, **8**, 156—193).—Fast Red TR, KB, and 3GL and chromates all have a sensitising effect on the skin. The dyes produced by coupling these with Naphtol AS have less effect, whilst Fast Orange is practically harmless. The skin is also damaged, but not sensitised, by NaOH, healthy skin being much more resistant than skin already affected by other substances.
M. A. B.

Dermatitis alleged to be due to wearing textiles. C. M. Whittaker (J. Soc. Dyers and Col., 1938, **54**, 447—454).—A lecture, dealing mainly with the legal aspects. Opinions of various medical

authorities and extracts of evidence and judgments on several cases of alleged dermatitis are quoted. R. J. W. R.

"Physical allergy" as a indemnifiable industrial disease. F. LUCE (Arch. Gewerbepath. Gewerbehyg., 1937, **8**, 206—222).—A case is described of skin affection caused by exposure to heat, and a review of the literature shows that many other cases of hypersensitivity to temp. changes and other physical influences have been encountered in the past. M. A. B.

(s) RADIATIONS.

Induction by fast neutrons of mutations in *Antirrhinum* and *Myosotis*. R. M. CHATTERS (Science, 1938, **88**, 241—242).—Plants grown from dry seeds which had been exposed to stray neutrons from the cyclotron have given rise to flowers which are different in colour and in morphology from the controls. W. F. F.

Temperature distribution in layers of biological tissues after exposure to electromagnetic radiation with air as external medium. A. ESAU, J. PÄTZOLD, and E. AHRENS (Naturwiss., 1938, **26**, 477—478).—Fat–muscle layers were irradiated with electromagnetic waves λ 25 cm. and the temp. distribution in the layers was determined. Both in the fat and the muscle there was an approx. exponential decrease of temp. with depth. A. J. M.

Temperature distribution in layers of biological tissues after exposure to electromagnetic radiation with an external medium of high dielectric constant. J. PÄTZOLD and K. OSSWALD (Naturwiss., 1938, **26**, 478—479).—The temp. distribution in fat–muscle layers in water after irradiation with electromagnetic waves λ 100 cm. was determined. Comparison with experiments with air as external medium (see preceding abstract) shows that the ratio of heating of fat to muscle is considerably less in water than in air. A. J. M.

General biological action of *X*-rays. H. HOLTHUSEN (Strahlenther., 1938, **62**, 228—239).—A review of the material relative to the latent period between the application of *X*-rays and the appearance of cellular changes. S. H.

Biological experiments with a condenser discharge type of *X*-ray tube. K. H. KINGDON, P. A. ZAHL, C. P. HASKINS, and H. E. TANIS (Radiology, 1938, **31**, 52—58).—The apparatus employed delivered 3·5 r. over a period of about 5 μ-sec., giving $4{\cdot}2 \times 10^7$ r. per min. instantaneously, and a mean rate of 200 r. per min. when set to discharge at 1-sec. intervals. The test materials were *Drosophila melanogaster*, *Aspergillus niger*, and seeds of a stock winter wheat. A radiation of normal intensity provided control data. The intensity of radiation was independent of the total effect produced when no recovery was allowed between doses. W. F. F.

Effect of radiation on cell respiration. A. GOLDFEDER and J. L. FERSHING (Radiology, 1938, **31**, 81—88).—Respiratory exchange of irradiated and normal kidney tissue was determined with the Barcroft–Warburg respirometer. With *X*-rays and Ra no respiratory effects were seen, dosages being up to 30,000 r. units and 4140 mg.-hr. units respectively. Rn irradiation in a large dosage (*e.g.*, 5000 mc.-hr.) diminishes O_2 uptake about 50% and the R.Q. to a smaller extent. W. F. F.

How *X*-rays may kill cells. H. RUDISILL and J. H. HOCH (Radiology, 1938, **31**, 104—106).—*X*-Ray irradiation of yeast cells results in damage to the dehydrogenase complex, as judged by absorption band spectra. W. F. F.

Effect of *X*-rays on the stomach in rabbits. R. B. ENGELSTAD (Amer. J. Roentgenol., 1938, **40**, 243—263).—A field in the epigastrium corresponding with the stomach was irradiated with various doses in 59 rabbits. Physical conditions were: 175 kv., 4 ma., filter 0·5 mm. Cu + 1·0 mm. Al, focus–skin distance 27 cm., radiation intensity 41 r. per min. The smallest dose producing distinct microscopical changes in the peptic cells, which are the most sensitive elements, lies between 250 and 500 r. A dose of 1500 r. results in pronounced changes, both macro- and micro-scopic, terminating in perforating ulcers in some cases. This dose is insufficient to produce any distinct effects on the skin. A dose of 3000 r. always produces an ulcerative condition, mainly on the lesser curvature, corresponding with peptic gastric ulcer in man. Coatings of the stomach wall other than the mucous membrane are only slightly radiosensitive with these doses. W. F. F.

Conditions for sterilisation of viruses by *X*-rays: vaccinia virus. A. LACASSAGNE and W. NYKA (Compt. rend. Soc. Biol., 1938, **128**, 1038—1040).—The effect is discontinuous, a decrease in the toxic action as a function of the amount of irradiation being observed, the limit at which the inconsistency occurred varying with the no. of elements irradiated. H. G. R.

Action of β-rays of radium on organic acids, especially maleic acid. B. LUSTIG and H. WACHTEL (Biochem. Z., 1938, **298**, 330—339; cf. Kailan, A., 1915, i, 212).—The contents of H, O, and carboxyl group in maleic acid are decreased, the C content and the power to combine with I are increased, and the m.p. is lowered by exposure to the rays which possibly cause elimination of water and production of an unsaturated polymeride. These changes are accompanied by loss of the power to protect carcinoma cells from the action of normal serum and by acquisition of the power to counteract the protective action of non-irradiated maleic acid. The development of Ehrlich mouse carcinoma or sarcoma by inoculation is prevented if a slightly alkaline solution of the irradiated acid is added to the material used for inoculation. Ethyl maleate and maleic anhydride are not thus affected by the rays. Irradiated maleic acid loses its biological properties when heated with water but not when heated alone. Acetic and malonic acid, before or after irradiation, have no effect on cytolytic processes but acrylic and malic acid acquire power to attack carcinoma cells by irradiation. The cytolytic properties of mesaconic

and thapsic acid are not affected by irradiation but those of palmitic acid are diminished. W. McC.

Biological influence of γ-rays on the glandular and hair system of the skin in normal and pathological conditions. V. PALUMBO (Radiology, 1938, **30**, 705—717).—Irradiation of the skin either promotes or discourages growth of hair, according to the dosage employed. W. F. F.

Effect of γ-radiation on cells *in vivo*. F. G. SPEAR and A. GLÜCKSMANN (Brit. J. Radiol., 1938, **11**, 533—553).—Normal tadpoles maintained at room temp. were exposed to a single dose of γ-radiation, and the histological changes studied over a period of ten weeks. Irradiation is followed by (1) reduction in cell division, (2) alteration in the ratios of nos. of cells in different phases of mitosis at various subsequent times, (3) appearance of degenerate cells. With the doses used, animals are capable of recovery; those in which metamorphosis had begun recover more quickly. The quant. results resemble closely results on avian fibroblasts *in vitro* and on mammalian tissue *in vivo*. W. F. F.

Action of short waves on living tissue. E. HASCHÉ (Naturwiss., 1938, **26**, 493).—The growth of embryonic hen fibroblasts is not stimulated by exposure, at distances of 4 and 5 cm., to radiation of λ 3·5 m. When exposure lasts longer than 8 hr. reversible and later irreversible inhibition of growth occurs, followed, after not more than 40 hr., by the death of the cultures. W. McC.

Theory of the action of radiations on biological materials capable of recovery. I, II. D. E. LEA (Brit. J. Radiol., 1938, **11**, 489—497, 554—566).—I. One cause of the dependence on intensity of the effect produced by a given dose of radiation is the existence of recovery in biological material. Alternative mechanisms are proposed for the recovery process, and it is shown that they all lead to dose-intensity curves of almost identical shape. Theoretical curves are compared with experimental findings on *Drosophila* eggs and tissue cultures.

II. A theory is advanced to explain delay in cellular division after irradiation. It is based on the concept of the cumulative dose, which is assumed to decay exponentially with time. This recovery process is similar to the recovery during irradiation discussed in Part I. Some agreement is found between the theory and available data on *Arbacia* eggs and on tissue cultures. Variations in mitotic count after irradiation can be predicted with some accuracy. W. F. F.

Chemical influence of irradiation on the skin. W. MILBRADT (Dermatol. Woch., 1936, **103**, 918—931, 959—964; Chem. Zentr., 1937, i, 108).—The influence on moisture, Cl′, PO_4''', Ca, Mg, K, Na, sugar, cholesterol, and phosphatides was investigated. A. H. C.

Absorption of ultra-violet radiation by human sweat. W. H. CREW and C. H. WHITTLE (J. Physiol., 1938, **93**, 335—348).—A film of sweat partly screens the skin against erythema-producing radiation; a 0·2-mm. film produces a just observable screening effect; the fatty substances sol. in ether are responsible for some of the screening effect. A sweat film 1 mm. thick transmits about 27% of solar radiation effective in producing sunburn. The average thickness of sweat on the forehead of a person profusely perspiring is about 0·07 mm.; 30% of the surface of the skin will then receive only about 75% of effective solar radiation. J. A. C.

Mutation rate in relation to the quantity and quality of radiation. W. NOETHLING and H. STUBBE (Strahlenther., 1938, **61**, 622—630).—The ripe male sex organs of *Antirrhinum majus* were irradiated with ultra-violet light from λ 254 to 366 mμ. The mutation rate varied with both quantity and quality of radiation. At λ 366 mμ., 70×10^5 ergs per cm.^{2} produced no certain increase above normal mutation rate. At λ 297 mμ., 65×10^5 ergs per cm.^{2} caused an increase of $5{\cdot}53 \pm 1{\cdot}69$%, whilst $1{\cdot}78 \times 10^5$ ergs per cm.^{2} caused $4{\cdot}37 \pm 1{\cdot}58$% increase. At λ 265 mμ. $2{\cdot}72 \times 10^5$ ergs per cm.^{2} caused $1{\cdot}78 \pm 0{\cdot}70$% increase. At λ 254 mμ., $2{\cdot}90 \times 10^5$ ergs per cm.^{2} caused an increase of $2{\cdot}93 \pm 2{\cdot}54$%. The probable errors of the figures for % increase are large, but a rough curve shows max. effectiveness at λ 297 mμ. There was no evidence for the production of sp. mutations. S. H.

Wave-length limit for the production of mutations in *Drosophila melanogaster* by ultra-violet light. A. REUSS (Strahlenther, 1938, **61**, 631—632).—Provisional figures show a limit on the long-wave side at λ 313 mμ. S. H.

Irradiation as a cause of genetic damage. A. PICKHAN (Strahlenther., 1938, **62**, 240—250).—Experiments on *Drosophila melanogaster* show that radiation causes lethal mutations in the *X* chromosome at the rate of about 10% per 4500 r. The relation between close and mutation rate is very nearly linear and is not affected by the duration of the irradiation nor by the λ. It is of the same order in the case of many other biological objects. The total calc. mutation rate for all genes and all severe mutations is 48% per 1000 r. in the F_1–F_2 crosses, or 1% of mutations per 20 r. The mutations are mainly recessive. The significance of those observations for human genetics is discussed. S. H.

Sensitivity of human skin to ultra-violet light in two cases of xeroderma pigmentosum. J. J. ZOON (Strahlenther., 1938, **61**, 640—645).—No difference in the sensitivity to short ultra-violet (2500 A.) was found between the xeroderma cases and the controls. To long-wave ultra-violet (3000 A.) the xeroderma cases were 20—38 times as sensitive as the controls. This is regarded as related to the increased porphyrin content of blood and urine in these xeroderma cases (48—52 units against normal 1—15). S. H.

Production of light-sensitising substances by micro-organisms. A. VON MALLINCKRODT-HAUPT (Strahlenther., 1938, **61**, 636—639).—Coproporphyrin was produced by cultures of *Streptothrices*, yeasts, and certain Gram-positive bacilli. Various Gram-negative bacilli produced fluorescent substances which had a sensitising effect when tested by application to human skin and to the skin of white mice. S. H.

Production of hydrogen peroxide in the organism. K. YAMAFUJI, M. NISHIOEDA, and K. SO (Biochem. Z., 1938, **298**, 293—297; cf. A., 1938, III, 626).—Most of the fractions of material obtained from living pressed yeast and dried, powdered sugar-cane leaves by extraction with water or 80% alcohol and subsequent dissolution in water or ether, followed in some cases by pptn. with normal or basic Pb acetate, $AgNO_3$, phosphotungstic acid, Ba acetate, or Hg^{II} acetate or by hydrolysis with 1% aq. H_2SO_4 or 5% aq. $Ba(OH)_2$, adsorption on kaolin, bone C, Al_2O_3, kieselguhr, or talc and elution with 1% aq. $Ba(OH)_2$, yield varying amounts of H_2O_2 when dissolved or suspended in water and irradiated with light from a Hg-vapour lamp. Little or no H_2O_2 is produced from glucose, fructose, sucrose, starch, alanine, caseinogen, glycerol, methyl alcohol, olive oil, morin, quercetin, or tannin under these conditions. W. McC.

Photodynamic action. II. Fate of hæmatoporphyrin after parenteral administration. III. Influence of sensitiser on photo-oxidation of tissues. H. SMETANA (J. Biol. Chem., 1938, **125**, 741—751).—II. Intravenously injected hæmatoporphyrin disappears from the blood within 24 hr. Its elimination is delayed following intraperitoneal or subcutaneous injection. Most of it is taken up by the liver and eliminated through the biliary tract.

III. The effects of photosensitisation of the living animal depend on the surface area subjected to irradiation and are due to oxidation of plasma acceptors. P. G. M.

Photochemical reactions in monolayers. II. Photochemistry of proteins.—See A., 1938, I, 615.

(t) PHYSICAL AND COLLOIDAL CHEMISTRY.

Donnan equilibria in biological processes. K. R. DIXIT (Current Sci., 1938, **7**, 169—177).—A review.

Application of the law of chemical equilibrium (law of mass action) to biological problems. F. C. MCLEAN (Physiol. Rev., 1938, **18**, 495—523).

Specific attraction between gene molecules. P. JORDAN (Physikal. Z., 1938, **39**, 711—714).—If there is a sp. attraction between gene mols. it must be a resonance effect from the viewpoint of quantum mechanics. The conditions under which such a resonance attraction between similar mols. can occur are considered. It is shown that there can only be a resonance interaction between similar mols. in different states of excitation, and that the model of a gene as a solid mol. is unsuitable to account for any quantum mechanical resonance attraction. A. J. M.

Physical structure of giant organic molecules.—See A., 1938, I, 603.

Mechanical forces and torque on an ellipsoid in diffusion fields in connexion with the problem of orientation of colloidal micellæ in biological systems. G. YOUNG and J. M. REINER (Growth, 1937, **1**, 251—261).—A mathematical analysis. W. F. F.

Mathematical biophysics of cell respiration. H. D. LANDAHL (Growth, 1937, **1**, 263—277).—A mathematical analysis, supported by experimental findings. W. F. F.

Diffusion and biological membrane permeability. J. M. REINER (Growth, 1937, **1**, 313—327).—A theoretical treatment. W. F. F.

Cell permeability. W. WILBRANDT (Ergebn. Physiol., 1938, **40**, 204—291).

Biological-physical Röntgen effect. K. STAUNIG and J. LÖBERING (Kolloid-Z., 1938, **84**, 319—323).—The swelling max. of animal tissues is increased or decreased by *X*-irradiation. The effect is reversible. E. S. H.

Dielectric properties of cozymase and adenylic acids from muscle and yeast. I. HAUSSER and E. KINDER (Z. physikal. Chem., 1938, **B**, **41**, 142—150, 320).—The dielectric consts. of aq. solutions have been measured by means of an ultra-short-wave method. Both of the adenylic acids function as amphoteric ions at the isoelectric point, whilst cozymase is a quadrupole. The higher conductivity of the adenylic acid from yeast as compared with that from muscle indicates that in the former the PO_4''' group, which is attached to the third C of the *d*-ribose group, is strongly dissociated. C. R. H.

Recording of electro-biological phenomena. V. GIORCELLI and L. FERMINI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 334—347).—The nature of the electric potentials (0·1—70 mv.) occurring in tissues and the general principles applied to their measurement are discussed. F. O. H.

Osmotic pressure of organs. IX. Variations in osmotic pressure of the blood and organs at different periods after intravenous injection of hypertonic solutions of sodium chloride or sulphate. I. SIMON (Arch. Farm. sperim., 1938, **66**, 73—86; cf. A., 1938, III, 753).—Data for the osmotic pressure of the blood, heart, brain, muscle, kidney, and liver of rabbits at varying periods after injection of hypertonic aq. NaCl and Na_2SO_4 are tabulated and discussed. F. O. H.

Artificial lecithin-proteins. III, IV. E. HOFER (Acta Biol. Exp., 1938, **12**, 70—74).—III. Lecithin was dissolved in alcohol and added to a solution of serum-albumin; the solution was pptd. by changing p_H by addition of $(NH_4)_2SO_4$ or acetic acid. A serum-albumin-lecithin complex was obtained, which was not broken up by ether extraction, and was easily sol. and could be filtered.

IV. If ether and alcohol are added to a lecithin solution, lecithin is quantitatively found in the ether at p_H 2·5; lecithin is recovered in the ether at p_H 7·0, if 1% KCl is added. In the presence of proteins (1% ovalbumin) only traces of lecithin are found in the ether at p_H 3·0; if 1% KCl is added 3 phases are obtained: (1) ether with little lecithin, (2) an emulsion with much lecithin and protein, (3) a watery solution with much lecithin. A. S.

Polyose-proteins. XII. S. J. VON PRZYŁĘCKI and D. ASSENHAJM (Acta Biol. Exp., 1938, **12**, 75—81).—Euglobulins of different species combine with different amounts of glycogen *in vitro*. A. S.

Mode of combination of polyoses with proteins. S. J. VON PRZYŁĘCKI (Acta Biol. Exp., 1938, **12**, 82—86).—Polyoses combine with proteins obtained from serum and form glyco-proteins; they link up with histidine (histidine-polyoses) through their NH group. This histidine-polyose complex is broken down in the organism by an enzyme. A. S.

Emulsifying substances and the stability of emulsions. U. GALLO (Boll. Chim.-farm., 1938, **77**, 517—522, 525—527, 546—552, 555—558, 575—576, 579—582, 585—588).—The colloidal nature, physical properties, and prep. of emulsions and the types of substances used as stabilisers and emulsifying agents are discussed. F. O. H.

Colloid models illustrating biological processes. III. Antagonism of neutral salts in the reversal of charge of adsorbed arabate and lecithin films. H. G. B. DE JONG and G. G. P. SAUBERT (Protoplasma, 1936, **26**, 282—294).—There is an antagonism between $UO_2(NO_3)_2$ and $NaNO_3$ in the reversal of the charge of Na arabate films and between (*a*) $CaCl_2$ and NaCl, and (*b*) LiCl and NaCl in the case of egg-lecithin films. With Na arabate films the effects of $CaCl_2$ and NaCl show no antagonism and are practically additive. M. A. B.

(u) ENZYMES.

Chemistry and mechanism of enzyme action. K. G. STERN (Enzymologia, 1938, **5**, 190—197).—A lecture. J. N. A.

Influence of thiol groups on the activity of dehydrogenases. II. Location of dehydrogenases in muscle. F. G. HOPKINS, E. J. MORGAN, and C. LUTWAK-MANN (Biochem. J., 1938, **32**, 1829—1848; cf. A., 1938, III, 438).—Succinic dehydrogenase differs from other dehydrogenases in that it is inactivated by incubation with oxidised glutathione, by a low concn. of alloxan, by Cu, and by maleic or iodoacetic acid. Malonic, succinic, and fumaric acids protect the enzyme from the effect of oxidised glutathione. The activity of the enzyme depends on the integrity of the SH groups. Extraction of muscle with salt solutions (NH_4Cl etc.) does not completely deplete the residual fibres of dehydrogenases. P. G. M.

Identity of the Schardinger enzyme with xanthine-oxidase and aldehyde-mutase. M. DIXON (Enzymologia, 1938, **5**, 198—225).—A review of the literature and of the evidence that the Schardinger enzyme and the aldehyde-mutase system are quite distinct and different from the aldehyde-oxidase system. J. N. A.

Stability of xanthine oxidase. F. J. PHILPOT (Biochem. J., 1938, **32**, 2013—2016).—Xanthine oxidase prepns. from milk appeared inactivated after removal of casein and dilution. Addition of casein, glycine, or CN′ caused reactivation which in the case of CN′ rose to above the original level. This is probably due to removal of Cu inhibition. Loss of activity of some preps. on dialysis or incubation can thus be wholly or partly reversed. Addition of cysteine had no effect. It is recommended that in xanthine oxidase activity measurements, 0·1M-glycine and 0·01—0·03M-KCN be used. T. F. D.

Isolation of the prosthetic group of *d*-amino-acid-oxidase. O. WARBURG and W. CHRISTIAN (Biochem. Z., 1938, **298**, 150—168; cf. A., 1938, III, 694).—On dialysis or storage at 0°, the oxidase prepared from sheep's kidney is less active. Separation of the protein moiety from the alloxazine-adenine dinucleotide is effected by 0·1N-HCl in the presence of $(NH_4)_2SO_4$ at 0°. The prosthetic group is stable in aq. neutral solutions at 0° and is completely destroyed by N-HCl at 100° in 5 min., whilst 0·1N-H_2SO_4 or -HNO_3 has no effect at room temp. Its catalytic activity is lost in 2 hr. with 0·5N-NaOH at room temp. Hydrogenation (Pt–H_2 at p_H 9·0 or $Na_2S_2O_4$ at p_H 7·5) decolorises the dinucleotide reversibly. It is pptd. by $HgSO_4$ or $AgNO_3$ from acid solution. The mononucleotide is not pptd. by $AgNO_3$. Org. solvents do not ppt. the dinucleotide from aq. solutions but may induce fluorescence with loss of activity. *p*-Cresol completely extracts the dinucleotide from aq. $(NH_4)_2SO_4$ solution. The methods for the prep. of the dinucleotide as the Ba salt $C_{27}H_{31}O_{15}N_9P_2Ba$ from horse kidney or liver and yeast are described (yield 1 mg. per kg. of tissue). Adenine (83% of calc. amount) was isolated as picrate after hydrolysis of the Ba salt with 0·1N-H_2SO_4 at 100° for 6 hr. Treatment of the Ba salt with NaOH and extraction with $CHCl_3$ yields 72% of the (lumino-) flavin. The absorption spectra of lactoflavin and the dinucleotide only differ in the shortest ultra-violet spectrum. The nucleotide appears to act by hydrogenation of the alloxazine ring by the amino-acid and subsequent dehydrogenation with mol. O_2. C. C. N. V.

Yellow enzymes. O. WARBURG and W. CHRISTIAN (Biochem. Z., 1938, **298**, 368—377).—Yeast extract is treated by the authors' method (A., 1934, 109) and the material obtained is then partly purified by cataphoresis (Theorell, A., 1935, 1024). The impure enzyme thus obtained is dissolved in water, half-saturated with $(NH_4)_2SO_4$, cooled to 0°, and acidified with 0·1N-HCl (p_H 2·8) which ppts. the protein component. The components (protein and prosthetic group) thus obtained in 78 and 95% yield, respectively, are purified separately. Alloxazine-adenine dinucleotide combines with the protein component giving a new yellow enzyme having absorption max. at 380 and 465 mμ. and the same catalytic properties as the old yellow enzyme, *i.e.*, it transfers H from the dihydropyridine of the pyridine nucleotide to O_2, having 70% of the activity of the mononucleotide compound. Possibly this compound does not occur in nature but is produced from the new enzyme by elimination of adenylic acid during isolation. Of the enzymes containing the alloxazine residue, some have a common protein, and others a common prosthetic, group. The specificity and the spectrum are determined by the protein component. A method of determining the velocity coeffs. of the stoicheiometric reactions of the enzymes is described. Further details oft he method of isolating alloxazine-adenine dinucleotide from yeast (cf. A., 1938, III, 847) are given. W. McC.

New yellow enzyme. E. HAAS (Biochem Z., 1938, **298**, 378—390).—The isolation in 7% yield of the enzyme (cf. preceding abstract) from extract of dried yeast (1 kg. contains 0·143 g.) is described. The enzyme, which is stable (10% loss of activity, not due to removal of prosthetic group, in 25 days at 0°) in aq. solution at p_H 4·6 but is inactivated in 5 min. at 55°, exhibits light-absorption bands at 275, 377, and 455 mμ., has a mol. wt. of 60,000—65,000, and contains 0·385% of luminoflavin. The prosthetic group, alloxazine-adenine dinucleotide, is not replaceable by that of the old yellow enzyme. The protein component, which also is different from that of the old enzyme, is obtained in 45% yield by treating the impure enzyme with H_2SO_4 and $(NH_4)_2SO_4$. The new enzyme is a more active catalyst of methylene-blue reduction than is the old, probably does not act as O_2 carrier in the living organism, is not oxidised in nature by cytochrome-*C*, and is reduced by the dihydropyridine of triphosphopyridine nucleotide. Its hydrogenated form is oxidised by O_2 but the rates of reduction and oxidation are different from those of the old enzyme. The enzyme is reconstituted on simple admixture of its components. W. McC.

Specificity and the prosthetic group of diamino-oxidase. E. A. ZELLER (Naturwiss., 1938, **26**, 578).—Diamino-oxidase has very little action on spermine, whilst with arcain (tetramethyleneguanide) there is no deamination. Both substances act as inhibitors in the deamination of histamine by the enzyme. For a substrate to be deaminated it must contain at least two strongly basic NH_2 groups, one of which can be substituted. The enzyme is completely inhibited by 0·01M- and 0·001M-NH_2OH and 0·0001M-semicarbazide, whilst 70% inhibition is attained with 0·00004M-semicarbazide. The effect of semicarbazide can be partly prevented by addition of pyruvic acid. The prosthetic group of the enzyme probably contains a free CO group. The inhibitory action of HCN in higher concn. is reversible and dependent on p_H (min. at p_H 6·4). HCN may form a cyanohydrin with the CO group. J. N. A.

Diaphorase. H. VON EULER and G. GÜNTHER (Naturwiss., 1938, **26**, 676—677; cf. A., 1938, III, 438, 614).—Top and bottom yeasts have the same diaphorase activity. A mixture of yeast, water, and 4N-NH_3 is autolysed at room temp. until the p_H is 7·5—8·5. $(NH_4)_2SO_4$ added to the centrifugate ppts. diaphorase which is then freed from flavin enzyme. Diaphorase from top yeast loses 55% of its activity at 0° and p_H 7·5 in 6 days. It dehydrogenates dihydrocozymase at p_H 7·2 but not dihydrocodehydrogenase II which is dehydrogenated rapidly in the presence of flavin enzyme. It dehydrogenates dihydrodeaminocozymase slowly at p_H 7·2 and greatly accelerates the transfer of H from dihydrocozymase and -deaminocozymase to methylene-blue at 30°. J. L. D.

Flavin enzymes. H. VON EULER (Congr. int. Quim. pura apl., 1934, **9**, V, 147—151; Chem. Zentr., 1937, i, 109).—The lacto-, oo-, and lumiflavin content of various organs (liver) and yeast and their ability to increase the respiration of *Thermobacterium helveticum*—an effect not inhibited by HCN—is described. A. H. C.

Chemical constitution of cytochrome-*C*.—See A., 1938, II, 462.

Pentose-oxidase and catalase in *Fusaria*. A. HAYASIDA (Biochem. Z., 1938, **298**, 169—178).—The enzyme system of *F. lini*, Bolley, includes a pentose-oxidase active at p_H 3·2—8·1, especially in presence of KCN. *F. lini* and *F. oxysporum* contain a very active catalase. C. C. N. V.

Peroxidases during embryonic life of vertebrates and invertebrates. A. SPIRITO (Boll. Soc. ital. Biol. sperim., 1938, **13**, 470—471).—Differences in the benzidine reaction for peroxidase in egg and embryo of *Astacus* and frog or fowl are discussed. F. O. H.

Two blood peroxidase systems. M. POLONOVSKI and M. JAYLE (Compt. rend. Soc. Biol., 1938, **128**, 1076—1079).—The hæmoglobin and plasma peroxidase systems are readily distinguishable. The former is relatively thermostable in dil. solution and is only resistant to the action of peroxides when associated with ascorbic acid. H. G. R.

Determination of peroxidase activity. M. JAYLE (Compt. rend. Soc. Biol., 1938, **128**, 1074—1076).—The method depends on the liberation of I from KI and can be utilised to express the peroxidase activity of blood in precise units. H. G. R.

Removal of metals from enzymes. M. PADOA and M. PEDINELLI (G. Biol. ind. agrar. aliment., 1936, **6**, 150—164; Chem. Zentr., 1936, ii, 4228).—*Ricinus* peroxidase (activity determined spectrometrically from the indophenol formation) inactivated by cysteine (which effects the removal of Fe), glutathione, or ascorbic acid is reactivated by inorg. Fe, reactivation depending on temp. (optimum 30°) and concn. A. H. C.

A new lipase. E. FREUDENBERG (Sitzungsber. Ges. Beförd. ges. Naturwiss. Marburg, 1936, **71**, 1—16; Chem. Zentr., 1937, i, 368).—The hydrolysis of milk and butter fat, laurel and olive oil, tributyrin, and triacetin by sheep bile lipase, which is probably a modified liver lipase, is described. Activation by egg albumin and $CaCl_2$ and inhibition by $HgCl_2$, $FeCl_3$, and NaF were observed. Cocaine, atoxyl, quinine, alcohol, acetone, and toluene were without action. A. H. C.

Influence of co-enzymes on lipolysis and the co-adsorption theory of Willstätter. K. KRÄHLING and H. H. WEBER (Biochem. Z., 1938, **298**, 227—241).—The effect of Ca or Na oleate or Na glycocholate on the hydrolysis of water-sol. esters by lipase in HCO_3'–CO_2 buffer at p_H 7·1—8·0 is due to their effect on the velocity of decomp. of enzyme–co-enzyme system. They exert no action on the affinity of the enzyme–substrate system. C. C. N. V.

Enzymic hydrolysis of benzyl stearate and butyrate. A. K. BALLS and M. B. MATLACK (J. Biol. Chem., 1938, **125**, 539—543).—Pancreas extract hydrolyses benzyl stearate and butyrate very rapidly. The course of hydrolysis is linear at 40° but at lower

temp. follows a curve typical of lipase action. The butyrate is hydrolysed at lower temp. than is the stearate. The fact that the rate of hydrolysis of the butyrate is approx. proportional to the quantity of enzyme gives a method of determining lipase. Liver extract hydrolyses benzyl butyrate but not stearate at 40°. E. M. W.

Specificity of choline-esterase. D. GLICK (J. Biol. Chem., 1938, **125**, 729—739).—A substituted amino-group must be present only in the alcohol component of the ester if hydrolysis by choline-esterase is to take place, as shown by the fact that the ethyl ester of betaine is unaffected. Enzymic hydrolysis is increased in proportion to the length of the acid chain, although palmitylcholine chloride and acetyl-β-methylcholine stearate are almost unaffected, and the introduction of an α-hydroxy-group reduces hydrolysis. The presence of an α-methyl and, to a greater extent, a β-methyl group in the choline portion of the mol. reduces activity. P. G. M.

Activation of enzymes. IV. Jack-bean arginase. C. C. STOCK, M. E. PERKINS, and L. HELLERMAN. **V. Specificity of arginase and non-enzymic hydrolysis of guanidino-compounds. Activating metal ions and liver-arginase.** L. HELLERMAN and C. C. STOCK (J. Biol. Chem., 1938, **125**, 753—769, 771—793).—IV. Jack-bean arginase is catalysed by $Co^{\cdot\cdot}$ and $Mn^{\cdot\cdot}$, the optimum p_H being shifted from 9 to 7·7 and 8·3, respectively. In contrast to liver-arginase, the inception of the catalysis of which is at p_H 4·5, $Co^{\cdot\cdot}$ has little effect below p_H 6·7. $Ni^{\cdot\cdot}$ is not an effective activator. The arginase activity of jack-bean enzyme preps. is not attributable to their urease content.

V. The most effective *in-vitro* activators of liver-arginase are reduced ions of some metals of the first transition series (Co etc.) in the periodic table, and involve the formation of metal-co-ordinated complexes. The specificity of arginase, particularly as regards the rôle of the α-amino-group of *d*-arginine, appears to be a matter of degree rather than an abs. property. P. G. M.

Uricase of dogs, including the Dalmatian. F. W. KLEMPERER, H. C. TRIMBLE, and A. B. HASTINGS (J. Biol. Chem., 1938, **125**, 445—449).—Ground liver tissue from dogs, including a pure-bred Dalmatian excreting large quantities of uric acid in the urine and animals of mixed breed some of which excreted small quantities of uric acid, is rich in uricase. No correlation was observed between the amounts of uricase in the liver tissue and the uric acid excretion in the animal. Actively respiring liver slices had less uricolytic activity than had ground liver suspensions. No uricase was found in dog's kidney, muscle, or spleen. W. O. K.

Preparation and properties of wheat proteinase. A. K. BALLS and W. S. HALE (Cereal Chem., 1938, **15**, 622—628).—Examination of conc. proteinase from bran confirms its resemblance to papain. It is activated by cysteine and other reducing agents, inactivated by oxidising bread improvers and by iodoacetic acid. It digests casein, clots milk, and lowers the viscosity of gelatin. E. A. F.

Proteolytic enzymes of sprouted wheat. III. J. D. MOUNFIELD (Biochem. J., 1938, **32**, 1675—1684; cf. A., 1936, 1420).—The p_H optima for the hydrolysis of gelatin and wheat gluten by wheat proteinase are 5·1 and 6·0, respectively. With gluten, amino-acid production is a max. at 1·5% substrate concn., NaCl having no effect on the hydrolysis. The difference in the effect of varying the substrate concn. between gluten and edestin hydrolysis at p_H 6·0 and 4·1, respectively, is due to the participation of dipeptidase in the former case. HCN, which does not activate the gluten hydrolysis, affects only the reaction velocity with edestin and not the nature of the final products. Wheat proteinase does not attack ovalbumin and hydrolyses slightly glutenin and gliadin. A. L.

Effect of the oxidation-reduction potential of the medium on proteolysis of spleen pulp. P. REISS (Compt. rend. Soc. Biol., 1938, **128**, 1197—1200).—At the optimum p_H (3·8 or 4·9 for calf spleen) proteolysis is governed chiefly by the oxidation-reduction potential of the medium. H. G. R.

Enzymic proteolysis. I. Liberation of ammonia from proteins. M. DAMODARAN and P. ANANTA-NARAYANAN (Biochem. J., 1938, **32**, 1877—1889).—NH_3 formed during proteolysis of caseinogen, edestin, or gliadin by pepsin, trypsin, or erepsin arises from the secondary decomp. of the primary products of hydrolysis, and is due to the reaction of the media and not to enzymic action. Papain, however, yields NH_3 either as a result of its own activity or that of an associated deaminase component. P. G. M.

Determination of nature of degradation products during proteolysis. V. RANGANATHAN and B. N. SASTRI (Proc. Indian Acad. Sci., 1938, **8**, **B**, 243—248).—A known amount of protein dispersed in a buffer is incubated with the enzyme and at definite intervals of time two equal portions of 20 c.c. are withdrawn. In one, total- and amino-N is determined, and in the other after removal of protein by pptn. with 10% trichloroacetic acid. By the use of a formula (derivation given) the "complexity factor" is obtained which is a measure of the complexity of the degradation products. Application of this formula to the results of Northrop (A., 1933, 94) and Bhagvat (A., 1937, III, 368) shows that the hydrolysis of casein by cryst. trypsin ceases when peptides containing approx. ten amino-acids are liberated, whilst with crude trypsin proteolysis goes practically to completion. J. N. A.

Electrophoresis of pepsin. A. TISELIUS, G. E. HENSCHEN, and H. SVENSSON (Biochem. J., 1938, **32**, 1814—1818).—Cryst. pepsin migrates as a homogeneous protein with a negative charge and no isoelectric point. Some inactive protein material is left behind and the sp. activity is raised by 31—69%. H. G. R.

Heat-resistant, enzymic reactions during anaërobic degradation of carbohydrate. L. CURTIUS and P. OHLMEYER (Biochem. Z., 1938, **298**, 412—420; cf. Kendal and Stickland, A., 1937, III, 469).—Boiled muscle extract contains thermostable proteins which, when added to dil. muscle extract,

catalyse the transfer of PO_4''' from phosphopyruvic acid to adenosine diphosphate and from the latter to creatine and cause the phosphorylation of an acceptor, probably glycogen, which is also present in the boiled extract. The proteins activate the co-enzymes involved in the production of lactic acid from glycogen. Dialysable material from boiled muscle extract contains no previously unknown co-enzyme involved in the production of lactic acid. W. McC.

Effects of some inorganic and organic salts on hydrolysis of sucrose by invertase. F. A. SOLIVEN and A. U. AGDEPPA (Philippine Agric., 1938, **27**, 43—51).—The inversion of sucrose was retarded by KNO_3, KCl, NaCl, $Fe_2(SO_4)_3$, $(NH_4)_2CO_3$, and $CaCl_2$ to extents which increased in the order of substances named. $(NH_4)_2HPO_4$, $MgSO_4$, and sugar-cane wax had no appreciable effect. With prolonged contact KNO_3 and KCl destroyed the invert sugar produced. A. G. P.

Invertase. IV. Purification by electrodialysis. N. TAKETOMI (J. Soc. Chem. Ind. Japan, 1938, **41**, 220—221B).—Invertase may be purified and separated from inorg. salts by electrodialysis through Cellophane. The activity of the dialysed invertase depends on the c.d. (optimum 0·3—0·5 ma. per sq. cm.) and the p_H (optimum 5·5—6·5). Apparatus is described. J. D. R.

Enzymic phosphorylation in alcoholic fermentation and muscle-glycogenolysis. J. K. PARNAS (Enzymologia, 1938, **5**, 166—184).—A lecture. J. N. A.

Phosphorus-transmitting enzymes in muscle extracts. T. BARANOWSKI (Acta Biol. Exp., 1938, **12**, 122—125).—Two enzymes are held responsible for the transmission of the P groupings from phosphopyruvic acid to muscle-adenylic acid. A. S.

Phosphorylation of riboflavin by extracts of intestinal mucous membrane and the action thereon of iodoacetic acid. H. HÜBNER and F. VERZÁR (Helv. Chim. Acta, 1938, **21**, 1006—1009; cf. Tauber, A., 1938, III, 504).—Anodic migration of the pigment shows that riboflavin is phosphorylated by dry preps. from swine, cat, and rat. Iodoacetic acid restricts phosphorylation *in vitro*. Preps. from the animals poisoned by iodoacetic acid retain their phosphorylating power. H. W.

Reversible inactivation of phosphatase. M. KIESE and A. B. HASTINGS (Science, 1938, **88**, 242).—The activity of a potent phosphatase prep. was decreased to 10% of its initial val. by reduction with H_2, using Pt- or Pd-asbestos as catalyst. Mol. O_2, with the same catalyst, restores the initial activity. W. F. F.

Pus. III. Glycerophosphatase. T. SHIMADA (J. Chosen Med. Assoc., 1935, **25**, 1439—1443).—Pus from acute abscess contains a glycerophosphatase (optimum p_H 5·4) in amounts greater than that from cold abscess. CH. ABS. (*p*)

Specifity of phosphatase of prostate and testis. J. REIS (Enzymologia, 1938, **5**, 251—253).—Prostate-phosphatase is a nucleotidase with slight glycerophosphatase activity. Testis-phosphatase is sp. for 5-nucleotides, and has an alkaline optimum p_H. Bull testis is the richest source of this enzyme. A. T.

Plant pyrophosphatases. II. Glycerophosphatase and pyrophosphatase from almond. P. FLEURY and J. COURTOIS (Enzymologia, 1938, **5**, 254—261; cf. A., 1938, III, 761).—Pyrophosphatase is inactivated somewhat more readily than glycerophosphatase. Both enzymes can be conc. by adsorption on Al_2O_3, elution with β-glycerophosphate solution, and dialysis. A. T.

Enzyme system responsible for the transference of phosphate from phosphoglyceric to adenylic acid. P. BARANOWSKI (Enzymologia, 1938, **5**, 262—272).—Acetone-dried rabbit muscle extract contains an enzyme system which brings about the transfer of PO_4''' from phosphoglyceric acid to adenylic acid with the formation of adenosinetriphosphoric acid. The system can be separated from other phosphatases by aq. extraction of the dried powder. Formation of phosphopyruvic acid is due to the presence of phosphoglyceromutase and enolase. A heat-labile enzyme, less easily extracted, and present alone in the later extracts, effects the further transference of the PO_4''', but requires the addition of a thermostable complex of protein nature present in the first extract. This is neither the mutase nor the enolase, but a fourth enzyme, since it is relatively insensitive to F′ poisoning, and is not present in dried yeast extract, which catalyses the phosphoglyceric → phosphopyruvic reaction. $Mg^{\cdot\cdot}$ is an essential constituent of the system (optimum concn. 0·04 mg. per 100 g.), which has an optimum p_H of 9·0. An enzymic method of preparing adenosinetriphosphoric acid is given. A. T.

Quantitative method for determining the action of enzymes. L. ASHER (Verh. Schweiz. Physiol., 1938, **13**, 11—12).—The Zeiss interferometer is recommended for determining the activity of enzymes. A. S.

(v) MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY.

New facts and hypotheses in the chemistry of fermentations. M. SCHOEN (Ann. Ferm., 1938, **4**, 193—219, 257—283, 321—345).—A review. I. A. P.

Biochemistry of alcoholic fermentation. F. F. NORD (Chem.-Ztg., 1938, **62**, 769—772).—A lecture. F. O. H.

Permeability and metabolism of yeast. J. RUNNSTRÖM and E. SPERBER (Biochem. Z., 1938, **298**, 340—367).—The resistance to penetration of yeast cells by NaF, measured chemically and by extent of inhibition of respiration and fermentation of glucose, is due to the envelope of the cells and is greatly diminished or lost when the yeast is dried. Brewer's yeast is more permeable to NaF than is baker's yeast and both (especially the latter) are more permeable under anaërobic than aërobic conditions. Inhibition by NaF of the respiration of baker's yeast is greatly increased if the yeast is exposed anaërobically to the action of NaF for a short time before addition of glucose. NaF inhibits the aërobic

fermentation by baker's yeast in presence of cysteine much more rapidly than the anaërobic fermentation. When the respiration of the yeast itself is diminished (*e.g.*, by diminishing the amount of substrate or adding thioacetic acid), the permeability to NaF is increased. Addition of glucose to yeast suspension greatly diminishes the permeability. Probably oxidation–reduction systems located on the surface of the cells influence the permeability. W. McC.

Direct fermentation of hexoses by living yeast. T. Goda (Biochem. Z., 1938, **298**, 431—435; cf. Meyerhof, A., 1938, III, 237; Willstätter and Rohdewald, A., 1937, III, 355).—A short period of induction and an accumulation of glycogen are observed when glucose is added to suspension of fresh brewer's yeast in aq. PO_4''' at p_H 6·8. Since, however, the period of induction is non-existent or very short and since no accumulation of glycogen occurs when pressed baker's yeast or brewer's yeast kept at 0° for several days is used, it is concluded that synthesis of glycogen is not invariably the first stage in the fermentation of glucose by living yeast. W. McC.

Growth of yeast in a magnetic field. G. C. Kimball (J. Bact., 1938, **35**, 109—122).—Budding of old yeast cells on solid media is retarded by a small magnetic field. The effect is produced only with cells in the second half of the lag phase. A. G. P.

Utilisation of pyruvic acid by baker's yeast. C. V. Smythe (J. Biol. Chem., 1938, **125**, 635—651; cf. A., 1923, i, 424; 1927, 902).—Baker's yeast suspended in 0·067N-K_2HPO_4 containing 3% of glucose at 28° metabolises very little pyruvate at p_H 5·6—7·0 in N_2. At p_H 5·6 in O_2 metabolism is more rapid than at p_H 7·0. At p_H 2·0—2·65, anaërobic utilisation is very marked (cf. A., 1926, 543) but aërobic is diminished (*Torula* yeasts have a lower O_2 consumption than baker's yeast). The former is affected much more by p_H changes than the latter. Urea and various amino-acids, in a concn. equiv. to that of pyruvic acid, may treble the rate of metabolism. The R.Q. of yeast suspended in dil. pyruvic acid, after allowing for the CO_2 produced in the oxidation of the acid, is 1·31, a val. much in excess of that (0·8) to be expected from the complete oxidation of acetaldehyde. Yeast at the same p_H but without a substrate has R.Q. 0·94. This endogenous metabolism (shown by a diminution in the amount of hydrolysable carbohydrate in the cell) continues in the presence of pyruvic acid, so that the "corr." val. for the R.Q. in the presence of pyruvic acid is 1·45. A balance sheet constructed on the basis of the substances known to participate in the metabolic reaction does not balance, particularly with regard to H_2. The unknown products are not volatile alcohols, lactic acid, or H_2. Washed cells, after an aërobic experiment, when hydrolysed with N-HCl or aq. alcoholic KOH yield more light petroleum-sol. material than controls suspended in HCl. Assuming the additional sol. material is fat or fatty acid a more exact oxidation–reduction balance can be constructed. The formation of this fat-like substance is sp. for pyruvic acid (acetaldehyde or lactic acid substituted for pyruvic acid does not result in its formation) but it is not known whether the acid itself, or the carbohydrate which disappears from the cell as a result of endogenous metabolism, is converted into fat (A., 1922, i, 795). 0·0021N-Iodoacetate diminishes the utilisation of O_2 at p_H 2·5 by 90%, and the pyruvic acid used to approx. that under anaërobic conditions. Iodoacetamide is less effective. J. L. D.

Aërobic formation of citric acid from acetic acid by yeast.—See A., 1938, II, 428.

Anaërobic fermentation of citric acid.—See A., 1938, II, 428.

Constitution of yeast-nucleic acid. J. M. Gulland and E. M. Jackson (J.C.S., 1938, 1492—1498).—The "dephosphorylating" action of sp. phosphatases on yeast-nucleic acid has been followed by determining at suitable intervals the inorg. PO_4''' liberated in a mixture of yeast-nucleic acid and enzyme buffered at an appropriate p_H and maintained at a definite temp. The cessation of "dephosphorylation" occurs at various % levels which are less than 100, and it has been shown that these are true end-points. All four phosphoryl groups are doubly linked, confirming the conclusion of Takahashi (A., 1933, 426). The degree of dephosphorylation by various mixtures of phospho-mono- and -di-esterases is 75%, suggesting that one phosphoryl group may be constituted differently from the others. The joint action of phosphodiesterase and 5-nucleotidase liberates 35% of the total P as phosphate, suggesting that two or more phosphoryl groups may be attached at $C_{(5)}$ of the ribose radicals in view of the high specificity of 5-nucleotidase for adenosine (inosine) 5-phosphate. F. R. S.

Fatty acids from yeast as respiratory factors. E. S. Cook and C. W. Kreke (Nature, 1938, **142**, 719).—Steam-distillation of a crude concentrate of an alcohol yeast extract yields a water-insol. substance (chemical reactions described) which causes a 350% increase in O_2 uptake of a yeast suspension. It also markedly inhibits skin respiration in rats and stimulates epithelial growth in cultures. W. F. F.

Yeast fermentation of pentosephosphoric acids. F. Dickens (Biochem. J., 1938, **32**, 1645—1653).—Lebedev macerate of dried beer yeast alone, and dried dialysed Lebedev extract in presence of cozymase and H_3PO_4, are capable of fermenting *d*-ribose-5-phosphoric acid with formation of 1 mol. of alcohol, 1 mol. of CO_2, 1 mol. of H_3PO_4, and an unidentified substance which may be glycol. The rate of fermentation is similar to that of hexose monophosphate. Arabinose- and xylose-5-phosphoric acids are very little fermented by the enzyme preps. used. A. L.

Phosphorylation of adenosine by yeast and its significance for alcoholic fermentation. P. Ostern, T. Baranowski, and J. Terszakowec (Acta Biol. Exp., 1938, **12**, 40—44).—Adenylic acid and adenosinetriphosphoric acid are formed if brewer's yeast and toluene are mixed with adenosine and phosphate. 2 g. of adenosine form 1 g. of adenylic acid, which is identical with muscle-adenylic acid (adenosine-5-phosphoric acid). This synthesis takes place as an oxido-reduction. Adenosine combines with phosphate from phosphopyruvic acid. Adenosine is a P-transferring co-enzyme during yeast glycolysis. A. S.

Action of yeast on amino-acids. S. EDLBACHER (Verh. Schweiz. Physiol., 1938, **13**, 13—14).—Arginine or histidine disappears when added to yeast; they remain unchanged in the presence of $(NH_4)_2SO_4$. Yeast-arginase is inactivated by small amounts of O_2. Mn ions play an important part in the activity of arginase. A. S.

Byssochlamys fulva. T. G. GILLESPY (Ann. Rep. Fruit Veg. Pres. Res. Stat., Campden, 1936—37, 68—75).—The enzyme produced by the mould decomposes both insol. pectose and sol. pectin. The enzyme loses none of its activity when kept for many months in glass, but in cans it is ultimately deactivated. Conditions for germination of the ascospores are investigated. E. C. S.

Lower fungi. II. Constitution and synthesis of phœnicin and derivatives of 4 : 4′-ditoluquinone.—See A., 1938, II, 449.

Action of micro-organisms on fruit and vegetable pectins. E. A. RODIONOVA and R. I. BARKOVSKAJA (Proc. Inst. Sci. Res. Food Ind. Leningrad, 1935, **3**, 117—136).—*Penicillium* and *Aspergillus* produce pectase and pectozymase, which, from pectin, yield pectic acid, reducing sugars, methoxy-compounds, and CO_2. Some species destroy vegetable pectins (*e.g.*, from sugar beet) but not those from fruit and berry juices. CH. ABS. (*p*)

Oxalic fermentation. Mechanism of oxalic acid production by the *Mucedineæ*. R. JACQUOT (Ann. Ferm., 1938, **4**, 284—294, 346—362).—Oxalic acid is not produced when $(NH_4)_2SO_4$ is the source of N, but with KNO_3 or alanine it is formed after an initial delay. Oxalic acid production does not depend on the amount or type of food materials, on any lack of balance between these, or on senescence. It is governed by p_H, and represents a response by the organism to the production of potentially harmful basic material, *e.g.*, NH_3 from alanine, or $K^{\cdot}$ from KNO_3. Liberation of H_2SO_4 from $(NH_4)_2SO_4$ precludes the necessity for oxalic acid production. Sugar utilisation for production of unit wt. of mycelium is greater in presence of KNO_3 than of $(NH_4)_2SO_4$, since oxalic acid production in presence of the former is accompanied by increased evolution of CO_2. This extra CO_2 is formed in the course of production of the acid, and not by oxidation of the acid itself. The organisms investigated were *Aspergillus niger*, *A. oryzæ*, and *Penicillium solitum*. I. A. P.

Effect of zinc on the growth of *Rhizopus nigricans* and the formation of acid by this organism. S. G. WAKSMAN and J. W. FOSTER (Compt. rend., 1938, **207**, 483—486; cf. A., 1913, i, 235).—In a glucose medium Zn increases the rate of growth and the amount of glucose utilised, but decreases the production of fumaric acid. More complete oxidation of the acid probably makes available more energy for purposes of growth. An unidentified acid is also formed. J. L. D.

Effects of surface tension and osmotic pressure on the gross morphology of certain pathogenic fungi. J. W. WILLIAMS (J. Bact., 1938, **35**, 409—414).—Effects of peptone, Na taurocholate, dyes, NaCl, KI, and $[O_2]$ are examined. A. G. P.

"Tyrosinase reaction" of actinomycetes. C. E. SKINNER (J. Bact., 1938, **35**, 415—424).—The rapid production of a dark colour in protein or peptone media by chromogenous *Actinomyces* is due to tyrosine metabolism. A. G. P.

Nephelometric determination of the bacteriolytic principle of *Actinomyces*. M. WELSCH (Compt. rend. Soc. Biol., 1938, **128**, 1172—1175).—The method described utilises the Pulfrich-Zeiss nephelometer. H. G. R.

Inactivation of the bacteriolytic principle of *Actinomyces* by heat. M. WELSCH (Compt. rend. Soc. Biol., 1938, **128**, 1175—1178).—The inactivation conforms to a unimol. reaction. H. G. R.

Rhythmicity of divisions of *Paramecium*. J. DEMBOWSKI (Acta Biol. Exp., 1938, **12**, 22—33).—The rhythmicity of cell division of *P. caudatum* previously observed is due to the change of the medium in which the organisms are kept; cell divisions are scanty 6—9 hr. after changing the medium; a max. no. of cell divisions was observed after 12—18 hr. A. S.

Effect of certain peptone media and carbohydrates on growth of *Paramecium bursaria*. J. B. LOEFER (Arch. Protistenk., 1936, **87**, 142—150).—Among peptones examined, proteose peptone (Difco) was the most favourable to growth of *P. bursaria*. Growth of protozoa in carbohydrate media does not necessarily preclude utilisation of the carbohydrate although there is no evidence of fermentation. Glucose, mannose, maltose, dextrin, and melizitose improved growth in the (descending) order named; fructose, galactose, mannitol, lactose, sucrose, sol. starch, and salicin had little effect; arabinose, xylose, rhamnose, and inulin were unfavourable. A. G. P.

Physiology of the contractile vacuole in ciliates. I. Effect of osmotic pressure. II. Effect of hydrogen-ion concentration. III. Effect of temperature. IV. Effect of heavy water. H. Z. GAW (Arch. Protistenk., 1936, **87**, 185—193, 194—200, 201—212, 213—224).—I. The rate of pulsation of the anterior contractile vacuole of 4 species of *Paramecium* diminishes with increase in osmotic pressure of the medium, effects being similar in all species. The vacuole probably takes part in the osmoregulation of the cells.

II. The rate of contraction of the vacuole varies with p_H and is optimum at p_H 7·0.

III. Temp. effects on pulsation are recorded and utilised in characterising the biochemical changes concerned.

IV. The rate of pulsation diminishes with increasing $[D_2O]$. The temp. characteristic in 30% D_2O is similar to that in water. A. G. P.

Effect of ethyl alcohol on growth of eight protozoan species in bacteria-free cultures. J. B. LOEFER and R. P. HALL (Arch. Protistenk., 1936, **87**, 123—130).—Growth of *Euglena gracilis* and *E. deses* was accelerated by 0·025—0·1% of alcohol in the medium. Other species examined were unaffected. A. G. P.

Growth and respiration of some soil bacteria in juices of leguminous and non-leguminous plants. D. W. THORNE and P. E. BROWN (J. Bact., 1937, **34**, 567—580).—Species of legume bacteria grew well in juices of their respective host plants but not usually in those of other hosts. The bactericidal effects of the plant juices toward "foreign" strains of organisms were associated with proteins contained therein and varied from growth inhibition to agglutination and pptn. Cowpea bacteria and *Rhizobium japonica* grew equally well in soya-bean juice. Juice of navy beans was bactericidal to *R. phaseoli* in some instances. None of the juices examined was toxic to *Pseudomonas pyocyanea*. A. G. P.

Respiratory enzyme systems in symbiotic nitrogen fixation. I. "Resting cell" technique for study of bacterial metabolism. P. W. WILSON (J. Bact., 1938, **35**, 601—623).—The method is described and utilised in an examination of *Rhizobium trifolii*. Glucose, with perhaps arabinose, was the most suitable carbohydrate to act as H-donator for the organism. The course of oxidation of polyhydric alcohols indicates the formation of an intermediate, possibly the corresponding aldose, which is a better respiratory substrate. Max. respiratory rates were attained with fumarate or succinate substrates. A. G. P.

Decarboxylation of aspartic and glutamic acids. A. I. VIRTANEN, P. RINTALA, and T. LAINE (Nature, 1938, **142**, 674; cf. A., 1937, III, 146, 428).—A suspension of legume bacteria, kept under toluene for 24 hr., forms β-alanine in aspartic acid at p_H 7 in presence of toluene. The same bacteria convert *l*-glutamic acid into γ-aminobutyric acid and CO_2 at p_H 7. Both reactions are quant.; the rate of decomp. of glutamic acid exceeds that of aspartic acid. Two different decarboxylases are probably involved. These bacteria do not decarboxylate other NH_2-acids. L. S. T.

Lactoflavin and bacterial luminescence. M. DOUDOROFF (Enzymologia, 1938, **5**, 239—243).—Some dull variants from cultures of luminous bacteria cannot synthesise lactoflavin. In vitamin-B_2-free medium, complete reversion to luminous type occurs after a lag period. Small additions of -B_2 cause normal growth and respiration of the dull variant; large amounts cause increased luminescence without appreciable change in rate of respiration. A. T.

Determination of bacteriochlorophyll. C. B. VAN NIEL and W. ARNOLD (Enzymologia, 1938, **5**, 244—250).—The bacterial cell suspension is extracted with 10 vols. of abs. methyl alcohol and immediately centrifuged. To the extract, 1·5 vols. of CCl_4 and 0·2 vol. of 25% HCl are added. The light-insensitive bacteriophæophytin formed remains in solution in the mixed solvent, and is determined spectrophotometrically, using the He line 6678 A. The error of the method does not exceed 3%. A. T.

Vitamin-B_1 as a growth factor for *B. radicicola*. II. R. NILSSON, G. BJÄLFVE, and D. BURSTRÖM (Naturwiss., 1938, **26**, 661; cf. A., 1938, III, 618).—For the active growth of *B. radicicola*, there is required, in addition to vitamin-B_1, a substance which is contained in an acid–ether extract of yeast and has been separated in a cryst. form. If the medium contains an amyl alcohol extract of yeast (4 μg. per c.c.), the addition of -B_1 (0·08 μg. per c.c.) does not further increase the growth of the bacteria in terms of the nos. of organisms but increases the size and modifies the form of the individual cells. W. O. K.

Light as a factor in production of pigment by certain bacteria. J. A. BAKER (J. Bact., 1938, **35**, 625—631).—Acid-fast bacteria producing pigment in light but not in darkness are recorded. Fully developed unpigmented cells produce pigment after brief exposure to ultra-violet or sunlight. Formation of pigment is a vital process and not the result of chemical action induced by light in preformed material. A. G. P.

Fresh-water bacteria. IV. Seasonal fluctuations in relation to plankton production. A. T. HENRICI (J. Bact., 1938, **35**, 129—139).—The production of org. matter by plankton is an important factor controlling the no. of bacteria in fresh-water lakes. A. G. P.

Decomposition of nitrogenous substances in sea-water by bacteria. S. A. WAKSMAN, M. HOTCHKISS, C. L. CAREY, and Y. HARDMAN (J. Bact., 1938, **35**, 477—486).—Decomp. of copepods in sea-water by bacteria is accompanied by O_2 consumption, liberation of NH_3, regeneration of PO_4''', and bacterial multiplication. In sea-water containing asparagine 70% of the theoretical O_2 requirement was consumed in 6 days. This period also represented the period of max. bacterial nos. A. G. P.

Occurrence and characteristics of chitinoclastic bacteria in the sea. C. E. ZOBELL and S. G. RITTENBERG (J. Bact., 1938, **35**, 275—287).—Organisms capable of obtaining their C, N, and energy sources from chitin are described. Others require supplementary C sources but use chitin as sole N source. A third group attack chitin only in presence of simple C and N sources. Products of decomp. of chitin include acids, NH_3, and reducing sugar. A. G. P.

Phosphate cycle in oceans.—See A., 1938, I, 642.

Nature of glucose fermentation by *Fusiformis biacutus*. A. R. PRÉVOT and E. KIRCHHEINER (Compt. rend. Soc. Biol., 1938, **128**, 963—964).—36·2% of the glucose (broth containing 2%) is fermented in 8 days, producing alcohol, acetic and propionic acids (in the ratio 3 : 1), aldehydes, and ketones, the p_H being reduced from 7 to 4. H. G. R.

Classification of acid-fast bacteria. R. E. GORDON (J. Bact., 1937, **34**, 617—630).—Saprophytic acid-fast bacteria from soil and plant and animal tissues are divided into 3 groups on the basis of cultural reactions. A. G. P.

Ethyl alcohol-producing bacillus from *Hibiscus Sabdariffa*, L. (Rozella). C. WEIZMANN (Chem. and Ind., 1938, 1049—1050).—*Clostridium ethylicum*, Weizmann, grows well on a gelatin–glucose medium, causing liquefaction of the gelatin. There is good growth, but no appreciable decomp. of the starch, on 5% maize or 10% potato mash. On a medium con-

taining glucose or sucrose (3%), autolysed yeast, and $CaCO_3$ there is nearly complete decomp. of the sugar with production of ethyl alcohol, H_2, CO_2, amines, and volatile acids, but no acetone or higher alcohols. J. N. A.

Mechanism of butyric fermentation. H. PELDÁN (Suomen Kem., 1938, **11**, **A**, 91—98; cf. A., 1938, III, 535).—Published work is reviewed. The formation by *Granulobacter saccharobutyricum*, Beijerinck, and *Clostridium saccharobutyricum*, Beijerinck, of formic, acetic, lactic, and butyric acids, and alcohol using glucose, glycerol, Na glycerate, and pyruvic acid substrates has been studied. The effects of variation of p_H, nature of the buffer solution, and presence of H_2 acceptors have been examined. M. H. M. A.

Effects of light and dark backgrounds on incidence of seemingly infectious disease in fish. F. B. SUMNER and P. DOUDOROFF (Proc. Nat. Acad. Sci., 1938, **24**, 463—466).—Fish, kept in fresh water in glass bowls painted on the outside in various colours and illuminated overhead by electric light, frequently succumb to a disease, the symptoms of which are emaciation and lesions of the skin and fins, particularly of the tail. Treatment with salt water has a partially beneficial effect. Susceptibility to the disease is greatest in black and least in white bowls. A parasitic, non-sporulating bacillus is considered responsible for the disease, the incidence of which is in some way influenced by the same factors which bring about changes in the melanin content of the fish in various coloured bowls. J. N. A.

Relationship between the electric charge and the age of organisms from the same culture. R. SEIGNEURIN (Compt. rend. Soc. Biol., 1938, **128**, 945—946).—During ageing of the culture the proportion of electronegative organisms increases. H. G. R.

Effect of cations on bacterial development. Rôle of electric charges. L. NEIPP (Bull. Sci. Pharmacol., 1938, **45**, 289—302).—The rapidity of transference of electric charges between bacteria is independent of the concn. of bacteria in the emulsions. Addition of $La(NO_3)_3$ only exerts an appreciable effect on the electric charges in concns. which alter or kill the bacteria. P. G. M.

Mitogenetic rays and bacterial multiplication. M. FAGUET (Compt. rend. Soc. Biol., 1938, **128**, 969—971).—No evidence was obtained for the existence of mitogenetic rays. H. G. R.

Crystalline violacein from a new chromogenic bacterium. A. SARTORY, J. MEYER, and J. WAELDELE (Bull. Sci. Pharmacol., 1938, **45**, 302—306; cf. A., 1938, III, 619).—The pigment, $C_{10}H_{12}O_3N$, belongs to the quinoneimine group of substances and probably contains a cyclic side-chain $C_4H_7O_2$. Cultures of the bacillus from which the pigment is obtained also give rise to indole. P. G. M.

Polylævans formed by the carbohydrate metabolism of certain bacteria.—See A., 1938, II, 474.

Attempt to demonstrate a labile antigen in *Br. abortus*. F. W. PRIESTLEY (Vet. Rec., 1938, **50**, 137—139).—No labile antigen could be demonstrated. The difference in immunising ability between living and dead organisms is not due to any difference in antigenic structure. M. A. B.

Detection of antigenic variants of *Brucella* by means of an opsonocytophagic test. M. MUNGER and I. F. HUDDLESON (J. Bact., 1938, **35**, 255—260).—Antigenic variants are unsuitable for use in the test for detecting sp. *Brucella* opsonins in human or animal blood. A. G. P.

Action of micro-organisms on pentosans and pentoses. L. M. HOROVITZ-VLASOVA and N. V. NOVOTELNOV (Proc. Inst. Sci. Res. Food Ind. Leningrad, 1935, **3**, No. 3, 34—50).—Pentosans from cottonseed or sunflower-seed hulls after acid hydrolysis to pentoses are fermented by *Aërobacter aërogenes* yielding acetic acid and CO_2 or by *B. esterificans* to give butyric acid and traces of alcohol. Moulds (*Penicillium*, *Aspergillus*, *Dermatium*, *Monilia*) act directly on the pentosans, citric and oxalic acids being among the final products. CH. ABS. (*p*)

Electrophoretic migration velocity of *Escherichia coli* after cultivation on media of varying composition. I. Changes in organic constituents. II. Changes in inorganic constituents. R. P. TITTSLER and G. P. BERRY (J. Bact., 1938, **35**, 213—222, 441—451).—I. The electrophoretic velocity of the organisms remained const. during serial cultivation on a variety of media in which the nature and proportion of org. matter were modified. The composition of the cells was probably unchanged by variations in the media.

II. Serial cultivation on media of varied inorg. composition did not affect the migration velocity except in the case of $LiCl_2$. The effects of cations other than Li on electrophoretic potential are probably reversible. A. G. P.

Fermentation of acetylmethylcarbinol by the *Escherichia–Aërobacter* group: its significance in the Voges–Proskauer reaction. R. P. TITTSLER (J. Bact., 1938, **35**, 157—162; cf. A., 1937, III, 357).—Approx. 50% of strains of *Aërobacter aërogenes* and *A. oxytocum* examined but none of *A. cloacæ*, *A. levans*, or *Escherichia* intermediates fermented the carbinol. Strains fermenting the carbinol invariably grew and produced acid in synthetic media containing this as sole source of C; they also gave negative Voges–Proskauer reactions in Clark and Lubs media if incubated for more than 3—5 days. Cultures of *Escherichia–Aërobacter* organisms to be tested for production of the carbinol should not be more than 2 days old. A. G. P.

Dissimilation of glucose by *B. coli*. Lactic acid as independent product of dissimilation. V. BOLCATO (Enzymologia, 1938, **5**, 226—232; cf. A., 1938, III, 72).—The formation of lactic acid is independent of that of other products: it is not formed by an intermediate reduction of trioses by H metabolised from formic acid. J. N. A.

Anaërobiosis. I. Nature of the inhibition of growth of cyanide-treated *E. coli* by reversible oxidation-reduction systems. R. H. BROHKANN and I. A. MIRSKY (J. Bact., 1938, **35**, 455—

475).—Cyanides permit anoxytrophic growth of *E. coli* but prevent oxytrophic multiplication. Reversible oxidation–reduction systems of suitable potential arrest growth in presence of O_2 or CN′ but have little action on anaërobic cultures. The effect is ascribed to accumulation of H_2O_2 under aërobic conditions. Facultative and obligate anaërobes have different anaërobic systems. A. G. P.

Influence of vitamin-*C* on growth of anaërobes in presence of air with special reference to the significance of E_h and oxygen in the growth of anaërobes. I. J. Kligler and K. Guggenheim (J. Bact., 1938, **35**, 141—156).—Vitamin-*C* in fluid media favours the growth of *Clostridium welchii* in presence of air. Glucose improves growth without affecting the min. -*C* requirement. In Tyrode–peptone media the min. -*C* required decreases (within limits) as the peptone concn. increases. Growth of *Cl. welchii* occurs in media having a reduction potential of −0·125 v. Glucose does not affect the potential and has no influence on the loss of -*C*. Peptone lowers the potential and protects the -*C* added to the medium. -*C* probably acts as a catalyst for anaërobes by lowering the reduction potential but does not affect the $[O_2]$. Anaërobic growth is determined by E_h and not by $[O_2]$. If E_h exceeds the crit. val. free O_2 disturbs the oxidation–reduction processes within the cells. A. G. P.

Reduction of nitrate to ammonia by *Clostridium welchii*. D. D. Woods (Biochem. J., 1938, **32**, 2000—2012).—Washed suspensions of *Cl. welchii* in 0·05—0·1M-phosphate buffer (p_H 7·1) take up H_2 in the presence of NO_3', NO_2', and NH_2OH with formation of NH_3. NO_2' is an intermediate in the reduction of NO_3'. Similarly NH_2OH is an intermediate in the reduction of NO_2' although it is reduced too rapidly to be detected, and attempts to fix it by oxime formation fail. *B. coli* also produces NH_3 from NO_3, NO_2, and NH_2OH in the presence of H_2. The effects of concn. of substrate, age of suspension, and p_H on NH_3 production are determined. T. F. D.

Action of silargel on diphtheria bacilli. T. Link (Z. Hyg., 1937, **120**, 14–15).—Addition of silargel ($AgCl$–SiO_2 gel) to the culture medium rendered diphtheria bacilli non-virulent, but also destroyed the immunising power of the culture. M. A. B.

Structure of "rough" and "smooth" colonies. K. A. Bisset (J. Path. Bact., 1938, **47**, 223—229).—Strains of *C. diphtheriæ*, *B. coli*, *B. dysenteriæ*, and various streptococci were studied. The structure of a morphologically rough colony of a bacillus was essentially similar to that of the medusa head colony of the anthrax bacillus. The bacilli lie closely together in threads, whilst those composing a smooth colony are all separate and show no characteristic arrangement. Between these extremes are many intermediate forms. Similar variations are found in streptococci. The usually described $S \rightarrow R$ variation appears to consist of two separate changes, one affecting the morphology of the individual organism, the other connected solely with the nature of its surface material. These may occur separately, though a considerable degree of relationship exists. The structure of a colony depends on physical factors and varies mainly with the degree of attachment shown by the component organisms. [11 photomicrographs.] C. J. C. B.

Reactivity of diphtheria prophylactics. P. J. Moloney and M. D. Orr (J. Path. Bact., 1938, **47**, 315—322).—The reaction-inducing quality of unmodified and of purified diphtheria toxoid, of toxoid pptd. by alum, of toxoid adsorbed on $Al(OH)_3$, of toxoid–antitoxin floccules, and of heptadecylamine–toxoid ppt. was investigated, using both an intradermal and an anaphylactic test in sensitised guinea-pigs. Of these, only toxoid–antitoxin floccules and heptadecylamine toxoid ppts. failed to cause reactions. Purity of the toxoid associated with the floccules is not the factor on which low reactivity depends, since toxoid recovered from floccules will cause both skin reactions and anaphylaxis in sensitised guinea-pigs. It is suggested that slow solubility or slow disintegration in the body fluids is a more probable explanation of the low reactivity of the floccules. C. J. C. B.

Vitamin-*C* and toxins. I. Effect of vitamin-*C* and other reducing substances on diphtheria and tetanus toxins *in vitro*. II. Effect of administration of vitamin-*C* to guinea-pigs injected with diphtheria and tetanus toxins. B. Ghosh and B. C. Guha (J. Indian Chem. Soc., 1938, **15**, 438—442, 443—448; cf. A., 1937, III, 338).—I. Inactivation of diphtheria and tetanus toxins by vitamin-*C*, glutathione, cysteine, and quinol is studied. Below p_H 5·0, both toxins are inactivated; above this val., they remain active. Inactivation by ascorbic acid differs from that due to lowering of p_H, *e.g.*, diphtheria toxin is detoxicated at p_H 5·4 by ascorbic acid.

II. Injection of -*C* immediately before or after diphtheria or tetanus toxin, into guinea-pigs, affords some protection, possibly connected with temporary rise in blood-acidity. Possible immunity by administering -*C* is studied (cf. Greenwald and Harde, A., 1935, 1429), but results suggest no definite protection. A. T. P.

Effect of keten on the flocculating power of anti-diphtheria serum. H. Goldie and G. Sandor (Compt. rend. Soc. Biol., 1938, **128**, 974—977).—Acetylation of 15% of the amino-groups destroys the flocculating power of the serum, whereas the antitoxic function is only affected when more than 40% are acetylated. Inhibition of flocculation is attributed to dissolution of the antitoxin–antigen complex by the acetylated proteins. H. G. R.

Culture of *B. fæcalis alcaligenes* on a chemical medium. A. Berthelot and G. Amoureux (Compt. rend. Soc. Biol., 1938, **128**, 980—981).—Culture of the organism on a medium containing Na pyruvate and glucose is described. H. G. R.

Treatment of gonococcal vaginitis with Corbus–Ferry gonococcal filtrate. L. E. Goldberg and K. Blanchard (J. Pediat., 1938, **13**, 381—389).—Out of 24 cases, 18 were cured but 5 recurred.

Differential medium for meningococcus and gonococcus. S. F. Bailey (J. Bact., 1937, **34**,

645—656).—The medium contains serum (ox, lamb, pig) from which fermentable substances and diastases have been removed and a conc. broth with inorg. salts but no carbohydrate. Tubes are sealed to ensure retention of the acid produced during growth. A. G. P.

Influence of diet on the *L. acidophilus* content and hydrogen-ion concentration of the intestine. L. WEINSTEIN, J. E. WEISS, and R. W. H. GILLESPIE (J. Bact., 1938, **35**, 515—525).—Some degree of correlation was apparent between the [H$^{\cdot}$] in the rat colon and the no. of *L. acidophilus* present. In the small intestine no relation was found. The nature of the diet had an important influence on the p_H and no. of organisms. A. G. P.

Gas-producing species of the genus *Lactobacillus*. C. S. PEDERSON (J. Bact., 1938, **35**, 95—108).—Growth temp., action on arabinose followed by that on lactose, sucrose, and raffinose are the most important factors for characterising organisms of this group. *L. brevis*, *L. fermentum*, *L. buchreri*, and *L. pastorianus* are differentiated on this basis. A. G. P.

Lactic dehydrogenase of lactic acid bacteria. H. KATAGIRI and K. KITAHARA (Biochem. J., 1938, **32**, 1654—1657).—With the methylene-blue technique *Lactobacillus sake* and *Leuconostoc mesenteroides* are capable of dehydrogenating *d*- and *l*-lactic acid, respectively. *Lactobacillus plantarum* dehydrogenates both isomerides by virtue of its specificity for the *l*-form and its racemiase content. The product, pyruvic acid, is isolated in 60% yield. A. L.

Identity of *Bacillus innutritus* (Kleinschmidt) and *B. paraputrificus* (Bienstock). I. C. HALL and D. RIDGWAY (J. Bact., 1937, **34**, 631—638). A. G. P.

***Bacillus mesentericus vulgatus mucosus* and production of the polypeptide of glutamic acid.** G. IVÁNOVICS (Zentr. Bakt., 1938, I, **142**, 52—64; cf. A., 1937, 250, 454).—The propagation and properties of two strains of the bacillus and means of obtaining the polypeptide in quantity are described. Power to produce mucus and polypeptide is reversibly or irreversibly lost when some variants of the bacillus arise. $Fe^{\cdot\cdot\cdot}$ and $Mn^{\cdot\cdot}$ stimulate the growth on synthetic media of the bacillus, increase production of the polypeptide, and cause production of a brown and a yellow pigment, respectively. W. McC.

Optimum conditions for preparation of complex vaccines. V. M. KULIKOV, A. V. BEILINSON, M. P. BOBKOVA, and N. V. CHOLSCHEV (J. Microbiol. Epidemiol. Immunobiol. U.S.S.R., 1935, **14**, 822—832).—Purification of bouillon nutrient by pptg. a high-mol. N complex with naganin in acid does not diminish the nutrient val. of the medium for *Sal. paratyphi* or *Eberthella typhosa*, but removes proto- and hetero-albuminose which is not assimilated by the bacteria. The N complex again appears in the medium after 6 days' growth of the organisms. Immunity was induced in mice by vaccination with live cultures and with the complex vaccine obtained after a second removal of the N complex from the nutrient. Formalin-treated vaccine gave 24% cases of immunity. Use of the filtrate without live cultures was unsuccessful. CH. ABS. (*p*)

Pathogenic and antigenic properties of electropositive and electronegative strains of *B. paratyphosus* B. R. SEIGNEURIN (Compt. rend. Soc. Biol., 1938, **128**, 943—945).—The two strains have a marked antigenic specificity and the electropositive strain is more virulent than the ordinary or negative strains. H. G. R.

Presence of Vi-antigen in certain strains of *B. paratyphosus* C. M. ROUCHDI (Compt. rend. Soc. Biol., 1938, **128**, 1022—1024).—Certain strains of *B. paratyphosus* C contain both the *O*- and Vi-antigens, separable by the uranyl salt method. H. G. R.

Vi-antigen in bacteria. M. ROUCHDI (Compt. rend. Soc. Biol., 1938, **128**, 1024—1026).—Precipitability of the sugar–lipin antigen by uranyl salts should not be used to characterise Vi-antigen. H. G. R.

Attempt to increase resistance to *pertussis* in new-born infants by immunising their mothers during pregnancy. J. A. LICHTY, jun., B. SAVIN, and W. L. BRADFORD (J. clin. Invest., 1938, **17**, 613—621).—The opsono-cytophagic reaction of the blood of the new-born infant for *H. pertussis* is significantly influenced by (i) the phagocytic capacity of the mother's blood, (ii) previous pertussis in the mother, and (iii) artificial immunisation of the mother with pertussis vaccine during the latter part of pregnancy. Neither the previous disease nor artificial immunisation with pertussis vaccine during pregnancy exerted any significant influence on the opsono-cytophagic reaction of the mother's blood. In a few infants tested before and after nursing, no apparent increase in the phagocytic capacity of blood for *H. pertussis* was produced by the colostrum obtained during the first week of life. C. J. C. B.

Cultural characteristics, physiology, and pathogenicity of strain types of *Phytomonas stewarti*. S. S. IVANOFF, A. J. RIKER, and H. A. DETTWILER (J. Bact., 1938, **35**, 235—253).—Morphology and cultural characteristics are examined. A. G. P.

Production of ascorbic acid by *Bacillus prodigiosus*. G. BERENCSI and A. ILLÉNYI (Biochem. Z., 1938, **298**, 298—300; cf. A., 1938, III, 766).—Production of ascorbic acid (or of a similar substance) by *B. prodigiosus* in agar medium is scarcely or not at all affected by adding *l*(−)-xylose, arabinose, glucose, fructose, mannose, maltose, sucrose, or lactose, but is increased approx. 10-fold by adding *d*(+)-xylose and approx. 2- to 3-fold by adding galactose or *dl*-xylose. W. McC.

Effect of xylose on the gaseous metabolism of bacteria. A. ILLÉNYI and G. BERENCSI (Biochem. Z., 1938, **298**, 301—306).—Addition of *d*(+)-xylose increases the metabolism of *B. prodigiosus* in agar medium only if meat extract is also present. When the medium contains calf serum, *d*(+)-xylose diminishes the metabolism, but this effect is counteracted by the extract. The diminution in metabolism caused by ovalbumin is not affected by adding *d*(+)-xylose alone or together with the extract. W. McC.

Bacterial agglutination. II. Identity of precipitin and agglutinin. M. HEIDELBERGER and E. A. KABAT (J. Exp. Med., 1936, **63**, 737—744).—The type-sp. anti-carbohydrate agglutinin and precipitin occur in equal amounts in type I antipneumococcus horse serum. Diminution of one is accompanied by an equal reduction in the other. In purified antibody solutions, there is slight excess of agglutinin probably due to modification of the antibody during purification. CH. ABS. (*p*)

Growth of *proteus* on ammonium lactate plus nicotinic acid. P. FILDES (Brit. J. exp. Path., 1938, **19**, 239—244).—Nicotinic acid was an essential accessory nutrient for 10 strains of *proteus*. It was the only nitrogenous substance required in metabolism which could not be synthesised from NH_3. Its function was to supply material for the synthesis of pyridine nucleotides. R. L. N.

Influence of type of nitrogenous nutriment on pigmenting power of *Bacillus pyocyaneus*. B. JELINEK and T. HOF (Ann. Ferm., 1938, **4**, 141—160).—Three strains of *B. pyocyaneus* of different pigmenting types were grown on broths containing peptone preps. of different nature. Variations in N fractions in the filtered cultures are detailed. Coloration is probably a function of the hydrolysis produced by the organism. Added glycerol, which does not disappear during fermentation, augments pigmentation and favours proteolysis, but gives decreased NH_3. Appreciable amounts of tyrosine are unnecessary for pigment production. I. A. P.

(A) Effect of sodium chloride on the E_h of protogenous media. (B) Effect of E_h and sodium chloride concentration on physiology of halophilic bacteria. L. S. STUART and L. H. JAMES (J. Bact., 1938, **35**, 369—380, 381—396).—(A) The E_h of the media diminishes with increase in p_H and amount of NaCl added prior to sterilisation. NaCl increases the resistance of the medium against oxidation, and the effects of cysteine hydrochloride.

(B) *Sarcina littoralis* (Paulsen) did not show obligate halophilic characteristics when transferred from old cultures. In media containing 10% NaCl the organism grew rapidly without pigmentation. Growth occurred at higher E_h as the [NaCl] decreased. With 12·5—15·0% NaCl the delay in growth was greater than when higher or lower concns. were used. With 17·5% NaCl growth occurred only at the junction of filter-paper strips and the medium. Such growth was favoured by low E_h, was pigmented, and increased the E_h of the medium. A. G. P.

Sensitivity of *Spirochæta ictero-hemorragiæ* to saponin. P. MOLLARET and H. SIMONS (Compt. rend. Soc. Biol., 1938, **128**, 1002—1004).—In contrast to the results of Noguchi, the organism is easily sol. in Na taurocholate and sensitive to saponin. H. G. R.

Dissociation of single-cell cultures of *Staphylococcus aureus*. R. E. HOFFSTADT and G. P. YOUMANS (J. Bact., 1938, **35**, 511—514).—Single-celled strains from the yellow undissociated strain dissociated whereas that from the white variant did not. White forms were the more active enzymically. Sera produced from all strains showed agglutinins for all strains. Variations in physiological characteristics on dissociation are profoundly influenced by the type of cell dominant at the time culture. A. G. P.

Amino-acid metabolism of staphylococci, diphtheria bacilli, and Gram-negative mucus-producers. F. LIEB and W. REICHELT (Zentr. Bakt., 1938, I, **142**, 64—69).—The pathogenic staphylococci decompose asparagine, tyrosine, alanine, and glycine but attack aspartic acid only slightly or not at all. Non-pathogenic species attack glycine, asparagine, and aspartic acid slightly but do not attack alanine or tyrosine. Diphtheria bacilli decompose asparagine, glycine, and alanine but attack aspartic acid and tyrosine only slightly or not at all. Gram-negative mucus-producers do not attack glycine, attack tyrosine only slightly, and decompose asparagine, aspartic acid, and alanine. W. McC.

Effect of pyridine compounds on the nutrition of *Staphylococcus aureus*. M. L. ANDY (Nature, 1938, **142**, 618).—Nicotinylglycine has the same growth-promoting activity as nicotinic acid. Trigonelline, pyridine-3-carboxylic acid betaine, 2-aminopyridine and its 3-carboxylic acid were completely inactive. (Cf. A., 1938, III, 766.) W. F. F.

Lethal effect of ultra-violet light on bacteria suspended in air. D. G. SHARP (J. Bact., 1938, **35**, 589—599).—Broth cultures of bacteria are atomised in air, passed through a tube exposed to ultra-violet light, and then into nutrient broth. Approx. 26,200 ergs per sq. cm. were necessary completely to kill *Staphylococcus albus* cultures. A. G. P.

Growth and fermentations of *Streptococcus thermophilus*. U. VARTIOVAARA (Suomen Kem., 1938, **11**, B, 26).—Growth of *S. thermophilus* occurs between 12° and 52°, the optimum being at 37—47° with a p_H of 5·85—6·18. Growth is increased by addition of vitamins, in the order, $-B_1 > -B_2 > -C$. The main products from a potato infusion–glucose medium are alcohol, formic and lactic acids. Production of alcohol is favoured by low p_H, that of formic acid by high p_H, and that of lactic acid by high temp., high p_H, and $-B_2$. Lengthy fermentation decreases lactic acid. Production of formic acid is decreased by addition of $-C$. M. H. M. A.

Factors influencing rate of fermentation of *Streptococcus lactis*. O. RAHN, C. P. HEGARTY, R. E. DEUEL (J. Bact., 1938, **35**, 547—558).—Fermentation proceeds at optimum rates at p_H 7·0 and is retarded more by deviation to the acid than to the alkaline side. The optimum [PO_4'''] is 4% but with 6% PO_4''' the final acidity was max. Glucose in amounts exceeding 0·2% did not affect the rate of fermentation; Na lactate caused retardation. Agitation with air or O_2 retarded but that with N_2 accelerated fermentation. A. G. P.

Nutrition of streptococci. S. H. HUNTER (J. Bact., 1938, **35**, 429—440).—Strains of *S. asalignus*, *S. bovis*, and *S. mastitidis* required cystine (or cysteine) and at least one more amino-acid in hydrolysed casein. Fuller's earth inactivated de. proteinised milk for these organisms and also for *S.*

liquefaciens. *S. bovis* requires at least 2 amino-acid factors, one of which is pptd. by $HgSO_4$. A. G. P.

Relation of peptone to production of hæmolysin by streptococci. F. SMITH (J. Bact., 1937, **34**, 585—601).—Yields of hæmolysin increase to a max. and subsequently decline as the concn. of peptone in the medium is progressively increased. The quality of the peptone is an influential factor. Isolation of peptone fractions which separately promote multiplication and hæmolysin production is described. A. G. P.

Influence of various substances and conditions on streptococcal hæmolysin. F. SMITH (J. Bact., 1937, **34**, 603—616).—In low-glucose, high-peptone media no evidence of the sparing of peptone by glucose was obtained. Optimum production of hæmolysin occurs at p_H 7·0. A. G. P.

Sensitivity of rheumatic subjects to streptococcal products. C. A. GREEN (J. Path Bact., 1938, **47**, 337—344).—Of 32 cases of acute rheumatism, 27, 14, and 13 showed skin-sensitivity to endotoxin of autogenous hæmolytic, *viridans*, and indifferent streptococci respectively. 75% of 105 cases of acute and subacute rheumatism gave positive skin reactions with a stock prep. of hæmolytic streptococcal endotoxin as compared with 24% in 105 non-rheumatic controls. In a few quiescent cases, local and general manifestations of the rheumatic syndrome were induced by subcutaneous injection of hæmolytic streptococcal endotoxin. The evidence supports the view that hæmolytic streptococcal infection is an important factor in the production of the rheumatic state. C. J. C. B.

Serological identification of *Streptococcus zymogenes* with the Lancefield group *D*. F. R. SMITH, C. F. NIVEN, and J. M. SHERMAN (J. Bact., 1938, **35**, 425—428).—Of 76 cultures examined all belonged to group *D*. A. G. P.

Species-specific immunity to hæmolytic streptococcus infections induced in white mice by immunisation with an *R* variant of an erysipelas strain. Significance of cell autolysis in relation to antibody response. S. SPICER and E. L. BLOOM (J. Bact., 1938, **35**, 289—303).—A rough variant of an erysipelas strain used as a vaccine protected white mice against virulent unrelated strains of hæmolytic streptococci. The variant and the original *S* strain were avirulent but the vaccine from the *R* variant was toxic to mice. Surviving animals were protected against subsequent infections with various virulent heterologous strains. Treatment with alcohol and ether rendered the vaccine non-toxic and of greater protective potency. Repeated freezing and thawing increased the protective action of vaccines. A. G. P.

Lyophile complement in the Kolmer complement-fixation test for syphilis. J. A. KOLMER, C. E. RICHTER, and E. R. LYNCH (Amer. J. clin. Path., 1938, **8**, 522—528).—Lyophile complement kept at 4—10° is satisfactory for the complement-fixation test for syphilis for at least 10 months and probably at least 13 months. Longer periods of time were not tested. C. J. C. B.

Flocculate-induced antibodies and syphilis immunity in rabbits. F. RYTZ (Amer. J. clin. Path., 1938, **8**, 529—535).—Rytz flocculation methods for the diagnosis of syphilis constantly gave negative results on blood from normal rabbits, and the flocculate obtained by those methods from human syphilitic serum, and also from the serum of syphilitic rabbits, will induce antibodies in rabbits demonstrable by flocculation tests. Non-sp. flocculate from cow serum and from patients with malaria, injected intravenously, will also give rise to antibodies in rabbits detectable by the same method. C. J. C. B.

Sensitiveness and specificity of the Bordet-Wassermann reaction (Morch) and Kahn's standard reaction. P. KRAG (Bull. Health Org., League of Nations, 1938, **7**, 451—459).

Viscosity of anti-tetanus and anti-diphtheria sera in presence of their antigens. J. LOISELEUR (Compt. rend. Soc. Biol., 1938, **128**, 1105—1108).—No increase in η of the sp. serum was observed on mixing with the microbial toxin. H. G. R.

Separation of mixed tubercle bacilli cultures on media of differing alkalinity. E. GRÓH (Zentr. Bakt., 1938, I, **142**, 190—197).—Colonies from 48 strains of human and 20 strains of bovine tubercle bacilli on various liquid and solid media of p_H 5·6 to 8·0 were examined. In all cases of human tuberculosis bovine bacilli are present, and in no case was separation possible. Human bacilli reproduce only in presence of the bovine bacilli and, without the latter, lose their vitality and pathogenicity. All cultures of bovine tubercle bacilli contain small numbers of human bacilli and on special media the latter can be cultivated so that after many generations they numerically exceed the bovine bacilli. The growth of human bacilli on solid or liquid media at p_H 5·6—8·0 shows little variation, but there is a tendency to optimum growth on neutral or slightly alkaline media. Growth is approx. the same for the first generation of bovine bacilli on solid media at p_H 5·6—8·0 but in the subsequent generations on neutral or slightly alkaline media there is a change in form. No growth of bovine bacilli occurs on acid liquid media, but growth and colony formation begin as soon as neutrality is attained. J. N. A.

Resistance of tubercle bacilli. H. J. COOPER and M. L. COHN (J. Bact., 1938, **35**, 223—233).—The resistance of human tubercle bacilli to thermal and chemical (acetic acid) treatment varied with the composition of the media used in culturing. A. G. P.

Germicidal action of thiocyanates. IV. Further experiments on disinfection of tuberculous sputum with acid and alkaline thiocyanate solutions. G. LOCKEMANN and K. HEICKEN (Z. Hyg., 1937, **120**, 1—13; cf. A., 1937, III, 435).—Acid CNS′ solutions killed tubercle bacilli in 5—30 min., according to the concn. and acidity of the solution. Equally good results were obtained whether the acidity was produced with HCl, $KHSO_4$, or oxalic acid. Alkaline CNS′ solutions gave indefinite results. M. A. B.

Protein-free nutrient media for tubercle bacilli. G. LOCKEMANN (Zentr. Bakt., 1938, I, **142**, 79—82).—The best solution contains NaH_2PO_4,H_2O 3 g., KH_2PO_4 4 g., $MgSO_4,7H_2O$ 2·5 g., Na citrate (+5½ H_2O) 2·5 g., $Fe(NH_4)_2(SO_4)_2,12H_2O$ 0·01 g., asparagine (+H_2O) 5 g., glycerol 25 g. per l. W. McC.

Simple medium for the cultivation of the tubercle bacillus. S. R. JAMIESON (J. Path. Bact., 1938, **47**, 353—355).—A modification of Herrold's egg yolk agar gave better results than the original medium. C. J. C. B.

IV-Variants of *Salmonella typhi-murium* (*Aertrycke*) with special reference to cultures from pigeons. P. R. EDWARDS (J. Bact., 1938, **35**, 123—128).—Of 155 cultures examined the only IV-variants obtained were from pigeons or rabbits which had been in contact with pigeons. Cultures from pigeons all belonged to the IV type. A. G. P.

Reciprocal relationship between the antigenic factors of *Salmonella*. K. MEYER (Compt. rend. Soc. Biol., 1938, **128**, 959—963).—The antigenic factors IV and V of *B. typhosus* B are probably constituents of a single mol. since they always occur in the same quant. relationship and are pptd. together by either anti-IV or anti-V serum. H. G. R.

Application of the Feulgen method to the study of viruses. C. F. ROBINOW and J. O. W. BLAND (Nature, 1938, **142**, 720—721).—The Feulgen reaction of inclusion bodies and elementary bodies of certain viruses is described. W. F. F.

Recovery of Eastern equine encephalomyelitis virus from brain tissue of human cases of encephalitis in Massachusetts. L. T. WEBSTER and F. H. WRIGHT (Science, 1938, **88**, 305—306).—Brain tissue from 7 cases was examined. It is claimed that this is the first instance in which horse virus has been identified with encephalitis in man. W. F. F.

Concentration of poliomyelitis virus in nasopharyngeal washings. J. R. PAUL [with G. BLEZINGER] (J. Bact., 1938, **35**, 493—500).—The washings are conc. by freezing and drying in presence of normal monkey serum. A. G. P.

***In-vitro* inactivation by oxygen of the erythroleucæmic virus of fowls.** D. RUFFILLI (Boll. Soc. ital. Biol. sperim., 1938, **13**, 426—428).—The virus is rapidly inactivated by O_2. F. O. H.

Application of the ultracentrifuge to the isolation of the virus of "grasserie" of silkworms. A. PAILLOT and A. GRATIA (Compt. rend. Soc. Biol., 1938, **128**, 1178—1180).—The serum is first centrifuged at a moderate speed and the opalescent serum ultracentrifuged, the sediment from which can be readily emulsified. This emulsion flocculates but does not crystallise with $(NH_4)_2SO_4$. H. G. R.

Crystalline preparations of tomato bushy stunt virus. F. C. BAWDEN and N. W. PIRIE (Brit. J. exp. Path., 1938, **19**, 251—263).—A protein, probably the virus itself, was isolated from plants infected with tomato bushy stunt virus. The protein differed from normal plant proteins and from the other purified plant viruses. It was fully cryst., had a higher nucleic acid content than tobacco mosaic or potato virus *X*, and was more stable towards p_H changes but less stable towards dehydrating agents. Its particles were not elongated and liquid and solid preps. were isotropic. When irradiated with ultraviolet light or treated with HNO_2 the virus lost its infectivity but could still be cryst. and still retained its serological activity. R. L. N.

Isolation and properties of tobacco mosaic and other virus proteins. W. M. STANLEY (Harvey Lect., 1937—38, S. **33**, 170—204).

Amylase activity of mosaic tobacco. A. K. BALLS and L. F. MARTIN (Enzymologia, 1938, **5**, 233—238).—Extractable amylase of normal tobacco leaves increases with age. Leaves infected with common and yellow mosaic show, in the former case, less amylase activity due to lower content of less stable form of enzyme, and in the latter case, considerably greater activity after an initial decrease. Neither the virus protein nor any other constituent of the plant extract affects the amylolytic activity of tobacco leaves or of malt. Observed differences between normal and diseased plants are in amount rather than in intrinsic activity of amylase. A. T.

Production of homogeneous suspensions of vaccinia elementary bodies and the histology of the associated skin lesions. C. R. AMIES (J. Path. Bact., 1938, **47**, 205—222).—The method used is a fractional centrifugation of material from the skin lesions of rabbits after rapid serial passage of the virus. Finally pure suspensions are obtained which when analysed in the Svedberg equilibrium centrifuge give clearly defined sedimentation boundaries. Histologically, when the less pure suspensions obtained before passage are used, there is an early and pronounced inflammatory reaction and few inclusion bodies, but with the pure suspensions the inflammatory reaction is slight, there is marked proliferation of the Malpighian layer with balloon degeneration of these cells, and well-defined eosinophil inclusion bodies in the cytoplasm. This change in the character of the lesions is thought due to a process of adaption and selection whereby the normal ectodermal affinities of the virus are intensified. [6 photomicrographs.] C. J. C. B.

Effect of soft *X*-irradiation on bacteriophages. E. V. WRIGHT and H. KERSTEN (J. Bact., 1937, **34**, 639—644).—The lytic activity of bacteriophages for *Staphyloccus aureus*, hæmolytic streptococci, *E. coli*, and Shiga dysentery organisms is partly or completely inhibited by soft *X*-rays, the intensity of the action differing with the species and increasing with the period of exposure. A. G. P.

Somatic and flagellar bacterial antigens. A. BOIVIN and L. MESROBEANU (Ann. Inst. Pasteur, 1938, **61**, 426—472).—A review. Special reference is made to the chemical properties of the antigens. G. P. G.

Serum antistreptolysin titre in acute glomerulonephritis. J. D. LYTTLE, D. SEEGAL, E. N. LOEB, and E. L. JOST (J. clin. Invest., 1938, **17**, 631—639).—In 116 consecutive cases of acute glomerulonephritis, 71·5% had bacteriological and

94% immunological evidence of a recent streptococcal infection. The height and duration of the antistreptolysin titre in acute glomerulonephritis are related to the severity, persistence, or recurrence of the hæmolytic streptococcal infection. There was a wide variation in the curve of antistreptolysin response constructed over a long period of time. The form of the curves had no relation to the severity or duration of acute nephritis or to the tendency to develop chronic nephritis. C. J. C. B.

Characteristics of natural anticomplementary power. L. NATTAN-LARRIER, L. STEEG, and J. DUFOUR (Compt. rend. Soc. Biol., 1938, **128**, 1031—1033).—Natural anticomplementary power is thermolabile, non-resistant to ageing, and is decreased by heating the solution. The natural anticomplementary power and that due to ageing have probably the same origin in the serum. H. G. R.

Disaggregation of proteins by enzymes. C. G. POPE (Brit. J. exp. Path., 1938, **19**, 245—251).—Fibrinolysin produced a change in the antitoxic pseudoglobulin mol., so that it became disaggregated into protein components having different physical and chemical properties. By using this property of the enzyme a method of crit. differential heat-denaturation for the further purification of antitoxins is described. R. L. N.

Technique for the study of precipitins. R. TULASNE (Compt. rend. Soc. Biol., 1938, **128**, 1041—1044).—The technique for obtaining the max. flocculation, with the antigen purified by dialysis, for use with the photometric method (A., 1938, III, 765) is described. H. G. R.

Effect of non-specific substances on the titre of agglutinins. R. WAHL (Ann. Inst. Pasteur, 1938, **61**, 415—425).—The effect of injecting $MnCl_2$, deutero-albumose, and Na nucleate into rabbits immunised against typhoid and cholera on the agglutinin titre of their sera was investigated. The effect produced by injections given during immunisation was feeble, inconstant, and transitory. When given after the titre had fallen to a stable level, the effect depended on the initial response to the immunising doses. Where this was active (typhoid) the titre rose to its former level; where the initial response was feeble (cholera), little or no change in the stabilised titre was found. The results suggest that antigen is not a component of antibody. G. P. G.

Gordon test for Hodgkin's disease. H. W. SACHS and W. STEFFEL (Klin. Woch., 1938, **17**, 1043—1046).—The Gordon test is often positive before a histological diagnosis can be established with certainty. E. M. J.

Allergy and immunity produced by dead bacilli suspended in vegetable oils. E. COULAUD (Ann. Inst. Pasteur, 1938, **61**, 355—393).—Dead tubercle bacilli, suspended in vegetable oils (neutral or rancid olive oil or castor oil) and injected subcutaneously into guinea-pigs or rabbits, produce an earlier and more marked allergy and more defined immunity than when suspended in physiological saline, but not so marked as when suspended in lanoline or paraffin. If the organisms suspended in vegetable oil are injected intravenously into rabbits an immunity as well marked as that produced by subcutaneous injection of paraffin-suspended bacilli is produced; in other cases pulmonary lesions are formed, resistance is lowered, and a well-marked allergy established. G. P. G.

Bactericidal properties of linoleum and linoleum substitutes. H. SCHULZ (Z. Hyg., 1937, **120**, 54—58).—Certain of the chemical constituents of linoleum, "stragula," and "balatum" have a bactericidal action. When dried with water which had been in contact with these materials for 24 hr. bacteria were killed in about 2 hr. as compared with 4 hr. when dried with pure water. When dried in direct contact with the materials death occurred in about 1 hr. "Balatum" was slightly more, and "stragula" slightly less, effective than linoleum. M. A. B.

Metabolism of pathogenic bacteria. I. Bacteriological and chemical methods. T. E. FRIEDEMANN (J. Bact., 1938, **35**, 527—546).—Methods for metabolic studies and analytical procedure are described. Acid effectively stops metabolic activities and preserves cultures. A. G. P.

Detecting the lipolytic effect of micro-organisms. L. M. HOROVITZ-VLASOVA and M. I. LIVSCHITZ (Proc. Inst. Sci. Res. Food Ind. Leningrad, 1935, **3**, No. 3, 22—32).—Comparative tests of numerou bactseria, yeasts, and fungi are recorded. Determination of free acid in the fat fraction of the inoculated medium gives best results but is less convenient than the Nile-blue test. Lipolysis may be detected by the formation of a transparent drop of soap solution in the turbid medium on addition of 1 drop of 15% aq. KOH. CH. ABS. (p)

Photo-electric method for counting bacteria in vaccines. R. MAGGIORA-VERGANO and L. VIVALDI (R. Ist. San. pubbl., 1938, **1**, 334—341).—Nephelometric determination using a single Fe–Se cell is described. S. O.

Synthetic polytrophic medium for differentiation of typhoid, paratyphoid, *coli*, dysentery, diphtheria, and pseudodiphtheria bacilli. P. Z. GINTSCHEFF (Zentr. Bakt., 1938, I, **142**, 208—213).—The prep. of a liquid medium containing Na_2HPO_4, K_2SO_4, NaCl, $MgCl_2$, $(NH_4)_2SO_4$, Witte peptone, lactose, mannose, bromothymol-blue, and neutral-red is described. By means of this medium, using as a basis the evolution of gas, formation of acid or alkali, and reduction of the indicators, it is possible to differentiate between the types of bacilli. A scheme showing the nature of the gas evolved and the colour changes in the medium produced by each type is given. J. N. A.

Hydrogen sulphide [and bacteria]. I. Detection of hydrogen sulphide in cultures. C. A. HUNTER and H. G. CRECELIUS (J. Bact., 1938, **35**, 185—196).—Compounds of Bi (Bi liquor, Bi NH_4 citrate, or Bi sulphite) are superior to those of Fe or Pb in detecting H_2S in cultures. A. G. P.

Preservation of bacterial cultures. I. H. E. MORTON and E. J. PULASKI (J. Bact., 1938, **35**, 163—

183).—Cultures are satisfactorily preserved under sterile paraffin oil. Other methods are examined. A. G. P.

Apparatus for measuring turbidity of bacterial suspensions. E. V. WRIGHT and H. KERSTEN (J. Bact., 1937, **34**, 581—583).—A photronic cell is utilised for comparison of turbidities. A. G. P.

Apparatus for transporting water and milk for bacteriological examination (*coli* test). S. SIERAKOWSKI (Zentr. Bakt., 1938, I, **142**, 213—219). J. N. A.

Glass button-spatula. R. WEISS (Zentr. Bakt., 1938, I, **142**, 105—110).—The production of separate colonies of uniformly distributed and readily counted bacteria is facilitated by using a glass button approx. 15 mm. in diameter having a stem 2 cm. long in place of a spatula when transferring bacteria to nutrient media. W. McC.

Tube for cultivation of gas-forming anaërobes. P. B. WHITE and L. WARD (J. Path. Bact., 1938, **47**, 348).—In the cultivation of the stricter anaërobes in covered tubes petroleum jelly provides (especially where the onset of growth is delayed) a more effective seal than does liquid paraffin. With vigorous gas production the solid cover is liable to be forced upwards in the tube and the cotton-wool plug expelled. By the simple device of expanding the culture tube, before filling, above the level of the cover, a vent for the evolved gases is supplied. C. J. C. B.

(w) PLANT PHYSIOLOGY.

Periodicity in the growth of the orange tree. H. S. REED and D. T. MACDOUGAL (Growth, 1937, **1**, 371—373).—The cyclic growth of orange trees (Washington Navel) correlates with activity of meristems of shoots, cambium, and roots. W. F. F.

Positive geotropic movement of aerial organs of plants. V. KAUPP (Jahrb. wiss. Bot., 1937, **85**, 107—150).—Geotropic response is examined in relation to the distribution of growth-substance. A. G. P.

Survival of plant cells immersed in liquid air. B. J. LUYET and G. THOENNES (Science, 1938, **88**, 284—285).—Pieces of prepared onion epidermis died on immersion in liquid air. Specimens plasmolysed prior to immersion and transferred to the plasmolysing solutions immediately on removal from the liquid air contained intact cells. The cellular processes involved are discussed. W. F. F.

Change in the specific gravity of tissue powder in regenerated buds and other leaves of mulberry stem caused by removing shoot-top or leaves. Y. OKABE (Bull. Sericult. Japan, 1938, **10**, 276—281).—The hardness of the stem and the *d* of the tissue powder are greatest if only the shoot-top is removed. A progressive decrease occurs as other leaves are removed. H. G. R.

Absorption and accumulation of solutes by living plant cells. VII. Time factor in the respiration and salt absorption of Jerusalem artichoke tissue (*Helianthus tuberosus*) with observations on ionic interchange. F. C. STEWARD and W. E. BERRY (J. Exp. Biol., 1934, **11**, 103—119).—Aërated leaf discs show rapid decline in CO_2 production on immersion. KBr solutions cause a temporary increase in respiration which disappears after 24 hr. After drying and re-immersion in aq. KBr such leaves release electrolytes which are later reabsorbed. Decreased respiration is accompanied by decreased ability to absorb KBr. The mechanism of these changes is discussed. A. G. P.

Inheritance and use of phenol colour reaction in hard red spring wheats. J. G. C. FRASER and F. GFELLER (Sci. Agric., 1936, **17**, 243—249).—The colour developed by treating grain with 1% PhOH increased in intensity with advancing maturity. The mechanism of inheritance of the reaction is discussed. A. G. P.

Reversal of the potassium effect in *Nitella*. W. J. V. OSTERHOUT and S. E. HILL (Proc. Nat. Acad. Sci., 1938, **24**, 427—431; cf. A., 1935, 1289).—In normal cells of *Nitella* KCl is strongly negative to NaCl (K effect), but in certain cells leached in distilled water this effect is reversed and KCl becomes positive to NaCl. The reversal may be due to a higher partition coeff. for NaCl than for KCl. J. N. A.

Influence of salts on extensional growth [of plant cells]. I. Action of single salt solutions on growth of etiolated seedlings. H. BORRISS (Jahrb. wiss. Bot., 1937, **85**, 732—769).—Alkali salts stimulate and $CaCl_2$ retards the growth of seedling shoots. The action of the salts is largely on cell elongation and is not controlled by [$H^{\cdot}$]. Salts affect the condition of hydration of plasma colloids and this in turn influences the effect of growth-promoting substances. A. G. P.

Influence of boric acid on the growth and salt intake of *Impatiens balsamina*. S. REHM (Jahrb. wiss. Bot., 1937, **85**, 788—814).—Addition of H_3BO_3 to nutrient solutions increases the intake of nutrients by the plant, favouring the intake of cations and NO_3' and restricting that of other anions. The effect is associated with modification of p_H and increased permeability of membranes due to increased base intake. Within the plant B forms complex org. compounds which change the isoelectric point of plasma colloids towards the acid side. Flowering and fruiting is specifically affected. Susceptibility of root crops to crown and heart rot is probably an indirect effect of B deficiency. A. G. P.

Mathematical expression of equilibrium between lime, magnesia, and potash in plants. W. THOMAS (Science, 1938, **88**, 222—223).—A diagrammatic method is explained showing, on a trilinear co-ordinate system, the deviations from the optimum physiological balance between Ca, Mg, and K in differently treated plots. W. F. F.

Influence of nutrition on systemic development of a yellow strain of tobacco mosaic. E. L. SPENCER (Phytopath., 1937, **27**, 140).—Plants grown in media deficient in K or P showed systemic symptoms earlier than controls adequately supplied

with these nutrients. Excess of N did not delay the appearance of systemic infection. A. G. P.

Formation and distribution of ascorbic acid (vitamin-*C*) in wheat during germination. L. H. PULKKI and K. PUUTULA (Z. ges. Getreidewes., 1938, **25**, 149—153).—Ascorbic acid is formed in germinating wheat, its concn. being nearly ∝ the length of the coleoptile and only slightly influenced by the p_H of the water used. The germ contains most of the ascorbic acid and of the proteolytic enzymes formed, but amylolytic enzymes are present mainly in the endosperm. E. A. F.

Photo-ammonification of organic nitrogenous compounds in the soil. G. G. RAO and C. I. VARADANAM (Nature, 1938, **142**, 618).—The amounts of NH_3 liberated from 0·05M solutions of glycine, alanine, aspartic acid, glutamic acid, and urea by exposure to sunlight for 30 hr. in presence of ignited Fe_2O_3 or heated red soil as catalyst under sterile conditions are recorded. Important chemical reactions in the soil may thus be brought about by the photochemical action of sunlight, independently of bacteria. L. S. T.

Nitrogen nutrition of ruderal plants. H. MARTHALER (Jahrb. wiss. Bot., 1937, **85**, 76—106).—Younger plants utilise $NH_4^{\cdot}$ more readily than NO_3', the latter tending to induce temporary chlorosis. High-N media produce high N contents in the plants but the general intake of salts does not increase proportionally with increase in the concn. of the medium. Optimum intake is associated with a definite level of concn. of nutrients. With low [N] in the medium plants utilise $NH_4^{\cdot}$ more effectively than NO_3'; with conc. media the reverse is the case. The two forms of N induce morphological differences in plants, notably in cell-wall structure. In certain plants the intake of NO_3' from mixed $NH_4^{\cdot}$–NO_3' nutrients is greater in light than in darkness. A. G. P.

Nitrogen supply of sugar beet in sand culture in relation to extent of injury by southern *Sclerotium* rot. A. E. DAVEY (Phytopath., 1937, **27**, 126—127).—No relationship was apparent between the level of N supply and susceptibility to *S. rolfsii*. A. G. P.

Hydroxylamine formed in plants in the course of nitrate and nitrite assimilation. D. M. MICHLIN (Compt. rend. Acad. Sci. U.R.S.S., 1938, **20**, 149—152).—NH_2OH was detected in cells of *Chlorella* but not in tissues of higher plants under ordinary conditions of growth. Potato leaves immersed in formaldehyde–KNO_3 or –KNO_2 solutions produce NH_2OH and NH_3. Ascorbic acid favours the reaction. No NH_2OH is formed in absence of formaldehyde. A. G. P.

Metabolism of amides in green plants. II. Amides of the rhubarb leaf. H. B. VICKERY, G. W. PUCHER, C. S. LEAVENWORTH, and A. J. WAKEMAN (J. Biol. Chem., 1938, **125**, 527—538; A., 1937, III, 328).—A rise in concn. of $NH_4^{\cdot}$ resulting from protein degradation during culture of detached rhubarb leaves in water is accompanied by the synthesis of glutamine both in light and darkness. Individual specimens differ greatly in synthesising power. Culture in darkness in aq. glucose does not increase glutamine production; hence glucose is probably not the precursor of glutamine in rhubarb. E. M. W.

Some protein constituents of normal tobacco and tomato leaves. F. C. BAWDEN and N. W. PIRIE (Brit. J. exp. Path., 1938, **19**, 264—267).—A discussion. R. L. N.

Effect of quality of light on the assimilation apparatus of differently coloured [algal] tissues. G. SCHMIDT (Jahrb. wiss. Bot., 1937, **85**, 554—591).—Max. CO_2 assimilation in green and in brown tissues poor in fucoxanthin occurs in red light; a second max. appears in blue and a min. in green light. In tissues rich in fucoxanthin the principal max. is in blue, a secondary max. in red, and a min. in green light. Tissues rich in phycoerythin show a max. in green light. Relative activities in different coloured light are uninfluenced by the intensity of illumination. In green plastids diminution in blue waves from white light has a smaller relative effect on blue light-photosynthesis than in the case of fucoxanthin plastids. Disturbance of the assimilation apparatus destroys the superiority of fucoxanthin plastids and a physiologically "green alga" state develops. A. G. P.

Syntheses carried out *in vivo* by isolated pea roots. I. J. BONNER and E. R. BUCHMAN (Proc. Nat. Acad. Sci., 1938, **24**, 431—438).—Isolated pea roots growing *in vitro* in a sucrose–NO_3'–inorg. salt medium with less than 0·1 mg. of vitamin-B_1 per litre can synthesise -B_1 from a mixture of 5-aminomethylpyrimidine and 4-methyl-5-hydroxyethylthiazole. The root tips were assayed by (*a*) *Phytophthora cinnamomi* which determines -B_1 but not the mixture of pyrimidine and thiazole, and (*b*) *Phycomyces Blakesleeanus* which determines -B_1 and/or any uncombined intermediates. The pea root also synthesises -B_1 from the thiazole and pyrimidine intermediates. These syntheses are probably due to a sp. enzyme "thiaminase." The roots can also synthesise the thiazole component from thioformamide and either acetopropyl or chloroacetopropyl alcohol and when they are supplied with these and the pyrimidine component they grow normally and contain as much -B_1 as controls supplied with -B_1. This synthesis of the thiazole component is due to an enzyme "thiazolase." The pea root can also convert 4-methyl-5-chloroethyl-, -5-vinyl-, -5-thioethyl-, -5-amino ethyl-, -5-alanyl-, but not -5-β-hydroxyethyl-, -5-*iso*propoxy-, and 2 : 4-dimethyl-5-hydroxyethyl- into 4-methyl-5-hydroxyethyl-thiazole. J. N. A.

Time course of photosynthesis as shown by (A) the glass electrode, with anomalies in acidity changes, (B) the rapid electrode method for oxygen. L. R. BLINKS and R. K. SKOW (Proc. Nat. Acad. Sci., 1938, **24**, 413—419, 420—427).—(A) By the use of a glass electrode in direct contact with the leaf or layer of cells settled from a suspension, the vol. of solution is restricted to a very thin film and p_H changes due to assimilation or production of acid are very prompt. During the first moments of illumination there is a sudden production of acid

before the normal increase in p_H, and conversely during the first moments of darkness there is a sudden increase in p_H before the normal decrease. These anomalies are observed with many marine algæ and fresh-water and land plant leaves. In all cases the sudden production of acid is most marked on illuminating after long dark periods, and that of alkali on darkening after long light exposures. If stomata are closed or if the surface has no stomata light has practically no effect. Albino leaves show no response to light, but their Mendelian green dominants give a good response including the anomalies. Non-photosynthetic plants show no light effect. NH_3 has practically no effect on the response, whilst CN′ and urethane greatly reduce or entirely inhibit the normal response, although in low concn. they sometimes increase the anomalies.

(B) The course of photosynthesis as shown by O_2 evolution is determined for leaves of *Ulva*, *Potamogeton*, and *Ricinus*, when these are firmly held against a bright Pt electrode. In every case there is a practically instantaneous response to illumination or darkness, but if anaërobic conditions have been attained in the dark, then on illuminating, there is an immediate but exceedingly brief evolution of O_2, which is followed by a sudden fall before the normal evolution is observed. A comparison is made between the immediate and brief evolution of O_2 and the very brief evolution of acid observed when the glass electrode is used. J. N. A.

(A) Effect of interrupted translocation on loss of chlorophyll in leaves during autumn coloration. (B) Anthocyanin formation in leaves with cut veins. A. GRIFFIN (Butler Univ. Bot. Stud., 1935, **3**, 129—137, 139—140).—(A) Severance of leaf veins does not entirely prevent the removal of products of decomp. of chlorophyll in net-veined leaves. Four groups of plants are distinguished by the nature of the decolorisation pattern relative to the point of incision of veins.

(B) Interrupted translocation in leaves hastens anthocyanin formation in many species. This process is not entirely dependent on the accumulation of reducing sugars which follows incision of veins. CH. ABS. (*p*)

Fluorescence intensity changes in green plants. H. KAUTSKY and R. EBERLEIN (Naturwiss., 1938, **26**, 576—577).—When the marine alga *Ulva lactuca* is immersed in sea-water at 20° aërated with CO_2–N_2–O_2 at the rate of 10 l. per hr., and excited by the green and blue light from a Hg lamp, the intensity of fluorescence and the time taken to reach a steady state both increase with decrease of $[O_2]$. With 21% O_2, the intensity fluctuates considerably during the first 0·5 sec. and a steady state is attained after 1·5—2·0 sec. With 0·01% O_2, the initial intensity is increased nearly threefold, and after a slight fall it slowly rises to a steady state, 1·7 times the val. for 21% O_2, in about 40 sec. J. N. A.

Plant growth-hormones. K. V. THIMANN and J. BONNER (Physiol. Rev., 1938, **18**, 524—553).

Growth-substance and seedlings of *Agrostemma githago*. A. HÖFNER (Jahrb. wiss. Bot., 1937, **85**, 485—505).—Application of growth-substance pastes to one side of the hypocotl results in negative curvature of the stem which ceases and reverses after 1—1·5 hr. Subsequently the negative curvature again becomes stronger, proceeding with progressively smaller fluctuations to a steady position. The time curve resembles that of a damped vibration. With decreasing concn. of growth-substance the initial point of inflexion is gradually delayed. With bilateral application of growth-substance the acceleration of growth shows similar periodic fluctuations, the period of the first inflexion of the time curve diminishing with increasing concn. of growth-substance. The effects are ascribed to lateral movement of growth-substance in the hypocotl. A. G. P.

Effect curve of growth-substance on the *Avena* coleoptile. R. POHL (Naturwiss., 1938, **42**, 695).—In Went's coleoptile test the angle of bending of the coleoptile is proportional to the amount of growth-substance applied, only when this is small. With larger applications transport of auxin across the stem becomes an influential factor. The rate of extension of the coleoptile following symmetrical applications of auxin reaches two max., viz., with 40—80 μg. and with more than 160 μg. of heteroauxin. A. G. P.

Tests for [plant] growth-substances. H. SÖDING (Jahrb. wiss. Bot., 1937, **85**, 770—787).—Decapitated hypocotls of *Cephalaria* are very sensitive to the action of heteroauxin. The sensitivity varies widely with season and the auxin–curvature relationship is not always of the same form. A. G. P.

Changes in wheat metabolism caused by powdery mildew. P. J. ALLEN and D. R. GODDARD (Science, 1938, **88**, 192—193).—The O_2 consumption of the mildew *Erysiphe graminis tritici* was measured, and the effect of its presence on the host determined. A 250% increase in respiration above normal was found for infected wheat. W. F. F.

Effects of boron treatment in the control of "hard fruit" in citrus. A. A. MORRIS (J. Pomology, 1938, **16**, 167—181).—Occurrence of "hard fruit" is associated with low B contents in leaves and fruit. Deficiency of B does not influence the intake of the principal nutrients (with the possible exception of N) by the trees but results in low contents of sugar and pectin in fruit. Applications of B cause a rapid increase in B content of leaves, an increase in juice and sol. solids in mature fruit, and somewhat slower maturation. Heavy treatments with B tend to retard the translocation of sugars but not of pectins from leaves to fruit. A. G. P.

Fixation of leuco-bases and vital dyes by living vegetable cells. A. GUILLIERMOND and R. GAUTHERET (Compt. rend., 1938, **207**, 417—421).—Janus-green with H_2 affords first an unstable pink compound (oxidised to Janus-green) and then a stable pink compound further reduced to a leuco-base which can be oxidised to the stable pink form. The unstable pink compound stains the plastids and chondriosomes of *Allium cepa*; the stable pink substance does not penetrate the cells. The leuco-base is fixed by the cytoplasm, nucleus, plastids, and

chondriosomes. *Saprolegnia diclina* gives similar results. Neutral-red with H_2 at p_H 8·2 affords a leuco-base absorbed by *S. diclina*. Oxidation shows that it accumulates, as does neutral-red, in the vacuoles. Springer's yeast does not absorb the leuco-derivative although neutral-red is absorbed. If the yeast, stained with dye, is reduced with $Na_2S_2O_4$, the dye is converted into a yellow, fluorescent form. When wheat roots are immersed in the leuco-derivative of neutral-red and then oxidised, the cells of the root-cap and the differentiated cells stain yellow, whilst those of the meristem are orange or red. The epidermal cells of *A. cepa* and *Iris germanica* likewise form the yellow compound. Bean roots stain red. Acid cell sap and the presence of hydroxyflavones favour the formation of the yellow form. Neutral-red with $Na_2S_2O_4$ affords the yellow derivative which colours the vacuoles of yeast, epidermal, and root cells. Cells of the root-cap of wheat stained with neutral-red and treated with $Na_2S_2O_4$ are gradually changed to yellow. The leuco-base of Nile-blue is fixed in the vacuoles and cytoplasm of yeast but to a smaller extent than is the dye. Wheat, barley, bean, and castor-oil plant roots and the epidermal cells of *A. cepa* and *I. germanica* react similarly. In the cells of *Allium*, the leuco-base of cresyl-blue is absorbed by the vacuoles, nucleus, plastids, and chondriosomes. Cells of the root-cap of wheat stained with cresyl-blue show only slow reduction of the dye with $Na_2S_2O_4$. The leuco-base of methylene-blue penetrates yeast at p_H 9—11 and is fixed only by the cytoplasm.

J. L. D.

Root-tip smear technique and the differential staining of the nucleolus. P. N. BHADURI (J. Roy. Microscop. Soc., 1938, **58**, 120—124).—Fixation is carried out in acetic acid–formalin or acetic acid–alcohol mixtures, the proportions varying with the material; fixed material can be stored in 80% alcohol with a drop of acetic acid. After washing, hydrolysis is carried out by N-HCl at 60° for 10—30 min., followed by further washing and treatment overnight with decolorised fuchsin solution. The material is then put on a slide with 45% acetic acid, and pressed with a coverslip; this produces a uniform smear. The prep. is treated with acetic acid–alcohol (1 : 9) 5 min., then 95% alcohol 10 min., saturated solution of Na_2CO_3 in 80% alcohol 1 hr., then 70% alcohol 10 min., and finally stained in light-green 15 min. Differentiation is carried out under the microscope in 80% alcohol + saturated Na_2CO_3 in 80% alcohol (4 : 1). After dehydration and clearing it is mounted in neutral balsam. E. E. H.

Procedure for growing, staining, and making permanent slides of pollen tubes. E. H. NEWCOMER (Stain. Tech., 1938, **13**, 89—91).—Warmed slides are smeared with a mixture made by boiling 0·5 g. of agar with 0·5—2 g. of sugar in 25 c.c. of water, and then stirring in 0·5 g. of powdered gelatin; the pollen is dusted on, and germination carried out in a moist chamber. When desired, killing is carried out with any suitable fluid, and the chromosomes are stained as follows. Slides are treated with 1% $KMnO_4$ for 3 min., rinsed in 5% oxalic acid for 1—3 min. and in tap-water for 15 min., then mordanted in 1% chromic acid for 20 min., washed, and treated with 1% aq. crystal-violet for 4 hr. The colour is changed from blue to brown by treating sections for 1—2 min. with I–KI (I : KI : 80% alcohol = 1 : 1 : 100). After rinsing in 95% alcohol, slides are counterstained with 1% gold-orange in clove oil for 2—4 min., rinsed in abs. alcohol, cleared, and mounted in balsam. The chromosomes are intensely stained.

E. E. H.

Technique in the study of vascular systems in plants. F. A. VARRELMAN (Stain Tech., 1938, **13**, 115—119).—One method is to dissect buds, immerse overnight in 20% HCl, and then bleach in 5% bleaching powder; after dehydrating and clearing, the buds are examined whole in cedar-wood oil or balsam in a dark field: the vessels stand out as white strands. Another method is to put the stems bearing buds in 0·01% aq. solution of Niagara-sky-blue, forcing infiltration by pressure obtained in an ordinary pressure cooker by a bicycle pump; the buds are then dehydrated, embedded, and sectioned. E. E. H.

(x) PLANT CONSTITUENTS.

Origin of secondary products of plants. A. FREY-WYSSLING (Naturwiss., 1938, **26**, 624—628).—Theoretical. All secondary plant products probably arise from unsaturated hydrocarbons or amines which theoretically could be obtained by deamination and decarboxylation of amino-acids. Rose oils arise from phenylalanine, the heteroauxins from tryptophan, terpenes from leucine, tobacco alkaloids from ornithine, and pepper and pyridine alkaloids from lysine. Union of ethylene and *iso*-amylene units can lead to lignins, and that of phenyl-ethylene, ethylene, and isoprene units to catechins and anthocyanidins. J. N. A.

Chemical composition of various parts of the mulberry tree. K. SUDA (Bull. Sericult. Japan, 1938, **10**, 89—95).—Analytical data are given for various parts of the leaves, old and new stems, and root. H. G. R.

Flame-photometric determination of potassium [in plants]. W. LEHMANN (Angew. Chem., 1938, **51**, 595—596).—Schuhknecht's method (A., 1937, I, 326) is suitable for determining K in plant ash etc. Vals. agree closely with those obtained by the $HClO_4$ method. Suitable light filters ensure the elimination of flame colours of Ca and Na.

A. G. P.

Determination of oxalacetic acid in green plants. A. I. VIRTANEN, T. LAINE, and P. ROINE (Suomen Kem., 1938, **11**, **B**, 25).—Szent-Györgyi's method is inaccurate when applied to green plants. Oxalacetic acid is quantitatively decarboxylated by aniline at 0°, but only about 70% of the CO_2 is evolved at room temp. The acid may be determined by formation of the oxime, and reduction (Pt) to aspartic acid which is determined in the usual way.

M. H. M. B.

Unstable ester of choline, without choline-esterase, in the potato and in a mushroom. A. OURY and Z. M. BACQ (Arch. int. Physiol., 1938, **47**, 92—101).—An unstable choline ester is present

in certain varieties of potatoes and in a mushroom. No choline-esterase is present; therefore the metabolism of these esters is different from that in animals. H. E. R.

***Liatrix* and *Melitot*, plants yielding coumarin.** G. IGOLEN (Parfums de France, 1936, **14**, 222—226; Chem. Zentr., 1937, i, 216).—Extraction of *Liatrix odoratissima* and species of *Melitot* (*officinalis*) with volatile solvents yields oils containing much coumarin and suitable for use in perfumery. Approx. 50% of the non-coumarin fraction, which has an odour of tobacco, is sol. in 50% NaOH. A. H. C.

Oil from seeds of *Santalum album*, Linn. M. K. MADHURANATH and B. L. MANJUNATH (J. Indian Chem. Soc., 1938, **15**, 389—392).—The oil, *d* 0·9356, *n* 1·4891, sap. val. 176, Hanus I val. 153, CNS val. 151, acid val. 29 (extracted) or 44 (expressed oil), Reichert–Meissl val. 0·9, acetyl val. 22—25, diene val. 3·9, η_{50}^{50} 243, yields 8·8—13% of unsaponifiable matter [including a phytosterol, m.p. 131° (acetate, m.p. 118°)], 49% of liquid (oleic and a small amount of linolenic) acids, and 51% of solid [*santalbic* and a small amount of palmitic] acids. Santalbic acid, $C_{18}H_{30}O_2$, m.p. 41—42° (p-*phenylphenacyl* ester, m.p. 56—57°), absorbs 3 H_2 to give stearic acid, but gives oils with Br or maleic anhydride and does not undergo photopolymerisation. R. S. C.

Seed fat of the annual nasturtium (*Tropæolum. var.*). T. P. HILDITCH and M. L. MEARA (J.C.S., 1938, 1608—1610).—The seeds yield to light petroleum a wax from which trierucin separates. Hydrolysis, and fractionation of the resulting fatty acids yields erucic 81·8, oleic 16, linoleic 1·2, behenic 0·8, and palmitic acid 0·2%. The wax contains probably 40% of trierucin. J. D. R.

Seed and fruit coat fats of *Neolitsea involucrata*. B. G. GUNDE and T. P. HILDITCH (J.C.S., 1938, 1610—1614).—The seed fat (extracted by light petroleum) yields on hydrolysis *n*-decoic 3, lauric 86, myristic 4, oleic 4, and linoleic acid 3%, and contains 87% of saturated glycerides (including 66% of trilaurin). The fruit-coat fat, similarly treated, yields lauric 10, palmitic 28, stearic 3, hexadecenoic 5, oleic 44, and linoleic acid 10%. J. D. R.

Seeds of *Blepharis edulis*. II. Composition of the oil. G. P. PENDSE and J. B. LAL (J. Indian Chem. Soc., 1938, **15**, 471).—A correction. The sterol previously described (A., 1937, III, 445) is $C_{27}H_{42}O_3$ and not $C_{27}H_{47}O,2H_2O$. Further data are recorded of % of saturated acids in the oil. A. T. P.

Fruit of the Cape gooseberry (*Physalis peruviana*). III. J. B. LAL (Proc. Nat. Acad. Sci. India, 1938, **8**, 59—62).—Alcohol extracts a *phytosterol*, $C_{27}H_{44}O,H_2O$, m.p. 132°, oleic, linoleic, linolenic (trace), and saturated acids, a *substance*, $C_{45}H_{66}O_{18}$, m.p. 100—102°, as well as tannins, phlobaphens, and reducing sugars from the bark. J. L. D.

Sterols. Additive compounds of sterols.—See A., 1938, II, 487.

Lipins of wheat flour. I. Petroleum ether extract. B. SULLIVAN and M. HOWE (Cereal Chem., 1938, **15**, 716—720).—The fats extracted by light petroleum from wheat flour are similar to those of the germ, but present in different proportions. The amount of volatile sol. fatty acids is much greater. The total unsaponifiable matter is higher, but less of this is pptd. by digitonin. E. A. F.

Colloidal nature of cereal albumins and structural chemistry. K. SCHMORL (Z. ges. Getreidewes., 1938, **25**, 144—149).—Examination of colloidal plant substances, with particular reference to gluten, indicates that their colloidal properties result from their ring structure, large aggregates being formed by the action of residual valencies. E. A. F.

***Indigofera linifolia, Retz.* Isolation of its active principle.** M. P. GUPTA and S. DUTT (Proc. Nat. Acad. Sci. India, 1938, **8**, 49—52).—The EtOH extract contains ceryl palmitate and a *lactone*, $C_{26}H_{50}O_2$, m.p. 96°. F. R. G.

Vincetoxin, a glucoside from *Cynanchum vincetoxicum*. R. GAGER and L. ZECHNER (Arch. Pharm., 1938, **276**, 431—447).—Vincetoxin (10% methoxyl content; isolation described) resembles condurangin in most of its properties, has a very slight hæmolytic or toxic action, and gives an amorphous aglucone. Its colour reactions, fluorescence, and distribution in the plant are detailed. R. S. C.

Survey of anthocyanins. V. W. J. C. LAWRENCE, J. R. PRICE, G. M. ROBINSON, and R. ROBINSON. **VI.** J. R. PRICE and V. C. STURGESS (Biochem. J., 1938, **32**, 1661—1667, 1658—1660; cf. A., 1934, 1227).—The pigments of a further list of flower petals and permanently pigmented leaves have been examined and the anthocyanin types to which they belong determined. A. L.

Natural flavones. II. Colouring matters of the bark of *Oroxylum indicum*, Vent. P. K. BOSE and S. N. BHATTACHARYA (J. Indian Chem. Soc., 1938, **15**, 311—316).—Alcoholic extracts of the bark yield baicalein (cf. Shibata *et al.*, A., 1923, i, 591), separated as its Pb salt, and a mixture of substances which on demethylation yields baicalein and chrysin, and probably consists of mixed chrysin and baicalein monomethyl ether. J. D. R.

Presence of a toxic bitter principle in the bark of *Mansonia altissima*. A. CHEV, M. MASCRÉ, and R. PARIS (Compt. rend. Soc. Biol., 1938, **128**, 1004—1006).—0·2% of a bitter principle has been obtained which is toxic to guinea-pigs and dogs on injection. H. G. R.

Microchemical reaction of the alkaloids of *Atropa belladonna*. F. AMELINK (Pharm. Weekblad, 1938, **75**, 1196—1199).—Alkaloid extracts in HCl from Bulgarian and West European roots of *Atropa belladonna* and from tinctures of the leaves give identical microcryst. ppts. with KI–I solution. S. C.

Alkaloids of *Magnolia fuscata*.—See A., 1938, II, 515.

Attempted synthesis of oroxylin-*A* and the synthesis of wogonin.—See A., 1938, II, 502.

(y) APPARATUS AND ANALYTICAL METHODS.

Apparatus for continuous, electrical, graphical recording. G. Ammirandoli (Boll. Soc. ital. Biol. sperim., 1938, **13**, 450—452).—Smoked paper or ink-reservoir pens on the kymograph are replaced by a sparking system such that the trace is given by a series of burn-points on white paper. F. O. H.

New tambour. H. Yamasaki (Folia pharmacol. japon., 1938, **25**, 38). F. Ja.

Polyelectrophysiograph. O. L. Huddleston and R. W. Whitehead (Rev. Sci. Instr., 1938, **9**, 315—319).—The apparatus, which is designed for use as an electrocardiograph and for the study of bioelectrical phenomena, contains a "slow-screen" cathode-ray tube in which the phosphorescent trace persists for ~ 1 min. and may be erased by exposure to red light. A. J. E. W.

Optical methods in physiology. A. von Muralt (Schweiz. med. Wschr., 1938, **68**, 954—955).—A review. A. S.

Study of tissue cultures by the luminoscopic method. A. Hadjioloff (Compt. rend. Soc. Biol., 1938, **128**, 1096—1098).—The application of the luminoscope to the study of tissue cultures *in vitro* is described. H. G. R.

Apparatus for the study of photoluminescence at the b.p. of liquid air. C. Dhéré and V. Castelli (Compt. rend. Soc. Biol., 1938, **128**, 1011—1013). H. G. R.

Fluorescence methods in microbiology. C. Dhéré (Schweiz. med. Wschr., 1938, **68**, 948—951).—A review. A. S.

Use of fluorescence spectrography in the determination of the porphyrins. F. Bandow (Strahlenther., 1938, **61**, 664—668).—A method for the clinical determination of porphyrin by measuring the intensity of the lines of fluorescence with a spectrophotometer is described. The porphyrin substances can be more satisfactorily separated from the other fluorescent substances than by the absorption method. S. H.

Direct radiocinematography. Van de Maele (Radiology, 1938, **30**, 750—755).—A description of apparatus and method for direct *X*-ray cinematography. W. F. F.

Cranial radiographic technique in the living rat. E. G. Burr and H. Mortimer (Radiology, 1938, **31**, 162—169).—The apparatus and method for taking stereoscopic *X*-ray photographs of the anæsthetised rat are described. W. F. F.

Cineradiography by the indirect method. R. Reynolds (Radiology, 1938, **31**, 177—182).—A review. W. F. F.

Apparatus for photographing experimental material. L. H. Addington (Science, 1938, **88**, 335—336).—The apparatus described is suitable for photographing small animals such as rats. W. F. F.

Improved extraction apparatus for poorly soluble substances. H. A. Heinsen (Klin. Woch., 1938, **17**, 1225—1226). E. M. J.

Apparatus for detecting mustard gas by the Ligtenberg method. H. P. Boddaert (Chem. Weekblad, 1938, **35**, 709—710).—A simplified apparatus, consisting of a paper funnel and a U-shaped reaction tube containing 0·1% aq. $AuCl_3$ in a specially constructed box, fitted with a suction pump, is described. The gas reacts with the aq. $AuCl_3$ in a capillary tube, which can be viewed against a dark ground by means of an eyepiece fitted to the instrument. S. C.

Simple cuprosodium reagent [for glucose]. G. Gurmendi (Bol. Soc. Quím. Peru, 1938, **4**, 122—124).—Determination of glucose, especially in urine, with a solution containing 100 c.c. of 30% NaOH and 1 g. of $CuSO_4$ in 10 c.c. of H_2O, preferably with addition of 5% $K_4Fe(CN)_6$, gives reliable vals. and is recommended for its low cost. F. R. G.

Micro-determination of glucose. W. Niemierko (Acta Biol. Exp., 1938, **12**, 178—182).—The method of Fujita and Iwatake was modified. To the test solution (not more than 0·5 ml.) is added (in a test-tube) 0·25 ml. of a solution containing in 100 ml. $K_3Fe(CN)_6$ 0·066 g., K_2HPO_3 5·6 g., and K_3PO_4 1·68 g., and placed in boiling water for 15 min. After cooling 3 drops are added of a solution containing in 100 ml. NaCl 25 g., $ZnSO_4,7H_2O$ 5 g., and KI 2·5 g., 2 drops of 1 : 1 HCl, and 1 drop of 0·25% starch in saturated NaCl. I is titrated against 0·005N-$Na_2S_2O_3$, using a Hg micro-burette (Pincussen). The glucose in μg. = 0·174(a—b), where a = thiosulphate equiv. of the control, b = that of the test solution. Glucose can be determined to an accuracy of 1—2% in quantities of 5—10 μg. A. S.

Colorimetric determination of the sugar content of liquids by means of the Pulfrich step-photometer. P. Ujsághy (Biochem. Z., 1938, **298**, 141—149).—The carbohydrate content of biological fluids is determined by means of the α-naphthol–H_2SO_4 colour reaction. All carbohydrates behave as glucose, Ca gluconate in concns. up to 0·2% gives no colour reaction, whilst urea, uric acid, vitamin-*C*, and cystine at a concn. of 0·2% give vals. corresponding with 0·003—0·0073% glucose. A protein content of 0·2% gives a glucose val. of 0·0003%. C. C. N. V.

Determination of methionine, cysteine, and sulphate in proteins after hydrolysis with hydriodic acid.—See A., 1938, II, 518.

Determination of tyrosine, tryptophan, and cystine by means of the step-photometer. Application to Folin and Marenzi's colorimetric method.—See A., 1938, II, 518.

Micro-molybdomanganimetric determination of the free phosphoric ion in complex biological material. L. Thivolle (Compt. rend. Soc. Biol., 1938, **128**, 1208—1210).—A rapid method is described in which pptn. in the cold avoids hydrolysis of complex phosphates. H. G. R.