BRITISH CHEMICAL ABSTRACTS

A., III.—Biochemistry

APRIL, 1937.

Effects of pulmonary gas embolism. I. Singh (J. Physiol., 1936, **87**, 11—22).—O_2 consumption falls during temporary embolism, but rises and then returns to normal when vascular compensation occurs; O_2 debt occurs during blockage and is subsequently repaid. Metabolism rises by about 5%. Relief of embolic asphyxia and disordered respiration with adrenaline is often counteracted by the increase produced thereby in metabolic rate. R. N. C.

Use of helium as a therapeutic gas. A. L. Barach (Anesthesia and Analgesia, 1935, **14**, 210—215).—Mice were unaffected by substitution of He for N_2 in normal atm. proportions. Use of He in respiratory obstruction is considered.

Ch. Abs. (*p*)

Analeptic respiratory action of theophylline-ethylenediamine complex. J. van Heerswynghels (Compt. rend. Soc. Biol., 1937, **124**, 285—287).—The complex (" euphyllin ") stimulates respiration, the effect being > the additive effects of the constituents. H. G. R.

Which isomeride of coproporphyrin is eliminated during blood [pigment] decomposition? H. T. Schreus (Klin. Woch., 1935, **14**, 1717—1718; Chem. Zentr., 1936, i, 1904; cf. A., 1936, 501).—Coproporphyrin III is obtained from urine of patients under salvarsan treatment. A. G. P.

Detection of porphyrin in blood-serum. J. T. Brugsch (Münch. med. Woch., 1935, **82**, 1803; Chem. Zentr., 1936, i, 2156).—Applications of a fluorescence technique are discussed. H. N. R.

Oxygen transport of the fœtal and maternal blood during pregnancy. R. G. Leibson, I. I. Likhnitzky, and M. G. Sax (J. Physiol., 1936, **87**, 97—112).—The area of variation of the O_2 dissociation curve of the blood of a healthy woman is narrow. The curve is displaced slightly to the right in pregnancy, possibly through fall of p_H, whilst the curve of the fœtal blood lies to the left of the normal adult curve, from which it differs in shape. The mean % of saturation of fœtal blood is about 15% > that of the adult blood at the same p_H and O_2 pressure, apparently through the presence of a different type of hæmoglobin in the former; under the same conditions O_2 saturation in maternal blood is about 6% > in non-pregnancy blood. These variations of O_2-carrying power partly compensate the displacement of the O_2 dissociation curve to the right during pregnancy. R. N. C.

Freezing and resuscitation of animals. M. T. Zarotschenzev (Ice and Refrig., 1935, **89**, 133—134).—The blood of cold-blooded animals has high CO_2 and $COMe_2$ contents. Under conditions in which blood of warm-blooded animals contains these substances in appropriate proportions the temp. of the animals can be lowered without causing death.

Ch. Abs. (*p*)

Changes in composition of the blood of the turtle following complete anoxia. F. B. Moreland (J. Biol. Chem., 1937, **117**, 471—479; cf. A., 1934, 93).—Administration of Na_2CO_3 or $NaHCO_3$ to turtles during anoxia increases blood-lactate and lowers blood-sugar by relieving acidosis. Acidosis alone from rebreathing CO_2 does not produce hyperglycæmia. The CO_2 set free in anoxia corresponds with that displaced by lactic acid. No significant formation of AcCHO or $AcCO_2H$ occurs. The effect of CN′ on blood-sugar and -lactate is > that of O_2 deprivation. Depletion of glycogen during anoxia occurs mainly in the heart. R. M. M. O.

Acclimatisation of the human subject to atmospheres containing low concentrations of carbon monoxide. E. M. Killick (J. Physiol., 1936, **87**, 41—55).—Acclimatisation occurs to a considerable degree. Hæmoglobin, the red cell count, and the O_2/CO distribution coeff. of whole blood outside the body are unaltered in acclimatisation. R. N. C.

Histamine and leucocytosis. V. H. Moon, M. M. Lieber, and P. J. Kennedy (Arch. Path., 1935, **20**, 209—215).—Injection of histamine (I) phosphate increases the no. of polymorphonuclear leucocytes in blood. Release of (I) from cells in areas of extensive injury is a factor in evoking the subsequent leucocytosis. Ch. Abs. (*p*)

Solvent water in the mammalian erythrocyte. J. Macleod and E. Ponder (J. Physiol., 1936, **86**, 147—152).—The distribution of $(CH_2{\cdot}OH)_2$ between human, rabbit, ox, and sheep erythrocytes and the surrounding fluid shows that the cell-H_2O is virtually all solvent H_2O. R. N. C.

Action of salts of fatty acids on erythrocytes and bacteria. H. O. Hettche (Z. Immunitäts., 1935, **83**, 506—511; Chem. Zentr., 1936, i, 2381).—The hæmolytic activity of fatty acids increases with the no. of C atoms and with the no. of double linkings. Hæmolysis was most rapid with linolenic acid. Salts of fatty acids are bactericidal only to Gram-positive organisms. The relative toxicity of the acids follows the same order as their hæmolytic activity.

A. G. P.

Formation of ammonia in avian erythrocytes and cell respiration. V. A. Engelhardt and A. A. Baev (Biochimia, 1936, **1**, 113—133).—The

corpuscles liberate NH_3 under anaërobic conditions (replacement of O_2 by CO_2 or N_2, or addition of phenylurethane or KCN). The ratio of labile P to formed NH_3 is not const., suggesting that sources of NH_3 other than adenosinetriphosphoric acid exist. The process of NH_3 liberation is irreversible, and cannot be inhibited by phospho-glyceric or -pyruvic acid, as is the case for muscle cells. It is concluded that rephosphorylation in avian erythrocytes is associated with an oxidative rather than a glycolytic process. R. T.

Preservation of human and sheep erythrocytes in naphthalenedisulphonate solution. H. Goldie (Compt. rend. Soc. Biol., 1937, **124**, 206—208).—The optimum concns. and p_H of 1 : 6-$C_{10}H_6(SO_3Na)_2$ for preservation of human and sheep erythrocytes are 1—2% and 0·75%, and 6·2—6·4 and 6·8, respectively. H. G. R.

Bilirubin of blood and bile. Application of electrophoresis and of the ultracentrifuge. K. O. Pedersen and J. Waldenström (Z. physiol. Chem., 1937, **245**, 152—162).—The sedimentation const. of bilirubin (I) (whether in the form which can be diazotised directly or in that which can be diazotised only after treatment with EtOH) is approx. equal to those of serum-albumin (II) and hæmoglobin and its isoelectric point is p_H 4·8 approx. Aq. (I) combines with (II) but not with ovalbumin. Hence (I) occurs in blood combined with (II) and probably does not circulate free in the organism. In bile (I) occurs combined with a carrier of high mol. wt. which increases its solubility. W. McC.

Dispersion of hæmoglobin. P. Lambert and J. Fautrez (Protoplasma, 1936, **25**, 220—233).—Nistler's method gave 21 A. for the radius of hæmoglobin particles in 1·7% solution. In concns. >2·3% and at p_H <3 and >8·5 and near the isoelectric point (p_H 6·8—7·4) particles of different sizes were present. M. A. B.

Resistance of hæmoglobin. I. Physicochemical. II. Chemical. III. Experiments with animals. Y. Azuma (J. Chosen Med. Assoc., 1935, **25**, 489—511).—The resistance is measured by the time required for the disappearance of the α-band after treating laked blood with acid or alkali. Bases are less active than mineral acids in this respect. Effectiveness of acids is in the order AcOH < HCl < H_2SO_4 < HNO_3. Resistance of different bloods was in the order human < dog < mouse < rabbit < chicken < pig < sheep < goat < cattle. In anæmia and hyperleucocytosis vals. were normal. Ch. Abs. (*p*)

Chlorophyll and hæmoglobin regeneration after hæmorrhage. J. H. Hughes and A. L. Latner (J. Physiol., 1936, **86**, 388—395).—Chlorophyll (I) in very small, but not in large, doses accelerates hæmoglobin regeneration in rabbits after hæmorrhage. Crude (I) or its Mg-free derivatives accelerate regeneration in large doses. R. N. C.

Oxygen dissociation curves and osmotic pressures of hæmoglobins of different species. E. F. McCarthy (J. Physiol., 1936, **86**, 77—82).—The O_2 dissociation curves of hæmoglobins from a no. of species show marked differences. The osmotic pressures are all of the same order except that of rabbit hæmoglobin, which is slightly > the average val. R. N. C.

Storage of carbon particles in the reticuloendothelial system and hæmoglobin formation. T. Radeff (Biochem. Z., 1937, **289**, 211—216).—A single injection intravenously or intraperitoneally of Indian ink into mice, rats, or rabbits does not increase blood-hæmoglobin or the no. of red cells, neither does it inhibit the formation of hæmoglobin or red cells. The absorption of such colloidal particles of C by the liver and spleen does not affect their Fe content. P. W. C.

Distribution of hæmoglobin and its derivatives in the tissues of *Phyllodoce mucosa*. C. Raphaël (Compt. rend. Soc. Biol., 1937, **124**, 347—349).—Hæmoglobin has been identified in the dorsal cirrus, base of the parapodia, and skin. H. G. R.

Relation between the hæmoglobin content of the blood and the blood groups. A. Gargiulo (Compt. rend. Soc. Biol., 1937, **124**, 501—502).—No correlation was observed. H. G. R.

Preparation of hæmoglobin in a dry and active state. D. B. Morrison and A. Hisey (J. Biol. Chem., 1937, **117**, 693—706).—The prep. of reduced hæmoglobin (I) in a dried and stable condition without significant loss of O_2-capacity and the properties of such preps. are described. More difficulty was experienced in obtaining high activities with dog (I) than with ox, pig, or human (I) when the O_2-inactivating factor was not excluded at crit. stages of prep. and dissolution of samples. Dog (I) is the most readily cryst., is slower to dissolve after drying, and yields more methæmoglobin (II). Rapid drying of reduced (I) and oxyhæmoglobin greatly accelerates (II) formation. In the dried state, reduced (I) may be preserved indefinitely in a vac. without change in activity. P. W. C.

Hæmoglobin determination by hæmatocrit. (Indirect hæmoglobin determination.) H. Schartum-Hansen (Folia hæmatol., 1935, **54**, 22—26; Chem. Zentr., 1936, i, 1926—1927).—The vol. of erythrocytes ∝ hæmoglobin content. H. N. R.

Micro-spectrophotometric examination of the absorption spectra of oxyhæmoglobin of vertebrates. T. Tucholski and A. Woloszczuk (Acta phys. polon., 1934, **3**, 271—278; Chem. Zentr., 1936, i, 2582).—Absorption spectra of hæmoglobin from man, guinea-pig, and frog are identical. A new band at 492—519 mμ (max. 510 mμ) is recorded. A. G. P.

Carbamate equilibrium. II. Equilibrium of oxy- and reduced hæmoglobin. W. C. Stadie and H. O'Brien (J. Biol. Chem., 1937, **117**, 439—470; cf. A., 1936, 289).—That CO_2 forms with hæmoglobin a carbamate analagous to those of the NH_2-acids is indicated by the rates of formation and the thermal relations being the same; the CO_2 combines directly with the protein amphanion and not with the zwitterion. Mass action equilibria developed on this basis support new and published experimental data. R. M. M. O.

Titration curves of oxygenated and reduced hæmoglobin. B. German and J. Wyman, jun. (J. Biol. Chem., 1937, **117**, 533—550).—Titration curves of oxy- (I) and reduced hæmoglobin (II), determined directly with a glass electrode, show that between p_H 4·5 and 6·08—6·15 (II) is the stronger acid, and over the p_H range 6·08—6·15 to about 8·9 (I) is the stronger. Ionic strength of the solutions has little effect on this relationship. Equations relating p_H with O_2-affinity are deduced. F. A. A.

Methæmoglobin containing fluorine, and its significance for the determination of fluorine in industrial hygiene. R. Fabre and S. Bazille (XIV Congr. Chim. ind. Paris 1934, 1935, **1**, 5 pp.; Chem. Zentr., 1936, i, 2399).—The F-methæmoglobin may be detected spectroscopically in presence of 10 parts of oxyhæmoglobin by its absorption band at 610 mμ. 0·1—2 mg. of NaF may be so determined by measurement of the extinction coeff. J. S. A.

Colour values of acid hæmatin solutions. G. Barkan and J. Olesk (Biochem. Z., 1937, **289**, 251—265).—Acid hæmatin solutions from blood and erythrocyte suspensions of the same hæmoglobin (I) content show characteristic differences in their colour vals. determined photometrically, and colorimetrically. Numerous factors (time, temp., concn., etc.) influence the degree of dispersion and therefore the colour vals. and it is doubtful whether the (I) content can be inferred from them. P. W. C.

Chemiluminescence of hæmin and the recognition of forensically important blood traces. W. Specht (Angew. Chem., 1937, **50**, 155—157).—The solution consists of about 0·1 g. of 3-aminophthalhydrazide (I), 5 g. of Na_2CO_3, 15 c.c. of 3% H_2O_2, and 100 c.c. of H_2O, or 0·1 g. of (I) in 100 c.c. of 0·5% aq. Na_2O_2; to the first solution a trace of indazolone-4-carboxylic acid is added. Fresh blood causes only a feeble luminosity whereas dried blood stains give a bright blue, persistent chemiluminescence the intensity of which increases with the age of the stain. The reaction is sp. for blood. H. W.

Physical state of globin and mol. wt. of methæmoglobin obtained by reaction of protohæmatin with globin. J. Roche and R. Combette (Compt. rend., 1937, **204**, 70—72).—A solution of a globin (I) with protohæmatin at p_H 8 affords ferroporphyrin, denatured globin, and methæmoglobin (II). (II) obtained in this way, or by the action of $K_3Fe(CN)_6$ on blood, has a mol. wt. of about 66,000, which indicates that the reaction has broken up the aggregates of (I) (cf. A., 1933, 174). J. L. D.

Electrophoresis of serum-globulin. I. A. Tiselius (Biochem. J., 1937, **31**, 313—317; cf. Reiner, A., 1928, 192; Pedersen, A., 1933, 674).—The isoelectric point of the globulin (I) (horse, rabbit) is p_H 5·2. The heterogeneity of (I) is marked, especially at high p_H. W. McC.

Rapid determination of the serine-globulin ratio in blood-serum. J. A. Labat (Bull. trav. Soc. Pharm. Bordeaux, 1935, **73**, 172—174; Chem. Zentr., 1936, i, 2155).—Total protein is nephelometrically determined with $CCl_3{\cdot}CO_2H$ and serine by a similar process after pptn. of the globulin with $MgSO_4$. H. N. R.

Alcoholysis of serum-albumin in autoclaves. V. S. Sadikov and V. A. Vadova (Biochimia, 1936, **1**, 218—244).—The loss of N due to volatilisation amounts to 15% for serum-albumin heated at 180° (6 hr.) with H_2O or MeOH, and to 10% with EtOH. 27% of the total N is recovered as NH_2-groups with H_2O, 22% with EtOH, and 8·8% with MeOH; the corresponding vals. for amide-N are 25, 2, and 14%, and for *cyclo*peptide- + $(NH_2)_2$-acid-N 48, 76, and 78%, respectively. *cyclo*Peptides (including *cyclo*leucyl*iso*valine) are isolated from the alcoholysates by extraction with Et_2O or $CHCl_3$. R. T.

Blood-serum and muscle-plasma of the fœtus. C. Achard and M. Piettre (Compt. rend., 1937, **204**, 24—27).—Myxoprotein in fœtal blood diminishes, whereas globulin and albumin slightly increase, as the fœtus grows. The p_H of striped muscle decreases and its glycogen content is < that of the liver. J. L. D.

Effect of formaldehyde on the heat-denaturation of proteins. A. Fischer (Enzymologia, 1937, **1**, 353—358).—The denaturation of highly purified serum-globulin is inhibited by low concns. of CH_2O (I). The inhibiting effect is greatest at the commencement of reaction and then decreases rapidly, due to the increasing no. of radicals formed with which (I) must combine to inhibit denaturation. Inhibition is more marked if (I) is added at the beginning of the process. Small amounts of (I) react with more NH_2-groups in the denatured than in the true protein. E. A. H. R.

Phase-rule study of proteins of blood serum: comparison of proteins of human, rat, and horse serum. E. Jameson and D. B. Roberts (J. Gen. Physiol., 1937, **20**, 475—489).—In salting out serum-proteins with increasing concns. of K citrate (I), breaks in the curve relating composition of liquid and concn. of (I) indicate four successive solid phases. There are sex and species differences in the proportions of the phases, and the concn. at which each begins to separate. All the solid matter is probably hydrated. R. M. M. O.

(A) **Blood-amino-acids in surgery.** A. J. Bengolea, C. V. Suarez, and R. S. Ferracini. (B) **Amino-acid contents of blood cells and plasma: relation to surgical operations.** R. S. Ferracini (Rev. med.-quir. patol. fem., 1935, **6**, 245—260, 261—265).—(A) Lesions of the liver are accompanied by increased aminoacidæmia. Major operations cause a temporary increase, which is attributed to tissue destruction.

(B) Operations were followed by changes (increase or decrease) in the ratio cell-/plasma-NH_2-acids. In all cases total NH_2-acids in blood increased. Ch. Abs. (*p*)

Tyrosine index of the blood-polypeptides in the normal dog, horse, and pig. F. Liégeois (Compt. rend. Soc. Biol., 1937, **124**, 569—571).—The average vals. for the blood-polypeptides were 21, 14, and 23·6 mg. per kg., respectively. H. G. R.

Tyrosine index of the blood-polypeptides in cancerous dogs. F. Liégeois and P. Térache

(Compt. rend. Soc. Biol., 1937, **124**, 571—572).—A normal val. is observed unless the tumour is accompanied by cellular proteolysis, when it is increased. H. G. R.

Tyrosine index of the blood-polypeptides of dogs with trauma. F. Liégeois and P. Térache (Compt. rend. Soc. Biol., 1937, **124**, 572—573).—Hyperpolypeptidæmia was observed. H. G. R.

Interrelation of blood-lipins. E. M. Boyd (Canad. J. Res., 1937, **15**, D, 1—23).—Variations (within the normal range) in the total lipins (I) of blood-plasma were paralleled by those of neutral fats (II), phospholipins (III), cholesterol (IV), and (IV) esters. In lipæmia the initial change in plasma is a rapid increase in (II). (IV) esters increased at a later stage. Increases (in normal ranges) of the total (I) of red cells are due to increases in (III). Higher (II) contents may occur if the total (I) become > normal, in which condition changes in cellular (I) were unrelated to plasma-(I). Similar changes occur in white cells although the total (I) content of these was > that of red cells or plasma. A. G. P.

Effect of pregnancy and pseudo-pregnancy on the blood-lipins of rabbits. E. M. Boyd (J. Physiol., 1936, **86**, 250—257).—Serum-lipins are all reduced in pseudo-pregnancy. In the first half of pregnancy, phospholipins and free cholesterol (I) are decreased, esterified (I) increased, and neutral fat is unchanged; all fall in the second half. The lipins of the erythrocytes are unaffected by pregnancy or pseudo-pregnancy, and are of the same order as in man. R. N. C.

Composition of ether-extractable and ether-non-extractable lipins in blood-serum. K. Lee and J. S. Chen (Chinese J. Physiol., 1937, **11**, 1—6).—Sheep's serum is extracted with Et_2O and then with Et_2O–EtOH mixture, and the I val., cholesterol, phosphatides, fatty acids, N, and P are determined for each fraction. The results suggest that the lipins insol. in Et_2O may be bound to protein, the complex undergoing fission with EtOH. E. M. W.

Effect of anticoagulants on blood-lipins. E. M. Boyd and R. B. Murray (J. Biol. Chem., 1937, **117**, 629—638).—The lipin vals. of heparinised, hirudinised, and defibrinated blood were unaffected by the concn. of anticoagulant or by keeping at 0°. $K_2C_2O_4$ and other anticoagulant salts caused an initial increase in red-cell-lipins, returning to normal after 1 day; the reverse was true for plasma. P. G. M.

Blood-cholesterol in rabbits in relation to atherosclerosis. K. B. Turner and E. H. Bidwell (J. Exp. Med., 1935, **62**, 721—732; cf. A., 1933, 1321).—The effects of KI and of dried thyroid on hypercholesterolæmia produced by feeding cholesterol are compared. Ch. Abs. (*p*)

Influence of sodium glycocholate on the enzymic synthesis and hydrolysis of cholesteryl esters in blood-serum. W. M. Sperry and V. A. Stoyanoff (J. Biol. Chem., 1937, **117**, 525—532).—Na glycocholate (I) inhibits esterification of free cholesterol (II) in serum (man, dog). In human sera, with 0·2% of (I), inhibition is complete and the ratio free/combined (II) remains unaltered by larger amounts of (I). In dogs' sera, addition of (I) beyond this point causes hydrolysis of esterified (II), which is complete with about 0·35% of (I). The reactions are enzymic. F. A. A.

Enzymes of blood-serum. I. Esterase. N. Sugiyama (Sei-i-Kwai Med. J., 1935, **54**, No. 1. 63—78).—Esterase content (determined on tributyrin substrate) of Japanese males was max. at age 36—40 and min. at 16—20. In females, max. was reached at 21—25. Ch. Abs. (*p*)

Technique of blood-diastase determination by Ottenstein's method. F. Rennkamp and B. Schuler (Klin. Woch., 1935, **14**, 1760; Chem. Zentr., 1936, i, 2156).—Presence of diastase in the glycogen prep. used may vitiate the results. H. N. R.

Reaction of fatty materials of blood with acetic anhydride and sulphuric acid. W. Radsma (Acta Brev. neerl. Physiol., 1935, **5**, 67—69; Chem. Zentr., 1936, i, 1926).—Only linolenic, linoleic, and, possibly, oleic acids interfere with the colorimetric determination of cholesterol by this reaction. H. N. R.

Lipin content of rabbit's leucocytes. E. M. Boyd and J. W. Stevenson (J. Biol. Chem., 1937, **117**, 491—500).—Data for the contents (average vals. and standard deviations) of lipin constituents are tabulated and compared with corresponding vals. for human leucocytes. R. M. M. O.

Determination of blood-urea by enzymic action and direct nesslerisation. A. E. Raices (Rev. med. quir. patol. fem., 1935, **5**, 531—540).—The sample is treated with tungstic acid and the filtrate, suitably buffered, is decomposed by urease and the NH_3 produced is determined by Nessler's reagent. The urease prep. is purified by shaking with NH_3-free permutit in presence of H_2SO_4. Ch. Abs. (*p*)

Colorimetric determination of blood-urea. V. I. Krieger (Med. J. Australia, 1935, **2**, 340—343).—Patterson's method (A., 1925, i, 1200) gives satisfactory results. Its efficiency is impaired in cold, damp weather. Ch. Abs. (*p*)

Significance of the diazo-reaction of blood. G. Barac (Compt. rend. Soc. Biol., 1937, **124**, 266—269).—Normal blood contains only a small quantity of phenolic substances (0·5—1 mg. per litre), the greater part of the diazo-val. being due to non-volatile substances. When the glyoxalines are removed from the tungstate filtrate of blood with permutit, the diazo-val. is const. H. G. R.

Determination of indican in blood. M. Rosenberg (Bol. Assoc. brasil. Pharm., 1935, **16**, 276—278; Chem. Zentr., 1936, i, 2399).—The sensitivity of the Jolles reaction is 0·0032 mg. of indican. J. S. A.

Alcoholism. I. Alcohol content of blood and spinal fluid following oral administration in chronic alcoholism and psychoses. R. Fleming and E. Stotz (Arch. Neurol. Psychiat., 1935, **33**, 492—506).—Following oral administration of EtOH the blood-EtOH increased more rapidly and to a higher max. in drinkers than in abstainers. Vals. for moderate drinkers were intermediate. In spinal fluid changes were similar except that vals. for moderate

drinkers were lowest. Vals for EtOH psychoses were similar to those of heavy drinkers and those for schizophrenics approached those for abstainers. CH. ABS. (*p*)

Micro-determination of alcohol in blood and other biological fluids. R. CERNATESCU and I. ORNSTEIN (Compt. rend. Soc. Biol., 1937, **124**, 389—391).—The method of Nicloux (A., 1935, 116) is recommended and may be applied to material after storage. In normal cases, EtOH is distributed equally between the body-fluids. H. G. R.

Determination of *cyclo*propane, ethylene, and nitrous oxide in blood with the Van Slyke–Neill manometric apparatus. F. S. ORCUTT and R. M. WATERS (J. Biol. Chem., 1937, **117**, 509—515).—The method (Orcutt and Seevers, A., I, 202) is applied to the determination of the solubilities of *cyclo*propane (I), C_2H_4, and N_2O in blood, and vals. are tabulated for the determination of these gases, and of O_2 and CO_2, in blood (*e.g.*, during anæsthesia). C_2H_4, though less sol., is more quickly reabsorbed by blood than are (I) and N_2O. F. A. A.

Lactation and blood-sugar. J. L. Y DEAL (Lait, 1937, **17**, 113—121).—The blood-sugar (I) of 10 nursing mothers was 51—130 mg. per 100 c.c. No correlation existed between (I) level and stage of lactation, the changes at different stages being slight but variable. At max. milk yield the (I) content was 66—87 mg. per 100 c.c. W. L. D.

Fructosæmia in hepatic disturbances. P. DE LUCIA and E. CLAAR (Minerva med., 1935, II, 345—350).—Ingestion of fructose produced a transitory fructosæmia in normal patients but a greater and more prolonged effect in cases of altered hepatic function. CH. ABS. (*p*)

Semi-micro-determination of blood-sugar. F. MORENO MARTÍN and E. SUÁREZ PEREGRÍN (Anal. Fís. Quím., 1936, **34**, 842—849).—Glucose in blood coagulated with NaF is oxidised by a cuprammonium reagent and the Cu is oxidised by $Fe^{\cdot\cdot\cdot}$ (in H_2SO_4), the $Fe^{\cdot\cdot}$ formed being titrated to $KMnO_4$ with $NHPh_2$ as indicator. The results agree with those given by the Hagedorn–Jensen and the picramic acid methods. F. R. G.

Blood-sugar method based on ferricyanide–indigocarmine titration. J. PATTERSON (Biochem. J., 1937, **31**, 244—247).—A method is described for rapid duplicate determinations on a single 0·2 ml. of blood of the sugar content by means of indigocarmine titration of $K_3Fe(CN)_6$ reduced. The results agree with those by the MacLean method. H_2WO_4 may be used for pptn. of proteins in place of $Zn(OH)_2$, but the results are somewhat higher, corresponding more closely with those by the Folin–Wu method. P. W. C.

Blood glycolysis and phosphoglyceric acid. S. RAPOPORT (Biochem. Z., 1937, **289**, 290—291).—Phosphoglyceric acid (I) on incubation with whole blood is not attacked even in presence of added sugar and PO_4''' when esterification of PO_4''' is proceeding rapidly, but it is attacked on incubating with defibrinated blood, 40% of the total org. PO_4''' [including 56% of the (I)-PO_4'''] being hydrolysed in 20 hr. With washed erythrocytes suspended in saline, the reaction proceeds further, 75% of the total org. PO_4''' [including 55% of the (I)-PO_4'''] being hydrolysed. Hæmolysed blood attacks other forms of org. PO_4''' but does not attack (I) and converts diphosphoglyceric acid into (I). Defibrinated blood containing NaF does not attack (I) but on addition also of $AcCO_2H$ effects synthesis of (I) as does also hæmolysed blood + NaF. P. W. C.

Changes in silicic acid content of human blood, in health and in tuberculosis, following administration of lipin-soluble Siligran. F. GAUBATZ (Klin. Woch., 1935, **14**, 1753—1755; Chem. Zentr., 1936, i, 2770).—Prolonged dosage with Siligran (ethylsilicyl ricinoleate) increases blood-SiO_2, especially in tuberculosis. A. G. P.

Determination of the erythrocyte–plasma chloride ratio. M. PAGET (J. Pharm. Chim., 1937, [viii], **25**, 103—107).—The erythrocytes and plasma are separated by centrifuging, and the former washed with isotonic aq. glucose. After suitable dilution, the proteins are pptd. with $K_4Fe(CN)_6$ and $Zn(OAc)_2$ and Cl' in the clear filtrate is determined by addition of HNO_3 and excess of $AgNO_3$ followed by titration with NH_4CNS. W. O. K.

Micro-colorimetric determination of chlorides in blood and urine. T. V. LETONOFF (J. Lab. Clin. Med., 1935, **20**, 1293—1296).—The sample (0·1 c.c. of serum, plasma, or spinal fluid) is treated with Zn borate and filtered. Excess of $AgCrO_4$ is added to the filtrate and the mixture is stirred and centrifuged. To the clear liquid are added AcOH and *s*-diphenylcarbazide. The colour produced is compared with that obtained with standard NaCl similarly treated with $AgCrO_4$. Urine is diluted, 1 in 40, and 2-c.c. samples are taken for the test. CH. ABS. (*p*)

Method of ashing plasma and whole blood for determination of chlorides. W. E. WILKINS and H. D. JONES (J. Biol. Chem., 1937, **117**, 481—484).—Blood mixed with $AgNO_3$, HNO_3, and $Mg(NO_3)_2$ is ashed in presence of Cl-free asbestos, the residue being extracted with dil. HNO_3 for Cl' determination. R. M. M. O.

Distribution of bromide in blood-serum and spinal fluid. F. F. SMITH, M. E. DAILEY, and D. H. SLOAN (Arch. Neurol. Psychiat., 1935, **33**, 764—774).—Vals. obtained by the Hauptman and the Toxopeus methods differed from those by the $AuCl_3$ method. CH. ABS. (*p*)

Blood-bromine in the psychoses. T. J. HENELLY and E. D. YATES (J. Mental Sci., 1935, **81**, 173—183).—Normal vals. were 0·6—2·0 mg. per 100 g. in males, with wider variations at the lower vals. in females. No correlation with mental state or the psychoses was apparent. CH. ABS. (*p*)

Iodine contents of blood of rabbits fed exclusively on polished rice. K. ABO (Sei-i-Kwai Med. J., 1935, **54**, No. 1, 1—26).—In rabbits blood-I undergoes a seasonal variation similar to that in man. Vals. are paralleled by the severity of disease, and decline after administration of vitamin-*B* unless the severity is such that vitamin therapy is ineffective. CH. ABS. (*p*)

Blood-calcium level in relation to the action of the thymus and of irradiated ergosterol. M. Messini (Boll. Soc. ital. Biol. sperim., 1932, 7, 945—947; Chem. Zentr., 1936, i, 2581).—The action of irradiated ergosterol in increasing blood-Ca is nullified in dogs by removal of the thymus. A. G. P.

Blood-potassium and the sympathetic-adrenaline–hepatic mechanism. B. A. Houssay, A. D. Marenzi, and R. Gerschmann (Compt. rend. Soc. Biol., 1937, **124**, 383—384).—Stimulation of the splanchnic nerves (dog) increases blood-K both on account of adrenaline secretion and direct stimulation of the liver. Stimulation of the distal ends of the hepatic nerves, after adrenalectomy, increases blood-K. The liver is the source of any increase in blood-K, the muscles being incapable of causing any variation. H. G. R.

Exchange of sodium, potassium, and calcium between erythrocytes and plasma. Content of these elements in blood-plasma and -serum. (A) H. Waelsch. (B) G. M. Streef (Z. physiol. Chem., 1937, **245**, 89—92, 92).—(A) Differences between the author's results (A., 1935, 1142) and those of Streef (A., 1936, 1284) are due to differences in experimental conditions.

(B) A reply. W. McC.

Investigation of the oligolytic saline concentration in blood by the changes in diameter of the erythrocytes. Z. Nisiyama (Keijo J. Med., 1936, 7, 477—506).—The diameter of erythrocytes in man, ox, and rabbit is reduced in aq. NaCl at low concn. As the concn. increases, the size of the erythrocytes decreases until a certain vol. is reached, after which there is a gradual increase in diameter to normal vals. The diameter and vol. are least in saline solutions of oligolytic concn. A. L.

Osmotic pressure and saline content of the blood of *Petromyzon fluviatilis*. T. McL. Galloway (J. Exp. Biol., 1933, **10**, 313—316).—On placing the lamprey in dil. (1 in 3) sea-H_2O the osmotic presence of the blood increases to the equiv. of 0·886% NaCl. Subsequent immersion in fresh H_2O causes recovery of the lamprey and the return to normal osmotic pressure. Ch. Abs. (*p*)

Determination of the alkaline reserve of normal and scorbutic guinea-pigs. L. Randoin, A. Raffy, and J. Aguirrezabala (Compt. rend. Soc. Biol., 1937, **124**, 621—623).—The val. is normal in scorbutic guinea-pigs until the onset of diarrhœa with hæmorrhage (after 24 days), when it increases by approx. 100%. H. G. R.

Determination of the alkali reserve of the blood with the Mook micro-apparatus. I. van der Hal (Nederl. Tijds. Geneesk., 1936, 139—141; Chem. Zentr., 1936, i, 2786).—The apparatus is described. H. J. E.

Effect of water intake on human reactions to reduced cooling powers. R. A. Gregory and D. H. K. Lee (J. Physiol., 1936, **86**, 204—218).—Serum-protein and hæmoglobin concn. in the blood are increased if H_2O is not administered, and the H_2O/protein ratio of the serum also tends to fall during exposure to heat. Blood-Cl is kept const. by intake of H_2O. Urinary Cl falls during exposure to heat, whatever the urinary output may be. The CO_2 content and CO_2-combining power of whole blood and the CO_2-combining power of serum show an initial fall, but return to normal if H_2O is being supplied. H_2O increases the acid and NH_3 output in the urine. R. N. C.

Determination of the water content of the blood of 1239 boys and girls. T. Ryô (Keijo J. Med., 1936, 7, 426—458).—The H_2O content of the blood of males and females increases gradually during the 12th year of age. With males, a max. is reached at 13 years followed by a gradual decrease. The max. for females occurs at 14—15 years, remains steady for a year, and then slowly decreases. A. L.

Water content of the blood of various species of fish. K. Kuroda and R. Ebina (Keijo J. Med., 1936, 7, 327—338). A. L.

Change in the water content of guinea-pig's blood during growth. K. Kuroda and R. Ebina (Keijo J. Med., 1936, 7, 376—388).—The H_2O content of the blood reaches a max. 3 weeks after birth, then decreases with age, becoming const. when the animal is 5—6 months old. A. L.

Water content of the blood of various species of birds. K. Kuroda and R. Ebina (Keijo J. Med., 1936, 7, 459—476). A. L.

***pK'* of serum and red cells.** D. B. Dill, C. Daly, and W. H. Forbes (J. Biol. Chem., 1937, **117**, 569—579).—It is confirmed that the *pK'* of serum of man, ox, and dog at 37° is 6·11. Over the physiological range of p_H, the *pK'* of human red blood cells is 6·04 in the oxygenated, 5·98 in the reduced, state. The *pK'* of ox cells is about 0·04 unit higher. Equations for the variations of these vals. with p_H and temp. are given. The design and construction of a suitable glass electrode are described. F. A. A.

Biological action of the so-called short waves [$\lambda = 6{\cdot}4$ m.]. J. Latkowski and B. Charlampowicz (Bull. Acad. Polonaise, 1936, **B**, 189—204).—The blood of rabbits within 1 hr. after exposure to radiation λ 6·4 m. shows a diminished content of hæmoglobin, red blood cells, and serum-proteins, followed by a slow rise. During the hours following irradiation, blood-Ca decreases, and -K and -Na increase, the blood-p_H shifts to the acid side, and the alkali reserve diminishes. Blood-albumin increases, and -globulin decreases. Results are discussed in relation to similar changes resulting from irradiation by widely different $\lambda\lambda$. F. A. A.

Solubility coefficients of *cyclo*propane for water, oils, and human blood.—See A., I, 178.

Individuality, from the aspect of hæmolysis, of the distribution of water between plasma and erythrocytes. Y. Egami (Keijo J. Med., 1936, 7, 339—375).—Examination of the blood of 200 oxen shows that the individual variations in the ease of hæmolysis of erythrocytes, the H_2O contents of serum and plasma, and the d and η of the serum have a normal symmetrical distribution. A. L.

Effect of concentration of erythrocytes on the degree of hæmolysis. T. Bak (Keijo J. Med.,

1936, 7, 389—425).—In hypo-oligolytic media, the degree of hæmolysis is at a max. and decreases with increasing concn. of erythrocytes. In hyperoligolytic media, the hæmolysis is at a min. and reaches a const. val. with increasing concn. of erythrocytes. A. L.

Gelation of blood constituents. W. KOPACZEWSKI (Compt. rend., 1937, **204**, 453—456).—The gelation of serum, plasma, and red corpuscle suspensions by HCl, NaOH, or lactic acid is most rapid with moderate concns. Gelation by NaOH is reversible. R. M. M. O.

Flocculation in mixtures of filtered tetanus bouillon and antitetanus serum. G. RAMON (Compt. rend. Soc. Biol., 1937, **124**, 414—416).—The toxin neutralises the antitoxin in the mixture in which the flocculation appears first when variable quantities of serum are added to a fixed quantity of toxin. H. G. R.

Determination of the intrinsic antigenic power of tetanus toxin and anatoxin by flocculation. G. RAMON, E. LEMÉTAYER, and R. RICHOU (Compt. rend. Soc. Biol., 1937, **124**, 416—420). H. G. R.

Chemistry of bacterial agglutination. III. Quantitative theory of agglutination. M. HEIDELBERGER and E. A. KABAT (Proc. Soc. Exp. Biol. Med., 1936, **35**, 301—303).—Experiments with pneumococcus suspensions confirm the chemical nature of agglutination, *i.e.*, combination of multivalent polysaccharide with multivalent antibody. P. G. M.

Action of chloroform on flagellatory agglutination-*H* of vibrios. P. C. VASSILIADIS (Ann. Inst. Pasteur, 1937, **58**, 165—180).—The flagellatory agglutination-*H* (thermolabile) of *V. cholerœ* by the antiserum is enhanced (irreversibly) by extraction of the serum with $CHCl_3$, a treatment which affords agglutination even with inactive (non-agglutinable) vibrios. The effect is due to activation of an agglutinogen and not to production of a new antigen. F. O. H.

Reversal by acidification of the agglutination by trypaflavine. V. SERTIC and N. A. BOULGAKOV (Compt. rend. Soc. Biol., 1937, **124**, 217—218).—The degree of reversion varies with the strain of bacteria used. H. G. R.

Animal species and coagulation of serum. W. KOPACZEWSKI (Protoplasma, 1936, **25**, 16—24).—The rate of coagulation of serum by a given acid is characteristic for each species. Different acids produce different effects in the same serum, depending partly on the degree of dissociation and partly on the nature of the anion and its dehydrating action. M. A. B.

Streptococcus anticoagulant. E. E. DART (Proc. Soc. Exp. Biol. Med., 1936, **35**, 285—286).—Purified fibrinolysin is obtained by EtOH pptn. (75% ice-cold) from 24 hr. glucose–broth cultures of streptococci, which have no anticoagulant action. It is quantitatively destroyed if heated at 60° for 30 min., whilst the anticoagulant, which is sol. in 75% EtOH, resists heating at 100° for 30 min. P. G. M.

Precipitin reactions of helminth extracts. L. L. EISENBRANDT (Proc. Soc. Exp. Biol. Med., 1936, **35**, 322—325).—Helminth extracts have low N and protein concns., but they produce antisera in rabbits of high titre. These react more strongly with the homologous antigens than any heterologous antigen of equal N content. P. G. M.

Theory of precipitin reaction. II. An azoprotein–antibody system. III. Reaction between crystalline ovalbumin and its homologous antibody. M. HEIDELBERGER and F. E. KENDALL (J. Exp. Med., 1935, **62**, 467—483, 697—720).—II. The precipitin reaction is examined by means of an azoprotein–antibody system and is shown to comply with chemical laws.

III. The reaction is explained on the basis of chemical laws. Serum from the same animal after successive courses exhibits progressive changes consisting of the formation of more and more antibody capable of reacting with a large no. of chemically different groupings in the antigen mol. Anti-ovalbumin is not homogeneous. After prolonged immunisation the anti-serum contains much low-grade antibody incapable of forming ppts. unless the more reactive precipitin is present. CH. ABS. (*p*)

Influence of coagulation on the sensitising action of an antigen. P. E. PINOY and G. FABIANI (Compt. rend. Soc. Biol., 1937, **124**, 562—563).—Heat-coagulation has no effect on the sensitising power. H. G. R.

Protein fractions of serum as different antigens. I. PIROSKY (Folia biol., 1933, 142).—Prep. of euglobulin and pseudoglobulin of different antigenic natures is described. CH. ABS. (*p*)

Properties of the "Vi" antigen of *Eberthella typhosa* and its corresponding antibody. A. FELIX and S. S. BHATNAGAR (Brit. J. Exp. Path., 1935, **16**, 422—434). CH. ABS. (*p*)

Immunising potency of antigenic components isolated from different strains of *B. typhosum*. W. W. C. TOPLEY, H. RAISTRICK, J. WILSON, M. STACEY, S. W. CHALLINOR, and R. O. J. CLARK (Lancet, 1937, **232**, 252—256).—Experiments which bear on the nature of the Vi antigen and the factors which determine its immunological behaviour are described. It appears possible to isolate from suitable strains of *B. typhosum* a chemically pure and stable antigen which has the immunising properties of the whole bacterial cells. L. S. T.

Phagocytosis of *Eberthella typhosa* in relation to its antigenic structure and to the antibody components of the sensitising system. S. S. BHATNAGAR (Brit. J. Exp. Path., 1935, **16**, 375—384).—The opsonic effect of normal serum is due to combined action of complement (I) and natural "*O*" antibody. The bacteriotropic effect of immune serum is due to combined action of (I) and immune "*O*" antibody. No essential difference exists between the activity of opsonic and bacteriotropic sera. The "*H*" antibody has little effect on phagocytosis, which is intimately associated with agglutinability by "*O*" antibody. CH. ABS. (*p*)

Species-non-specific antigenic factor in mammalian sera. F. A. SIMON (J. Allergy, 1934, **6**,

1—8).—Various mammalian sera contained an antigenic substance to which a patient with vasomotor rhinitis was highly sensitive. The properties of the active substance are examined. Ch. Abs. (*p*)

Preparation and antigenic properties of globin from hæmoglobins of different species. C. A. Johnson and W. B. Bradley (J. Infect. Dis., 1935, **57**, 70—73).—Globin (I), prepared from hæmoglobin (II) by acid hydrolysis and subsequent pptn. with $COMe_2$, has the same species-specificity as (II). When used as an antigen (I) induces the formation of precipitins in the antiserum which are identical with those produced by (II) from the same species. (I) is probably responsible for the antigenic properties of (II). Ch. Abs. (*p*)

Antigenic property of quinine hydrochloride. Y. Hirose (Sei-i-Kwai Med. J., 1934, **53**, No. 12, 31—58).—A sp. antibody was produced by injection of quinine hydrochloride (I) into rabbits. Such rabbits showed increased tolerance to (I). Ch. Abs. (*p*)

Immunising activity of certain chemical fractions isolated from hæmolytic streptococci. T. C. Stamp and E. B. Hendry (Lancet, 1937, **232**, 257—259).—Fractions which induce active immunity in mice have been isolated from strains of hæmolytic streptococci of groups *A* and *C*. The active fraction from the group *C* strain is sol. in dil. acids and insol. in aq. NH_3. It is comparatively stable and not inactivated by NH_3. The fraction from group *A* is sol. in acid, but is inactivated by aq. NH_3. Both fractions appear to be proteins. L. S. T.

Inactivation of "*H*" antigen by dilute mineral acid. J. T. Duncan (Brit. J. Exp. Path., 1935, **16**, 405—410).—"*H*" antigen is inactivated by appropriate amounts (ascertained by a titration–agglutination method) of dil. acids. The "*O*" antigen is but little affected by this treatment. Ch. Abs. (*p*)

Toxins of the dysentery bacillus. Thermostable toxic principles of the bacillus of Shiga. L. Mesrobeanu and A. Boivin (Compt. rend. Soc. Biol., 1937, **124**, 439—442).—In both the rough and smooth forms, the complete somatic antigen is the chief constituent of the thermostable endotoxin with a toxic protein as an accessory. H. G. R.

Toxins of the dysentery bacillus. Nature and biological properties of the toxic principles in the filtrate from broth cultures of the bacillus of Shiga. A. Boivin and L. Mesrobeanu (Compt. rend. Soc. Biol., 1937, **124**, 442—444).—The endotoxin is not produced in a culture of the smooth form at p_H 7·2 but is found at p_H 8 when autolysis can occur. H. G. R.

Titration by flocculation of anti-dysenteric sera. I. K. Halapine, L. Basilevskaia, and N. Schitkova (Ann. Inst. Pasteur, 1937, **58**, 154—164).—The flocculation-titration of the sera with the corresponding toxin affords a method of assay of the antitoxin. F. O. H.

Precipitating power of therapeutic anti-anthrax sera. J. Pochon (Compt. rend. Soc. Biol., 1937, **124**, 432—433).—Virulent or slightly attenuated *B. anthracoides* contain two antigens (anti-protein and -sugar) one of which is destroyed by EtOH–Et_2O treatment, whilst the avirulent organism does not contain the latter. H. G. R.

Isolation of immunologically pure antibody from the immune precipitate of pneumococcus, type I. B. F. Chow and H. Wu (Chinese J. Physiol., 1937, **11**, 139—153).—The immune ppt. is obtained from immune horse serum (180 c.c.) by addition of a solution of the corresponding polysaccharide (I). It is then suspended in 60 c.c. of H_2O and 3 c.c. of *N*/70-NaOH are added (p_H 9·5). After keeping overnight at 0° 1·55 c.c. of *N*/70-HCl are added + NaCl to 0·85% (p_H 7·6). The antibody contained in the supernatant fluid is immunologically pure, 85—90% being pptd. by (I). P. G. M.

Recovery of antibodies from immune agglutinate of pneumococcus, type I. B. F. Chow and H. Wu (Chinese J. Physiol., 1937, **11**, 155—162).—The antibodies can be recovered from the immune agglutinate by alkali-extraction; their agglutinin and protective activity is 16 times that of the original serum. The method is capable of general application. P. G. M.

Isolation of a new fraction of protective antibody from immune rabbit serum of pneumococcus, type I. B. F. Chow and H. Wu (Chinese J. Physiol., 1937, **11**, 163—168).—A new fraction, immunologically different from the antipolysaccharide precipitin (I), has been obtained from the supernatant fluid after agglutination of "*R*" organisms, by further agglutination with the vaccine of the "*S*" organism, followed by alkali-extraction. The protective action of this fraction is 4 times that of (I). P. G. M.

Isolation of pure antibodies of pneumococci, types II and III. B. F. Chow and H. Wu (Chinese J. Physiol., 1937, **11**, 169—173).—By means of an alkali-extraction of the immune ppt. (as for type I) a highly purified prep. of the precipitin and agglutinin of type II is obtained which is 20 times as active (100 for type III) as the original serum. P. G. M.

Chemical nature of antibodies. B. F. Chow, K. Lee, and H. Wu (Chinese J. Physiol., 1937, **11**, 175—182).—Pure type I antipneumococcus precipitin (horse) has an isoelectric point at p_H 7·6 and contains 14·47% of N. It is pptd. by half saturation with $(NH_4)_2SO_4$ but not by one third saturation. The increase in NH_2-N on tryptic digestion runs parallel with the decrease in activity, and the substance behaves in all respects as a protein. P. G. M.

Unitarian hypothesis of antibodies. B. F. Chow and H. Wu (Chinese J. Physiol., 1937, **11**, 183—192).—Immunologically pure precipitin of rabbit serum can accomplish all five immune reactions, thus proving the unitarian hypothesis. The failure of immune horse serum to produce passive anaphylaxis and to fix complement may be due to the presence of an inhibiting substance. P. G. M.

Comparison of immunological activity of antibodies of pneumococcus, type I, from different animals. K. Lee, B. F. Chow, and H. Wu (Chinese J. Physiol., 1937, **11**, 193—199).—The immunological properties of pure precipitins from antipneumococcus (type I) immune sera of 3 horses

and 18 rabbits are const., whilst the mouse protection titre of the new fraction from rabbit sera varies considerably. P. G. M.

Effect of immunisation on the distribution of serum-proteins. S. Liu, B. F. Chow, and K. Lee (Chinese J. Physiol., 1937, **11**, 201—210).—Immunisation of rabbits against type I pneumoccocus caused an increase in the % of serum-pseudoglobulin to 3 times the normal val., whilst with horses mainly the euglobulin fraction was affected. P. G. M.

Isolation of a basic fraction from normal and immune horse sera. S. Liu, H. Wu, and B. F. Chow (Chinese J. Physiol., 1937, **11**, 211—222).—A basic globulin fraction was prepared from the H_2O-sol. proteins of normal and immune sera by fractionation with MeOH or $(NH_4)_2SO_4$; this fraction contained most of the antibody, and 53% of the total protein was pptd. by the homologous polysaccharide. The isoelectric point was p_H 7·3—7·5. P. G. M.

Antigenicity of the new polysaccharide preparation in rabbits as shown by complement fixation. B. F. Chow (Chinese J. Physiol., 1937, **11**, 223—224).—The evidence confirms the belief that the polysaccharide is weakly antigenic in rabbits and is changed to Ac derivative on acid hydrolysis. P. G. M.

Antibody properties of the viscous protein of serum. P. G. Charpentier, M. Doladilhe, and C. Morel (Compt. rend., 1937, **204**, 451—453).—When Doladilhe's "viscous protein" is separated from a serum immunised to sheep corpuscles, it is able to sensitise these to hæmolytic action of guinea-pig or even sheep serum. R. M. M. O.

Protein–fat antibodies. K. Meyer (Compt. rend. Soc. Biol., 1937, **124**, 430—431).—The protein–fat antibody cannot be considered as a mixture of the separate constituents. H. G. R.

Stabilisation by formaldehyde and recovery by sodium naphthylaminetrisulphonate of the antitoxin of antidiphtheria serum. H. Goldie (Compt. rend. Soc. Biol., 1937, **124**, 550—554).—After CH_2O treatment and pptn. at p_H 4·6 with the Na salt, 75% of the activity can be recovered by redissolving the ppt. at p_H 6·5, whilst a further 12% is present in the mother-liquor. H. G. R.

Lipins and immunological reactions. I. Relation of phospholipins to type-specific reactions of antipneumococcus horse and rabbit sera. F. L. Horsfall, jun., and K. Goodner (J. Exp. Med., 1935, **62**, 485—503).—Removal of lipins from the antisera causes diminution or loss of agglutination and pptn. capacities. Activity can be restored to extracted immune horse serum by addition of lecithin and to rabbit serum by kephalin. Ch. Abs. (*p*)

Serological reactions of azoproteins derived from aromatic hydrocarbons and diaryl compounds. J. Jacobs (J. Gen. Physiol., 1937, **20**, 353—361).—Reactions of antisera from β-anthramine (I), *p*-aminodiphenyl, *p*-aminodiphenylmethane, and NH_2Ph were tested with the homologous antigens and others formed from β-$C_{10}H_7{\cdot}NH_2$ (II) and *p*-toluidine (III). There is considerable reaction-specificity between various nuclei. NH_2Ph and (III) are sharply differentiated from the others and (II) most resembles (I). Some sera have quite distinct differences in reaction with CH_2Ph_2 and Ph_2O, which are nearly as different from each other serologically as $COPh_2$ is from either. R. M. M. O.

Serological study emphasising the hydrogen-ion concentration of the blood, in conjunction with the red-cell sedimentation test, leucocytic index, and complement fixation test. K. T. Sasano (Amer. Rev. Tuberc., 1935, **32**, 458—474).—The usually accepted normal range of blood-p_H is too broad. Basic and comparable vals. are obtained with fasting blood in early morning. No correlation was apparent between blood-p_H and the sedimentation rate of erythrocytes, the leucocytic reaction, or the complement fixation test for tuberculosis. Ch. Abs. (*p*)

Complement fixation with vaccinial elementary body suspensions and anti-vaccinial rabbit serum. M. H. Finlayson (Brit. J. Exp. Path., 1935, **16**, 358—364).—The complement-fixing activity of the elementary body suspensions is partly removed by filtration through membranes having pore size 0·65 mμ and removed completely by those having pores of 0·15 mμ or by high-speed centrifuging. The antigenic activity is retained in the resuspended deposits. Ch. Abs. (*p*)

Influenza: preparation of immune sera in horses. P. P. Laidlaw, W. Smith, C. H. Andrewes, and G. W. Dunkin (Brit. J. Exp. Path., 1935, **16**, 275—290).—The method of prep. is described. In immune horse sera activity is largely associated with the pseudoglobulin fraction pptd. by salting out with 12—16% Na_2SO_4. Ch. Abs. (*p*)

Prophylaxis of experimental *V. septique* infection; application of antibacterial methods. D. W. Henderson (Brit. J. Exp. Path., 1935, 393—405).—Inoculation tests with rabbits are described. The antibody produced by inoculation with formalised but unheated bacilli has a greater protective val. than that of the "*O*" antibody produced by inoculation with boiled cultures. This higher val. is independent of antitoxic action. Ch. Abs. (*p*)

Mechanism of the phenomena of tachyphylaxis. J. Sugimura (Sei-i-Kwai Med. J., 1935, **54**, No. 4, 64—93).—Tachyphylaxis was produced in rabbits by repeated injection of the coagulin from steer lung. During the phenomenon the blood-Ca and fibrinogen were substantially unchanged but there was marked diminution in platelets and prothrombin. Ch. Abs. (*p*)

Theory of hapten action. J. H. Lewis (J. Infect. Dis., 1935, **57**, 94—103).—Haptens are presumed to combine chemically with proteins to form complete antigens. The combination is a foreign protein and must be formed prior to contact of haptens with proteins circulating in the blood. Preformed antibodies do not react with haptens but with the hapten–protein compounds, the protein being furnished by the antiserum with which the hapten is mixed. Ch. Abs. (*p*)

Recent advances in immuno-chemistry. H. Rudy (Angew. Chem., 1937, **50**, 137—147).—A review.

Azo dyes and immunobiology. Schulz-Dale experiments with bis-*p*-succinanilic acid-azo-resorcinol.—See A., II, 144.

How does the human body obtain all the elements which it needs? W. P. Jorissen (Chem. Weekblad, 1937, **34**, 146—149).—A review of the elementary compositions of the human body, the sea, and the earth's crust and a discussion on the significance of their similarity. S. C.

Post-mortem changes in mineral salt distribution in nerve cells. L. L. Tureen (Proc. Soc. Exp. Biol. Med., 1936, **35**, 293—294).—Post-mortem demineralisation becomes noticeable at 3 hr. after death and reaches equilibrium at 15—20 hr. Salt loss in chilled tissues (10°) lags 7—8 hr. behind that in tissues at room temp. P. G. M.

Distribution of magnesium in the tissues of the eye. R. Wolff and A. Bourquard (Compt. rend. Soc. Biol., 1937, **124**, 319—320).—Mg in the retina and pigmented layer of the eye of the ox and sheep is high (90 mg. per 100 g. dry wt.), whilst that of the optic nerve and vitreous humour is similar to that of the serum (30—40 mg. per 100 g. dry wt.). H. G. R.

(A) **Distribution of magnesium in the animal organism: effect of dietary magnesium.** (B) **Grass staggers and magnesium metabolism.** I. J. Cunningham (New Zealand J. Sci. Tech., 1936, **18**, 419—423, 424—428).—(A) Mg is uniformly distributed in all bones of individual sheep. In internal organs of cattle, sheep, and rats vals. are similar for individuals of the same or different species, those for heart and gluteal muscle being notably high. The Mg contents of bones and blood, but not those of other organs, are directly affected by that of the diet. (B) Deficiency of dietary Mg is not the cause of grass staggers in dairy cows. A. G. P.

Iron content of teeth of normal and anæmic rats. S. Ratner (J. Dental Res., 1935, **15**, 89—92).—The Fe content of the upper incisors of rats receiving an anæmia-producing diet was < that of controls. The Fe content and colour of teeth are related. Ch. Abs. (*p*)

Nature of silica in living organisms. Silica of constitution and of interposition. E. Kahane and G. Antoine (Bull. Soc. Chim. biol., 1936, **18**, 1769—1782).—The insol. residue after destruction of org. tissues by HNO_3–$HClO_4$ contains SiO_2 in gelatinous form (usually the SiO_2 of constitution found in very variable amounts in both animal and vegetable tissues), amorphous SiO_2 of diatoms, sponges, bamboo, etc., and cryst. SiO_2 as found in human lungs and other animal tissues (regarded as Si of interposition). Tables summarise the Si contents in these substances. P. W. C.

Presence of silicious particles in animal organs. G. Antoine (Bull. Soc. Chim. biol., 1936, **18**, 1783—1788).—SiO_2 particles are isolated from various animal organs by means of the HNO_3–$HClO_4$ technique and their physical and chemical properties shown to resemble those of natural SiO_2. P. W. C.

Arsenic in human tissues and food animals. I. So-called normal arsenic. W. F. Boos and A. B. Werby (New England J. Med., 1935, **213**, 520—524).—As is not a normal constituent of the body. Small amounts detected are accounted for by ingestion with food. Ch. Abs. (*p*)

Composition of [New Zealand sheep] bones, normal and abnormal. M. W. Young (New Zealand J. Sci. Tech., 1936, **18**, 391—395).—Analysis of the lower ends of femurs of normal adult and young sheep are recorded. Calcification proceeds slowly during the first year but marked changes in bone composition begin when the period of rapid body-wt. increase has passed. In certain disorders (but not in bush sickness) the ash/org. matter ratio is < normal. A. G. P.

Biochemistry of bones during development. V. Caglioti and D. Gigante (Atti R. Accad. Lincei, 1936, [vi], **23**, 878—880).—The mol. elements of bone, hydroxyapatite and the peptide chain, have the same spacial distribution of 6·88—6·90 A. In the rat, *X*-ray patterns indicate that orientation of the elements occurs during growth and firstly in those bones where the need for solidity (*e.g.*, for walking) is greatest. F. O. H.

Crystal orientation in tooth-enamel. J. Thewlis (Naturwiss., 1937, **25**, 42—43; cf. A., 1936, 623, 1010, 1011).—Human tooth-enamel is characterised by a double thread structure. "Good" enamel, with a smooth surface, and showing no coloration with fuchsin, possesses a high degree of orientation. "Bad" enamel shows a weak thread diagram. Enamel is "bad" when one thread axis is present, "good" when the other is present either alone, or with the first. The polarisation-microscopic method of Schmidt (A., 1936, 1010) is criticised as giving only a generalised determination of orientation. A. J. M.

Crystal orientation in tooth-enamel. W. I. Schmidt (Naturwiss., 1937, **25**, 43).—Complicated superstructures of numerous histological elements may give rise to irregularities in the *X*-ray diagram for inorg. crystallites. It is possible that the single and double thread structure of tooth-enamel observed by Thewlis (cf. preceding abstract) may be due to a parallel and crossed arrangement of the crystal prisms. A. J. M.

Analysis of flesh and entrails of birds and rabbits. G. Balboni (Quad. Nutrizione, 1935, **1**, 450—542; Chem. Zentr., 1936, i, 2766).—Analyses are recorded. A. G. P.

p_H of muscle. W. O. Fenn and F. W. Maurer (Protoplasma, 1935, **24**, 337—345).—The plasma surrounding frog muscle contains 2·6 times as much HCO_3' as the muscle fibres. Allowing for this a p_H of 6·9 for the interior of the fibres and of 7·34 for the extracellular fluid is calc. from the Henderson–Hasselbalch equation. A micro-method using an indicator gives p_H 7·4 for the extracellular fluid. M. A. B.

"Hydrophoby" of the hair. V. PTSCHELIN (Kolloid. Shurn., 1936, **2**, 247—248).—When shaken with H_2O and C_6H_6 rabbit hair goes into the C_6H_6 layer even if it has previously been boiled with H_2O, dil. alkali, acid, EtOH, Et_2O, or CS_2, or treated with saponin. Only boiling with conc. alkali corrodes the hair and makes it hydrophilic. J. J. B.

[Determination of] cystine in wool. S. D. ROSSOUW [with WILKEN-JORDEN] (S. African J. Sci., 1935, **32**, 135—136; Chem. Zentr., 1936, i, 2597).—The method depends on the pptn. of a very insol. Cu mercaptide of cystine from H_2SO_4-hydrolysed material, reduction of the mercaptide in acid by Zn, removal of residual Cu and Zn, and colorimetric determination of the resulting cysteine by Sullivan's method. Vals. for grass and wool are given. A. G. P.

Clinical significance of the creatine reserve of the human heart. M. BODANSKY and J. F. PILCHER (Arch. Int. Med., 1937, **59**, 232—244).—Determinations of the creatine concn. of the right and left ventricle and the papillary heart muscles are discussed statistically. Significant differences exist between the mean results for groups with and without evidence of heart disease but individual results are diverse. E. M. W.

Heterogony of the glutathione content of newborn rabbits. I. M. LERNER, P. W. GREGORY, and H. GOSS (Proc. Soc. Exp. Biol. Med., 1936, **35**, 283—285).—Each of the 4 breeds studied has a characteristic glutathione content and rate of change of this factor, which is related to the adult size of the breed. P. G. M.

Chemical constituents of *hsiung-chang* (bear's paw). T. H. TANG and Y. H. CHAO (J. Chinese Chem. Soc., 1937, **5**, 9—13).—Dried *hsiung-chang* (after boiling in H_2O) contains fat 43·90, crude protein (I) 55·23, total N 8·83, and ash 0·94%. From the hydrolysate (25% H_2SO_4) of (I) are isolated aspartic and glutamic acids, phenylalanine, leucine, tyrosine, proline, arginine + alanine, and valine + oxyvaline. J. W. B.

Depôt fat of *Varanus salvator* (Ceylon). T. P. HILDITCH and H. PAUL (Biochem. J., 1937, **31**, 227—228).—The fat of the Ceylon lizard, *V. salvator*, Laur., contains, like the fats of marine animals, 12% of palmitoleic acid and small amounts (5%) of C_{20} unsaturated acids and, like the fats of land animals, a high content (43%) of palmitic and stearic acids. P. W. C.

Influence of fasting on the histophysiology of the pulmonary lipins. L. BINET, J. VERNE, and J. L. PARROT (Compt. rend. Soc. Biol., 1937, **124**, 342—344).—The lung contains a small fraction of the lipin reserves of the body and, during fasting, the adventitious fatty globules disappear but intracapillary fatty globules remain with a possible accumulation of ketonic substances. H. G. R.

Physical chemistry of lipins. IV. Influence of narcotics on the salt-binding capacity of lecithin. M. SPIEGEL-ADOLF (Proc. Soc. Exp. Biol. Med., 1936, **35**, 263—267; cf. A., 1935, 1523).—Alcohols decrease the salt-binding capacity of lecithin in proportion to the length of the chain; it is nearly abolished by C_5H_{11}·OH. The opacity of the sol and the sensitivity to salt pptn. increase at the same time. P. G. M.

Determination of parallel variations in liver-glycogen and -lipin by multiple sampling in the same dog. P. CRISTOL, L. HÉDON, A. LOUBATIÈRES, and P. MONNIER (Compt. rend. Soc. Biol., 1937, **124**, 637—638). H. G. R.

Simultaneous bilateral β-oxidation of dibasic fatty acid.—See A., II, 135.

(A) Coagulation of myosin by dehydration. (B) Coagulation in muscle. A. E. MIRSKY (J. Gen. Physiol., 1937, **20**, 455—459, 461—474).—(A) Drying with freezing renders myosin (I) insol. without alteration of its detectable ·SH content. Of all *in vitro* coagulation methods this alone approches the change of solubility unaccompanied by change in chemically detectable groups which occurs in muscular contraction. Such dehydration resembles coagulation *in vivo* ≫ coagulation by denaturing agents.

(B) Frog muscle can be prepared as a dry powder containing myosin (I) in its original condition. It rapidly coagulates on addition of H_2O equal to that removed in drying, but not when the powder is allowed to imbibe excess of H_2O. Addition of dil. aq. KCl causes coagulation. Conc. solutions of KCl do not coagulate but extract (I) and ppt. it reversibly on dilution. (I) in intact muscle, unlike extracted (I), is not coagulated by drying and freezing, but that in swollen muscle is contracted by freezing. The coagulation process has a temp. coeff. of about 2 and does not require free $Ca^{\cdot\cdot}$. Coagulation of (I) occurs only when it is embedded in the structure of muscle. The orientation of (I) mols. is considered in relation to coagulation. R. M. M. O.

***l*(+)-α-Aminobutyric acid as a constituent of proteins.**—See A., II, 138.

Constitution of the lactoflavinphosphoric acid from liver. P. KARRER, P. FREI, and H. MEERWEIN (Helv. Chim. Acta, 1937, **20**, 79—83).—Lactoflavinphosphoric acid (I) isolated from liver is mixed with an adenine nucleotide, from which it cannot be separated by any adsorption process; the existence of a chemical compound of the substances is not assumed. Oxidation of (I) with HIO_4 does not yield CH_2O; PO_4 cannot therefore be present at $C_{(2)}$ or $C_{(3)}$ but is probably at $C_{(5)}$. (I) from yeast is probably a $C_{(5')}$ compound. H. W.

Cytochrome-*C*. I. Is porphyrin-*C* an amino-acid porphyrin? H. KATAGIRI, K. MASUDA, and T. HIMEMOTO (Bull. Agric. Chem. Soc. Japan, 1937, **13**, 94—98).—Prep. and purification of cytochrome-*C* (I) and porphyrin-*C* (II) are described. (I) is not a NH_2-acid porphyrin since it is obtained by the action of AcOH and 20% H_2SO_4 on aq. hæmatin containing $Na_2S_2O_4$. Deutero-, meso-, and hæmato-porphyrin (III) are prepared from (II). Decomp. of (I) with 40% H_2SO_4 gave Fe and (III) (1 : 1 mol.). J. N. A.

Constitution of uro- and mussel shell-porphyrin. Uroporphyrin III in congenital porphyrinuria.—See A., II, 168.

Fluorescence spectrum of a pigment isolated from *Holothuria*. H. Bierry and B. Gouzon (Compt. rend. Soc. Biol., 1937, **124**, 323—324).—Extraction of *H. nigra* with EtOH yields a pigment having a green fluorescence which is stable to sunlight. H. G. R.

Vegetable sterols in toads. R. Hüttel and H. Behringer (Z. physiol. Chem., 1937, **245**, 175—180; cf. Wieland *et al.*, A., 1936, 1252).—The poisonous secretion from toads (*Bufo vulgaris*, *B. vulgaris formosus*, *B. arenarum*, and *Alytes obstetricans*) yielded γ-sitosterol (I) on extraction with light petroleum, evaporation of the solvent, dissolution in boiling MeOH and chromatographic adsorption of the crude sterol in C_6H_6 on Al_2O_3. 80—95% of the sterol extracted from the skin of the toads was cholesterol (II), the remainder being (I), which occurred chiefly in the free state. Little or no (II) and no pro-vitamin were found in the secretion. W. McC.

Blood-clotting action of human milk. M. Jacoby and S. Adler (Enzymologia, 1937, **1**, 373—376).—The blood-coagulating substance in human milk cannot be thrombin as it coagulates plasma only in the presence of Ca. The substance in 0·2 c.c. of human milk is completely neutralised by 0·3—0·4 mg. of heparin. Its cytozyme nature is supported by its antigenic character. No antibody is formed after injection of cow's milk. E. A. H. R.

Variations in the fat and protein contents of cow's milk during milking. E. Neutard (Diss., Tierartzl. Hochschule, Hanover, 1934; Bied. Zentr., 1935, **A**, **6**, 192).—The fat content of milk increases, though not uniformly, during milking. The protein content is unrelated to the fat content or to the stage of the milking process. A. G. P.

Relative digestibility of caseins in their artificial and natural environments. K. Bhagvat (Proc. Soc. Biol. Chem. India, 1937, **1**, 22—24).—The milks of various animals differ in their albumin (I) content. In general the dispersion of the casein (II) increases with (I) content. The (II) of asses' milk, which contains much (I), is very highly dispersed, and more readily digestible *in vitro* than is cow's milk. If, however, the pptd. protein is treated with PO_4-buffer solution, that from asses' milk redisperses much less readily than that from cow's milk, and the redispersed protein is correspondingly less digestible. The indigestible asses' (I) apparently protects the (II) particles from digestion. The bearing of these results on the humanisation of milk is discussed. W. O. K.

Determination of lipase in milk. R. Reder (Proc. Oklahoma Acad. Sci., 1935, **15**, 49—50).—In McGillivray's modified method a sterile milk–olive oil emulsion is a better medium for lipase activity than H_2O–oil emulsion. 0·6 mg. of lipase is detectable after incubation for 1 hr., and 0·05 mg. after 24 hr. Ch. Abs. (*p*)

Non-protein-nitrogen of milk. K. Bhagvat (Current Sci., 1936, **5**, 297—298).—The composition of the non-protein-N fractions of the milk of the cow and ass shows no significant differences. J. L. D.

Butyric acid content of milk.—See B., 1937, 179.

Determination of protein in spinal fluid. R. S. Hubbard and H. R. Garbutt (Amer. J. Clin. Path., 1935, **5**, 433—442).—The fluid is treated with $CCl_3{\cdot}CO_2H$ (hot), cooled, and after addition of abs. MeOH is centrifuged. The ppt. is digested with Folin–Wu oxidising reagent, Rochelle salt is added, and NH_3 determined by Nessler's reagent. 0·005—0·25% of protein may be determined in 2 c.c. of fluid. Ch. Abs. (*p*)

Spectrographic analyses of human spinal fluid. G. H. Scott and J. H. McMillen (Proc. Soc. Exp. Biol. Med., 1936, **35**, 287—289).—All spinal fluids can be expected to show spectrographic evidence of Al, Ba, Sr, and B, half of them Pb, and a quarter Sn. P. G. M.

Osmotic pressure of the colloids of the vitreous humour. C. Lenti (Atti R. Accad. Lincei, 1936, [vi], **24**, 223—226).—Ox humour, *d* 1·007—1·008, $n_D^{17\cdot5}$ 1·335130—1·336052, residue on drying 0·57—1·62%, Δ 0·490—0·585°, N content 0·0195—0·0347%, has a colloid-osmotic pressure of 6·75—23·36 (average 12·42) mm. H_2O which approx. ∝ the N (or protein) content. F. O. H.

Secretagogue and depressor substances in saliva and pancreatic juice. J. A. Guimarais (J. Physiol., 1936, **86**, 95—108).—Sympathetic saliva contains substances causing submaxillary secretion that are not identical with the depressor constituent. EtOH extracts exhibit both effects, but to a smaller degree than saliva itself. Dog's pancreatic juice, obtained either by secretion or vagal stimulation, contains pancreatic secretagogues, the potency of which ∝ the concn. of the juice. Pancreatic juice does not cause submaxillary secretion nor saliva pancreatic secretion, but the depressor substances in both are similar in thermolability and non-inhibition by atropine. R. N. C.

p_H of normal resting saliva. II. Diurnal variation. III. Effects of vitamin-*A* and -*D* in school children. R. E. Brawley (J. Dental Res., 1935, **15**, 79—86; cf. A., 1936, 501).—II. The average normal p_H of saliva was 6·75. Vals. increased slightly 1 hr. before meals and diminished about 1 hr. after. Variations were independent of age and sex.

III. Feeding vitamin-*A* and -*D* produced no significant change in p_H during a 1 year experimental period. Ch. Abs. (*p*)

Effect of fundusectomy on acidity of gastric and duodenal contents. J. R. Watson (Arch. Surg., 1935, **31**, 1—9).—Reduction in both free and total gastric acidity immediately followed extensive fundal resection, probably through removal of acid-secreting glands. Ch. Abs. (*p*)

Duodenum and automatic control of gastric acidity. W. J. Griffiths (J. Physiol., 1936, **87**, 34—40).—Experimental introduction of HCl into the normal human duodenum reduces HCl secretion in response to an EtOH test drink, or arrests it before it reaches its max. if it has been established previously by EtOH. Neutral Cl′ and peptic activity of the gastric contents show a marked rise in both cases. R. N. C.

Reduction of cholic acids by Bouveault's method.—See A., II, 100.

Gastric secretion of bromine during bromine therapy. C. CHATAGNON (Compt. rend., 1936, **203**, 1398—1399; cf. this vol., 88).—In a woman, aged 45, who received 33 g. of NaBr during 14 days, the ratio of 1000Br : Cl in the gastric juice increased from 1—2 to 1815, and returned to normal 60 days afterwards. In the blood the ratio increased from 0·6 to 315. During the whole period blood-Cl underwent only normal fluctuations. J. N. A.

Urinary excretion of bromine after ingestion of sodium bromide. C. CHATAGNON (Compt. rend., 1937, **204**, 72—74).—NaBr (1 g.), administered orally to a woman, was excreted in 31 days, whilst the Cl excretion was normal. Repeated doses (33 g. of NaBr in 14 days) were excreted in 69 days, the max. daily excretion being 1·7 g. J. L. D.

Post-partum urinary elimination of amino- and amino-ammoniacal nitrogen. P. OLIVIER-PALLUD and G. GLOMAUD (Compt. rend. Soc. Biol., 1937, **124**, 211—213).—The max. elimination occurs on the 3rd day, the val. decreasing to the 5th day, when it becomes const. or shows a slight increase. H. G. R.

Determination of urinary lactic acid. G. MATTHIESSEN (Biochem. Z., 1937, **289**, 167—171).—The Müller–Parcham technique (A., 1933, 966) is slightly modified for application to urine. Urine of normal subjects contains between 16 (fasting, morning) and 80 (noon) mg. of lactic acid per 100 c.c. P. W. C.

Detection of morphine in urine of opium-addicts. C. K. LIANG (Chinese Med. J., 1937, **51**, 211—216).—Older methods of detection of morphine are combined with new features to make possible the detection of 0·005 mg. in 50 c.c. of urine. E. W. W.

Urobilin. Modification of the Schlesinger reaction in urine analysis. O. M. MIGLIACCIO (Día méd., 1933, **6**, 224).—The sample is mixed with an equal vol. of 10% $Zn(OAc)_2$ in EtOH and the mixture is centrifuged. Fluorescence in the clear liquid indicates the presence of urobilin. CH. ABS. (*p*)

Urobilinogen. II. Urobilinogen in urine and fæces of subjects without evidence of disease of liver or biliary tract. III. *Per diem* excretion of urobilinogen in common forms of jaundice and disease of liver. C. J. WATSON (Arch. Int. Med., 1937, **59**, 196—205, 206—231).—II. The amount of urobilinogen (I) excreted in 24 hr. by a normal adult in the urine and fæces is 0—4 mg. and 40—280 mg., respectively. Variations from the normal in diseases other than of the liver and biliary tract are discussed.

III. Urinary (I) is not much increased in jaundice due to stone unless complications are present. Jaundice due to neoplasm is characterised by very small amounts of (I) in the fæces with traces or none in the urine. Urinary (I) increases in diffuse hepatic disease, and in hæmolytic jaundice increases are observed which cannot be correlated with increased destruction of blood. E. M. W.

Results of stool urobilinogen determinations in disturbed colouring-matter balance. H. FLEISCHHACKER and H. SEYFRIED (Wien. klin. Woch., 1935, **48**, 1604—1607; Chem. Zentr., 1936, i, 2156).—The clinical significance of such determinations is discussed. H. N. R.

Influence of bile acid on elimination of bilirubin in urine. H. WESPI (Klin. Woch., 1935, **14**, 1820—1821; Chem. Zentr., 1936, i, 2386).—Bilirubin appears in rabbit urine after injection of >10 mg. per kg. body-wt. Simultaneous injection of bile acid lowers this threshold val. possibly by inducing the transformation of bilirubin-I into -II. A. G. P.

Existence in blood and urine of substances promoting liver function. II. Urine. N. MIZUTA and T. MATSUURA (Japan J. Gastroenterol., 1935, **7**, 57—68; cf. A., 1936, 1146).—Normal human and rabbit urines contain a PhOH-like substance promoting the excretion of azofuchsin-G from livers of rabbits poisoned with U nitrate or cantharidin. The substance is thermostable in acid or neutral media but is rapidly destroyed by heating with alkali. CH. ABS. (*p*)

Significance of diastase content of urine in various surgical conditions. J. WAKO (Tôhoku J. Exp. Med., 1935, **26**, 268—290).—Urinary diastase changes in cases of various diseases. CH. ABS. (*p*)

Chemistry and prophylaxis. A. VERNES (Chim. et Ind., 1937, **37**, 17—30).—Various techniques and data afforded by their use on the properties of serum as applied to the diagnosis and prophylaxis of tuberculosis, cancer, syphilis, etc. are described. F. O. H.

Effect of cortin on renal excretion and balance of electrolytes in humans. G. W. THORN, H. R. GARBUTT, F. A. HITCHCOCK, and F. A. HARTMAN (Proc. Soc. Exp. Biol. Med., 1936, **35**, 247—248).—Cortin injections reduce Na excretion by 42% in normal and 20—50% in cases with Addison's disease (5 hr. period); K excretion increases more in these patients than in normal subjects. P. G. M.

Relation of drug therapy to agranulocytosis. R. R. KRACKE and F. P. PARKER (J. Amer. Med. Assoc., 1935, **105**, 960—966).—Amidopyrine, dinitrophenol, and related drugs cause agranulocytosis. CH. ABS. (*p*)

Drug or protein allergy as a cause of agranulocytosis and certain types of purpura. F. T. HUNTER (New England J. Med., 1935, **213**, 663—673).—The disorders are allergic and may be caused by amidopyrine, arsphenamine, Au salts, dinitrophenol, or foreign proteins. CH. ABS. (*p*)

Treatment of milk allergy and its basic principles. B. RATNER (J. Amer. Med. Assoc., 1935, **105**, 934—938).—Lactalbumin and lactoglobulin are usually responsible for allergy. Coagulation of these proteins on heating lowers the allergic effects of milk. CH. ABS. (*p*)

Protein content of extracts of various allergens. R. S. HUBBARD and H. OSGOOD (J. Allergy, 1935, **6**, 231—239).—A micro-method for determining N in phosphotungstic acid or $CCl_3{\cdot}CO_2H$ ppts. is described. CH. ABS. (*p*)

Preparation of pollen extracts. J. M. Anderson (J. Allergy, 1935, 6, 244—246).—A solution containing 0·86% of NaCl in 1 : 1 glycerol–H_2O is used as an extractant. Ch. Abs. (p)

Histamine and typhoid protein in control of asthma and hay fever. N. F. Thiberge (J. Allergy, 1935, 6, 282—287).—The EtOH-sol. portion of typhoid protein which has been hydrolysed by KOH is safer than histamine in use. Ch. Abs. (p)

Constituents of the antiasthmatic, Epokan. H. Kreitmair (Münch. med. Woch., 1936, 83, 141—142; Chem. Zentr., 1936, i, 2587—2588).—The principal constituents are l-ephedrine-coumarin carbonate, pyrazinemonocarboxylic acid anhydride, and ψ-tropine benzyl ester hydrochloride. A. G. P.

Sex variations in the utilisation of iron by anæmic rats. M. C. Smith and L. Otis (Science, 1937, 85, 125—126).—Hæmoglobin regeneration in anæmic female rats is > in males. This may explain the reported anomalies concerning the availability of Fe in foodstuffs. L. S. T.

Hæmoglobin regeneration in chronic hæmorrhagic anæmia of dogs (Whipple). I. Effect of iron and protein feeding. C. C. Sturgis and G. E. Farrar, jun. (J. Exp. Med., 1935, 62, 457—465).—Addition of liver to a diet for dogs with a slowly regenerating anæmia increased regeneration > did the equiv. amount of inorg. Fe. The effect of liver is not due to its content of NH_2-acids. Whipple's anæmia serves as an index of hæmoglobin-producing power. Ch. Abs. (p)

Anæmia of infancy and early childhood. X. Anæmia of infantile scurvy. L. G. Parsons and W. C. Smallwood (Arch. Dis. Childhood, 1935, 10, 327—336).—The anæmia is due to vitamin-*C* deficiency. -*C* is necessary in all stages of maturation of red cells. Ch. Abs. (p)

Specific effect of ascorbic acid on the anæmia of scurvy. D. M. Dunlop and H. Scarborough (Edinburgh Med. J., 1935, 42, 476—482).—Daily administration of 60 mg. of ascorbic acid to scurvy patients increased the red cell count and hæmoglobin content of blood. Ch. Abs. (p)

Treatment of secondary anæmia. S. O. Foster (Med. Ann. Dist. Columbia, 1935, 4, 212—216).—Fe^{II} is more effective than Fe^{III}. Cu enhances the clinical action. "Primary" and "secondary" anæmia liver fractions are differentiated. Vitamin-*A*, -B_2, and -*C*, phenylalanine, tyrosine, proline, arginine, and glutamic acid are useful adjuvants. Fe^{II} is more effective in acid than in neutral or alkaline media. Ch. Abs. (p)

Supplementing soil with iron and copper for prevention of anæmia in young pigs. L. H. Moe, W. A. Craft, and C. P. Thompson (J. Amer. Vet. Med. Assoc., 1935, 40, 302—311).—Piglings having access to 50 lb. of soil to which were added 9 g. of $FeSO_4$ and 1·5 g. of $CuSO_4$ showed better growth increases and higher hæmoglobin levels than did controls. Ch. Abs. (p)

Isolation of the anti-anæmic principle of liver. B. Strandell (Acta med. Scand. [Suppl.], 1935, 71, 1—52; Chem. Zentr., 1936, i, 2130).—From 100 g. of liver 0·0002 g. of active substance was obtained. 0·002 g. in H_2O was an effective dose in cases of pernicious anæmia. A. G. P.

Diagnostic value of phosphatase determinations in study of bone tumours. C. C. Simmons and C. C. Franseen (Ann. Surg., 1935, 102, 555—562).—Plasma-phosphatase increased in metastatic carcinoma and œstrogenic sarcoma. Ch. Abs. (p)

Blood radiation in disease, especially in tumours. W. W. Siebert and H. Seffert (Biochem. Z., 1937, 289, 292—293).—By mixing equal parts of blood of various pathological cases (mitogenetically inactive) with normal blood (mitogenetically active) the activity of the latter often disappears when the disease involves tumour formation but not with many other diseases. Certain exceptions are discussed. P. W. C.

Preparation of an extract of human liver capable of producing tumours. S. A. Neufach (Compt. rend. Soc. Biol., 1937, 124, 616—617).—The liver is minced and extracted with C_6H_6 for an hr. in the light at room temp. and then for several days in the dark at 0°. H. G. R.

Influence of diets containing proteins of various molluscs on the growth of tumours in rats. S. Toyuyama and W. Nakahara (Sci. Papers Inst. Phys. Chem. Res. Tokyo, 1937, 31, 85—98; cf. A., 1936, 1406).—Diets of shell-fish proteins have a more stimulating influence on the growth of tumours implanted into rats than have those of fish proteins. Tumour growth with diets of proteins of cephalopods is still less. Generally, those shell-fish proteins inducing good body-growth before implantation also enhance tumour development; with scallop, however, body-growth was excellent but tumour growth poor. A. L.

Experimental production of malignant tumours by a benzene extract of cancerous liver. Endogenous carcinogenic substances. L. Schabad (Compt. rend. Soc. Biol., 1937, 124, 213—216).—Injection of a C_6H_6 extract of the liver from a case of cancer of the stomach induced sarcoma and carcinoma in mice. H. G. R.

Tumour metabolism. IX. Effect of cozymase on glycolysis in tumour extracts. E. Boyland, M. E. Boyland, and G. D. Greville. **X. Action of colchicine and *B. typhosus* extract.** E. Boyland and M. E. Boyland (Biochem. J., 1937, 31, 461—466, 454—460).—IX. Added cozymase increases glycolysis of hexose diphosphate, hexose phosphate, and glucose (I), to a rate comparable with that of (I) breakdown in the original tissue. Cozymase is present in tumour tissue but is destroyed rapidly in the extract.

X. The lethal dose of colchicine (II) injected intraperitoneally in mice is lowered by the presence of tumours. The injection also diminishes the ascorbic acid contents of liver, intestine, and tumours and renders tumours hæmorrhagic; these effects resemble those of the *B. typhosus* extract. Injection of (II) is followed by a depressed respiration in surviving tumour but not in liver; its addition *in vitro* to the

tissue also depresses respiration but far less strongly than colchiceine, which is much less potent *in vivo*.
R. M. M. O.

Genesis of cancer: general and local factors in the origin of cancer. L. T. Larionov (Z. Krebsforsch., 1935, **43**, 120; Chem. Zentr., 1936, i, 1891).—Pre-disposing factors are considered.
A. G. P.

Chemistry of cancer. B. Lustig (Z. Krebsforsch., 1935, **43**, 156—162; Chem. Zentr., 1936, i, 2117).—Christiani's theory of the pre-elective action of cholesteryl esters is discredited. A. G. P.

Bacteriological test of von Brehmer's cancer diagnosis. L. Lange (Z. Krebsforsch., 1935, **43**, 196—216; Chem. Zentr., 1936, i, 2118).—von Brehmer's test is valueless. A. G. P.

Von Brehmer's determination of blood-reaction in health and disease especially in cancer. H. Dieckmann and H. Mohr (Z. Krebsforsch., 1935, **43**, 217—254; Chem. Zentr., 1936, i, 2118).—Use of blood-p_H measurements in diagnosis, and the theory of the significance of alkalosis in the origin of cancer (von Brehmer) are unsound. A. G. P.

Value of some cancer reactions in early diagnosis of cancer of the uterus. H. Bělohradský (Wien. klin. Woch., 1935, **48**, 1612—1615; Chem. Zentr., 1936, i, 2117).—Various biochemical tests examined are pronounced unsuitable. Histological methods are recommended. A. G. P.

Value of ether and chloroform narcosis in treatment of cancer. R. W. Benner (Anesthesia and Analgesia, 1935, **14**, 205—209).—High alkalosis in blood is associated with malignancy. Anæsthesia with $CHCl_3$ and Et_2O causes a beneficial acidosis. Blood-Ca is increased. Ch. Abs. (*p*)

Serological investigations on substance present in urine of cancer patients. M. Aron (Compt. rend., 1936, **203**, 1550—1552; cf. A., 1936, 626).—Incubation at 38° for 16—18 hr. of a mixture of a purified EtOH extract of cancer urine with blood-serum of a cancer patient produces a distinct turbidity and in some cases flocculation. Normal sera give a very slight or no reaction. Cancer serum does not give the reaction if the urine extract is heated at 90° for ½ hr., whilst certain non-cancerous sera retain their reactivity under these conditions.
J. N. A.

Biochemical and biological changes in experimental mouse and guinea-pig carcinoma. F. Lasch and B. Lustig (Z. Krebsforsch., 1935, **43**, 146—155; Chem. Zentr., 1936, i, 1891).—After 4 weeks' development of experimental carcinoma there was an increase in protein-sugars and a decrease in Mg in serum, change in the Freund and Kammer reaction in serum and fæces, increased K and Cl, and decreased Na, irrespective of the original vals. Blood-p_H, white cell count, serum-cholesterol, -Ca, and -inorg. P, and the sedimentation time were unchanged. A. G. P.

Trypsin, cathepsin, amylase, and lipase of cancerous tissues and in carcinomatous blood. G. Vercellana (Z. Krebsforsch., 1935, **43**, 163—171; Chem. Zentr., 1936, i, 1891—1892).—Except in a case of parotid tumour, none of the enzymes could be detected. In amylase tests the I consumption of alkaline glycerol affords a source of error in examining glycerol extracts. A. G. P.

Adsorption and elution of the Rous sarcoma agent. E. M. Fraenkel and C. A. Mawson (Brit. J. Exp. Path., 1935, **16**, 416—422).—The best adsorptive agent was Willstätter *C* and *D* Al_2O_3. Max. potency of eluates was obtained by adsorption at p_H 6·0 and elution at 8·4. Ch. Abs. (*p*)

Dietary factors in the production of dental disease in experimental animals, with special reference to the rat. I. Dental caries. J. D. King (Brit. Dental J., 1935, **59**, 233—244, 305—316).—Diets of maize starch, rice starch, cane sugar, or finely ground yellow maize with deficiency of vitamins and mineral salts did not produce abnormalities in molar teeth. There was high incidence of Gram-positive lesions in decalcified sections of the dentine of lower molars of rats receiving diets composed mainly of coarse yellow maize or whole brown rice. Upper teeth were relatively free from these defects. Ch. Abs. (*p*)

Local factors influencing dental caries: study of organic matter associated with enamel. P. Pincus (Brit. Dental J., 1935, **59**, 372—391).—Org. matter from enamel resembled keratin in some respects. Decalcification of enamel proceeds at different rates across and along the dental rods. The effect of synthetic saliva and lactic acid on tooth sections was negligible. An acid-resistant matrix occurs in enamel. Ch. Abs. (*p*)

Relation between nutritional deficiencies and (*a*) facial and dental arch deformities, (*b*) loss of immunity to dental caries, among South Sea Islanders and Florida Indians. W. A. Price (Dental Cosmos, 1935, **77**, 1033—1045).—The diet of the mother during gestation and lactation and of the child during growth determines the degree of reproduction of the ancestral physical pattern. Nutritional deficiency can change the racial pattern even in a single generation, and tends to reduce immunity to certain diseases. Ch. Abs. (*p*)

Comparison in five types of animals of the effects of dietary egg white and of a specific factor given orally or parenterally. J. G. Lease, H. T. Parsons, and E. Kelly (Biochem. J., 1937, **31**, 433—437).—In the chick, rat, rabbit, and monkey but not in the guinea-pig, a diet with a toxic excess of dried egg white produces a characteristic dermatitis. Individual variations depend partly on the variability of existing stores of the factor protecting against "egg white injury." R. M. M. O.

Diabetes mellitus. Analysis of 347 cases in Chinese patients. I. S. H. Wang (Chinese Med. J., 1937, **51**, 9—32).—Ætiological and clinical aspects are discussed. F. O. H.

Effect of administration of carotene and vitamin-*A* in diabetes mellitus. I. Effect of oral administration of carotene on blood-carotene and -cholesterol of diabetic and normal patients. E. P. Ralli, H. Brandaleone, and T. Mandelbaum (J. Lab. Clin. Med., 1935, **20**, 1266—

1275).—Blood-carotene (I) increases in diabetes. Administration of carrots or (I) in oil produces a greater increase in blood-(I) in diabetics than in normal individuals. A second dosage to diabetics produces a greater increase than the first. Increased liver-(I) in diabetics is due to inability of the organ to convert (I) into vitamin-*A*. Absorption of (I) from the blood is thereby reduced. Ch. Abs. (*p*)

Utilisation of fructose in diabetes. A. Yovanovitch (Compt. rend. Soc. Biol., 1937, **124**, 477—479).—Ingestion of fructose decreases the glucose and $COMe_2$ in the urine. H. G. R.

Adrenaline secretion in animals with experimental diabetes. J. M. Rogoff and E. N. Nixon (Proc. Soc. Exp. Biol. Med., 1936, **35**, 257—259).—The diabetes is primarily responsible for reduction of adrenaline secretion, which can be raised by stimulation of the splanchnic nerve. P. G. M.

Endemic goitre in Langkloof valley. E. E. Buttner (S. African Med. J., 1935, **9**, 187—189).—Development of goitre is associated with deficiency of sunlight and vitamin-*D* and metabolism of I, Ca, P, and Fe. In studying dietary deficiency cooked and not raw foods should be examined for I. Ch. Abs. (*p*)

Primary granulocytopænia due to hypersensitivity to amidopyrine. T. L. Squier and F. W. Madison (J. Allergy, 1934, **6**, 9—16).—The disorder proceeded from use of amidopyrine alone or in combination with a barbiturate. Ch. Abs. (*p*)

Blood-iron and -copper in hæmochromatosis. A. Sachs, V. E. Levine, and W. O. Griffith (Proc. Soc. Exp. Biol. Med., 1936, **35**, 332—335).—Low vals. (89—74% of normal) for blood-Fe are recorded, possibly owing to retention of Fe in the tissues. There is no relation between Fe metabolism and blood-Cu in hæmochromatosis. P. G. M.

Resistance of vitamin-B_1- and -B_2-deficient and normal rats to intracerebral injection of herpes virus. E. V. Cowdry, A. M. Lucas, and C. F. Neff (J. Infect. Dis., 1935, **57**, 174—182).—Deficient rats were slightly the more sensitive. Ch. Abs. (*p*)

Chemotherapy of infectious diseases. M. Oesterlin (Klin. Woch., 1935, **14**, 1682—1684; Chem. Zentr., 1936, i, 1913).—A parallel is traced between therapeutic activity and fluorescence in anti-malarials and trypanocides. H. N. R.

Lipin–protein metabolism in infectious diseases. A. Sartory, R. Sartory, G. Hufschmitt, and J. Meyer (Bull. Soc. Chim. biol., 1936, **18**, 1842—1849).—Determinations of the total amounts of any component of the lipin–protein complex do not permit any conclusion to be reached on the course of the infection. However, the ratios of serum-albumin (I) : globulin (II), (I)-lipin : (II)-lipin, total fat : total protein, and (I)–cholesterol (III) : (II)–(III), and the lipocytic index all assist in diagnosis of the stage of the disease. P. W. C.

Plasma-phosphatase in various kinds of jaundice. F. K. Herbert (Brit. J. Exp. Path., 1935, **16**, 365—375).—Phosphatase determinations have a supplementary val. in diagnosis. Phosphatase and directly-reacting bilirubin in sera do not show parallel variations. Ch. Abs. (*p*)

Galactose-tolerance test as an aid to diagnosis in jaundice. E. H. Bensley (Canad. Med. Assoc. J., 1935, **33**, 360—363). Ch. Abs. (*p*)

Mouse leucæmia. (i) Proleucæmic changes in lymphoid metabolism. (ii) Metabolism in spontaneous lymphatic leucæmia. J. Victor and J. S. Potter (Brit. J. Exp. Path., 1935, **16**, 243—252, 253—265). Ch. Abs. (*p*)

Relation of viscosity of blood to leucocyte count, with reference to chronic myelogenous leucæmia. D. J. Stephens (Proc. Soc. Exp. Biol. Med., 1936, **35**, 251—256).—High leucocyte counts in chronic myelogenous leucæmia are often responsible for an increase in blood η and prolongation of the circulation time. P. G. M.

Comparative therapeutic examination of ethyl-*apo*quinine and optoquin. E. Arjona (Z. Immunitäts., 1935, **83**, 472—477; Chem. Zentr., 1936, i, 2587).—Ethyl*apo*quinine was the more effective. A. G. P.

Blood-sugar curves in mental disorders. S. Katzenelbogen and W. S. Muncie (J. Nervous Mental Dis., 1935, **82**, 125—133).—Blood-sugar curves were not closely related to the various emotional reactions observed. Ch. Abs. (*p*)

Biological relations in moniliasis of the skin and mucous membranes. P. Negroni (Folia biol., 1933, 134—135).—Agglutination tests are described. Ch. Abs. (*p*)

So-called mosaic fungus as an intercellular deposit of cholesterol crystals. A. M. Davidson and P. H. Gregory (J. Amer. Med. Assoc., 1935, **105**, 1262—1264).—The mosaic associated with skin infections consists of aggregations of cholesterol crystals. Ch. Abs. (*p*)

Alkalosis of blood in neoplasms and its diagnostic and pathogenetic importance. A. Oszacki and R. Kurzweil (Biochem. Z., 1937, **289**, 234—242).—Using an adapted H_2 electrode for determination of blood p_H, it is shown that alkalosis is almost always found in neoplasmic diseases. In no case was acidosis or even normal val. reached. Alkalosis with vals. above p_H 7·379 diagnosed tumours with 90% probability and below 7·36 excluded tumours with 95% probability. The vals. with serum do not give as clear-cut a picture as with whole blood. P. W. C.

Sphingomyelin from brain in Niemann–Pick disease. C. Tropp and B. Eckardt (Z. physiol. Chem., 1937, **245**, 163—167; cf. this vol., 56).—The dry material from the brain of the case previously described yielded 0·7% of unidentified sugar, 1·6% of cerebrosides, and 3·6% of pure (13·4% of crude) sphingomyelin, $[\alpha]_D^{20}$ +6·98° in $CHCl_3$–MeOH (1 : 1), which, on hydrolysis, gave palmitic, lignoceric, and stearic acids in the proportions 1 : 1·5 : 6. W. McC.

Experimental osteodystrophia fibrosa produced by parathyroid hormone and its relation to vitamin-*D*. T. Perras (Virchow's Arch., 1935,

296, 212—239; Chem. Zentr., 1936, i, 2767—2768).—Prolonged administration of parathormone induces osteodystrophia. Vitamin-*D* has a corrective action. A. G. P.

Intestinal chemistry in pellagra. A. Slatineanu, I. Balteanu, M. Sibi, and R. Levit (Compt. rend. Soc. Biol., 1937, **124**, 392—394).—An increase in the intestinal p_H causes a decrease in the alkaline reserve of the blood, occurrence of albuminuria, and an increase in putrefactive flora and toxins. H. G. R.

Auto-intoxication in pellagra. A. Slatineanu, I. Balteanu, I. Nitulescu, M. Franke, M. Sibi, E. Veith, and I. Naftalis (Compt. rend. Soc. Biol., 1937, **124**, 395—397).—Toxic substances are absorbed into the blood due to a deficiency in the antitoxic power of the liver. H. G. R.

Cinchona alkaloids in pneumonia. IV. Derivatives of ethyl*apo*cupreine [ethyl*apo*quinine). —See A., II, 171.

Action of iodine compounds on bone calcification in experimental rachitic rats. R. Lecoq and R. Gallier (Bull. Sci. pharmacol., 1935, **42**, 526—528; Chem. Zentr., 1936, i, 2583).—Supplementary feeding of KI or CaI_2 increased calcification. A. G. P.

Reduced ascorbic acid content of blood-plasma in rheumatoid arthritis. J. F. Rinehart, L. D. Greenberg, and F. Baker (Proc. Soc. Exp. Biol. Med., 1936, **35**, 347—350).—The intake of ascorbic acid required to maintain an average plasma level in arthritics is ⩾ average requirements in normal individuals. P. G. M.

Reduced ascorbic acid content of blood-plasma in rheumatic fever. J. F. Rinehart, L. D. Greenberg, and A. U. Christie (Proc. Soc. Exp. Biol. Med., 1936, **35**, 350—353).—In acute rheumatic fever the plasma level of reduced ascorbic acid is uniformly low, and usually responds to an increased intake. P. G. M.

Scarlet fever toxin. I. Purification and concentration. G. F. Dick and A. K. Boor (J. Infect. Dis., 1935, **57**, 164—173).—Highly potent preps. are obtained by fractional pptn. with $(NH_4)_2SO_4$, treatment with $Al(OH)_3$, dialysis, and evaporation. Ch. Abs. (*p*)

Histological effects of potassium iodide and thyroid substance on guinea-pig thyroid in experimental scurvy. W. F. Abercrombie (Amer. J. Path., 1935, **11**, 469—481).—Administration of KI to scorbutic animals corrects pathological changes in the thyroid gland. Thyroid substance produces similar changes except that the epithelium is not flattened but returns to normal height. Neither KI nor thyroid substance prolongs the life of the animals. Vitamin-*C* is not concerned in I metabolism. Ch. Abs. (*p*)

Pathogenesis of scorbutic dystrophy. P. Rohmer and N. Bezssonoff (Arch. Dis. Childhood, 1935, **10**, 319—326).—In infants of age ⩾11 months vitamin-*C* can be synthesised in the body. In scorbutic cases synthesis is inhibited by a pathological condition. In urine *C* may be detected by the violet coloration produced by treatment with monomolybdophosphotungstic acid in H_2SO_4. Pathological conditions are indicated by the absence of the colour reaction and the appearance of a greyish-white ppt. on addition of the reagent. Ch. Abs. (*p*)

Rôle of cholesterol and lecithin in the mechanism of the Bordet–Wassermann reaction. I. Ornstein, M. Dragos, and S. Muhlberg (Compt. rend. Soc. Biol., 1937, **124**, 398—400).—A diminution in blood-cholesterol and -lecithin occurs in secondary and latent syphilis, the ratio remaining unchanged. H. G. R.

Chemotherapeutic action and carbohydrate metabolism. Curative effect of guanidine derivatives in trypanosome infection N. von Jancsó and H. von Jancsó (Z. Immunitäts., 1935, **86**, 1—30; Chem. Zentr., 1936, i, 2587).—The therapeutic action of Synthalin or Synthalin B (deca- and dodeca-methylenediguanide) is delayed by splenectomy or by poisoning of the reticuloendothelial system with colloidal Cu. The effect of Synthalin is associated with hypoglycæmia which influences the sugar metabolism of the parasite. Insulin restricts the propagation of the trypanosomes. A. G. P.

Mechanism of the iron–peptonate reaction proposed for diagnosis of Leishmannia interna in children. L. Auricchio and A. Chieffi (Pediatria, 1935, **43**, 745—750; Chem. Zentr., 1936, i, 2156).—The reaction is due to the increase of the euglobulin fraction in the serum. H. N. R.

Cholesterol content of the tuberculous focus in kidney tuberculosis. M. Hashimoto (Tôhoku J. Exp. Med., 1935, **26**, 412—418).—In tuberculous kidney tissue the cholesterol content is > normal. Ch. Abs. (*p*)

Behaviour of blood-cholesterol level in some surgical diseases, particularly in kidney tuberculosis. M. Hashimoto (Tôhoku J. Exp. Med., 1935, **26**, 419—432).—In certain diseases significant changes in blood-cholesterol (I) are observed. No relation exists between (I) and blood-urea or red-cell sedimentation rates. Ch. Abs. (*p*)

Interrelationship of vitamin-*A* and glycuronic acid in mucin metabolism. I. A. Manville (Science, 1937, **85**, 44—45).—The fundamental cause of ulcerative and erosive changes in the gastro-intestinal mucosa appears to be due to the presence in the body of toxins so constituted that for their detoxication they must be conjugated with glycuronic acid. The demands for detoxication appear to take precedence over those for mucin production. L. S. T.

Growth and decay. F. Bernstein (Cold Spring Harbor Symp., 1934, **2**, 209—217).—A mathematical discussion of the chemistry of growth changes. Ch. Abs. (*p*)

Genetics of abnormal growth in guinea-pigs. S. Wright (Cold Spring Harbor Symp., 1934, **2**, 137—147).—Specificity in gene action is always a chemical specificity and is probably related to the production of enzymes which control metabolism. Ch. Abs. (*p*)

Body build factor in the basal metabolism of boys. M. Molitch (Amer. J. Dis. Children, 1935, **50**, 621—625).—No relation was apparent between body build and O_2 absorption in boys of 10—18 years. Ch. Abs. (p)

Respiratory metabolism in infancy. XV. Daily energy requirements of normal infants. S. Z. Levine, T. H. McEachern, M. A. Wheatley, E. Marples, and M. D. Kelley (Amer. J. Dis. Children, 1935, **50**, 596—620; cf. A., 1932, 1293).—Data for children aged 4—9 months are obtained. Ch. Abs. (p)

Respiratory metabolism of excised brain tissue. II. Effects of drugs on brain oxidations. S. B. Wortis (Arch. Neurol. Psychiat., 1935, **33**, 1022—1029).—Addition of glucose and Na lactate to fluid used for immersion stimulates respiration in excised brain and spinal cord tissues. Narcotics and hypnotics depress the R.Q. Insulin lowers O_2 consumption by brain tissue. Ch. Abs. (p)

Action of glucose on respiratory exchange of adrenalectomised dogs. A. M. Elizalde (Rev. Soc. Argentina Biol., 1935, **11**, 125—132).—After bilateral adrenalectomy basal metabolism decreased by 30—40% and the R.Q. decreased slightly. Intravenous injection of glucose (I) produced more prolonged hyperglycæmia than in normal dogs. Ingestion or injection of (I) caused a return to normal of basal metabolism and increased the R.Q. Ch. Abs. (p)

Respiratory metabolism of nerves with blocked conductivity. S. N. Kaganovskaja (Biochimia, 1936, **1**, 479—484).—The O_2 consumption of frog nerves in which conductivity has been reversibly abolished by immersion in isotonic KCl is not increased by electric stimulation. The same effect is obtained when a portion of nerve between the electrodes is treated with KCl. R. T.

Respiration and functional activity. W. Deutsch and H. S. Raper (J. Physiol., 1936, **87**, 275—286).—Respiration of submaxillary and parotid glands *in vitro* is increased by pilocarpine, eserine, and acetylcholine, the effect being inhibited by atropine. Secretin increases respiration of pancreatic tissue and loses this property when inactivated. Adrenaline increases respiration only in the submaxillary gland of the cat, and does not affect either gland of the dog or rabbit. EtOH extract of human saliva does not increase respiration of the submaxillary gland. R. N. C.

Oxygen consumption and carbohydrate metabolism of the retractor muscle of the foot of *Mytilus edulis*. D. Glaister and M. Kerly (J. Physiol., 1936, **87**, 56—66).—The muscle-carbohydrate is almost exclusively glycogen, and rises in winter; lactic acid (I) is low in the resting state. O_2 consumption in sea-H_2O–PO_4''' is steady at 12—25°, but is reduced at 7·5°, and at 37° it is increased but decreases after 3—4 hr. It is of the same order in sea-H_2O–PO_4''' at p_H 7·2 and unbuffered sea-H_2O at p_H 8·4, but is reduced in sea-H_2O–PO_4''' at p_H 6·6 or PO_4''' buffer alone at any p_H. It is unaffected by glucose (II) or (I), but is generally depressed by $CH_2I{\cdot}CO_2H$ (III). (I) production is low and irregular in anaërobiosis; it is unaffected by (II), and inhibited by (III), NaF, and Na_2SO_3. Stimulation to fatigue increases (I) production, which is inhibited by (II). (I) production in summer is < in winter, both in anaërobiosis and after stimulation. R. N. C.

Effect of partial salt deficiency on cell respiration. H. Frenkel (Protoplasma, 1936, **25**, 176—187).—Omission of Ca, K, or both from the surrounding Ringer solution greatly depressed respiration in various animal tissues. The effects varied with the state of nutrition of the tissue and were different in embryonic and mature tissues. Ba was an almost perfect substitute for Ca; Sr also increased respiration but Mg inhibited it. M. A. B.

Embryonic biology. I. Anaërobiosis in petromyzonts and anurous amphibia. A. Spirito (Atti R. Accad. Lincei, 1936, [vi], **23**, 907—911).—The retarding effects of O_2 deprivation and of 0·001*M*-KCN on development are discussed. F. O. H.

Respiration and system of respiratory enzymes of fatigued muscle. E. T. Soreni and O. P. Tschepinoga (Ukrain. Biochem. J., 1936, **9**, 989—1004).—The O_2 intake of fatigued rabbit muscle is 15% > for resting muscle, but is inhibited by HCN to the same extent in both cases. The flavin content of muscle is unaffected by fatigue. It is concluded that the state of the system of respiratory enzymes of muscle is independent of the physiological state of the muscle. R. T.

Influence of exercise and training on the redox potential of muscle. IV. Redox potential and p_H. R. Tschagovetz (Ukrain. Biochem. J., 1936, **9**, 1005—1016).—The p_H of rabbit muscle extracts (in phosphate buffer at p_H 6·8) remain const. during 3 hr. (in vac.), whilst the E_H falls to a const. val., after which p_H begins to diminish. The p_H of white, but not of red, muscle extract or pulp rises after fatigue, whilst training leads to a fall in p_H in both red and white muscle. R. T.

Influence of *C*-avitaminosis on redox processes (studied by Thunberg's method) in muscle, after fatigue and training. M. F. Mereshinski (Ukrain. Biochem. J., 1936, **9**, 1017—1034).—The velocity of decoloration of methylene-blue (I) by resting is > by fatigued guinea-pig muscle; the effect is smaller when the exercise is preceded by a period of training. The decoloration of (I) is more rapid with resting trained than with untrained muscle. Analogous experiments performed on scorbutic animals indicated a lowered redox potential in all cases. R. T.

Effect of variation in the atmospheric temperature on the respiratory quotient and the alkaline reserve of the tortoise. L. Dontcheff and C. Kayser (Compt. rend. Soc. Biol., 1937, **124**, 364—366).—If the external temp. is lowered to 5°, an increase in the alkaline reserve occurs. The val. for CO_2 retained, calc. from the R.Q., is < that observed. H. G. R.

Non-carbohydrate metabolism in connexion with the motility of mammalian spermatozoa. I. I. Ivanov (Biochimia, 1936, **1**, 245—254).—The

R.Q. of motile sheep spermatozoa in carbohydrate-free media is 0·78, whilst in presence of glucose it is 1·0. The existence of non-carbohydrate sources of energy is postulated. R. T.

Significance of fumaric acid in the respiration of animal tissues. IV. I. Banga and A. Szent-Györgyi (Z. physiol. Chem., 1937, **245**, 113—122; cf. this vol., 59).—Extract of pigeon breast muscle contains fumaric dehydrogenase (I) which converts fumaric acid (II) into oxalacetic acid (III), exhibiting max. activity at p_H 7·4. Activity of (I) is independent of the concn. of (II) but is increased by addition of codehydrogenase and PO_4'''. (I) accepts H also from lactic, glutamic (IV), and succinic (V) acid, $AcCO_2H$, (III), and hexose diphosphate. (III) inhibits the action of (I) but its effect is counteracted by adding (IV). Associated with (I) is an enzyme which causes intense O_2 uptake in presence of p-$C_6H_4(NH_2)_2$ or (V). The extract also contains a decarboxylase (VI) which converts (III) into $AcCO_2H$ and CO_2. (VI) is most active at p_H 6—7. With low (III) concns. the extent of decarboxylation is ∝ the (III) concn. The extent of conversion of (III) into an equilibrium mixture of (II) and malic acid increases with p_H, reaching max. in feebly alkaline conditions, and is independent of the (III) concn. Production of the mixture decreases rapidly with time whilst decarboxylation continues. W. McC.

Glutathione concentration and hereditary size. IV. Effect of suckling. H. Goss and P. W. Gregory (J. Exp. Zoöl., 1935, **71**, 311—316; cf. A., 1935, 1424).—Vals. were higher in suckled than in fasted rabbits, 50 hr. after birth. No differences in ascorbic acid contents were found. Ch. Abs. (*p*)

Effect of diet on phosphorus and nitrogen compounds of muscle in fatigue. II. Meer S. Mischkis and Maria S. Mischkis (Ukrain. Biochem. J., 1936, **9**, 1035—1053; cf. A., 1935, 1521).—The phosphagen- and inorg. P contents of resting and fatigued (in parentheses) rat muscle are 0·0580 and 0·375 (0·0413 and 0·473), respectively, on a mixed diet, 0·0953 and 0·360 (0·0402 and 0·478) on a non-protein diet, and 0·0505 and 0·369 (0·0402 and 0·456) on a meat diet; the corresponding vals. for phosphagen- and total creatine are 0·242 and 2·26 (0·187 and 2·77), 0·388 and 2·58 (0·171 and 2·90), and 0·212 and 2·47 (0·168 and 2·69), for N content 13·6 (14·6), 14·2 (13·8), and 14·9 (13·4), and for H_2O content 75·5 (77·1), 76 (77·6), and 75·2 (75·6) g. per 100 g. The results indicate that the phosphagen content is highest on a protein-free diet in resting muscle, whilst fatigued muscles have the same val. irrespective of diet. R. T.

Influence of acidic and basic diets on the lactic acid content of muscle, and on its synthetic power in fatigue and training. A. V. Palladin and L. I. Palladin (Ukrain. Biochem. J., 1936, **9**, 969—987).—The lactic acid content of fatigued muscle increases by 41 or 65% above, and the synthetic capacity for org. P compounds falls by 11 or 16% below, the resting val., in rabbits maintained for 15 days on an acid or basic diet, respectively. The synthetic capacity of fatigued muscle is unaffected by previous training in the acid diet group, but is lowered in the basic group. R. T.

Effect of natural wines on composition of urine and alkali reserve of blood. J. H. Fessler, E. M. Mrak, W. V. Cruess, and J. J. Hayes (Z. Unters. Lebensm., 1936, **72**, 461—463).—The daily ingestion of 12 oz. of red or white wine had no perceptible effect. E. C. S.

Excess of fats in the ration as a limiting factor in the growth of rats. R. Lecoq and M. Allinne (Ann. Falsif., 1936, **29**, 539—545).—The growth of rats fed exclusively on plain or milk chocolate is retarded in proportion to the fat content of the chocolate, the rats appearing to suffer from avitaminosis-*B* even when yeast is added to the diet. Cacao butter may be replaced by butter fat without affecting the growth rate. Improved growth results from replacement of sucrose or lactose by maltose. E. C. S.

Influence of diet unbalanced with respect to carbohydrate on the composition of pigeon muscle. R. Lecoq and R. Duffau (Compt. rend., 1937, **204**, 449—451).—On a diet with 66% of galactose, which leads ultimately to death in "polyneuritic" convulsions, breast muscle shows increases in total reducing sugar, lactic acid, PO_4''', and total acid-sol. P and a decrease in adenylpyrophosphoric acid. R. M. M. O.

Effects of feeding stuffs on the pancreatic function of calves. N. Popov, E. Schmakova, and V. Kuznezova (Fiziol. Shur., 1934, **17**, 52—62; Bied. Zentr., 1935, **A**, **6**, 191).—Sunflower silage increases the quantity and alkalinity of pancreatic juice. Straw foods have the reverse effects. A. G. P.

Plant extracts in the nutrition of guinea-pigs and rabbits. A. G. Hogan and S. R. Johnson (Proc. Soc. Exp. Biol. Med., 1936, **35**, 217—221).—Rabbits and guinea-pigs were fed on a basal diet adequate for growth but insufficient during pregnancy and lactation. An EtOH extract of young cereal grasses (2%) with an Et_2O extract of dried lucerne (1%) formed a supplement adequate for the maintenance of pregnancy; neither separately was sufficient. P. G. M.

Nutrient value of tree shoots. P. Rauschenbach (Arb. Zootechn. Inst. Moscow, 1934, **1**, 68—78; Bied. Zentr., 1935, **A**, **6**, 194—195).—Starch equivs. and digestibility coeffs. of birch twigs are determined in trials with sheep. The food val. (notably crude protein) is > that of straw. A. G. P.

Consumption of different starches in nutritional tests with rats. J. A. F. Kok and J. Bouman (Acta. brev. néerland., 1935, **5**, 111—115; Chem. Zentr., 1936, i, 2583).—Wheat, rice, and maize starches in amounts to provide 75% of the ration were satisfactorily utilised by rats and growth rates were similar for the three varieties. Similar proportions of potato starch caused early death. A. G. P.

Food relations of *Lyctus* powder-post beetles. E. A. Parkin (Ann. Appl. Biol., 1936, **23**, 369—400).—A substance sol. in H_2O at 60° is necessary for the

normal development of the larvæ. Development is prevented by absence of starch (I). Enzymes capable of hydrolysing (I), maltose, sucrose, lactose, and protein are present in the gut. Sugar, protein, and (I) are necessary food constituents for the larvæ, which may be reared on synthetic media in the absence of wood. A. G. P.

Effect of proteins of wheat endosperm on active metabolism. F. W. Kaping (Z. Unters. Lebensm., 1936, 72, 453—457).—The proteins of the endosperm have approx. the same effect on the urinary quotient as has casein, but after prolonged feeding the quotient falls. E. C. S.

Biological differentiation of proteins of various parts of the wheat grain by means of the urinary quotient and its effect on active metabolism as compared with casein and ovalbumin. H. Jordan (Z. Unters. Lebensm., 1936, 72, 457—460).—The proteins of the embryo, the endosperm, and the bran affect the urinary quotient in rats to markedly different extents. As compared with casein, embryo- and bran- but not endosperm-protein cause a smaller loss of urinary N. Urinary C is decreased only by bran-protein. E. C. S.

Nutritive protein of some newly developed soya beans. A. A. O'Kelly, W. Smith, and R. C. Wilson, jun. (J. Tenn. Acad. Sci., 1935, 10, 175—178).—Substitution of soya-bean meal for casein in a mixed diet produced satisfactory growth in rats. Live-wt. increases varied with the variety of beans used. Roasting the meal at 150° for 30 min. improved the nutritive val. Ch. Abs. (p)

"Lipotropic" effect of dietary protein. C. H. Best, R. Grant, and J. H. Ridout (J. Physiol., 1936, 86, 337—342).—Casein (I) samples containing insignificant amounts of choline (II) prevent fat accumulation in the liver when fed to white rats, but gelatin exerts little or no effect. The "lipotropic" effects of (II) and an unidentified constituent of (I) cannot be differentiated. R. N. C.

Effect of muscular work on protein metabolism in ruminants. P. V. Ramiah (Proc. Soc. Biol. Chem. India., 1937, 1, 6—7).—In ruminants, muscular work is accompanied by protein breakdown even when there is an abundance of calorigenic material available. W. O. K.

Dependence of the action of supplementary administration of cystine in metabolism during work on the quality of the nutrition protein and its action in a protein-free diet. H. Krohn and W. Bärwolff (Biochem. Z., 1937, 289, 266—272).—Cystine (I) added to a diet containing caseinogen as the nutritive protein does not affect the urinary C : N quotient but leads to an increase of the vacate O : N ratio; when added to a diet containing lentil meal or potato protein it leads to an increase of both ratios. The decrease in wt. of rats on a protein-free but calorifically sufficient and otherwise complete diet cannot be avoided by addition of (I) to the diet. P. W. C.

Effect of the quality of different proteins on the oxidational level in intermediate metabolism. H. Ewald (Biochem. Z., 1937, 289, 273—275).—A table summarises the considerable changes of rat urinary C : N and vacate O : N ratios with change of the relative amounts of oatmeal and edestin in the diet. P. W. C.

Effect of high environmental temperature on cerebral nitrogen metabolism. S. E. Epelbaum and Maria S. Mischkis (Ukrain. Chem. J., 1936, 9, 1055—1067).—The total N content of the cerebral cortex, mid-brain, and cerebellum of rabbits maintained at 40° for 3 hr. is slightly <, and the non-protein-N slightly >, those of control animals. R. T.

Metabolism of sulphur. XXIV. Metabolism of taurine, cysteic acid, cystine, and peptides containing these amino-acids. F. R. White, H. B. Lewis, and J. White (J. Biol. Chem., 1937, 117, 663—671).—Glycyltaurine (but not glycylcysteic acid) is hydrolysed by liver and kidney extracts (pig, rabbit). Peptides containing glycine and cystine are hydrolysed by enzymes of the alimentary canal, and the excretion of extra S after their oral or parenteral administration is similar to that following administration of the free sulphonic acids (I). The intestinal flora play a definite part in the metabolism of (I). P. G. M.

Sulphur metabolism in cystinuria. J. C. Andrews and A. Randall (J. Clin. Invest., 1935, 14, 517—524).—The cystine (I) output is unchanged by administration of $NaHCO_3$ or Na citrate although daily dosage with alkali prevents deposition of (I) calculi. Glycine and glutamic acid given in equal amounts do not affect excretion of (I). Oral administration of *l*-(I) is followed by nearly complete oxidation of (I)-S. Oxidation of *dl*-(I) was less efficient. Cysteic acid is not oxidised by the normal or cystinuric organism. Administration of *dl*-methionine caused no significant increase in (I) excretion, no excretion of homocystine, but slight excretion of methionine. Ch. Abs. (p)

Transformation of adenosinetriphosphoric acid in muscle. D. L. Ferdmann and O. Feinschmidt [with M. T. Dmitrenko] (Biochimia, 1936, 1, 183—200).—Fatigue in isolated muscles or in the intact frog is associated with liberation of $H_4P_2O_7$ from adenosinetriphosphoric acid, and of H_3PO_4 from phosphocreatine; the reverse changes take place during rest. Fatigued muscle contains appreciable amounts of adenylic acid, indicating that deamination to inosic acid does not take place immediately. Inosinetriphosphoric acid is not formed at any stage of the process of muscular activity. R. T.

Effect of diets low in choline. C. H. Best, M. E. H. Mawson, E. W. McHenry, and J. H. Ridout (J. Physiol., 1936, 86, 315—322).—Diets low in choline (I) cause extensive deposition of neutral fat in the livers of white rats, the accumulation being greater when there is much fat in the diet. Cholesteryl esters are also slightly increased. Addition of <3 mg. of (I) daily to the diet inhibits fat deposition. With fat-rich diets (I) favours the rate of gain of body-wt. and general physiological condition of the animals. R. N. C.

Utilisation of *l*-carnosine by animals on a histidine-deficient diet. V. DU VIGNEAUD, R. H. SIFFERD, and G. W. IRVING, jun. (J. Biol. Chem., 1937, **117**, 589—597).—Carnosine (I), administered orally or subcutaneously to rats on a histidine (II)-free diet, promotes normal growth. Metabolism of (I) probably involves hydrolysis with liberation of (II). F. A. A.

Metabolic studies in phenylketonuria. L. PENROSE and J. H. QUASTEL (Biochem. J., 1937, **31**, 266—274).—In a case of phenylketonuria, 1—1·5 g. of phenylpyruvic acid (I) was excreted in 24 hr., representing the incomplete metabolism of at least half of the phenylalanine in the daily protein intake. A rapid method for determination of (I) in urine is described. The effect of feeding alanine (II), tyrosine (III), *dl*- (IV), *l*- (V), and *d*-phenylalanine (VI), and (I) to normal and phenylketonuric patients on the rate of excretion of (I) was investigated. In phenylketonurics, excretion of (I) is increased by feeding (IV), (V), or (VI) to an equal extent. In normal cases, ingestion of (V) does not, but of (IV) and (VI) does, lead to a slightly increased excretion of (I). In phenylketonurics, the ratio of (I)/urea excreted is approx. const. and is increased by feeding (IV) but not by feeding (II) or (III); (III) appears to cause a slightly increased excretion of (I) but is for the most part normally metabolised. Feeding (I) causes a greater excretion of (I) in phenylketonurics than in control patients. The metabolic disturbance in phenylketonurics is due largely to a decreased rate of oxidation of the C_6H_6 ring in (I). P. W. C.

Fission products of glutathione in living tissues and the relation of glutathione to proteolytic degradation in the spread of cancerous swellings. A. ROSENBOHM (Biochem. Z., 1937, **289**, 279—287).—The degradation of glutathione (I) into SH-containing dipeptides was investigated in tissue pulp in terms of change of total reduction time and of colorimetrically determined SH val. (I) of kidney tissue is converted into glutamylcysteine and of other tissues into cysteinylglycine. When organ pulp is left in contact with dil. lactic acid, reduction times and SH vals. are increased. The former increase is due in part to degradation by cathepsin of protein with liberation of combined (I). Such proteolysis is much less in normal than in Jensen rat sarcoma tissue. P. W. C.

Metabolism of glyoxaline. II. Comparative glyoxalinuria of carnivorous, herbivorous, and omnivorous animals. P. LELU (Bull. Soc. Chim. biol., 1936, **18**, 1871—1884).—Urinary excretion of glyoxaline in herbivorous (rabbit, sheep) is $\gg$ that in omnivorous and carnivorous animals (pig, dog, rat) (cf. A., 1935, 389). P. W. C.

Relation of glycine and serine to growth. R. H. MCCOY and W. C. ROSE (J. Biol. Chem., 1937, **117**, 581—588).—Neither glycine nor serine is indispensable for the normal growth of rats. F. A. A.

Oxidation of aliphatic amines by brain and other tissues. C. E. M. PUGH and J. H. QUASTEL (Biochem. J., 1937, **31**, 286—291).—Sliced brain (guinea-pig, rat) cortex and rat's liver scarcely attack NH_2Me, NH_2Et, and NH_2Pr but deaminate butyl-, amyl-, *iso*amyl- (I), and heptyl-amine. Guinea-pig's liver and, to a smaller extent, kidney deaminate NH_2Bu ($AcCO_2H$ being produced by the liver) but scarcely attack NH_2Pr. Extracts of brain, liver, and kidney (not rat's kidney) deaminate amines. The respiration of brain cortex (in presence of glucose) is decreased by the higher amines but that of liver is increased by amines which undergo oxidation. Products of deamination of (I) by brain and liver are *iso*amyl alcohol (?) and a substance which yields a 2 : 4-dinitrophenylhydrazone. The system which deaminates amines is distinct from that which oxidises NH_2-acids. W. McC.

Formation of ammonia in the brain of hibernating animals. O. FEINSCHMIDT (Biochimia, 1936, **1**, 450—456).—The total purine-N of cerebral tissue of ground squirrels is 25—32 mg. per 100 g., of which 24—34% is present in nucleosides and free purines, and the rest in nucleotides. During hibernation practically the entire nucleotide content is represented by adenylic acid, the content of which falls abruptly, with liberation of NH_3, immediately after awakening from the winter sleep, and then rises gradually to the original winter level. Adenosinetriphosphoric acid is absent at all stages. R. T.

Utilisation of amino-acids and fat by the mammalian heart. E. W. H. CRUICKSHANK and G. S. MCCLURE (J. Physiol., 1936, **86**, 1—14).—The heart cannot utilise naturally- or non-naturally-occurring NH_2-acids (I) in the absence of sugar in the circulating blood. Insulin (II) does not affect (I) utilisation. In strictly aglycæmic conditions the heart with R.Q. 0·7 utilises only fat, which it apparently oxidises directly; cardiac glycogen is reduced by 30% in 3 hr. without (II), but is not utilised in its presence. R. N. C.

Lipin metabolism of birds. C. TARLAZIS and E. DIMITROPOULOS (Ann. Méd. vét., 1933, **78**, 462—468; Bied. Zentr., 1935, **A**, **6**, 182).—Resorbed fat expressed as % of ingested fat is characteristic for every fatty food. Data are given. A. G. P.

Effect of paprika on metabolism of fat. K. HORVATH (Orvosi Het., 1935, **79**, 850—852).—The blood-fat curve reached max. 3—7 hr. after ingestion of 100 g. of lard. When paprika was fed with lard max. vals. were sometimes higher and sometimes lower but the increase began earlier and was maintained for a longer period. CH. ABS. (*p*)

Effect of cholesterol and choline on liver-fat. C. H. BEST and J. H. RIDOUT (J. Physiol., 1936, **86**, 343—352).—Choline (I) added to the diet of rats with fatty livers induced by cholesterol (II) causes a fall in liver-glycerides (III) and cholesteryl esters (IV) if a relatively small daily dose of (II) is given, but if larger amounts of (II) are given, (IV) may show a temporary rise. (III) fall while (IV) are increasing, even when (I) is not given. When (II) feeding is discontinued, (I) accelerates the fall of (IV). The effect of (I) on (III) apparently precedes that on (IV), but large quantities of (III) may still be present in the liver when the action on (IV) has become demonstrable. R. N. C.

Origin of cholesterol in the animal organism. M. Vanghelovici and F. Parhon (Bul. Soc. Chim. România, 1936, **18**, 107—115).—Perfusion *in vivo* of the liver, kidney, and spleen of dogs with squalene or, to a smaller extent, oleic acid, but not with squalene hexachloride, increases the cholesterol content. Sterols are formed in animal organisms from long-chain, preferably unsaturated, compounds. R. S. C.

Formation of glycogen in the liver of anæsthetised cats : specific dynamic action. C. Reid (J. Physiol., 1936, **87**, 113—120).—Formation of liver-glycogen (I) occurs when glucose, lactic acid, glycerol, or alanine is infused slowly into a cat's vein. (I) is not increased during infusion of $EtCO_2H$, glutamic or aspartic acid, and is reduced by infusion of glycine. Chloralose anæsthesia does not prevent (I) formation. The increase in protein metabolism (lowering of SO_4'' excretion) and (I) formation by NH_2-acids cannot be correlated. R. N. C.

Breakdown of glycogen by the glycogenase of heart-muscle. L. B. Winter (Biochem. J., 1937, **31**, 236—239).—The end product of the action of a glycerol extract of heart-muscle on glycogen was shown from its m.p., reducing power, α, and phenylosazone to be chiefly glucose. A small amount of a second osazone was probably that of a trisaccharide but no intermediate formation of disaccharide could be detected. P. W. C.

Carbohydrate metabolism of the nervous system. I. Autolytic formation of acetaldehyde from monosaccharides by brain tissue. S. V. Fomin and P. M. Gutnitzkaja (Ukrain. Biochem. J., 1936, **9**, 1069—1084).—*In-vitro* production of MeCHO by brain tissue from added carbohydrates is considerable in the cases of glucose and fructose, small in that of galactose, and absent in that of mannose. R. T.

Metabolism of *d*-xylulose. H. W. Larson, N. R. Blatherwick, P. J. Bradshaw, M. E. Ewing, and S. D. Sawyer (J. Biol. Chem., 1937, **117**, 719—725).—*d*-Xylulose fed to rats increased liver-glycogen and, given subcutaneously or intraperitoneally, produced a slight increase in liver- and a significant decrease in muscle-glycogen. No changes were observed in liver- and muscle-lactic acid nor in the content of fermentable and non-fermentable reducing substances of liver, muscle, and kidneys when the sugar was fed or injected. P. W. C.

Phloridzin. VII. Effect on absorption of carbohydrates from the small intestine. T. Yoshikawa. **VIII. Effect on sugar excretion in rabbits.** K. Kurihara (Sei-i-Kwai Med. J., 1935, **54**, No. 2, 75—103, No. 3, 51—61).—VII. The order of absorption of monosaccharides from jejunum loop of normal rabbits is: galactose, glucose, mannose, xylose, arabinose, fructose. Retardation of absorption of glucose by phloridzin (I) is > that of fructose. H_2O, NaCl, and urea are unaffected. 0·05% aq. NaF inhibits absorption of NaCl but not that of sugar; simultaneous use of (I) under these conditions does not affect sugar absorption.

VIII. (I) lowers the renal threshold for parenterally administered glucose and sucrose. Ch. Abs. (p)

Limiting rate of assimilation of glucose introduced intravenously at constant speed in the resting dog. M. Wierzuchowski (J. Physiol., 1936, **87**, 311—335).—The glycosuria curve shows a max. in the first 3 hr. of infusion, becoming almost linear and rising slightly in the second 3 hr. Above a rate of 5 g. per kg. per hr. the max. becomes only a delayed increase, whilst at 9 g. glycosuria falls after reaching a max. in the 5th hr. The % of glucose (I) assimilated falls linearly as the rate of infusion rises. As the rate of infusion is increased, the % of the increment that is utilised falls, until at rates >7 g. each additional g. is almost entirely eliminated in the urine. The diuresis curves resemble the glycosuria curves in showing max. in the first 3 hr., which, however, become more prominent as the rate increases; they rise in the second 3 hr., except that at 8 g. which falls. The % of diuresis due to glycosuria is approx. const. The mean increases of diuresis over basal rate and glycosuria with the rate of infusion are approx. linear. The blood-(I) curves show max. in the first hr. up to 5 g., and afterwards become flat for the second 3 hr.; above 5 g. the max. disappears and the curves become steadily steeper and straighter. The mean blood-(I)-rate of infusion curve is a parabola. The % of the total (I) injected that remains in the organism after infusion rises with the rate of infusion, whilst the % of this that is assimilated falls, both curves being linear. The assimilation rate increases rapidly with the rate of infusion to reach an approx. steady max. at 4—5 g. Dilution of the blood increases in the first hr., the rise being more intense with high rate of infusion, and then falls steadily, except at 8—9 g. when a second rise occurs in 4 hr. The glycosuric ratio—increase in rate of glycosuria/(I) increase—increases with the rate to a max. at 4 g. and then falls, both branches of the curve being linear. The "incremental glycosuric ratio"—increment of glycosuria per g. increase of (I) supply/corresponding (I) increase—is const. for all rates of infusion. R. N. C.

Deuterium as an indicator in the study of intermediary metabolism. VIII. Hydrogenation of fatty acids in the animal organism. D. Rittenberg and R. Schoenheimer (J. Biol. Chem., 1937, **117**, 485—490; cf. A., 1936, 1547).—Following the feeding of D-containing unsaturated fatty acids, the corresponding D-containing saturated acids can be isolated from mice, and *vice versa*. Hence saturation and desaturation of fatty acids in the organism is a reversible process. R. M. M. O.

Metabolism of dicarboxylic acids. K. Bernhard and M. Andreae (Z. physiol. Chem., 1937, **245**, 103—106; cf. Flachenträger *et al.*, A., 1936, 510).—Orally administered adipic and succinic acids are almost completely and sebacic and suberic acids very incompletely oxidised in the body. W. McC.

Modification of the ratio between anaërobic glycogenolysis and the formation of lactic acid. R. Lippmann and J. Wajzer (Compt. rend. Soc.

Biol., 1937, **124**, 538—539).—Production of lactic acid in frog's muscle is increased by $K^{\cdot}$ and decreased by PO_4''' or an increase in acidity, glycogenolysis not being affected in the latter case. H. G. R.

Significance of liver in the metabolism of lactic acid. I. OHASHI (Japan. J. Gastroenterol., 1935, **7**, 88—103).—Normal livers perfused with lactic acid (I) split the *d*- more readily than the *dl*-form. Impaired livers (*e.g.*, with $CHCl_3$) show decreased utilisation of (I). CH. ABS. (*p*)

Certain metabolites and related compounds as precursors of endogenous citric acid. J. M. ORTEN and A. H. SMITH (J. Biol. Chem., 1937, **117**, 555—567).—Of 22 substances intravenously injected into dogs, several, including $NaHCO_3$ and NaOAc, produce small increases in urinary excretion of citric acid (I) ("alkali effect"), but Na_2 malonate, succinate, fumarate, malate, and maleate increase (I) excretion 30—120 times. Moderate increases in urinary p_H are also observed with both types of injected substance. The excreted (I) appears to be derived from the substances injected. F. A. A.

Effects of hydroxymalonate on the metabolism of brain. M. JOWETT and J. H. QUASTEL (Biochem. J., 1937, **31**, 275—281).—Added Na hydroxymalonate (I) restricts the oxidation of lactic acid (II) by slices of rat's and guinea-pig's brain more than it restricts that of glucose (III) and scarcely restricts that of $AcCO_2H$ (IV); at least part of the (III) of brain is therefore degraded by a process in which (II) is not an intermediary. (I) also inhibits anaërobic decomp. of (IV) by brain and anaërobic glycolysis in brain in presence or absence of (IV). The respiration of brain in the absence or presence of α-glycerophosphate is not increased by addition of phosphoglycerate. The red colour produced on dissolving the 2 : 4-dinitrophenylhydrazone in aq. alkali affords a method of determining (IV). W. McC.

Brain metabolism. II. Production of succinic acid. H. WEIL-MALHERBE (Biochem. J., 1937, **31**, 299—312; cf. A., 1936, 631).—Stable standardised sp. succinic dehydrogenase (I), prepared from ox heart by a method described, is used for the determination of succinic acid (II). (I) contains enzymes which dehydrogenate *d*(−)-glutamic acid, α-glycerophosphate, and *l*-α-hydroxyglutaric acid but in relatively much smaller amounts. Malonic acid (III), α-ketoglutaric acid (IV), pyocyanine, and phenosafranine inhibit the action of (I), (IV) specifically restricting the action by about 50%. Anaërobic production of (II) from $AcCO_2H$ and (IV) occurs in sliced and minced brain, and aërobic production from $AcCO_2H$, (IV), and (occasionally) AcOH in minced brain containing added (III). Addition of (III) does not cause accumulation of (II) in sliced brain and causes accumulation in minced brain only when (III) is used in certain concns. Minced brain produces small amounts of a volatile acid, probably AcOH, from $AcCO_2H$. W. McC.

Influence of bone marrow on contents of inorganic salts in blood and urine in splenectomised rabbits. H. KANEKO (Sei-i-Kwai Med. J., 1935, **54**, No. 3, 42—50).—Inorg. salt metabolism modified by splenectomy is compensated by administration of bone marrow. CH. ABS. (*p*)

Metabolism of inorganic salts and water in hepatic disturbances. III. (i) **Metabolism of inorganic salts.** (iii) **Perfusion of extirpated liver. IV.** (ii) **Metabolism of water.** H. SHIGEMI (Japan. J. Gastroenterol., 1935, **7**, 104—110, 111—114; cf. A., 1936, 1141).—III. Rabbit livers, injured with CCl_4 and then perfused with $CaCl_2$, $MgCl_2$, KCl, and NaCl, fixed subnormal amounts of cations in each case.

IV. Liver damage increases the amount of H_2O in liver, kidneys, intestine, and brain. CH. ABS. (*p*)

Chlorine content of the albino rat in relation to age. A. SALVATORI (Atti R. Accad. Lincei, 1936, [vi], **24**, 93—97).—Total Cl (determined after incineration with alkali) in albino rats fed on mixed diet after weaning falls by about one third in the first month, and then slowly until Cl (expressed as NaCl) = about 0·2% of body-wt. E. W. W.

Maternal transference of fluorine. M. M. MURRAY (J. Physiol., 1936, **87**, 388—393).—Litters from pregnant rats fed with 0·05% of NaF acquire significant amounts of F. F is also transmitted to young rats suckled by mothers receiving NaF. Mottling of temporary teeth in man probably results from maternal fluorosis, and in places where the H_2O supply contains F it reaches human milk in quantities that are effective biologically although chemically and spectroscopically undetectable. R. N. C.

Rat incisor as index of calcium metabolism. I. SCHOUR (J. Amer. Coll. Dentists, 1934, **1**, 49).—Calcification occurs during the action of an excessive dose of ergosterol, of multiple injections of parathyroid hormone, and of injected NaF. CH. ABS. (*p*)

Absorption of iron by ileum-fistula dogs. A. SCHEUNERT and J. BRÜGGEMANN (Ber. Verh. Sächs. Akad. Wiss. math-phys. Kl., 1935, **87**, 171—178; Chem. Zentr., 1936, i, 2387).—Reduced Fe which is readily transformed into Fe^{II} salts is more easily resorbed in the stomach and intestine than is colloidal $Fe(OH)_3$, Fe saccharate, or Fe–albumin preps. A. G. P.

Egg yolk and bran as sources of iron in the human dietary. E. McC. VAHLTEICH, E. H. FUNNELL, G. MACLEOD, and M. S. ROSE (J. Amer. Dietet. Assoc., 1935, **11**, 331—334).—Egg yolk and bran were equally efficient as sources of Fe for young women. CH. ABS. (*p*)

Biological significance of manganese. F. MARZETTI (Rass. Clin. Terap. Sci., 1935, **34**, 271—285; Chem. Zentr., 1936, i, 1909).—Mn is resorbed in the animal organism and takes part in metabolic processes although the amounts ingested and eliminated may be equal. A. G. P.

Secretion of calcium carbonate by hermetically sealed *Venus mercenaria*. L. P. DUGAL and L. IRVING (Compt. rend. Soc. Biol., 1937, **124**, 526—528).—During cessation of normal respiration, secretion of $CaCO_3$ into the fluid in the mantle cavity neutralises the acids produced by metabolism. H. G. R.

Renal elimination of phenol-red in the dog. H. L. Sheehan (J. Physiol., 1936, **87**, 237—253). R. N. C.

Elimination of phenol by animals receiving autoclaved food. W. Duce (Biochim. Terap. sperim., 1933, **20**, 81—93; Chem. Zentr., 1936, i, 2765).—With an autoclaved diet 28—35% of subcutaneously administered PhOH appeared in urine in a combined form. With normal food 44—55% was eliminated in this form. A. G. P.

Conjugation of phenol [by tissues]. G. Barac (Compt. rend. Soc. Biol., 1937, **124**, 264—266).—This is not an exclusive function of the liver but is possessed by other tissues to a similar degree. H. G. R.

Mercapturic acid synthesis in animals. II. Rôle of bile in absorption and detoxication of bromobenzene and naphthalene in the dog. J. A. Stekol and F. C. Mann (J. Biol. Chem., 1937, **117**, 619—627).—The presence of a biliary fistula does not affect the synthesis of *p*-bromophenyl- and 1-α-naphthyl-mercapturic acids, although the biliary output of taurocholic acid is diminished, probably owing to liver injury rather than removal of cystine for detoxication. P. G. M.

Transformation of dehydrodeoxycholic acid into α- and β-3-hydroxy-12-ketocholanic acid in the organism of the toad.—See A., II, 150.

Chemical and physical basis of pharmacological action. A. J. Clark, W. Straub, R. A. Peters, J. H. Quastel, H. R. Ing, J. H. Gaddum, W. Yorke, and J. F. Danielli (Proc. Roy. Soc., 1937, B, **121**, 580—609).—A discussion. F. O. H.

Emission of a radiation by the eggs of *Discoglossus* during development. M. M. R. Levy and R. Audubert (Protoplasma, 1936, **25**, 25—31).—The radiation has λ 2000—2500 A. and its intensity is approx. the same as that of Hg radiation of 2537 A. The magnitude for 25 eggs is 10^{-8}—10^{-9} erg-sec. per sq. cm. or 100—1000 photons per sec. per sq. cm. M. A. B.

Effects of *X*-irradiation on cell growth and structure. G. L. Clark (Cold Spring Harbor Symp., 1934, **2**, 249—263).—Effects on bacterial cells and on animal tissues are discussed. Catabolic changes produced by *X*-rays and by cancer growth are considered. Ch. Abs. (*p*)

Chemical-physical foundation of biological activities of *X*-rays. H. Fricke (Cold Spring Harbor Symp., 1934, **2**, 241—248).—Changes effected in cellular substances are discussed. Ch. Abs. (*p*)

Effect of *X*-rays on the anterior pituitary. E. Stöckl (Pozn. Towarz. przyj. Nauk Prace Komis. lek., 1935, **5**, No. 1, 1—134; Chem. Zentr., 1936, i, 2380).—Three stages of tissue injury are described. In women, but not in rabbits, a positive hormone-*A* test was obtained after irradiation of the pituitary. A. G. P.

Physicochemical basis of biological radiations. O. Rahn (Cold Spring Harbor Symp., 1934, **2**, 226—240).—Weak ultra-violet radiations (λ <2650 A.) emitted during certain chemical reactions increase the growth rate of onion root tips, bacteria, and yeasts. In senility and carcinoma human blood fails to produce these radiations. Curative effects of the rays are considered. Ch. Abs. (*p*)

Biological action of sound of high pitch. F. Förster and A. Holste (Naturwiss., 1937, **25**, 11—12).—Ultra-short waves decrease the amplitude and increase the rate of the cold-blooded heart as a result of an unknown action on the cells. The effect is not entirely reversible and is therefore not thermal. The influence on *B. coli* is variable. J. L. D.

Release of acetylcholine at voluntary motor nerve-endings. H. H. Dale, W. Feldberg, and M. Vogt (J. Physiol., 1936, **86**, 353—380).—Acetylcholine is liberated from a perfused voluntary muscle by stimulation of the motor nerve fibres, and by direct stimulation from a normal or autonomically denervated muscle, but not from a completely denervated muscle. Liberation from perfused muscle is not inhibited by curarine, but it is inhibited by exhaustion of the motor nerve fibres by repeated stimulation. R. N. C.

One-way permeability. I. Is frog skin permeable to water in one direction only? D. L. Rubinstein and T. Miskinova (Protoplasma, 1936, **25**, 56—68).—Accurate measurements with the differential osmometer gave no indication of a physiological one-way permeability of frog skin to H_2O. Movement of H_2O through the skin followed the ordinary laws of osmosis. M. A. B.

Permeability of cells of tissues grown *in vitro*. H. Grossfeld (Atti R. Accad. Lincei, 1936, [vi], **23**, 904—906).—NH_3 penetrates into the cells slowly, $NaHCO_3$ more slowly, and NaOH and KOH not at all. NH_4Cl and Na_3PO_4 penetrate (and then rapidly) only in absence of electrolytes in equilibrium with the cells. In absence of electrolytes, urea penetrates more rapidly than glucose. F. O. H.

Comparative permeability to alcohol of the intact and the living, skinned frog. G. Fontès (Compt. rend. Soc. Biol., 1937, **124**, 358—361).—When the skin is removed, the permeability of the animal for water and EtOH is increased but not to the same degree. H. G. R.

Comparative permeability towards alcohol of the isolated skin of the frog and collodion membranes. G. Fontès (Compt. rend. Soc. Biol., 1937, **124**, 361—363).—If collodion sacs are dried, the permeability to EtOH is very low and increases with use. The results do not support the bound H_2O theory of Nicloux (A., 1934, 445). H. G. R.

Effect of hydrogen-ion concentration on induction of polarity in *Fucus* eggs. I. Increased hydrogen-ion concentration and intensity of mutual inductions by neighbouring eggs of *Fucus furcatus*. D. M. Whitaker (J. Gen. Physiol., 1937, **20**, 491—500).—In sea-H_2O at p_H 6·0 mutual influence of neighbouring eggs on polarity of development is increased, possibly through local concn. of an acid active in undissociated form. The fact that large masses show the influence in normal

sea-H_2O whilst isolated eggs do not is attributed to local lowering of p_H in such masses. R. M. M. O.

Salt effect and medium in *Artemia salina*, L.; antagonism. L. G. M. Baas-Becking, W. K. H. Karstens, and M. Kanner (Protoplasma, 1936, **25**, 32—40).—The effect of different combinations and concns. of NaCl, $CaCl_2$, and $MgCl_2$ on development of *A. salina* eggs is expressed in triangular diagrams. Sensitivity to $Mg^{\cdot\cdot}$ and $Ca^{\cdot\cdot}$ increases with increasing total concn. $>0{\cdot}8M$ and $<0{\cdot}2M$. At $3{\cdot}5M$ and $0{\cdot}02M$ growth occurs only in pure NaCl solution. Between 0·2 and $0{\cdot}8M$ variations in total concn. have no effect. M. A. B.

Comparison between the action of carbonic acid and that of other acids on the living cell. Z. E. Becker (Protoplasma, 1936, **25**, 161—175).—CO_2, AcOH, and $BuCO_2H$ are much more toxic to plant and animal cells than are H_2SO_4, HCl, H_3PO_4, $H_2C_2O_4$, and citric acid. The differences in toxicity depend on rate of penetration into the cell and concn. of undissociated mols. but not on p_H. CO_2 differs from other acids in producing narcosis. M. A. B.

Biological effects of beryllium. R. N. Loomis and E. Bogen (Amer. Rev. Tuberc., 1935, **32**, 475—480).—Injection of Be as basic tartrate or chloride accelerated the development of experimental tuberculosis. Oral administration was not effective. Be rickets (Guyatt *et al.*, A., 1933, 1323) was not observed in rats. Ch. Abs. (*p*)

Effect of the high calcium content of *Cynara cardunculus*, L., and *Silybum Marianum*, L., on milk. L. Echenique (Compt. rend. Soc. Biol., 1937, **124**, 589—590).—These plants contain 1·7—2·2 and 4·19 mg. of CaO per 100 g. of dry matter, respectively; when fed to cows the Ca content of the milk increases and the milk gives a positive EtOH test. H. G. R.

Rôle of calcium in imbibition in certain natural organic colloids. D. Kohler (Compt. rend. Soc. Biol., 1937, **124**, 618—620).—Imbibition by *Laminaria flexicaulis* in aq. Na_2CO_3 $\propto$ the time after previous treatment with $CaCl_2$, whilst after treatment with other electrolytes the curve becomes steady after rapidly rising to a max. H. G. R.

Effect of potassium on the excitability and resting metabolism of frog's muscle. D. Y. Solandt (J. Physiol., 1936, **86**, 162—170).—Resistance to production of inexcitability of muscle in Ringer's solution by increased $[K^{\cdot}]$ shows a seasonal variation, being increased in winter. Resting heat production increases with $[K^{\cdot}]$ to a steady max. at 10 times the normal $[K^{\cdot}]$, the increase being reversible; it shows no seasonal variation. The max. resting heat production occurs 2—3 hr. after application of the $K^{\cdot}$ solution, a slow fall following. $Ca^{\cdot\cdot}$ (in Ringer proportion) and $Sr^{\cdot\cdot}$ oppose the action of $K^{\cdot}$ on resting metabolism, whilst $Rb^{\cdot}$ and $Ba^{\cdot\cdot}$ act similarly to $K^{\cdot}$; $Ba^{\cdot\cdot}$ is toxic in high concn. Glucose and sucrose increase resting metabolism, but acetylcholine, $CH_2I{\cdot}CO_2Na$, and curare-like substances, with or without $K^{\cdot}$, are without effect. Resting metabolism is also unaffected by change of p_H or osmotic pressure of the Ringer solution. R. N. C.

Potassium changes in the stimulated superior cervical ganglion. M. Vogt (J. Physiol., 1936, **86**, 258—263).—K is decreased by prolonged stimulation of the preganglionic fibres in the dog. It is unaffected by direct stimulation if the ganglion has previously been denervated. R. N. C.

Action of potassium on the superior cervical ganglion of the cat. G. L. Brown and W. Feldberg (J. Physiol., 1936, **86**, 290—305).—$K^{\cdot}$ liberates acetylcholine (I) from the normally innervated ganglion, but only insignificant amounts from the completely denervated ganglion, since denervation reduces the normal (I) content. (I) is also liberated by $Rb^{\cdot}$ and $Cs^{\cdot}$ (weakly), but not by $Na^{\cdot}$ or $Ca^{\cdot\cdot}$, $Ca^{\cdot\cdot}$ inhibiting (I) liberation by $K^{\cdot}$. R. N. C.

Liberation of acetylcholine by potassium. W. Feldberg and J. A. Guimarãis (J. Physiol., 1936, **86**, 306—314).—KCl injected intra-arterially in dogs and cats liberates acetylcholine from the salivary and sweat glands and the tongue. R. N. C.

Chemo-physiological activity of potassium and the protoplasm apparatus. L. Loew (Biochem. Z., 1937, **289**, 176–178). P. W. C.

Effect of iodine prophylaxy on the thyroid gland of the new-born. B. Steinmann (Endokrinol., 1936, **16**, 395—411; Chem. Zentr., 1936, i, 2762).—Administration of iodised salt decreased the wt. of the thyroid in the new-born and diminished the frequency of congenital scrofula. A. G. P.

Presence of heavy metals, especially copper, in organs of females of *Bonellia viridis*, extracts of which favour the development of males from indifferent larvæ. F. Mutschelller (Biol. Zentr., 1935, **55**, 615—625; Chem. Zentr., 1936, i, 2378).—It is unlikely that Cu is the active agent, causing development of males from larvæ. A. G. P.

Fate of thorium dioxide (thorotrast) in cerebral arteriography. D. W. C. Northfield and D. S. Russell (Lancet, 1937, **232**, 377—381).—Evidence has been obtained of retention of ThO_2 in the lumen or walls of cerebral vessels or in perivascular macrophages. L. S. T.

(A) Cellular reaction to silica. (B) Tissue reaction to sericite. J. T. Fallon and F. G. Banting (Canad. Med. Assoc. J., 1935, **33**, 404—407, 407—411).—(A) Subcutaneous injection of particulate quartz into rabbit ears caused inflammation and later the formation of fine hyalinised nodules.

(B) Introduction of aq. suspensions of finely-divided sericite into lungs or injection into ears of rabbits produced histological changes resembling those obtained with Si, mica, and $BaSO_4$ but not those with SiO_2. Ch. Abs. (*p*)

Chemical changes in blood of animals in acute ammonia poisoning. G. J. Fazekas (Magyar orvosi Arch., 1935, **36**, 285—295; Chem. Zentr., 1936, i, 2388).—Blood changes in NH_3 poisoning in many respects resemble those in diabetes mellitus, and include hyperglycæmia, increased serum-inorg. P, diminution in -Ca and alkali reserve, and shifting of serum-p_H towards the acid side. A. G. P.

Action of some -onium salts on the indirect sensitivity to stimulation of rabbit muscle. G. Bartorelli (Arch. ital. Biol., 1935, **93**, 170—174; Chem. Zentr., 1936, i, 2136).—The inhibitory action of the salts was in the order, $NMe_4I > C_8H_{17}\cdot NMe_3I >$ strychnine methiodide $> NMe_4Cl$. The action is more rapid in warm- than in cold-blooded animals. A. G. P.

Influence of some -onium salts on glycæmia. Tetramethylammonium-hyperglycæmia. B. Tanzi (Arch. ital. Biol., 1936, **93**, 175—182; Chem. Zentr., 1936, i, 2136).—Of the salts examined (cf. preceding abstract), only NMe_4I produced hyperglycæmia in rabbits. This effect is prevented by ergotamine but is unaffected by insulin. A. G. P.

Specific chemical factors influencing growth and differentiation. F. Gudernatsch (Cold Spring Harbor Symp., 1934, **2**, 94—105).—The effects of various NH_2-acids are examined. Ch. Abs. (*p*)

Potential and respiration of frog's skin. I. II. Effect of homologous carbamates and certain lysins. E. Ponder and J. MacLeod (J. Gen. Physiol., 1937, **20**, 433—447).—Et, Pr, Bu, and amyl carbamates depress O_2 consumption of frog skin in Ringer's solution to extents which increase with concn. Curves relating depression of p.d. across skin and concn. of carbamate are different in form from those for O_2 consumption. Ratios of isoactive concns. do not obey Traube's rule. Adsorption isotherms are given. Saponin and bile salts completely abolish p.d. but have no lasting influence on O_2 consumption. Heterogeneity of the material must be considered in interpreting these results. R. M. M. O.

Action of the two optical isomerides of 3-diethylaminomethylbenzdioxan on aqueous diuresis. E. Zunz and O. Vesselovsky (Compt. rend. Soc. Biol., 1937, **124**, 282—284).—The *l*- has a greater antidiuretic action than the *d*-isomeride. H. G. R.

Mode of action of methyloctenylamine hydrochloride (octinum). K. Samaan and K. Saad (Quart. J. Pharm., 1936, **9**, 647—658).—The intralymphatic (toad) and intravenous (dog) min. lethal doses are 0·2 and 0·025 g. per kg., respectively. In its general pharmacological action, the drug has the sympathomimetic properties characteristic of primary and *sec.* amines and of adrenaline. F. O. H.

Pharmacology of ethylene glycol. M. A. Mancini (Boll. soc. ital. Biol. sperim., 1935, **10**, 964; Chem. Zentr., 1936, i, 2136).—No toxic action follows use of the solvent in therapy. A. G. P.

Physiological effect of diethylene glycol. II. Toxicity and fate. H. B. Haag and A. M. Ambrose (J. Pharm. Exp. Ther., 1937, **59**, 93—100).—Lethal dosages of diethylene glycol (I) for white rats and rabbits are determined. Rats receiving 1% and 0·3% of (I) in their drinking H_2O showed a slight enhancement of growth and an increased urinary excretion of $H_2C_2O_4$. In dogs, the urinary $H_2C_2O_4$ is insignificantly increased and much of the (I) is eliminated unchanged. P. W. C.

Influence of two war vesicants and their products of hydrolysis on the interfacial tensions of lipins with respect to physiological serum, as well as on their hydrophilism. A. Kling and G. Lecordier (Compt. rend., 1936, **203**, 1544—1546; cf. A., 1934, 216).—Cholesterol forms no compounds with yperite (I) and lewisite (II). (I) and (II) both increase the interfacial tension of lipins with respect to physiological serum and decrease the hydrophilism. Thiodiglycol [hydrolysis product of (I)], which has no vesicant action, lowered the tension and increased the hydrophilism, whilst β-chlorovinylarsine [hydrolysis product of (II)] which still possesses vesicant action, had an effect on lipins similar to, but less pronounced than, that of (II). J. N. A.

Pharmacology of camphor. II. Action of camphor and *epi*camphor on the smooth muscle of leeches and on the morphine-affected respiration of rabbits. F. Reinartz (Praktika, 1935, **10**, 323—333; Chem. Zentr., 1936, i, 2387).—Camphor and *epi*camphor (I) produced substantially the same effects on muscle. (I) was the more active in increasing respiratory frequency. A. G. P.

Prevention of compressed-air illness. G. W. M. Boycott (J. Hyg., 1935, 318—326).—The CO_2 tension in subcutaneous tissue decreased and that of O_2 increased after saponin foam baths. Gases do not diffuse through the skin. Ch. Abs. (*p*)

Benzene poisoning and vitamin-*C*. A. Meyer (Z. Vitaminforsch., 1937, **6**, 83—86).—Chronic C_6H_6 poisoning in man is accompanied by increased utilisation of vitamin-*C*, the symptoms including those of avitaminosis-*C*. F. O. H.

Pharmacology of dibromocholesterol. P. Pirrone (Arch. Farm. sperim., 1936, **62**, 176—186).—Subcutaneous administration of dibromocholesterol daily for 9—40 days into rabbits is followed by the occurrence of Br in the blood, liver, kidney, striated muscle, lung, heart, thyroid, adrenal, and (after >30 days' injection) brain, but not in the spleen. F. O. H.

Effect of benzedrine sulphate on basal metabolic rate. J. B. Lagen, M. H. Soley, and T. B. Leake (Proc. Soc. Exp. Biol. Med., 1936, **35**, 276—278).—Administration of benzedrine sulphate (20 mg. per diem) produced a rise in basal metabolic rate which was not maintained after the final (5th) dose. Temp., pulse rate, and blood-pressure were unaffected. P. G. M.

Rôle of the Kupffer cells and liver cells [of the toad] in the elimination of vital dyes. E. de Robertis and L. S. Resta (Compt. rend. Soc. Biol., 1937, **124**, 255—256).—Basic dyes accumulate in the Kupffer cells if administered intravenously, but when they are administered by the biliary route are absorbed first by the liver cells and then pass to the Kupffer cells. They are rapidly eliminated whilst acid dyes are retained by the hepatic reticulo-endothelial system. H. G. R.

Vital dyes in [the tissues of] the silkworm. L. Hao (Compt. rend. Soc. Biol., 1937, **124**, 524—526).—If fixed by the vacuoles the dye is not discharged; small quantities only are eliminated by the tubules of Malpighi. H. G. R.

Icterogenic substance from *Lippia rehmenni*, Pears.—See A., II, 160.

Stereochemical configuration of the organic component and anti-tumour activity of metal–ascorbic acid complexes. F. ARLOING, A. MOREL, A. JOSSERAND, and L. PERROT (Compt. rend., 1936, **203**, 1404—1406; cf. A., 1936, 626).—Fe^{III} complexes derived from dehydroascorbic acid and the first product of oxidation of *d*-araboascorbic acid have practically the same anti-tumour action. The preponderating effect in disinfiltration is probably due to the metals associated with the redox system in the complexes. J. N. A.

Pharmacology of carotene. M. PICCININI (Boll. Chim.-Farm., 1937, **76**, 29—31).—Intramuscular injection of 2 c.c. of 1% carotene (I) in oil (equiv. to 33,000 international units of vitamin-*A*) into rabbits increases the blood-glutathione and -cholesterol and also the erythrocyte and leucocyte counts. The significance of (I) in metabolism is discussed. F. O. H.

Toxic effect of high doses of liver oils and activity of yeast in prevention of toxicity. M. YOSIDA (Bull. Agric. Chem. Soc. Japan, 1937, **13**, 120—147).—On diets containing 15% of cod-liver oil or liver oil from *Squalus wakiyæ*, the growth of rats was greatly retarded, but administration of yeast prevented the injurious effect. Toxicity is due mainly to very unsaturated acids, and the active protecting factor in yeast is a flavin. J. N. A.

Response to drugs of gut muscle in asphyxia and in iodoacetic acid poisoning. B. N. PRASAD (J. Physiol., 1936, **86**, 425—430).—The muscle under N_2 or NaCN asphyxia or poisoned by $CH_2I{\cdot}CO_2H$ responds to acetylcholine, but is inhibited by adrenaline. R. N. C.

Pharmacological action of choline derivatives. DE WISPELAERE (Compt. rend. Soc. Biol., 1937, **124**, 276—279).—Acetyl-β-methyl- (I), Et ester of β-methyl- (II), and ethyl-choline (III) have 5, 2, and 10 times, respectively, the hypotensive action of acetylcholine and the action is more prolonged. The action of (II) or (III) is suppressed or reversed by atropine whilst that of small doses of (I) is suppressed. H. G. R.

Acetylcholine content of the cerebrospinal fluid of dogs. W. FELDBERG and H. SCHRIEVER (J. Physiol., 1936, **86**, 277—284).—Eserine (I) induces the temporary appearance of acetylcholine (II) in the cerebrospinal fluid of dogs; the concn. ∝ the amount of (I) injected. Slow intravenous infusion of adrenaline and asphyxia cause (II) formation or an increase of its concn., but only after administration of (I). Central vagal stimulation does not increase (II). R. N. C.

Antagonism between curarine and acetylcholine. G. BRISCOE (J. Physiol., 1936, **87**, 425—428). R. N. C.

Reactions of the normal mammalian muscle to acetylcholine and eserine. G. L. BROWN, H. H. DALE, and W. FELDBERG (J. Physiol., 1936, **87**, 394—424). R. N. C.

Intensification of the adrenaline-secretory action of acetylcholine by eserine. H. HERMANN, J. JOURDAN, G. MORIN, and J. VIAL (Compt. rend. Soc. Biol., 1937, **124**, 317—318). H. G. R.

Influence of eserine on the secretion of adrenaline caused by stimulation of the splanchnic nerve and by intravenous injection of acetylcholine. A. TOURNADE and M. CHEVILLOT (Compt. rend. Soc. Biol., 1937, **124**, 565—566).—In both cases, previous injection of eserine augments the secretion of adrenaline. H. G. R.

Eserine and secretion of adrenaline. H. HERMANN (Compt. rend. Soc. Biol., 1937, **124**, 617—618).—Eserine augments the secretion of adrenaline in the dog caused by acetylcholine or stimulation of the splanchnic nerve. H. G. R.

Effect of vegetative nerve poisons on intermediate carbohydrate metabolism of the liver. I. Sympathetic poisons. II. Parasympathetic poisons. T. SATO (Tôhoku J. Exp. Med., 1935, **26**, 194—227, 228—267).—I. Adrenaline, unlike ergotamine, affects the intermediate carbohydrate metabolism of the liver quantitatively but not qualitatively.

II. The action of atropine is qualitatively independent of the dose but those of choline, acetylcholine, and pilocarpine vary with the amounts injected. CH. ABS. (*p*)

Effect of regular injections of acetylcholine on the choline-esterase activity of serum. G. E. HALL and G. H. ETTINGER (J. Pharm. Exp. Ther., 1937, **59**, 29—33).—The choline-esterase activity of dog serum is remarkably const. both hourly and daily over long periods of time and is unaffected by regular daily administration of acetylcholine for many months. P. W. C.

Protective action of phenolic ethers in histamine poisoning. D. BOVET and A. M. STAUB (Compt. rend. Soc. Biol., 1937, **124**, 547—549).—Substances of the type 933F are antagonistic to histamine although their pharmacological actions are similar. H. G. R.

Inhibition of the effect of histamine on the isolated intestine of guinea-pigs by sympathomimetic and sympatholytic substances. G. UNGAR, J. L. PARROT, and D. BOVET (Compt. rend. Soc. Biol., 1937, **124**, 445—446).—The effect of 1×10^{-6} g. of histamine is completely inhibited by concns. of 10^{-6}—10^{-5} of adrenaline, 10^{-3} of ephedrine, or 10^{-5} of 2-piperidinomethylbenzdioxan (which is most sp.). Yohimbine only partly inhibits the effect at 10^{-3} but completely inhibits that of acetylcholine at 10^{-4}. H. G. R.

Effects on blood pressure of substances contained in liver extracts. W. S. KOOPS, E. DINGEMANSE, and D. LUWISCH (Acta Brev. Physiol., 1935, **5**, 70—76; Chem. Zentr., 1936, i, 1904—1905).—Depressor substances include choline and derivatives, histamine, and adenosine derivatives. Tyramine has a pressor action. A. G. P.

Action of callicrein on the isolated intestine. A new substance causing intestinal contraction. E. WERLE [with W. GÖTZE and A. KEPPLER] (Biochem.

Z., 1937, 289, 217—233).—Examination of the reversible inactivation of callicrein (I) by addition of serum or extracts of lymphatic glands and of inactivation by heat, ultra-violet light, or treatment with NaOH, HCl, or H_2O_2 leads to the view that the (I) factor active on circulation is identical with that causing intestinal contraction. (I) is not inactivated by serum which has been heated at 57° for 1 hr. If (I) is mixed with serum and immediately placed in the suspension fluid of a dog's intestine, contraction occurs due to the formation of a new factor. The amount of this factor increases during the first 2—3 min. after mixing and may disappear after 8—10 min. (I) acts in the formation of this new factor from a precursor. The factor is not to be identified with tyramine, histamine, vesiglandin, vasopressin, oxytocin, adenylic acid, or (I). P. W. C.

Anti-toxic and anti-allergic organic preparation (Torantil) from intestinal mucous membrane. R. Rigler (Münch. med. Woch., 1936, 83, 15—17; Chem. Zentr., 1936, i, 2138).—The prep. and physiological action are described. H. N. R.

Anti-histamine action in the organism by Torantil. W. Ercklentz and B. W. Ercklentz (Münch. med. Woch., 1936, 83, 17—19; Chem. Zentr., 1936, i, 2138; cf. preceding abstract).—Applications are described. H. N. R.

Effect of general anæsthesia on the hydrogen-ion concentration and alkali reserve of the blood. B. Kaneta (Tôhoku J. Exp. Med., 1935, 26, 365—380).—General anæsthesia ($CHCl_3$, Et_2O) is followed by a decrease in blood-p_H and alkali reserve. Local anæsthesia produces variable effects. Ch. Abs. (*p*)

Anæsthesia and liver damage. I. Protective action of oxygen against the necrotising effect of certain anæsthetics on the liver. S. Goldschmidt, I. S. Ravdin, and B. Lucké (J. Pharm. Exp. Ther., 1937, 59, 1—14).—The necrotising effect of $CHCl_3$ and divinyl ether on dog's liver cells is largely prevented by volatilising the anæsthetic with O_2. Et_2O anæsthesia may also produce severe liver cell degeneration aggravated by O_2 deficiency and poor nutritive condition. P. W. C.

Effects of p_H on water absorption and elimination of frogs during ether anæsthesia. H. W. Neild (Anesthesia and Analgesia, 1935, 14, 169—171).—Lowering the p_H of liquid surrounding frogs diminished the period of Et_2O-anæsthesia, the amount of H_2O absorbed, and the toxic action of the anæsthetic. Increased p_H produced the reverse effects. Ch. Abs. (*p*)

Nembutal anæsthesia. M. C. Hrubetz, S. N. Blackberg, and L. B. Dotti (Proc. Soc. Exp. Biol. Med., 1936, 35, 303—305).—No correlation exists between blood-sugar level and susceptibility to nembutal, although anæsthesia is prolonged in starved animals and carbohydrate mobilisation appears to be affected. P. G. M.

Effect of thyroid feeding on nembutal poisoning. E. M. Scarborough (J. Physiol., 1936, 86, 183—189). R. N. C.

Pentothal-sodium anæsthesia. O. J. Murphy (Brit. Med. J., 1936, No. 3964, 1308—1309).—Dose for dose penthothal produces a deeper anæsthesia with more pronounced depression of respiration than does evipan but recovery is more rapid than from any other barbiturate. A. G. P.

Evipal in prolonged anæsthesia. A. H. Moloney and R. Hertz (J. Lab. Clin. Med., 1935, 20, 1260—1265).—Experiments with various dosages in dogs and rabbits are recorded. Administration of picrotoxin prior to the anæsthetic widened the margin of safety. Ch. Abs. (*p*)

Effect of narcotics on the state of living matter. Infra-red effect in narcosis of striated muscle. P. J. Jurišić (Protoplasma, 1935, 24, 268—280).—Model experiments on colloids show that changes in state of dispersion and coagulation increase the infra-red effect. Since narcosis of frog's sartorius produced no increase in the infra-red effect, it is concluded that the solidification of living tissues in narcosis is not due to coagulation but probably to structural changes depending on the thixotropic nature of the protoplasm. M. A. B.

Caffeine–sodium benzoate, sodium *iso*amylethylbarbiturate, sodium bromide, and chloral hydrate effect on the highest integrative functions. H. G. Wolff and W. H. Gantt (Arch. Neurol. Psychiat., 1935, 33, 1030—1057).—Treatment of dogs with caffeine–NaOBz produced a strong salivary response and induced relatively stronger responses to subsequent treatments. The other drugs had the reverse effect. Ch. Abs. (*p*)

Pharmacodynamic reactions of intracisternal sodium ethyl*iso*amylbarbiturate (sodium amytal), pyridine-3-carboxylic acid diethylamide (coramine), pentamethylenetetrazole (metrazol), and picrotoxin during morphine–sodium ethyl-*iso*amylbarbiturate anæsthesia. J. C. Rice and R. M. Isenberger (J. Pharm. Exp. Ther., 1937, 59, 43—47).—Intracisternal picrotoxin (0·023—1·2 mg. per kg. body-wt.) shortens the duration of respiratory paralysis produced in dogs by intracisternal Na amytal (5·3—11·3 mg. per kg.). Intracisternal coramine (18·3—28 mg. per kg.) and metrazol (0·9—8·1 mg. per kg.) fail to hasten the return of spontaneous respiration after Na amytal (6·3 mg. and 2·3—6·4 mg. per kg., respectively). P. W. C.

Barbiturates in cerebrospinal fluid. F. L. Kozelka and H. J. Tatum (J. Pharm. Exp. Ther., 1937, 59, 63—67).—Under the conditions employed, only minute amounts of barbiturates (I) were detected in spinal fluid; the depressant effect was dependent on the concn. of (I) in the fluid. Analysis of the fluid does not give significant evidence in respect of the character or amounts of the drug absorbed. P. W. C.

Alkyl *N*-8-quinolylcarbamates as local anæsthetics.—See A., 1936, 1389.

Chemotherapy. II. Diffusibility of aromatic arsenicals into erythrocytes: action of the latter on quinquevalent arsenicals. E. M. Lourie, F. Murgatroyd, and W. Yorke (Ann. Trop. Med.,

1935, **29**, 265—282).—Reduced tryparsamide (I) diffuses rapidly into red blood cells suspended in Ringer–glucose at 37°. In nutrient media dil. solutions of reduced (I) lose trypanocidal activity, possibly through combination with protein to form an inert substance. With quinquevalent (I) the substance diffusing out of red cells after exposure to the compound showed markedly greater trypanocidal power. This activation was shown by a solution of laked red cells, although hæmoglobin did not show this change either in the reduced or oxidised form.

CH. ABS. (*p*)

Comparative chemotherapeutic studies of Arsenoxide (3-amino-4-hydroxyphenylarsenoxide) and neoarsphenamine. G. W. RAIZISS and M. SEVERAC (Amer. J. Syphilis Neurol., 1935, **19**, 473—480).—The max. tolerance and therapeutic indices of the compounds for rats and rabbits are determined.

CH. ABS. (*p*)

Arsphenamine hypersensitiveness in guinea-pigs. III. (A) Regional geographic variability in susceptibility. (B) Chemical specificity of hypersensitivity. (C) Variation in sensitising proclivities of different brands. M. B. SULZBERGER and F. A. SIMON (J. Allergy, 1934, **6**, 39—55).—Hypersensitivity to neoarsphenamine is sp. to the arsenobenzene complex and is not identical with hypersensitivity to elemental As. CH. ABS. (*p*)

Comparative efficiency of mercurial diuretics with and without theophylline (mercuropurin, salyrgan, etc.). M. N. FULTON and A. H. BRYAN (J. Lab. Clin. Med., 1935, **20**, 1252—1260).—Neither mercuropurin [an org. Hg–theophylline (I) compound containing free I] nor a mercurial diuretic mixed with (I) was superior to salyrgan (II) in increasing urinary output in man, but both were more active than (II) in the case of dogs and rabbits. CH. ABS. (*p*)

Comparative effect of santonin, *iso*artemisin, and santoninamine on the blood-sugar of rabbits. W. E. EVANS, jun. (Quart. J. Pharm., 1936, **9**, 641—646).—Orally administered *iso*artemisin (I) has no effect on the fasting blood-sugar or on alimentary hyperglycæmia. Santoninamine sulphate (II) (0·5 g. per kg.) lowers the blood-sugar 3—5 days after subcutaneous injection. The toxic effect (hepatic and nephritic degeneration) of (I) is > that of (II).

F. O. H.

Biological action of iodoprotein-bromo-compounds on the metamorphosis of the axolotl. W. BRANDT (Biochem. Z., 1937, **289**, 276—278).—"Jobramag" (an iodo-bromo-protein prep.) fed along with thyroid powder did not cause an acceleration of metamorphosis. P. W. C.

Pharmacognosy of *Trixis divaricata*, Spreng, var. *discolor* Griseb. L. FLORIANI (Rev. farm. Buenos Aires, 1935, **77**, 223—226).—The drug contains resins, saponins, and an alkaloid. CH. ABS. (*p*)

Doebner reaction.—See A., 1936, 1393.

***Daphnia* as a biological reagent.** A. VIEHOEVER (J. Amer. Pharm. Assoc., 1936, **25**, 1112—1117).—The use of *D. magna* for the study and assay of physiologically active substances is described.

F. O. H.

Pharmacology of smooth muscle. Luminal–papaverine. M. A. MANCINI (Boll. Soc. ital. Biol. sperim., 1935, **10**, 966—967; Chem. Zentr., 1936, i, 2387).—The depressor action of luminal–papaverine is unaffected by Br and does not affect the normal action of pilocarpine on blood pressure. A. G. P.

Action of adrenaline and atropine on blood-alcohol. S. MINZ and E. SERIANNI (Atti R. Accad. Lincei, 1936, [vi], **24**, 235—238).—Of six persons who had ingested aq. EtOH, only two showed an increase and decrease, respectively, in blood-EtOH on administration of atropine or adrenaline (cf. Serianni, A., 1935, 1285). F. O. H.

Influence of drugs which act on the autonomic nervous system on sulphur metabolism. Y. SAITO (Sei-i-Kwai Med. J., 1935, **54**, No. 2, 104—114).—Adrenaline and atropine accelerated, and eserine, nicotine, and pilocarpine diminished, S metabolism in male rabbits. CH. ABS. (*p*)

Effect of drugs which act on the autonomic nervous system on the inorganic salt contents of the urine and blood of rabbits. H. KANEKO (Sei-i-Kwai Med. J., 1935, **54**, No. 4, 125—155).—Effects of atropine, ergotoxin, eserine, and pilocarpine on the Ca, Mg, K, and Cl contents of blood and urine of normal and splenectomised rabbits are recorded. All drugs influence salt metabolism, blood cells, and hæmoglobin content.

CH. ABS. (*p*)

Action of the hydrochloride and phenylpropionate of morphine on the excitability of the motor nerves in a medium deprived of electrolytes. Comparison with the action of the hydrochloride in Ringer's solution. J. RÉGNIER and A. QUEVAUVILLER (Compt. rend. Soc. Biol., 1937, **124**, 623—626).—The action of the phenylpropionate (I) on the motor nerve is 20—30 times that of the hydrochloride (II). In the absence of electrolytes, the effect of (II) depends on, whilst that of (I) is independent of, the concn. H. G. R.

Changes in potassium and the sympathetic-adrenaline-hepatic mechanism following pathological or pharmacological conditions. B. A. HOUSSAY, A. D. MARENZI, and R. GERSCHMAN (Compt. rend. Soc. Biol., 1937, **124**, 384—386).—Blood-K is increased by actions directly on the adrenal medulla (nicotine) or on the central (asphyxia) or peripheral nervous system (vasopressin).

H. G. R.

Effect of salivary activity on the composition of bovine blood. J. H. BLACKWOOD and G. M. WISHART (J. Physiol., 1936, **86**, 37—45).—Pilocarpine in cows causes rapid but transient rises in blood-Fe, lipin- and org. acid-sol. P, and a similar fall in inorg. P, which is apparently selectively absorbed by the salivary gland. The changes are contemporaneous with the increased flow of saliva. The changes in P in jugular venous blood are > in mammary venous blood, but the Fe increases are of the same order in both veins. R. N. C.

Influence of quinine hydrochloride on iodine contents of endocrine organs and blood of thyroidectomised rabbits. A. OTA (Sei-i-Kwai

Med. J., 1934, **53**, No. 12, 24—30).—Quinine hydrochloride does not affect the I contents of endocrine organs or blood of thyroidectomised rabbits as it does in normal animals. Ch. Abs. (*p*)

Chemotherapeutic action of homologues of *apo*quinine. E. Liebetruth (Z. Immunitäts., 1935, **84**, 445—454; Chem. Zentr., 1936, i, 2587).—*n*-Propyl-, *n*-butyl- (I) *n*-hexyl-, and *n*-octyl-*apo*quinine (II) were strongly bactericidal towards *Pneumococcus in vitro*. The bacteriostatic action of (I) and (II) was relatively weaker. In their effects on infected mice all derivatives were inferior to ethyl*apo*quinine. A. G. P.

Pharmacological action of four *Corydalis* alkaloids. K. K. Chen, R. C. Anderson, and T. Q. Chou (Chinese J. Physiol., 1937, **11**, 7—12; cf. A., 1934, 1014).—The min. lethal doses of the hydrochlorides of corydalis *B*, *J*, *L*, and *M*, determined by intravenous injection in mice, are 103, 42, 150, and 41 mg. per kg. respectively. Sublethal doses of *B* and *L* produce catalepsy in mice and monkeys, *J* and *M* cause convulsions in mice. Otherwise *B*, *J*, *L*, and *M* are very similar in physiological action. E. M. W.

Pharmacological action of tetrandrine, an alkaloid of Han-fang-chi. K. K. Chen, A. L. Chen, R. C. Anderson, and C. L. Rose (Chinese J. Physiol., 1937, **11**, 13—24).—Various physiological effects are described. The min. lethal doses of tetrandrine hydrochloride for mice, rats, guinea-pigs, rabbits, pigeons, and monkeys are respectively 55, 55, 21, 17, 125, and 30—40 mg. per kg. E. M. W.

[Pharmacological] action and toxicity of menisine and menisidine. K. K. Chen and T. Q. Chou (Chinese J. Physiol., 1937, **11**, 29—34; cf. A., 1935, 1433).—Min. lethal doses of menisine (I) and menisidine (II) for mice, rats, and guinea-pigs are 35 and 100, 20 and 75, 45 and 60 mg. per kg., respectively. (I), (II), and tetrandrine are similar in physiological action. E. M. W.

Effect of yohimbinylamine. B. Yanai (Tôhoku J. Exp. Med., 1935, **26**, 164—171).—The amine is less active than the parent substance in its cardiac and circulatory effects but has no local anæsthetic or stimulatory action on the central nervous system. Ch. Abs. (*p*)

Alkaloids of curare. K. B. Taylor (Ann. Chim. Analyt., 1937, [iii], **19**, 5—11, 33—34).—A review.

Biological determination of glucosides in *Adonis vernalis*. F. Mercier and S. Macary (Compt. rend. Soc. Biol., 1937, **124**, 459—463).—The min. lethal dose in dogs by intravenous injection is 0·70 and 1·75 mg. per kg. for adonidoside and adonivernoside, respectively. H. G. R.

Residual carbon and nitrogen of blood in acute lethal hydrocyanic acid poisoning. T. Inouye (Biochem. Z., 1937, **289**, 172—175).—In rapid acute HCN poisoning as in curarised rabbits after strangling, the blood residual C and N do not increase. Increases in these factors arise only when the animals are allowed to go into convulsions. P. W. C.

Determination of the time of administration in arsenical poisoning. L. van Itallie (J. Pharm. Chim., 1937, [viii], **25**, 97—101).—The determination of As in portions of hair at different distances from the scalp gives an approx. date of administration of As, the hair being assumed to grow at 1·5 cm. per month. W. O. K.

Isolation of arsenic from head hairs. J. A. Labat (Bull. Trav. Soc. Pharm. Bordeaux, 1935, **73**, 175—179; Chem. Zentr., 1936, i, 2156).—Such a procedure may be used to diagnose As poisoning. H. N. R.

Subacute arsenic poisoning. L. van Itallie and A. J. Steenhauer (Pharm. Weekblad, 1937, **74**, 231—233).—The As contents of fæces, hair, nails, and skin scales in a subacute case of As poisoning are determined and discussed. S. C.

Toxic action of metals on *Balanus*. T. Lee (Compt. rend. Soc. Biol., 1937, **124**, 665—666).—The toxicity of Cu is markedly decreased by the presence of Zn, Sn, or Pb. H. G. R.

Parathyroid extract and viosterol treatment of radium poisoning. L. F. Craver and H. Schlundt (J. Amer. Med. Assoc., 1935, **105**, 959—960).—Alternate periods of feeding parathyroid extracts with low-Ca diets and of viosterol with high-Ca diets did not cause marked increases in amounts of Ra excreted. Ch. Abs. (*p*)

Determination of soluble enzymes in official [pharmacopœal] preparations. H. Pénau and R. Audic (J. Pharm. Chim., 1937, [viii], **25**, 107—110).—Standard enzyme preps. kept in sealed tubes at 0° retained their activity almost unaltered for 3 years. W. O. K.

Effect of oxygen under pressure on succinic dehydrogenase. W. Libbrecht and L. Massart (Compt. rend. Soc. Biol., 1937, **124**, 299—300).—Succinic dehydrogenase is inhibited by O_2 under pressure, the true dehydrogenase of the system being affected. H. G. R.

Stable lactic dehydrogenase preparation. C. Gurchot and A. Lowman (Proc. Soc. Exp. Biol. Med., 1936, **35**, 315—316).—Baker's yeast is washed with saline and ground with PO_4''' buffer saturated with Et_2O. After centrifuging the lysate is cooled and shaken with Et_2O. The Et_2O-gel is removed and the filtered clear liquid is saturated with $(NH_4)_2SO_4$; the ppt. consists of the purified enzyme and is stable when dry. P. G. M.

Oxidation of pyruvic acid by liver enzymes. F. Cedrangolo (Enzymologia, 1937, **1**, 359—368).—$AcCO_2H$ is decarboxylated by liver, forming MeCHO. The latter is then oxidised (probably) to AcOH and succinic acid. The oxidative breakdown of keto-acids is inhibited by F′, HCN, and by heat. In the presence of HCN the R.Q. increases, indicating that decarboxylation is less inhibited than is dehydrogenation. E. A. H. R.

Oxidation of *l*-ascorbic acid by plant enzymes. S. W. Johnson and S. S. Zilva (Biochem. J., 1937, **31**, 438—453).—Aërobic ascorbic oxidase of cabbage juice has a broad p_H optimum, 5·0—7·0, falling

rapidly on the acid and slowly on the alkaline side. It is inhibited by 0·001*M*-NaCN, most strongly at p_H 7·0. Pyrocatechol (I) is oxidised by the crude enzyme but not by that obtained by $(NH_4)_2SO_4$ pptn. PhOH is not oxidised. With two substrates simultaneously (I) oxidation does not begin until that of ascorbic acid (II) is complete. The preps. contain peroxidase but no peroxide. Methylene-blue cannot act as acceptor. EtOH and $COMe_2$ ppts. are inactive. Juice and ppts. from cauliflower, cucumber, and marrow differed from those from cabbage only in sensitivity to NaCN and differential activity of pptd. preps. In the apple and potato oxidation of (II) depends on an insol. PhOH oxidase and sol. intermediary phenolic substances. Activity and sensitivity to NaCN at p_H 6·0 are > at the natural p_H 3·0. All these systems also oxidise *d*-glucoascorbic acid.

R. M. M. O.

Individuality of ascorbic acid oxidase. M. Srinivasan (Current Sci., 1936, **5**, 296—297).—The press juice from the pulp of *Cucumis sativus* (cucumber) oxidises ascorbic acid (I) by virtue of its oxidase (II) content. The juice from the rind, which contains (II) and peroxidase, but no peroxide, oxidises (I) as readily as does that from the pulp. J. L. D.

Simplification of the peroxidase reaction [in blood smears]. A. G. Douglass (Chem.-Ztg., 1937, **61**, 130).—After successive treatment with a solution of benzidine in dioxan, and aq. safranine mixed with H_2O_2, myeloid elements show brown granulations while the nuclei take up the counter-stain.

E. A. H. R.

Comparison of catalase activity and vitality of silkworm eggs. K. Yamafuji (Enzymologia, 1936, **1**, 268—270).—Catalase activity and vitality can be correlated. E. A. H. R.

Effect of arsenic derivatives on the activity of tissue lipase and amylase. M. A. Stolberg (Ukrain. Biochem. J., 1936, **9**, 1099—1108).—The lipase activity of the liver, kidney, and heart of white mice is reduced, and the amylase activity is increased, by injections of atoxyl or Na arsenite. Spleen lipase is unaffected, but spleen amylase is activated by arsenicals. R. T.

Choline-esterase in striated muscle of the cat. A. Marnay and D. Nachmansohn (Compt. rend. Soc. Biol., 1937, **124**, 446—448).—The rate of hydrolysis of acetylcholine is approx. equiv. to that in the striated muscle of the guinea-pig. H. G. R.

Choline-esterase activity of normal and pathological sera. G. E. Hall and C. C. Lucas (J. Pharm. Exp. Ther., 1937, **59**, 34—42).—A micro-modification of the continuous titration method for determining the rate of hydrolysis of acetylcholine by blood-serum is described. The choline-esterase activity is defined in terms of initial velocity of hydrolysis and the unit adopted is the amount of enzyme necessary to liberate 1 c.c. of 0·01*N*-AcOH in 10 min. at p_H 8 and 37·5°. The activity in 40 normal and 162 pathological human sera varied from 0·9 to 3·9 units per c.c., about 75% of the cases being between 1·9 and 3·2. No correlation between activity of serum and age, sex, diet, heart rate, or

blood pressure could be detected. None of the clinical conditions studied produced any characteristic change in the activity of the enzyme. P. W. C.

***In vitro* digestion of fats.** N. N. Dastur and K. V. Giri (Proc. Soc. Biol. Chem. India, 1937, **1**, 40—41).—The rates of hydrolysis of various substrates by castor-seed lipase are in the decreasing order: butter fat (I) (cow and buffalo), coconut (II), sesamé (III), and ground-nut oils (IV). With pancreatic lipase (p_H 12·6) (I) was the most slowly hydrolysed substrate, but at p_H 9·3 it was rapidly digested. The rates of hydrolysis by (VI) of (I) and (II) but not of (III) or (IV) are markedly accelerated in presence of Na taurocholate. The kinetics of the hydrolysis of (I) and other oils have been examined.

W. O. K.

Quantitative changes in the enzymes present in the liver and in various tissues due to impaired renal functions. S. Murata (Japan J. Gastroenterol, 1935, **7**, 69—87).—Nephrectomy causes a slight increase in asparaginase, amylase, and lipase in the livers of rabbits. Ch. Abs. (*p*)

Manometric method for enzymic determination of arginine. A. Hunter and J. B. Pettigrew (Enzymologia, 1937, **1**, 341—352).—Arginine (I) is hydrolysed by arginase, the urea formed is decomposed by urease, and the resulting CO_2 measured manometrically. The method has been applied to the determination of (I) in protein hydrolysates and tryptic digests. E. A. H. R.

Mechanism of action of glyoxalase. J. V. Giršavičius and P. A. Cheifetz (Biochimia, 1936, **1**, 525—541).—The velocity of enzymic conversion of AcCHO (I) into lactic acid rises with increasing concn. of free and combined (as semimercaptal) (I) to a max., depending on the glutathione (II) concn. It falls with increasing concn. of free (II); the concn. of (I) inversely ∝ that of (II). Yamazoye's compound (A., 1936, 1419) is an intermediate product of the action of glyoxalase on the semimercaptal. R. T.

Dependence of the reaction of combination of methylglyoxal with glutathione on p_H. J. V. Giršavičius and P. A. Cheifetz (Biochimia, 1936, **1**, 542—547).—The velocity of reaction of AcCHO and glutathione to yield semimercaptal rises rapidly with rising p_H from 2 to 3·5, above which it becomes immeasurably great. R. T.

Amino-acid deamidases of the animal body. B. Kisch (Klin. Woch., 1936, **15**, 170—171; Chem. Zentr., 1936, i, 2375).—3—4 different types of deamidases are recognised. H. N. R.

Enzyme for decomposition of creatinine and its action on the "apparent creatinine" of blood. B. F. Miller and R. Dubos (Proc. Soc. Exp. Biol. Med., 1936, **35**, 335—336).—A strain of soil bacteria (*NC*) grew in a creatinine–inorg. salt medium, but the enzyme was not liberated from the cells; it was, however, obtained in aq. solution by disruption of the cells of another species (*HR*). The enzyme decomposes 50% of the Jaffe-reactive material in human red cells and >50% in the plasma.

P. G. M.

Effect of acid and basic diets on the cathepsin content of organs. M. F. Guli and M. A. Kolomeitschenko (Ukrain. Biochem. J., 1936, **9**, 1085—1098).—The cathepsin content of glycerol extracts of kidney or liver is not significantly affected by previous feeding of the rabbits with acid, basic, or neutral diets. R. T.

Chemistry of cell growth and division. C. Voegtlin (Cold Spring Harbor Symp., 1934, **2**, 84—88).—The hydrolysis of proteins by cathepsin is activated by reduced glutathione, p_H being a controlling factor. Small amounts of Cu inhibit protein synthesis. The toxic action of As, Au, and Cu compounds and CN′ is inhibited by glutathione (I). Growth rates of amœbæ are directly correlated with their (I) content. The relative effects of Cu and (I) vary with the age of the cells. H_2O_2, methylene-blue, Cu salts, $CH_2I{\cdot}CO{\cdot}NH_2$, and high [CO] do not influence mitosis. Anæsthetics decrease O_2 consumption and inhibit mitosis. Protein synthesis is controlled by O_2 tension. (Cf. A., 1936, 1569.) Ch. Abs. (*p*)

Proteinases (cathepsin) in tissues of the chicken embryo. B. Goldstein and M. Ginzburg (Enzymologia, 1937, **1**, 369—372).—Glycerol extracts from the yolk sac, yolk, and germinal membranes have no proteolytic effect on gelatin during the first days of development. A proteolytic effect, after activation with H_2S, appears on about the 6th day, and one without activation on the 10th. H_2S activation is considerable until the last days of incubation, when it changes to a depression. The chemical properties and physiological function of the cathepsin in the egg and in mammalian placenta are probably identical. E. A. H. R.

Proteolytic enzymes of monocytic and polymorphonuclear pleural exudates. C. Weiss and E. J. Czarnetzky (Arch. Path., 1935, **20**, 233—244).—Rabbit monocytes contain only one proteinase, pepsin. Cathepsin, trypsin, and pepsin are present in polymorphonuclears. Serous portions of exudates of monocytic types inhibit, and those of polymorphonuclear types enhance, peptic digestion. Fluid of polymorphonuclear exudates inhibits the tryptic activity of the corresponding cells, whereas cells of monocytic exudates inhibit the tryptic activity of their fluid. Antagonistic extractable and bound enzymes occur in monocytic and polymorphonuclear cells of inflammatory exudates. In the digestion of gelatin by supernatant fluid of either type of exudate and in that of leucylglycine by monocytic fluid there is a decrease in the no. of CO_2H groups. Ch. Abs. (*p*)

Inactivation of pepsin by iodine and isolation of di-iodotyrosine from iodinated pepsin. R. M. Herriott (J. Gen. Physiol., 1937, **20**, 335—352).—I-inactivation of pepsin (I) involves formation of di-iodotyrosine (II). The influence of p_H on the rate of iodination is analogous to that on iodination of glycyltyrosine. Computation from titration curve of the tyrosine content of (I) gives vals. agreeing with the current estimate. 53% of the I absorbed by (I) was recovered as (II) from hydrolysate in an incomplete crystallisation. Inactivation is progressive with increasing iodination, becoming complete with 35—40 atoms of I per mol. of (I). No appreciable oxidation occurs. R. M. M. O.

Influence of intense mechanical vibration on proteolytic activity of pepsin. L. A. Chambers (J. Biol. Chem., 1937, **117**, 639—649).—Cryst. pepsin in acid solution (p_H 1·8) is inactivated by exposure to sound waves of 9000 cycles according to $A = A_0e^{-kt}$, where A is the activity remaining at time t and A_0 is the initial activity. Inactivation does not take place in absence of O_2, and in some unpurified preps. the activity is increased. P. G. M.

Parallel concentration of enzymes in pancreatic juice. S. G. Baxter (Amer. J. Digest. Dis. Nutrition, 1935, **2**, 108—111).—In the pancreatic juice of rabbits variations in concn. of trypsin, amylase, and lipase were of a parallel nature. Ch. Abs. (*p*)

Action of the trypsin–enzyme complex on substituted proteins. A. R. Kiesel and D. P. Roganova (Biochimia, 1936, **1**, 1—20).—The action of trypsin–proteinase (I) on edestin (II) is unaffected by Et esterification of the free $\cdot CO_2H$, sulphonation, or deamination. The Bz derivatives of (II) or deaminated (II) are not attacked by (I); the debenzoylated products undergo proteolysis normally. It is concluded that the presence of $\cdot NH_2$ or $\cdot OH$, or of the latter alone, is essential for the action of (I). R. T.

Does trypsin inactivate urease? J. B. Sumner and A. L. Dounce (J. Biol. Chem., 1937, **117**, 713—717).—The view that urease (I) is rapidly inactivated in presence of gum arabic by trypsin (II) is erroneous. (I) preserved with SO_3'' was not measurably inactivated by (II) at room temp. over a period of 95 hr. P. W. C.

Enzymic properties of natural papain. M. Frankel, R. Maimin, and B. Shapiro (Nature, 1937, **139**, 249).—Latex of *Carica papaya* at different stages of development and size splits both gelatin (I) and Witte's peptone (II) and need not be previously activated by HCN. The degree of hydrolysis of (I) is $<$ that of (II). On keeping, the activity of the latex towards (I) increases and diminishes towards (II). Preps. obtained from natural latex by different methods show different qual. and quant. enzymic properties, *e.g.*, a thermostable, natural activator inducing peptone cleavage and a prep. showing the enzymic features generally attributed to papain have been isolated. Contrary to the lit., true ovalbumin is split directly by a latex prep. Activation (or inhibition) by latex bodies of protein cleavage or peptone cleavage, respectively, appear to be different processes. L. S. T.

Phytases of wheat flour. E. V. Kolobkova (Biochimia, 1936, **1**, 512—524).—Wheat phytase is inactive at $>75°$, and at p_H <3 or $>7·3$; the optimum temp. and p_H are 55° and 5·5. The temp. coeff. of reaction and the Arrhenius const. fall with increasing temp., and are least at p_H 5·5. $>55\%$ of the total P of wheat grain is present as phytin, the content of which falls, with corresponding increase in lecithin- and protein-P, on germination. The p_H and temp. ranges of impure phytase are wider

than those of purified enzyme. The velocity of reaction falls with increasing relative concn. of substrate. R. T.

Proteolytic enzymes of the soya bean. E. D. Stacheeva-Kaverzneva and E. J. Oleinikova (Biochimia, 1936, **1**, 321—330).—Extracts of resting and germinating soya beans are equally active in reducing η of aq. gelatin, but whilst the extracts from the resting seeds show little or no proteolytic activity, those from the germinating seeds are much more active. During germination, the proteases of the seeds remain relatively const., but the peptidases increase. With peptone as substrate, the activity of the protease is optimum at p_H 7·0, and with gelatin and collagen (I) at 7·2—7·4. The small activity at acid p_H, and the absence of any activating action by KCN and Na_2S, indicate a low content of cathepsin (separated by adsorption on kaolin). Notwithstanding the specificity of plant proteases, the proteolytic enzymes of the germinating beans rapidly dissolve powdered (I). W. O. K.

Proteolytic enzymes of common moulds. J. Berger, M. J. Johnson, and W. H. Peterson (J. Biol. Chem., 1937, **117**, 429—438).—The kinetics of the proteolytic enzymes in species of *Penicillium* and *Aspergillus* were studied. Proteinase (gelatin; optimum p_H 7·0), carboxypolypeptidase (chloroacetyl-*l*-tyrosine), aminopolypeptidase (*dl*-leucyldiglycine), and dipeptidase (*dl*-leucylglycine) were present in all species in varying amounts and many contained smaller amounts of other peptidases (diglycine, triglycine). Total and relative enzyme contents vary independently of species relationships and depend on the medium. R. M. M. O.

Fission of animal proteins by the proteases of *Aspergillus oryzæ*. E. D. Stacheeva-Kaverzneva and E. J. Oleinikova (Biochimia, 1936, **1**, 331—342).—Extracts made from *A. oryzæ*, grown on a medium prepared from defatted soya-bean meal, hydrolysed gelatin and collagen (optimum p_H 7·2) but not elastin and keratin. Addition of 0·1% of Na_2SO_4 or $(NH_4)_2SO_4$ slightly increased the activity whilst greater concns. were inhibitory. By pptn. with EtOH, preps. were obtained almost equal in activity to pancreatin from ox pancreas. W. O. K.

Action of vegetable disaggregating and proteolytic enzymes on the proteins of wheat and rye. M. P. Jurgenson (Biochimia, 1936, **1**, 374—385).—The action of the natural mixture of proteolytic enzymes of wheat-flour extracts on the proteins of wheat gluten is max. at p_H 3·7—4·7 for leucosin (I), 3·7 for gliadin (II), and 4·9—5·3 for glutenin (III). For the mixed proteolytic enzymes of yeast extract the optimum p_H ranges are 3·7—4·7, 3·7, and 4·9—5·3, respectively. The fission of (III) is < that of (I) or (II). The optimum p_H for the action of wheat-flour protease on (II) or (III) is 4·9—5·0, whilst yeast protease has optimum activity on (II) or (III) at p_H 3·3—4·9. The action of both proteases is accompanied by little change in NH_2-N, so that their actions are disaggregating rather than proteolytic. The optimum p_H for the action of the natural mixture of proteolytic enzymes of rye-flour extracts on the proteins of rye flour are: (II) 3·7, (3·4—3·7); globulin 3·7 (3·7—4·2); (III) 4·9—5·6 (4·41—4·95), figures in parentheses being the isoelectric zones. W. O. K.

Cleavage of peptide rings by proteinases. K. Shibata and Y. Tazawa (Proc. Imp. Acad. Tokyo, 1936, **12**, 340—345).—Failure to observe the cleavage of diketopiperazines (I) by proteinases is due to the low affinity of these enzymes for artificial substrates of low mol. wt. Data are given for the hydrolysis of glycyl-*d*-glutamic anhydride by trypsin and papain, and of *dl*-diaminopropionic anhydride dihydrochloride by pepsin. The hydrolyses of both proteins and (I) have the same p_H optima. The prep. of *l-histidine anhydride dihydrochloride*, decomp. 270—280°, $[\alpha]_D^{26}$ +48·1°, is described. E. A. H. R.

Anhydrolytic decomposition of edestin and enzymic cleavage of the decomposition products. A. Fodor and N. Lichtenstein (Enzymologia, 1936, **1**, 311—320).—The decomp. of edestin by heating with anhyd. glycerol gives a product separable into four fractions according to their solubilities in H_2O, aq. EtOH, and AcOH. These substances have a closed polypeptide ring structure. Compositions, based on the NH_2-acids found in the total hydrolysate, are suggested, and the mol. wts. of 1300 and 2600 thus indicated are confirmed cryoscopically. All four fractions are hydrolysed by pepsin (I) and pancreatin (II), and by papain without previous activation. (II) but not (I) yields a product which is further attacked by arginase. E. A. H. R.

Rôle of maltase in the hydrolysis of starch by different varieties of malt. D. I. Lissitzin (Biochimia, 1936, **1**, 351—358).—The seeds of maize, sorghum, and millet, and the malts prepared from them, contain a maltase active at p_H 4·5—5·0. Although barley malt exerts no action on maltose, the presence of maltase is not excluded, for in this malt substances are present which inhibit maltase. W. O. K.

Ratio of synthetic to hydrolytic action of invertase as a characteristic value for different varieties of onions. B. A. Rubin (Biochimia, 1936, **1**, 467—478).—The ratio sucrose/monoses varies from 0·1 to 21·3 for different varieties of onion. The higher vals. are obtained for biennial plants, showing that slow growth is associated with preponderatingly synthetic action of invertase. The sucrose content of the bulb is greatest, and of the leaves least, at maturity. Analogous variations are found for different varieties of beet and marrow. R. T.

Application of the vacuum-infiltration method to the measurement of the synthetic and hydrolytic activity of invertase in living plant tissue. A. L. Kursanov (Biochimia, 1936, **1**, 269—294).—The hydrolytic and synthetic activities of the invertase in leaves of various plants are measured by injecting solutions of sucrose or of glucose and fructose and observing the changes which ensue. The relative vals. of the activities differ in different plants. When the concn. in the leaf of sucrose or of invert-sugar is changed by infiltration, the activity

of the invertase alters in such a way as to restore the disturbed equilibrium. W. O. K.

Optimal p_H of the invertase of different strains of *Aspergillus niger*. V. A. KIRSANOVA (Biochimia, 1936, **1**, 386—389).—For the invertases obtained from all strains of *A. niger* investigated, whether producing citric acid or not, the optimum p_H was 2·5—4·0. W. O. K.

Reversibility of the action of lactase. D. M. MICHLIN and O. J. BORODINA (Biochimia, 1936, **1**, 147—156).—Aq., $COMe_2$, and glycerol extracts of mammary gland promote synthesis of lactose from glucose and galactose. Attainment of equilibrium between the components is much more rapid with the extracts than with tissue pulp. R. T.

Amylase system of rice grain during ripening and germination. K. V. GIRI and A. SREENIVASAN (Biochem. Z., 1937, **289**, 155—166).—Experimental details of work already summarised (A., 1936, 1418). P. W. C.

The glycogenolytic system in liver and influence on it of insulin and adrenaline. R. WILLSTÄTTER and M. ROHDEWALD (Enzymologia, 1936, **1**, 213—255).—Amylase occurs in liver in both activated and inhibited states. Insulin and adrenaline annul both activating and inhibiting effects. E. A. H. R.

Heredity in amylase activity. K. YAMAFUJI and S. GOTO (Enzymologia, 1936, **1**, 271—272).—The blood-amylase content of silkworms approximates to the mean val. of that of the parents. E. A. H. R.

Amylase content of pure line barley. K. MYRBÄCK (Enzymologia, 1936, **1**, 280—287).—The total and free active amylase (I) contents of pure line barleys were determined over a period of 7 years. The relation between free and total (I) content is a characteristic of each species. Different species of barley have very different (I) contents, which are not paralleled by protein contents. Differences in (I) content persist in green and kiln-dried malt. E. A. H. R.

Glycolysis of various substrates by extracts of sarcoma and muscle. F. H. SCHARLES, M. D. BAKER, and W. T. SALTER (Amer. J. Cancer, 1935, **25**, 122—129).—Extracts of mouse sarcoma produced lactic acid from hexose phosphates. Glycogen, glucose, and fructose were not utilised. Extracts of sarcoma differed from those of muscle in being unable to form phosphate esters from small saccharide mols. even in the presence of adenosine triphosphate. CH. ABS. (*p*)

Cozymase as hydrogen-carrying co-enzyme in muscle-glycolysis. H. VON EULER, E. ADLER, G. GÜNTHER, and H. HELLSTRÖM (Z. physiol. Chem., 1937, **245**, 217—245).—Purest cozymase (I) and dihydrocozymase (II) cannot replace adenylic acid (III) in glycolysis but the material obtained by heating (I) with 0·01—0·04*N*-NaOH at 100° for 5 min. replaces (III) as PO_4''' carrier and in glycolysis. The material obtained from (II) by inactivation with acid is not a PO_4''' carrier. During the dehydrogenation of lactic acid (IV) by the dehydrogenase of heart and muscle (I) is reversibly converted into (II), but since the position of equilibrium favours (IV) production, $AcCO_2H$ (V) is reduced to (IV) in presence of apodehydrogenase. The mechanism of the reduction is analogous to that of MeCHO by the EtOH dehydrogenase of yeast. Similarly, in the reversible conversion by (I) of glyceraldehydephosphoric acid (VI) into glycerophosphoric acid (VII), (VII) production is favoured. Spectroscopic observation shows that (I) transfers H from (VII) to (V). The amounts of (IV) produced in dialysed muscle extracts by the systems hexosediphosphoric acid–(V), (VI)–(V), and (VII)–(V) indicate that these systems are activated by (I). The co-enzyme system of glycolysis includes (I) as H carrier. W. McC.

Coupling of the synthesis of adenosinetriphosphoric acid with the main oxidation–reduction process in blood glycolysis. Z. DISCHE (Enzymologia, 1936, **1**, 288—310).—Two types of glycolysis are distinguished, the normal, requiring adenosinetriphosphoric acid (I) and accounting for most of the glucose breakdown in the cell, and a secondary glycolysis which occurs only after partial decomp. of (I). This secondary glycolysis is due to a coupling of the oxidation–reduction process between $AcCO_2H$ and triose phosphates and the resynthesis of (I) from adenylic acid and inorg. P. The decomp. of (I) by adenylpyrophosphatase accelerates glycolysis by promoting the Parnas reaction (A., 1934, 1027). An explanation is given of the regulation of glycolysis by the co-operation of the spontaneous decomp. of (I) and of its resynthesis. E. A. H. R.

Competition between phosphorylating enzymes in muscle extract. H. LEHMANN and D. M. NEEDHAM (Biochem. J., 1937, **31**, 329—338).—From a mixture of adenylic acid and phosphopyruvic acid creatine accepts PO_4''' more rapidly than glycogen although the PO_4''' is gradually transferred to the glycogen as its phosphorylation is irreversible. The action is the same at p_H 8·8 and 6·5. Either acceptor is readily phosphorylated alone. At p_H 8·8 adenylic acid accepts from phosphopyruvic acid much more rapidly than from creatine phosphate, which reacts more quickly at p_H 6·5. Glycogen is esterified more rapidly by the above mixture of donators than by a low concn. of inorg. P (0·002*M*) and the latter process is catalysed by adenylic acid. At a concn. of 0·01*M* the inorg. P is preferred. Distinct enzymes are involved in the phosphorylation of glycogen and creatine. R. M. M. O.

Plant phosphatases. I. Phosphatase of germinated soya bean (*Glycine hispida*). K. V. GIRI (Z. physiol. Chem., 1937, **245**, 185—196).—Aq. extracts of powdered germinated beans on fractional pptn. with $COMe_2$ or EtOH, removal of impurities at p_H 5, and dialysis or ultra-filtration yield a highly active phosphatase (I). (I) exhibits optimal activity at p_H 5·1—5·5. With α- (II) and β- (III) -glycerophosphate, the rate of hydrolysis ∝ time until 10—12% of the substrate is hydrolysed, and with Na hexose diphosphate (IV) and $Na_4P_2O_7$ until 20% is hydrolysed. (IV) is more rapidly hydrolysed than are (II), (III), and $Na_4P_2O_7$ and (III) more rapidly than (II). F', C_2O_4'', $Cu^{\cdot\cdot}$, and ascorbic acid (V) but not CN' inactivate (I) to extents which vary with the

substrate used. F′ is more effective than C_2O_4'' and $Cu^{..}$ + (V) more effective than (V) alone. W. McC.

Vegetable pyrophosphatases. I. Kinetics of hydrolysis of pyrophosphoric and β-glycerophosphoric acids. P. Fleury and J. Courtois (Enzymologia, 1937, **1**, 377—395).—The p_H optima for both pyrophosphatase (I) and phytase (II) in seeds is 5·6—5·8, whilst the optimum for takadiastase (III) is more acidic. In seeds glycerophosphatase (IV) but not (II) activity runs parallel with (I) activity. (III) is richer in (IV) than in (I), but in emulsin (V) the distribution is reversed. In (V), (I) and (IV) are relatively thermostable, whilst in (III) they are completely inactivated at 65°. E. A. H. R.

Biochemical hydrogenation of dehydroandrosterone. L. Mamoli and A. Vercellone (Z. physiol. Chem., 1937, **245**, 93—95).—Dehydroandrosterone in EtOH dropped into fermenting invert sugar at approx. 20° (top yeast) is converted into Δ^5-androstenediol. W. McC.

Yeast and trehalose. K. Myrbäck (Svensk Kem. Tidskr., 1937, **49**, 24—26; cf. A., 1936, 759).—Pressed yeast ferments added trehalose (I) directly, but does not attack its own (I) unless previously dried. M. H. M. A.

Separation of growth-substances stimulating yeast and fungi. N. Nielsen and V. Hartelius (Compt. rend. trav. Lab. Carlsberg, Ser. physiol., 1937, **22**, 1—22).—Two growth-substances are distinguished, one (B_1) stimulating yeast and the other (B_2) affecting *A. niger*. B_1 is much less resistant to oxidising agents (H_2O_2, $KMnO_4$) than is B_2, but more resistant than the cell-extension hormone of the *Avena* coleoptile. The growth-substance obtained by heating sugar (A., 1932, 661) is very resistant. Neither B_1 nor B_2 is sensitive to reduction. From the mixed growth-substances *B* each organism preferentially absorbs its sp. substance. A method of separating B_1 and B_2 by this means is examined. B_2, but not B_1, requires the presence of a co-substance (metallic salt) for its activation. A. G. P.

Effect of 2 : 4-dinitrophenol on cellular oxidation in yeast. L. Plantefol (Ann. Physiol. Physicochim. biol., 1935, **11**, 32—53; Chem. Zentr., 1936, i, 2575).—In sugar-free solutions 2 : 4-dinitrophenol (I) in suitable concns. increases cellular oxidation of beer yeast and *S. cerevisiæ*. Anaërobic strains of yeast reduce (I) but there is no increase in cellular oxidation even in the presence of O_2. A. G. P.

Analysis of growth : yeast. O. W. Richards (Cold Spring Harbor Symp., 1934, **2**, 157—166).—Growth of *Saccharomyces cerevisiæ* follows a linear rather than a logarithmic or sigmoid course and consists of two cycles. Production of EtOH is greater at lower temp. Small amounts of Tl in certain brands of asparagine lowered sugar utilisation and increased crop growth. H_2O containing D_2O (1 in 2000—4000) increased growth. Ch. Abs. (*p*)

Action of low concentrations of deuterium oxide on the course of gas production by brewer's yeast. C. S. Shoup and S. L. Meyer (J. Tennessee Acad. Sci., 1935, **10**, 127—131).—0·5% of D_2O slightly retarded gas formation (2·6%) from sucrose at 30° after a period of 45—50 hr. Ch. Abs. (*p*)

Annulment of fluoride inhibition in living top yeast by adenylic acid. J. Runnström and T. Hemberg (Naturwiss., 1937, **25**, 74).—Addition of adenylic acid (I) annuls the inhibition by F′ of respiration and fermentation of living top yeast. The annulment is less marked at higher [F′] and [PO_4'''], but is promoted by $MgCl_2$ and AsO_4'''. With dried top yeast, after storage for long periods, and bottom yeast, the F′ inhibition is unaffected by (I). E. A. H. R.

Inhibition by iodoacetate of fermentation by dried yeast. J. Runnström and F. Alm (Naturwiss., 1937, **25**, 74).—The irreversible inhibition of fermentation by $CH_2I{\cdot}CO_2'$ (I) increases with increasing acidity. (I) interacts with the protein of the enzyme and not with the co-enzyme. Higher concns. of (I) are required for inhibition at $p_H > 7$. The system is protected at higher p_H vals. as the greater ·SH content binds more (I). E. A. H. R.

Chemistry of death. O. Rahn (Cold Spring Harbor Symp., 1934, **2**, 70—77).—In the killing of yeast cells by $HgCl_2$, by heat (50°), or by ultra-violet or *X*-irradiation, the reproductive capacity was the most sensitive to injury, fermentative capacity was secondarily affected, and plasma membrane permeability was the last factor to be injured. Death rate ∝ some exponent of the concn. of the poison (4—6 for PhOH). Progeny of surviving cells showed no increased resistance to the poison. Ch. Abs. (*p*)

Sulphite fermentation under conditions of repeated utilisation of yeast. V. S. Kurbatova and A. N. Schakin (Biochimia, 1936, **1**, 457—466).—The yeast can be used repeatedly for sulphite fermentation of sugar to glycerol, without loss of activity, if a sulphite-free culture is interposed after each succeeding sulphite culture. The yeast cells should be separated from the medium as soon as possible after completion of fermentation. R. T.

New black-pigmented species of *Torula*. N. Rouchelman (Compt. rend. Soc. Biol., 1937, **124**, 545—547).—The new *Torula Schoeni*, isolated from the aq. distillate of glycerinated yeast, produces a black pigment when grown on wort. H. G. R.

Influence of medium on the chemical composition of *Aspergillus niger*. R. S. Hilpert, G. Friesen, and W. Rossée (Biochem. Z., 1937, **289**, 193—197).—Tables summarising yields and % N in the mycelium of *A. niger* grown on various media show that the skeletal substance of the mould changes its composition with change of medium. P. W. C.

Influence of neutralisation of fermenting media on acid formation by *Aspergillus niger*. V. A. Kirsanova (Biochimia, 1936, **1**, 425—445).—Total acid production from sucrose by *A. niger* is greatly augmented by addition of alkali during fermentation. The optimum p_H varies from 4 to 7 for different strains of mould, whilst for all strains examined acid production approaches zero at $p_H < 3$ or > 8. The increase in total yield of acid is due to increased

production of citric (I), oxalic, and gluconic acids. The effectiveness of different alkalis rises in the series $CaCO_3 < NaOH < Na_2CO_3$. Higher yields of (I) are obtained by growing the pellicle of mould in one medium, and transferring it to the sucrose medium for (I) production. The yield of $H_2C_2O_4$ falls with increasing time of fermentation. The yield of (I) may be raised to 91% of theoretical by fermentation of 35% sucrose medium, with daily adjustment of p_H to 4—6, and with frequent change of the mould pellicle. R. T.

Influence of the antioxidants, methylene-blue and dinitrophenol, on the growth of *Aspergillus niger*. R. Bonnet and R. Jacquot (Bull. Soc. Chim. biol., 1936, **18**, 1850—1870).—It is impossible to dissociate completely the energy required for maintenance and that for growth by incorporating in the medium substances which influence respiratory activity. Methylene-blue (I) and dinitrophenol (II) in non-toxic concns. are without effect on the gross energy yield, but at certain concns. (I) increases, and (II) decreases, the energy yield. P. W. C.

Chemical studies of *Rhizopus japonicus*. H. Lim (J. Fac. Agric. Hokkaido, 1935, **37**, 165—209).—The dried fungus from cultures on Raulin's solution containing sucrose and tartaric acid as sole org. sources contained protein 38·8, erude fat 9·7, crude fibre 7·7, N-free extract 42·2, ash 5·5%. The Et_2O extract included ergosterol 1·08, fungisterol 2·55, palmitic acid 7·6, stearic acid 1·16, and phosphatides 1·19 g. per kg. The unsaturated acid consisted largely of oleic with small amounts of linoleic acid. The 95% EtOH extract of the fat-free material yielded mannitol, sucrose, trehalose, adenine, hypoxanthine, histidine, betaine, and stachydrin. Mannose (14·3%), and fructose (1·5%) were also present. A phosphoprotein *rhizopenin*, containing much tyrosine and tryptophan and having cystine-S : total S = 1 : 18, I val. 16·2, and isoelectric p_H 2·9—3·0, was also isolated. The digestibility coeffs. of the fungus were, N substances 72·1, carbohydrates 78·6, and ash 74·2. Vitamin-B_1 and -B_2 (but not -*A* or -*C*) and a yeast-growth-promoting substance were detected. Ch. Abs. (*p*)

Physiology of *Rhizopus oryzæ*. L. B. Lockwood, G. E. Ward, and O. E. May (J. Agric. Res., 1936, **53**, 849—857; cf. A., 1936, 1154).—Growth and glucose consumption of *R. oryzæ* were greater at 40° than at 30°; *d*-lactic acid production varied in the reverse manner. Formation of fumaric acid (I) was suppressed in media containing >6 g. of NH_4NO_3 per litre. *R. oryzæ* utilised NH_4 salts, urea, and certain NH_2-acids as N sources. $NaNO_2$ was unsatisfactory, and in media containing $NaNO_3$ as sole source of N no growth was made. In presence of $CaCO_3$, Zn salts favoured growth of the fungus. Under favourable conditions of growth the production of (I) depended on the maturity of the mycelium. A. G. P.

Biochemistry of Sonti fermentation. K. R. Reddi (Proc. Soc. Biol. Chem. India, 1937, **1**, 37—38).—The formation of glucose and EtOH in the Sonti fermentation of rice is principally due to an organism, *Rhizopus Sontii*, but two associated yeasts supplement the EtOH production by about 50%. W. O. K.

Nitrogen utilisation by *Ophiobolus graminis*. H. Fellows (J. Agric. Res., 1936, **53**, 765—769).—When grown in Czapek's medium *O. graminis* was unable to utilise N compounds other than ovalbumin, casein, peptone, and nucleic acid. This apparent specificity in N requirements was unrelated to the nature of the C supply, to the presence of growth-substances, or to the p_H of the medium. *Rhizopus* sp. and *Penicillium* sp. showed some specificity in this respect but could utilise a wider range of N compounds. A. G. P.

Parasitism and control of *Armillaria mellea*. R. Leach (Proc. Roy. Soc., 1937, **B**, **121**, 561—573).—*A. mellea*, unlike *Rhizoctonia bataticola* or *Botryodiplodia theobromæ*, requires roots of high carbohydrate (I) content for free development. Bark-ringing of trees (host), a process which depletes the root-(I), is recommended as a protective measure. F. O. H.

Reaction of protoplasm to radium radiation. W. Seifritz (Protoplasma, 1936, **25**, 196—200).—The protoplasm of slime moulds was highly resistant, but was killed by 20 hr. continuous radiation from nine 12-mg. needles at a distance of 1 mm. Less intense radiation stimulated growth. Immediately around the needles the protoplasm showed a finer grain than elsewhere. M. A. B.

Population growth in protozoa. T. L. Jahn (Cold Spring Harbor Symp., 1934, **2**, 167—180).—Various protozoa show similar growth responses to external conditions, changes in availability of O_2 and food, elimination and neutralisation of waste products, and oxidation–reduction potential. Ch. Abs. (*p*)

***Amœba proteus* as material for study of cell growth and division.** H. W. Chalkley (Cold Spring Harbor Symp., 1934, **2**, 89—93).—The organism is particularly suitable for the purpose. Effects of glutathione on cell division are described. Cystine and cysteine affect division but glycine is inert. Ch. Abs. (*p*)

Bacterial fermentation and structure of glucosamine. A. G. Wedum and A. W. Walker (J. Infect. Dis., 1935, **57**, 160—163).—Many species of bacteria which ferment glucose (I) and not (or less readily) mannose (II) also ferment glucosamine (III). (III) probably contains the (I) structure. *Torula cremoris* fermented (I) and (II) but not (III). Ch. Abs. (*p*)

Properties of an essential growth factor for pathogenic bacteria. F. Saunders, I. I. Finkle, L. Sternfeld, and S. A. Koser (J. Amer. Chem. Soc., 1937, **59**, 170—174).—Many plant and animal tissues (*e.g.*, calf spleen and liver) contain a S-free substance (I) (method of isolation described), which is essential for the growth of various pathogenic bacteria. (I) is sol. in H_2O, MeOH, EtOH, and PhOH but is largely insol. in higher alcohols, Et_2O, $CHCl_3$, and C_6H_6. (I) is unaffected by aëration, 3% H_2O_2, and ammoniacal $AgNO_3$; solutions are thermostable. Slight loss of activity occurs with

cold Br–H_2O, HNO_2, or Ac_2O–NaOAc at 100°. (I) is not inorg. since it destroyed by wet and dry ashing. Moulds grown on Czapek–Dox medium will synthesise (I). H. B.

Tryptophan and "sporogenes vitamin" requirements of *Cl. botulinum*. P. Fildes (Brit. J. Exp. Path., 1935, **16**, 309—314).—Normal strains require both tryptophan and the "vitamin" before growth can take place. Ch. Abs. (*p*)

Essential growth factor for *Staphylococcus aureus*. B. C. J. G. Knight (Brit. J. Exp. Path., 1935, **16**, 315—326).—The growth factor is a weak base yielding relatively sol. compounds with many base precipitants, and distilling at >105°/0·001 mm. *S. aureus* grows aërobically on media containing acid-hydrolysed gelatin, tryptophan, tyrosine, cystine, and glucose, supplemented with the growth substance. The latter is also essential for *B. anthracis*.
Ch. Abs. (*p*)

Carbon dioxide as an essential factor in growth of bacteria. G. P. Gladstone, P. Fildes, and G. M. Richardson (Brit. J. Exp. Path., 1935, **16**, 335—348).—Continuous passage of CO_2-free gases through cultures of various bacteria caused no change in growth of certain species but inhibited others. Inhibition is ascribed to removal of CO_2 from the cultures, and failure to inhibit resulted from production of CO_2 by the organisms at a rate > that of removal by the gas stream. CO_2 is essential for all bacteria and is produced by the organisms prior to growth. Ch. Abs. (*p*)

Dependence of bacterial growth on the nature of the nitrogen-containing constituents of the medium. D. A. Zuverkalov and V. M. Krasov (Biochimia, 1936, **1**, 295—300).—Bacteria of the paratyphoid group, which have only weak proteolytic activity, grow feebly in media containing pure protein but vigorously when the protein is hydrolysed. W. O. K.

Necessity of sulphur compounds for bacterial glycolysis. P. Chaix and C. Fromageot (Enzymologia, 1937, **1**, 321—327; cf. A., 1936, 760, 1561).—Substances activating glycolysis by *Propionibacterium pentosaceum* are examined. H_2S and org. thio-compounds are the strongest activators.
E. A. H. R.

Mechanism of action of sulphur compounds on glycolysis by *Propionibacterium pentosaceum*. P. Chaix (Compt. rend., 1936, **203**, 1396—1398; cf. A., 1936, 760).—*P. pentosaceum* contains a system *X* which diffuses into the medium and effects glycolysis. The "active limiting amount" of the bacteria is that amount below which glucose in the medium is no longer attacked, due to an insufficiency of *X*. Cystine (I), thiourea, and H_2S simply replace the deficiency of *X*, and do not increase the normal activity of the cells. Five successive saline washings and fermentations lowered the activity of a culture by almost 50%, but on addition of (I), the rate of glycolysis became normal. Nine washings and fermentations completely inactivated the bacteria, and activity was not restored by (I). J. N. A.

Pure culture studies of the sulphur organism *Thiobacillus* (sp. novo.). P. D. Karunakar and T. Rajagopal (Proc. Soc. Biol. Chem. India, 1937, **1**, 12—13).—The cultural appearance and general properties of *Thiobacillus* (sp. novo.) isolated from the soil at Coimbatore are described. W. O. K.

(A) Influence of p_H on growth of purple sulphur bacteria. (B) Growth of purple sulphur bacteria in organic acids. V. A. Tschesnokov and D. I. Saposhnikov (Biochimia, 1936, **1**, 63—74, 157—164).—(A) The optimum p_H for growth of *Ectothiorhodospira mobile*, Pelsch, varies according to the source of S, being 7·4 for $NaHSO_3$, 7·5 for $Na_2S_2O_3$, 8·5 for S, and 9 for Na_2S; the p_H and the degree of oxidation of the available S vary inversely. The effects are ascribed to the different E_H of the media.
(B) Growth in media containing org. acids in place of S, and the optimum p_H, vary inversely with the O content of the acid, in the series: valeric > butyric > propionic > acetic > glycollic > oxalic acid; butyric > succinic > malic > tartaric acid. R. T.

Characteristic lipochromes of fluorescent bacteria. F. Giral (Anal. Fís. Quím., 1936, **34**, 667—693).—The formation and properties of the fluorescent colouring matters produced in the normal metabolism of *B. pyocyaneus*, *B. fluorescens*, and *B. putidus*, and the effect of p_H and various reagents on the colour, have been studied. Chromatographic adsorption analysis shows the presence of two pigments, one of which is probably identical with pyorubin, and the other, to which the characteristic properties of the original are due, seems to be intermediate between flavin and xanthopterin. The yellow colouring matter of old potatoes is not identical with the bacterial pigment and is more likely a pterin.
L. A. O'N.

Bacteriological and biochemical relationships in *Pyocyaneus fluorescens* group. II. Green fluorescent pigment. G. E. Turfitt (Biochem. J., 1937, **31**, 212—218; cf. A., 1936, 1154).—The empirical formula of the green pigment is $C_4H_7O_2N$. Methods for its isolation from various organisms in the group are described. In alkaline solution there is a well defined band with absorption max. at 410 mμ; on acidification, the band becomes less marked with max. at 370 mμ, and is shifted towards the shorter λλ. J. N. A.

Antagonism between *B. fluorescens* and *B. pyocyaneum*. H. O. Hettche and W. Vogel (Arch. Hyg. Bakt., 1937, **117**, 234—244).—Two types of *B. fluorescens* having optimum growth temperatures of 22° and 37° were isolated. In liquid and solid media, cultures of *B. pyocyaneum* at 37° showed a strong bactericidal action against *B. fluorescens*. The effect ∝ the amount of colour produced in the case of young, but not in old, cultures.
W. L. D.

Luminescence of bacteria. II. Oxygen consumed in the light-emitting process of *Photobacterium phosphoreum*. J. G. Eymers and K. L. van Schouwenburg (Enzymologia, 1937, **1**, 328—340).—The inhibiting effects of KCN on O_2 consumption and light intensity indicate that the total respiration consists of a hæmin respiration, a

respiration associated with the light-emitting process and forming a const. % of the total, and a "rest" respiration. The quantum efficiency of the light-emitting process is a function of temp. It is highest at 22° (one quantum per 195 mols. of O_2 consumed). E. A. H. R.

Effect of carbohydrates and allied substances on urease production by *Proteus vulgaris*. R. Passmore and J. Yudkin (Biochem. J., 1937, **31**, 318—322).—The production of urease (I) by *P. vulgaris* is increased (by 100 and 40%, respectively) by addition to the medium of arabinose and glycerol. Fructose and galactose also sometimes increase (I) production whilst glucose and lactate lower it by approx. 50%. Jacoby's conclusion (A., 1918, i, 469) that the group ·CH(OH)·CH(OH)·CHO is essential for (I) production is not confirmed. W. McC.

Relation between the peptone utilised and indole produced by bacteria. A. Mustafa (Compt. rend. Soc. Biol., 1937, **124**, 450—451).—Martin's peptone is the most suitable for the production of indole. H. G. R.

Yield of indole from indole-producing bacteria and the composition of the peptone medium. A. Mustafa (Compt. rend. Soc. Biol., 1937, **124**, 514—515).—Reducing sugars and NO_3' retard indole production. H. G. R.

Influence of boric acid on acetic fermentation. M. Niculescu (Bull. Soc. Chim. biol., 1936, **18**, 1831—1841).—H_3BO_3, added in small amounts (0·0125—0·0375%) to a synthetic culture medium, promotes the formation of AcOH, but larger amounts are toxic, the toxicity, however, being decreased by the presence of substances (*e.g.*, glucose) which combine with the acid. P. W. C.

Effect of sodium iodoacetate on the respiration of *Staphylococcus aureus*. F. Chodat and G. Carrisson (Arch. Sci. phys. nat., 1936, **18**, Suppl., 139—141).—The O_2 uptake of *S. aureus* is progressively inhibited by increasing concn. of $CH_2I·CO_2Na$, from about 6% at $2 \times 10^{-5}M$ to 46% at $10^{-3}M$. F. A. A.

Sensitivity of *Azotobacter* in soil to the structure of the monohydroxybenzoic acids. G. Guittonneau and R. Chevalier (Compt. rend., 1936, **203**, 1400—1402; cf. A., 1936, 1422).—Using four types of *Azotobacter* on SiO_2 gel containing the Na salts of *o*-, *m*-, and *p*-$OH·C_6H_4·CO_2H$, three of the types were active in presence of the *p*-, one in presence of the *o*-, and none in presence of the *m*-compound. The last has no toxic action, bacteria remaining inactive in its presence, growing normally if transferred to a gel containing NaOBz. J. N. A.

Economy of carbon during fixation of nitrogen by *Azotobacter chroococcum*. T. R. Bhaskaran (Proc. Soc. Biol. Chem. India, 1937, **1**, 6).—The fixation of atm. N_2 by *A. chroococcum* does not seem to depend on the utilisation of org. acids derived from glucose. It therefore differs from N fixation in the soil by a mixed bacterial flora. W. O. K.

Cell inclusions and the life cycle of *Azotobacter chroococcum*. I. M. Lewis (Science, 1937, **85**, 16).—The colourless granules are fat bodies whilst the stainable granules consist of volutin. L. S. T.

Formation of β-alanine from aspartic acid by legume bacteria. A. I. Virtanen and T. Laine (Suomen Kem., 1937, **10**, B, 2).—About 50% of the org. N excreted from the nodules of leguminous plants is *l*-aspartic acid (I). 1—2% of the remainder is oxime-N whilst the major part, precipitable with phosphotungstic acid, is β-alanine (II). The root-nodule bacteria eliminate CO_2 from (I) forming (II). NH_2-acids are excreted by the nodules and not by the roots. E. A. H. R.

Polysaccharide synthesis by "nitrogen-fixing" organisms. E. A. Cooper and J. F. Preston (J.S.C.I., 1937, **56**, 1—5T).—*Rhizobium radicicolum* synthesises a gum, which is a glucose–glycuronic acid complex, from mono-, di-, and poly-saccharides, and also from polyhydric alcohols, containing 3, 5, and 6 C, and from Na lactate, malonate, and succinate. Amides and NH_2-acids are not suitable C sources for gum-production. *Azotobacter chroococcum* also synthesises a polysaccharide from diverse C compounds, and the conditions of formation resemble those holding in the case of *R. radicicolum*. These organisms are unable to form polysaccharides in culture media containing high concns. of sugars, and in this respect they differ from the bacilli and *Leuconostoc*.

Nodule bacteria. VI. Influence of different parts of plants on growth of nodule bacteria. VII. Influence of extracts of nodules. A. Itano and A. Matsuura (Ber Ōhara Inst. landw. Forsch., 1936, **7**, 359—377, 379—401; cf. A., 1936, 1301).—VI. Extracts of various plant organs affected the growth of nodule bacteria in the relative order, nodules > stems > leaves > roots > seeds from fresh plants. For dried plants the order was the same except that root extracts were more potent than those of stems. No relation exists between the N content of aq. extracts and their action on bacterial growth.

VII. Extracts made with single solvents and those obtained by fractional extraction with several solvents are examined. Alkaloids occur in extracts which markedly stimulate the growth of nodule organisms. A. G. P.

Separation and biological activity of the polysaccharide constituent in *Brucella* cells. A. D. Hershey, I. F. Huddleston, and R. B. Pennell (J. Infect. Dis., 1935, **57**, 183—185).—From the crude prep. (Favilli and Biancalani) of the sp. pptg. polysaccharide from *B. abortus* a non-polysaccharide (I)-pptg. fraction was obtained. A similar substance was prepared from a (I) antigen of *Brucella* cells by cleavage. The pptg. property of Favilli's prep. is due to (I). Ch. Abs. (*p*)

Change in fermentation reactions of a dysentery bacillus by passage through animals. M. Aitoff (Compt. rend., 1936, **203**, 1548—1550).—Passage of a dysentery bacillus which gave the typical fermentation reactions of *B. Flexneri* through mice, rats, guinea-pigs, or rabbits, produced a strain which gave the typical reactions of *B. Shigae*. Passage through an animal is necessary for the change,

and it has not been possible to reverse the process. Serum from a rabbit immunised with the "*Shigae*" strain caused a more pronounced agglutination of the "*Flexneri*" than of the "*Shigae*" strain, and the latter was agglutinated more readily by serum from a rabbit immunised with the "*Flexneri*" strain. J. N. A.

Biocatalytic properties of iron oxides.—See A., I, 192.

Bacterial variation and complete somatic *O* antigen. A. Boivin and L. Mesrobeanu (Compt. rend., 1936, **203**, 1402—1404).—The following variants of *B. aertrycke* have been separated: rough immotile, rough motile, smooth immotile, and smooth motile in sp. and non sp. phases. Only the three smooth variants contain the *O* antigen, which forms in each case about 8—9% of the dry wt. of the bacteria. All these *O* antigens have the same chemical composition (40% of carbohydrate and 20% of fatty acid) and are identical in every respect. The presence or absence of the *H* antigen, or variations in its specificity, have no effect whatever on the *O* antigen. J. N. A.

Hæmolysin from a strain of animal streptococci. H. Loewenthal and M. G. Pradham (Brit. J. Exp. Path., 1935, **16**, 230—236).—The serum-free hæmolysin of streptococci from an animal infection was subject to reversible oxidation and reduction. Ch. Abs. (*p*)

Pathogenic power and filterable forms of bacteria. R. Nativelle (Compt. rend. Soc. Biol., 1937, **124**, 225—227).—The filterable forms of *B. gangrenæ* become pathogenic only after 10—12 days and the vaccines prepared from them have immunising properties, in contrast to those prepared from the "adult" form. H. G. R.

Spectroscopic investigation of bacterial toxins: absorption spectra of products of *C. diphtheriæ*. A. Wadsworth, M. O'L. Crowe, and L. A. Smith (Brit. J. Exp. Path., 1935, **16**, 201—217).—The toxin and substances giving selective absorption bands corresponding with that of the porphyrins are produced or liberated by *C. diphtheriæ* under similar conditions. The absorbing substances may be separated from the toxin by ultrafiltration or by adsorption on C. Ch. Abs. (*p*)

Production of enterotoxic substance by bacteria. E. O. Jordan and W. Burrows (J. Infect. Dis., 1935, **57**, 121—128).—Production of toxic filtrates was increased by growth on a starch medium. Ch. Abs. (*p*)

Bacteriophage. I. Extraction with ether. II. Artificial production of a specific lytic agent behaving like bacteriophage. J. D. LeMar and J. T. Myers (J. Infect. Dis., 1935, **57**, 1—5, 6—11).—I. Bacteriophage can be extracted, wholly or in part, by Et_2O from an aq. phase.

II. Incubation, autoclaving, secondary incubation, and treatment of bacterial cultures with H_2O_2 yielded lytic filtrates of high potency. No active filtrate was obtained if the secondary incubation was omitted unless oxidation was prolonged for several days. Filtrates from autoclaved cultures incubated a second time but not oxidised, and those obtained from direct oxidation of living cultures, were not active. The lytic agent was destroyed by exposure to 75° for 30 min. but not by repeated freezing and thawing in solid CO_2. Ch. Abs. (*p*)

Reversible inactivation of bacteriophage with safranine. A. P. Krueger and D. M. Baldwin (J. Infect. Dis., 1935, **57**, 207—211).—Addition of safranine to a broth-suspension of anti-staphylococcus bacteriophage at p_H 7·4 produces a ppt. which inactivates the phage. The inactivation is, in part, a photodynamic effect. Dissolution of the ppt. at p_H 6·5 causes partial reactivation of the phage. Ch. Abs. (*p*)

Inactivation of bacteriophage by bacteria. V. Sertic (Compt. rend. Soc. Biol., 1937, **124**, 218—220).—The inactivating substance (probably a polysaccharide) can be washed out of a gelatin culture with broth and is moderately heat-stable. H. G. R.

Serological reactions of potato-virus "*X*." E. T. C. Spooner and F. C. Bawden (Brit. J. Exp. Path., 1935, **16**, 218—230).—Saps of tobacco, *Datura stramonium*, and potato infected with virus *X* contain a common antigen. Serological reactions with rabbit sera are described. Ch. Abs. (*p*)

Reaction of the viruses of tomato spotted wilt and tobacco mosaic to the p_H of the medium. R. J. Best and G. Samuel (Ann. Appl. Biol., 1936, **23**, 509—537).—Suspensions of the virus of tomato spotted wilt, buffered to p_H 7·0 at 0° and in the absence of O_2, retain their activity for $\leq$6 hr., but are rapidly inactivated at p_H <5 or >10. Tobacco mosaic virus is inactivated at p_H <2 or >8. Activity–p_H curves resemble those of enzymes rather than those of living organisms. A. G. P.

Isolation of crystalline tobacco mosaic virus-protein from tomato plants. H. S. Loring and W. M. Stanley (J. Biol. Chem., 1937, **117**, 733—754).—A detailed account of earlier work (A., 1936, 525). The proteins from tomato and tobacco plants possess the same infectivities, have the same serological properties, chemical composition, [α], and isoelectric point, and give the same sedimentation const. Repeated fractionation with celite at p_H 4·5 and 8 results in a gradual inactivation of the virus-protein. Tobacco mosaic virus reaches a concn. > that of the virus of tomato plants. P. W. C.

Virus of tobacco mosaic. IX. Correlation of virus activity and protein on centrifugation of protein from solution under various conditions. W. M. Stanley (J. Biol. Chem., 1937, **117**, 755—770; cf. A., 1936, 1562).—Ultracentrifuging of solutions of mixtures of tobacco mosaic virus-protein and tobacco proteins, ovalbumin, trypsin, and pepsin resulted in the sedimentation of the high-mol. wt. virus-protein as a cryst. mass at the bottom of the tube and in the concn. of virus activity in this protein. Fractional centrifuging at varying p_H gave similar results, the virus activity always remaining with the protein of high mol. wt. P. W. C.

Stream double refraction of preparations of crystalline tobacco-mosaic protein. W. N. Takahashi and T. E. Rawlins (Science, 1937, **85**, 103—

104).—Suspensions of visible crystals of two preps. in $(NH_4)_2SO_4$ produce stream double refraction as well as colloidal buffered solutions of the crystals. The cryst. preps. are probably pure virus which thus exhibits this refraction and, when in solution, is composed of submicroscopic rod-shaped particles. The dilution at which stream double refraction becomes undetectable and the active virus concn. depend on p_H. L. S. T.

Inactivation of poliomyelitis virus *in vitro* by ascorbic acid. C. W. Jungeblut (J. Exp. Med., 1935, **62**, 517—521).—Multiple paralytic doses of the virus are rendered non-infectious to *Rhesus* monkeys by addition of small amounts of ascorbic acid. Ch. Abs. (*p*)

Antisepsis. J. Kořinek (Časopis českoslov. Lék., 1935, **15**, 203—206; Chem. Zentr., 1936, i, 2590).—0·1% of *p*-OH·C_6H_4·CO_2Et inhibits growth of *B. coli*, *Penicillium*, *Saccharomyces cerevisiæ*, etc. H. N. R.

Destruction of *M. tuberculosis* by some proprietary disinfectants. P. Uhlenhuth and E. Remy (Arch. Hyg. Bakt., 1936, **117**, 131—138).—The capacities of certain proprietary disinfectants (German) for killing tubercle bacilli in sputum have been investigated. CH_2O and phenolic preps. were successfully used. W. L. D.

Oligodynamic action of silver on typhus vaccine. T. Uglowa (Arch. Hyg. Bakt., 1936, **117**, 144—152).—The oligodynamic action of Ag–Mn is 10 times that of Ag on *B. typhi*. For immunising purposes the vaccine treated with Ag is not superior to the ordinary vaccine. The Ag-vaccine kept its potency and biological properties for <9 months. W. L. D.

Biochemistry of the lower organisms. I. Protective action of casein in the poisoning of bacteria by nicotine. H. Leontjev and E. Truschina (Protoplasma, 1936, **25**, 211—219).—Nicotine (I) (1·25%) in Ringer solution at 35—38° killed *Staphylococcus albus* in 24 hr. and *B. dysenteriæ* in 1 hr. Addition of casein destroyed the toxicity of (I). M. A. B.

Bacteriostatic action of skatole on Gram-negative enteric bacilli. R. P. Tittsler, L. A. Sandholzer, and E. T. Callahan (J. Infect. Dis., 1935, **57**, 57—60).—Growth of the organisms was inhibited by skatole (I) (1 in 3000—4500). The bacteriostatic action of (I) was approx. double that of indole. Ch. Abs. (*p*)

Bacteriostatic action of indole on Gram-negative enteric bacilli and certain cocci. R. P. Tittsler and L. A. Sandholzer (J. Infect. Dis., 1935, **57**, 64—69).—Bacterial growth was inhibited by indole (I) in dilutions of 1 in 1500—2000. The sensitivity of a no. of species to (I) is examined: related species cannot be differentiated in this way. Sensitivity to (I) and the production of (I) by bacteria were unrelated. Ch. Abs. (*p*)

Bactericidal effect of hirudin and heparin. I. Intravenous injection and leeching in experimental bacteræmia. A. Ochsner and H. R. Mahorner (Arch. Surg., 1935, **31**, 308—314).—Hirudin is possibly beneficial but heparin increases mortality in staphylococcic bacteræmia. Ch. Abs. (*p*)

Germicidal action of combined solutions of potassium permanganate and mercury oxycyanate. F. Varga (Magyar orvosi Arch., 1935, **36**, 237—243; Chem. Zentr., 1936, i, 1916—1917).—Mixtures are more effective than either of the components. H. N. R.

Cryptotoxic and bactericidal action of soaps. M. Belin and J. Ripert (Compt. rend. Soc. Biol., 1937, **124**, 612—614).—Na and triethanolamine soaps of oleic, linoleic, and ricinoleic acids have a strong cryptotoxic action. Variations in the relative bactericidal powers were observed depending on the substrate. Abietic soaps are less bactericidal except when a ricinoleate-resistant organism is used. H. G. R.

(A) Hypersensitivity and increased resistance of bacteria towards antiseptics. (B) Vital staining of bacteria on substrates containing dyes. A. Hegedüs (Magyar orvosi Arch., 1935, **36**, 395—398, 399—404; Chem. Zentr., 1936, i, 2576).—(A) The extreme sensitivity or resistance of certain bacteria to antiseptic dyes is examined.

(B) Absorption of dyes from media by living bacteria follows the laws of physical absorption, irrespective of the sensitivity of the organisms to the bactericidal action of the dyes. A. G. P.

Oxygen consumption during lysis of bacteria (*M. lysodeikticus*) by lysozyme. L. R. Zubkova (Biochimia, 1936, **1**, 560—566).—The O intake of cultures of *M. lysodeikticus* increases >200% during 10—20 min. after introduction of lysozyme, and falls practically to zero after completion of bacteriolysis. R. T.

Benzidine blood agar (Penfold) for isolating *S. scarlatinæ*. R. Tunnicliff (J. Infect. Dis., 1935, **57**, 147—148). Ch. Abs. (*p*)

Relation between spleen and various endocrine organs as indicated by inorganic salt metabolism. I, II. H. Kaneko (Sei-i-Kwai Med. J., 1934, **53**, No. 12, 1—23, **54**, No. 1, 79—110).—The effect of injection of hormones on the mineral contents of blood and urine of normal and splenectomised rabbits is examined. Hypophorin and pituitrin act synergistically with the spleen and thyroxine is antagonistic. Pituglandol is antagonistic to the spleen in respect of $Na^·$ and Cl', but is synergistic in regard to K, Ca, and Mg metabolism, cell counts, and hæmoglobin (I) content. Insulin acts similarly except in relation to Ca. Adrenaline is synergistic to the spleen in all salt metabolism except Na; spermatin is synergistic in respect of salt metabolism and white cells, but antagonistic in regard to red cells and (I) content. Ch. Abs. (*p*)

Adrenaline content and physiological activity of adrenal extracts. H. G. Rees (Quart. J. Pharm., 1936, **9**, 659—668).—The use of the Folin (A., 1913, ii, 163) and $K_2S_2O_8$ methods (cf. Barker *et al.*, A., 1933, 320) for the determination of adrenaline (I) alone and in presence of ascorbic acid is described. The contents of (I) in desiccated, frozen, or fresh adrenal

glands given by these methods agree with vals. found by biological assays, no evidence being afforded of the presence of an (I)-like substance of a different physiological activity (cf. Svirbely and Szent-Györgyi, A., 1932, 546). F. O. H.

Biological test of adrenal preparations with white rats and mice. G. Widstrom (Acta med. Scand., 1935, **87**, 1—13; Chem. Zentr., 1936, i, 1902).—Details of the technique are given. A. G. P.

Action of adrenaline on the perfused liver. J. L. D'Silva (J. Physiol., 1936, **87**, 181—188).—K is liberated by a single injection of adrenaline from the saline-perfused cat's liver, the reaction occurring in the almost entire absence of O_2 and being complete in 1 min. Subsequent injections at 5—15 min. intervals give only small reactions. Blood restores the reaction and when perfused continuously prolongs it for about 6 min. for the first injection, subsequent injections at 5—15 min. intervals liberating comparatively large amounts of K. R. N. C.

Responses of normal and hypophysectomised rabbits to adrenaline. C. Bachman and G. Toby (J. Physiol., 1936, **87**, 1—10).—Subcutaneous injection of adrenaline (I) in hypophysectomised animals causes hypoglycæmia only if glycogen (II) storage is maintained in the liver by feeding. Whilst hyperglycæmia in normal animals is due to breakdown of muscle-(II), the impairment of the reaction in hypophysectomised animals is probably due to its relative fixation. Depôt fat accumulates in hypophysectomised and castrated animals—the latter respond normally to (I)—but not in thyroidectomised animals. R. N. C.

Action of adrenaline on serum-potassium. J. L. D'Silva (J. Physiol., 1936, **86**, 219—228).—Adrenaline injected intravenously into cats causes an increase in serum-K, which is mobilised from the liver. Ca and Na are unaffected. Liver-K in rats is independent of the glycogen storage. Insulin decreases serum-K in cats only in large doses. R. N. C.

Adrenaline and blood-potassium. A. D. Marenzi and R. Gerschman (Compt. rend. Soc. Biol., 1937, **124**, 382—383).—Adrenaline liberates K in the liver and thus increases plasma-K which, on fixation by the muscles, subsequently falls below the normal val. This action is intensified by cocaine and decreased by yohimbine and ergotamine. H. G. R.

Corticosterone, a crystallised compound with the biological activity of the adrenal-cortical hormone.—See A., II, 105.

Factors influencing survival of rats after adrenalectomy and the suitability of the young rat for testing the potency of adrenal cortex extracts. R. A. Cleghorn, S. M. M. Cleghorn, M. G. Forster, and G. A. McVicar (J. Physiol., 1936, **86**, 229—249).—The survival period is influenced by the age and strain of the animals; it is increased by the addition of bread to the diet, even when the NaCl content of the diet is reduced to 1%, suggesting that carbohydrate is also effective in prolonging life. The young rat is not suitable for testing cortical extracts. R. N. C.

Biological assay of the cortical hormone by the survival method in adrenalectomised young rats, and the influence of the salt content of the hormone extract. P. Schultzer (J. Physiol., 1936, **87**, 222—236).—The survival period is lengthened slightly by injection of 0·9% NaCl without cortical hormone (I). Rats injected with small doses of (I) survive for a longer period if the vol. of 0·9% NaCl is increased for the same dose. The gain in wt. is not related to the dose of (I). R. N. C.

Biological test for the corticotropic hormone. A. Jores and H. Beck (Z. ges. exp. Med., 1936, **97**, 622—629; Chem. Zentr., 1936, i, 2580).—The method is based on the increase in wt. of mouse adrenals per unit body-wt. produced by injection of the active material. A. G. P.

Effect of hypophysectomy on natural resistance of adult albino rats to histamine poisoning. D. Perla and S. H. Rosen (Arch. Path., 1935, **20**, 222—232).—Decreased resistance following hypophysectomy in rats is secondary to atrophic changes in the adrenal cortex due to withdrawal of the adrenotropic hormone of the anterior lobe. Repeated injection of the cortical hormone increased resistance to histamine. Ch. Abs. (*p*)

"Carbohydrate hormone" of the anterior pituitary in blood in glycogen-storing diseases. W. Hertz (Z. Kinderheilk., 1935, **57**, 525—531; Chem. Zentr., 1936, i, 1901).—The hormonal activity of blood-sera of children afforded no proof that the anterior pituitary is concerned in diseases involving glycogen accumulation. A. G. P.

Anterior pituitary extracts and liver-fat. C. H. Best and J. Campbell (J. Physiol., 1936, **86**, 190—193).—The EtOH-insol. fraction of an alkaline extract of ox anterior pituitary, administered to fasting white rats, causes a marked increase in liver-fat, a fall in total body-fat, and an increased ketonuria. The effects are less marked in fed rats. Posterior pituitary, liver, and pancreas extracts similarly prepared produce only slight effects. The rise of blood-ketones produced in thyroidectomised rabbits by another anterior pituitary prep. does not occur when hypothyroidism becomes advanced, but reappears after thyroid feeding. R. N. C.

Action of the pancreatropic hormone of the anterior pituitary in animals. K. J. Anselmino, L. Herold, and F. Hoffmann (Z. ges. exp. Med., 1935, **97**, 329—335; Chem. Zentr., 1936, i, 2762).—The hormone stimulated the growth and activity of the islets of Langerhans (cf. A., 1934, 701). A. G. P.

Effect of extracts of pituitary body on inorganic salts in the blood of normal and hypophysectomised dogs. S. Nishida (Sei-i-Kwai Med. J., 1935, **54**, No. 3, 29—41).—Injection of pituitrin, antuitrin, or pituglandol into normal dogs increases blood-Cl′, -K, and -Mg but decreases -Na and -Ca. Hypophysectomy produces changes of a reverse nature in Cl, K, Mg, and Ca; the injections reverse these effects. Blood-Na is decreased by hypophysectomy and further increased by injections. Ch. Abs. (*p*)

Effect of salt saturation on the urinary response to pituitary (posterior lobe) extract. K. I. Melville (J. Physiol., 1936, **87**, 129—143).—The diuretic response in dogs is increased by previous administration of NaCl, KCl, or $NaNO_3$, but not by Na_2SO_4. R. N. C.

Action and fate of injected posterior pituitary extracts in the decapitated cat. A. M. Jones and W. Schlapp (J. Physiol., 1936, **87**, 144—157).—The pressor (I) and oxytocic hormones disappear from the circulation at the same rate, 85% being lost in 20 min. and the whole in 2 hr. Blood dilution does not occur. About 30% of (I) appears in the urine. The hormones are destroyed somewhat rapidly by incubation with glycerol extracts of liver, kidney, and spleen, and slowly with whole blood, but not with incoagulable plasma. R. N. C.

Inhibition of water diuresis by pituitary (posterior lobe) extract and its relation to the water load of the body. M. Pickford (J. Physiol., 1936, **87**, 291—297).—The H_2O load over a certain range is roughly inversely ∝ the % inhibition of the rate of urine flow from intravenous injection of post-pituitary extract. R. N. C.

Function of the pigment hormone in warm-blooded organisms. I. Effect of the hormone on temperature and blood-sugar following interventricular injection in rabbits. A. Jores (Z. ges. exp. Med., 1935, **97**, 207—213; Chem. Zentr., 1936, i, 2130).—Intracerebral or intravenous injection of alkaline extracts of posterior pituitary lowers body-temp. and increases blood-sugar (I). The effects are unaltered by preliminary irradiation of the extracts with ultra-violet light. In atropinised rabbits and in narcosis the effect on body-temp. is diminished and that on (I) is unchanged. The hormone is probably the parasympathetic hormone and, in mammals, is antagonistic towards adrenaline. A. G. P.

Variations in hormone content of the pituitary with alternation of light and darkness. A. Jores (Klin. Woch., 1935, **14**, 1713—1716; Chem. Zentr., 1936, i, 1901).—The melanophone-hormone content increased during darkness to extents which apparently differed with the method of extraction. In darkness the hormone occurs in the gland in the form of an inactive precursor. Variations in other hormones are also examined and discussed. A. G. P.

Sex and cells. I—III. A. Partos (Z. ges. exp. Med., 1934, **95**, 95—103; 1935, **95**, 322—330, 331—340; Chem. Zentr., 1936, i, 2379).—II. Effects of phloridzin on sugar content of corpuscles are examined.

III. Administration of heterologous sexual hormones to phloridzinised dogs of both sexes produced changes in corpuscle sugars characteristic of the sexes. No change occurred after castration and destruction of the anterior pituitary. A. G. P.

Hormone of pregnancy urine and cholesterolæmia. L. Gioglia (Boll. Soc. ital. Biol. sperim., 1935, **10**, 890—892; Chem. Zentr., 1936, i, 2380).—The change in blood-cholesterol in young rabbits following injection of pregnancy urine is directly related to the folliculin content of the urine in the various stages of pregnancy. A. G. P.

Menstruation with "artificial" corpus luteum hormone. C. Kaufmann (Klin. Woch., 1935, **14**, 778—779; Chem. Zentr., 1936, i, 2127).—The "artificial" hormone prepared from stigmasterol produced an apparently normal menstruation in a castrated female (with atrophied uterine mucus membrane) following preliminary treatment with dihydrofolliculin benzoate. A. G. P.

Maintenance of pregnancy in the hypophysectomised rabbit with progestin. J. M. Robson (J. Physiol., 1936, **86**, 415—424). R. N. C.

Œstradiol benzoate therapy in depressions at the menopause. M. S. Jones, T. N. MacGregor, and H. Tod (Lancet, 1937, **232**, 320—322).—Injections of œstradiol benzoate (I) cured in certain cases the depressive illness which accompanies the menopause. Excessive amounts of gonadotropic hormone in the urine were reduced by (I). L. S. T.

Response of the uterus of immature rabbits to œstrone. M. K. McPhail (Quart. J. Pharm., 1936, **9**, 672—678).—The influence of frequency of injection, breed of rabbit, and ovariectomy, and the relationship between dose and response were investigated. F. O. H.

Extraction and spectroscopic detection of œstriol in urine of pregnancy. H. Bierry and B. Gouzon (Compt. rend. Soc. Biol., 1937, **124**, 320—323; cf. A., 1936, 644).—The absorption band of œstriol and œstrone occurs at 5735 A. H. G. R.

Conjugated œstrogens in urine of pregnant mares. B. Schachter and G. F. Marrian (Proc. Soc. Exp. Biol. Med., 1936, **35**, 222—224).—The "free" œstrogens, as determined colorimetrically, average 0·2—0·5 mg. per 100 c.c. of urine. Combined œstrogens average nearly 10 mg. per 100 c.c. at the 7th month and fall to 1—3 mg. per 100 c.c. at term. Fractionation of a NaOH-washed BuOH extract of urine yields a white amorphous solid containing 40% of œstrogens (as œstrone). Glycuronic acid is not present but the ester contains S and may be a phenol ester of H_2SO_4. P. G. M.

Relation of œstrin and pregnancy urine hormone in influencing uterine motility. V. J. Sager and S. L. Leonard (Proc. Soc. Exp. Biol. Med., 1936, **35**, 242—244).—Œstrin, in sufficient quantity, can override the inhibitory action of pregnancy urine hormone on uterine motility in the castrated rabbit. P. G. M.

Œstrogenic activities of some synthetic phenanthrene compounds and some oxidation products of theelol. S. A. Thayer, D. W. MacCorquodale, and E. A. Doisy (J. Pharm. Exp. Ther., 1937, **59**, 48—53).—The œstrogenic activity of 32 phenanthrene derivatives is investigated. Of these, 9-ethylphenanthrene, 1-keto-1 : 2 : 3 : 4-tetrahydrophenanthrene, and 2-phenanthrylacetic acid gave positive responses when injected into mice in 25 mg. dose. The oxidation acid $C_{18}H_{22}O_5$ of theelol is much less active than theelin but more potent than the above synthetic derivative. P. W. C.

Œstrogenic action of various products obtained during the refining of petroleum. A. Arthus and M. Provoost (Compt. rend. Soc. Biol., 1937, **124**, 345—347).—Crude vaseline oils and mazout have œstrogenic properties. This is observed not only after subcutaneous injection but also after complete immersion of the animal in a solution of the product in xylene. H. G. R.

Action of follicular hormone preparations and follicular hormone on the horse bean (*Vicia faba minor*). K. A. Neurath (Biochem. Z., 1937, **289**, 201—210).—Administration of small amounts of progynon accelerates shoot formation and larger amounts give small increases in crop yield. P. W. C.

Chemical nature of δ-follicular hormone.—See A., II, 100.

Presence of a substance similar to prolan-*A* in the urine in essential hypertonia. E. Dicker (Compt. rend. Soc. Biol., 1937, **124**, 303—304). H. G. R.

Gonadotropic hormone and incoercible vomiting in pregnancy. A. Brindeau, H. Hinglais, and M. Hinglais (Compt. rend. Soc. Biol., 1937, **124**, 349—351).—Hypersecretion of the gonadotropic hormone was observed in cases of vomiting in the early months of pregnancy. H. G. R.

Action of various substances of the androsterone group on the genital organs of the chicken embryo. E. Wolff and E. Wolff (Compt. rend. Soc. Biol., 1937, **124**, 367—369).—17-Methylandrostan-17-ol-3-one is 4—7 times as active as androsterone (I) in the comb-growth, prostate, and seminal vesicle tests, but only 1·5 times as active on the genital organs of the chicken embryo. Testosterone is 6 times as active as (I) in the comb-growth, 10 times as active on the growth of the seminal vesicles of rodents, but 1·5—2 times less active in the tests on chicken embryos. H. G. R.

Progesterone-like action of testosterone and certain related compounds. M. Klein and A. S. Parkes (Proc. Roy. Soc., 1937, **B**, **121**, 574—579).—Methyltestosterone and methyl- and ethyl-dihydrotestosterone and -androstanediol produce progestational proliferation in the uterus of ovariectomised rabbits, the activity being approx. 5% of that of progesterone. Testosterone shows some, and androstenedione slight, activity. F. O. H.

Similarity of action of male hormones and adrenal extracts on the female bitterling. I. S. Kleiner, A. I. Weisman, and D. I. Mishkind (Science, 1937, **85**, 75).—A discussion (cf. this vol., 38). L. S. T.

Use of bantam capons for the assay of male hormone preparations. A. S. Parkes (Quart. J. Pharm., 1936, **9**, 669—671).—The use of "Old English Game" bantam capons for the comb-test is recommended and a technique for caponisation is described. F. O. H.

Effect of hormones on blood-sugar in man. W. Schulz (Z. ges. exp. Med., 1935, **97**, 343; Chem. Zentr., 1936, i, 2760).—Insulin (I) action was intensified by administration of creatine and Gombreol (male sexual hormone from testes dissolved in oil). Neither substance alone affected blood-sugar. Pregenyl (a prep. of sexual hormone from urine) had the reverse effect whether administered alone or in conjunction with (I). A. G. P.

Insulin and the thyroidectomised rabbit. M. W. Goldblatt (J. Physiol., 1936, **86**, 46—60).—The hypersensitivity of thyroidectomised rabbits to insulin (I) is due to failure of glycogenolysis at low blood-sugar (II) levels. Unless the animals have been starved sufficient glucose is liberated to prevent convulsions. The hypersensitivity is not further increased by ergotamine. Adrenalinæmia in both normal and thyroidectomised adult rabbits is increased during hypoglycæmia. The (II) and blood-lactic acid increases caused by adrenaline in the thyroidectomised animal are slower in onset than in the normal animal; the (II) increase is also less in degree. The failure of glycogenolysis is hence due to the sluggishness of response of the sympathetic mechanism causing it; (I) does not produce deposition of glycogen in the livers of young thyroidectomised rabbits. R. N. C.

Insulin and the storage of liver-glycogen in anæsthetised cats. C. Reid (J. Physiol., 1936, **87**, 121—128).—Slow infusion of insulin (I) in fasting normal and adreno-medullectomised cats causes a rise of liver-glycogen (II) during the experimental period if the (I) does or the initial glucose (III) level in the blood is high, and a fall if the (I) dose is low and the initial blood-(III) is normal. (II) falls in both series of animals soon after (I) infusion is stopped, whilst blood-(III) rises in the normal animals only. (II) deposition in the normal animal given (III) is not increased by additional (I). The decrease of SO_4'' excretion produced by (III) is abolished by pancreatectomy, but is restored by (I) if the initial blood-(III) is high. (II) storage during infusion of (III) is not affected by pancreatectomy. R. N. C.

Action of insulin-glucose-chloride on post-operative acidosis. O. Lambret, J. Driessens, and H. Malatray (Compt. rend. Soc. Biol., 1937, **124**, 685—686; cf. A., 1936, 1565).—The acidosis is rapidly reduced by injection of a hypertonic solution of Cl′ and glucose associated with insulin. H. G. R.

Changes in the tissue of the adrenal cortex in rabbits following chronic insulin treatment. F. Schenk and H. Langecker (Endokrinol., 1935, **16**, 305—311; Chem. Zentr., 1936, i, 1901—1902).—Repeated subcutaneous injection of insulin into sexually-mature male rabbits increases the development of the cortex in which lipin-rich cells predominate. Subsequently three definite layers are formed, the inner- and outer-most of which contain plasma-rich cells of low lipin content. A. G. P.

Increase of adrenaline in the adrenal venous blood after injection of insulin. J. La Barre and R. Saric (Compt. rend. Soc. Biol., 1937, **124**, 287—289).—Stimulation of the central nervous system is the cause of adrenaline secretion following insulin administration. H. G. R.

Action of protamine-insulin in rabbits in relation to its standardisation. R. P. Patel and B. Rönnmark (Quart. J. Pharm., 1936, 9, 679—683).—Subcutaneous injection into rabbits of small doses (approx. 0·5 unit per kg.) of "neutralised" protamine–insulin has an effect on the blood-sugar almost identical with that of the same dose of a normal insulin prep. F. O. H.

Factors influencing the stability of insulin. M. Sahyun, M. Goodell, and A. Nixon (J. Biol. Chem., 1937, 117, 685—691).—An insulin (I) solution (100 units per c.c.; p_H approx. 3) on incubation at 52° lost 17% of its potency in 1 week and 50% in 9 weeks. After addition of 1 mg. of Cu or Fe per 1000 units, the loss was smaller; with 1 mg. of Zn (which does not affect the hypoglycæmic action in rabbits), the loss was negligible after 7 weeks and only amounted to 10% after 9 weeks. P. W. C.

Factors antagonising the thyroxine influence on differentiation. O. Hoffman (Cold Spring Harbor Symp., 1934, 2, 106—109).—In amphibian larvæ NH_2-acids (especially arginine) delayed the differentiation caused by di-iodotyrosine. Ornithine antagonised thyroxine (I). Urea dehydrated tissues but accelerated (I) differentiation. The latter was also accelerated by glucose, glycogen, xylose, and (sometimes) fructose but retarded by galactose, sucrose, and (usually) lactose. Adrenaline mobilised blood-sugar and (I) increased its destruction. Hence adrenaline hastened and insulin retarded the response to (I). The antagonistic action between MeCN and (I) is not a species-limited reaction. Ch. Abs. (*p*)

Immunology of the thyroid problem. I. Snapper and A. Grünbaum (Wien. klin. Woch., 1935, 48, 1199—1201; Chem. Zentr., 1936, i, 1902—1903).—Pptn. of iodoprotein (I) by anti-(I) sera is inhibited by very small amounts of di-iodotyrosine (II). Sera obtained after injection of thyreoglobulin (III) do not ppt. (I). Pptn. of (III), elityran, or thyroid extract by anti-(III) sera is not inhibited by addition of thyroxine (IV). (II) and (IV) probably are not combined with protein in the thyroid. Pptn. of (I) by anti-(I) sera is inhibited by (II) and other compounds containing the 2 : 6-di-iodophenol group. A. G. P.

Effect of antithyrotropic serum on the thyroid gland of guinea-pigs treated with thyrotropic hormone. E. F. Scowen and A. W. Spence (J. Physiol., 1936, 86, 109—116).—Rabbits injected with thyrotropic hormone develop in their serum an antithyrotropic substance (I) that is also present in traces in normal rabbit and human serum, but not in serum from patients with Graves' disease. (I) is probably a hormone rather than an antibody. R. N. C.

Influence of the pineal body on growth. L. Takács (Z. ges. exp. Med., 1935, 97, 204—206; Chem. Zentr., 1936, i, 2129—2130).—Administration of powdered pineal gland improves the growth and body-wt. of young pullets. A. G. P.

Functional relation between pineal body and anterior pituitary. I. Effect on ketonæmia. S. Fiandaca (Biochem. Terap. Sperim., 1935, 22, 9—17; Chem. Zentr., 1936, i, 2128).—Injection of anterior pituitary extracts into rabbits increased the proportion of ketonic substances, notably β-hydroxybutyric acid, in blood. Pineal extracts have the reverse effect and when injected simultaneously prevent the above action of pituitary extracts. A. G. P.

Liberation of histamine by the heart muscle. G. V. Anrep, G. L. Barsoum, and M. Talaat (J. Physiol., 1936, 86, 431—451).—The cardiac muscle continuously produces measurable quantities of a histamine-like substance (I) which is probably histamine itself. (I) production is decreased when the heart fails, and is increased by a high arterial resistance, adrenaline, anoxæmia, and CO_2 administration. The heart rate and the systemic output do not affect (I) production. R. N. C.

Chemical transmitter of motor impulses to the stomach. J. S. Harrison and B. A. McSwiney (J. Physiol., 1936, 87, 79—86). R. N. C.

Action of the nephrohormone in regulating the water content of blood. K. Ishida and T. Miyaji (J. Chosen Med. Assoc., 1935, 24, 471—488).—The kidney produces a hormone which controls blood-H_2O. Experimental hydræmia is inhibited by injection of renal venous blood. The hormone is insol. in H_2O but sol. in EtOH, Et_2O, Ac_2O, and $CHCl_3$, is unsaponifiable, and resistant to heat and strong alkali. Ch. Abs. (*p*)

Dihydroxyphenylethanolamine (arterenol) as a possible sympathetic hormone. R. L. Stehle and H. C. Ellsworth (J. Pharm. Exp. Ther., 1937, 59, 114—121).—The effect of arterenol (I) on the blood pressure of ergotaminised decapitate cats is often though not invariably similar to the effect obtained on stimulation of the hepatic sympathetic nerves, and it is suggested that (I) is possibly liberated *in vivo* on such stimulation. P. W. C.

Avitaminosis in young beasts of prey. A. Scheunert and F. Schmidt-Hoensdorf (Zool. Garten, 1936, 8, 113—116; Chem. Zentr., 1936, i, 2766).—Avitaminosis-B_1, -*A*, and -*D* are demonstrated. A. G. P.

Nutritive value of yeast as a supplementary substance in the diet of infants. I. K. Itami (Okayama-Igak.-Zasshi, 1935, 47, 2072—2096).—The vitamin-*A*, -*B*, -*C*, and -*D* contents of various yeast preps. are examined. Ch. Abs. (*p*)

Avitaminosis-*A* and nitrogen metabolism. L. Emerique (Compt. rend. 1936, 203, 1546—1548; cf. A. 1935, 1034).—During -*A* deficiency in the rat, the amount of N fixed decreases, urinary N increases, and fæcal N is approx. const. In avitaminosis-*A* there is a breakdown in the synthesis of sp. proteins, with an increase in N metabolism. J. N. A.

Comparative influence of sugars in avitaminosis-*A* and on an artificially-complete diet on the growth and recovery of the rat. L. Randoin and S. Queville (Bull. Soc. Chim. biol., 1936, 18, 1789—1802).—Utilisation of galactose and lactose is not favoured by the presence of vitamin-*A* or -*B*. Glucose, fructose (I), maltose, and sucrose have practically no effect on the development of avit-

aminosis-*A* (time of cessation of growth, and appearance of xerophthalmia, rapidity of loss of wt., length of survival). Of the latter sugars (I) has the most unfavourable effect in respect of maintenance of the general condition of rats. P. W. C.

Crystalline vitamin-*A* concentrate. H. N. Holmes and R. E. Corbet (Science, 1937, **85**, 103).—Fractionation by freezing of a solution of the non-saponifiable matter from the liver oil of *Stereolepis ishinagi* yields a cryst. product of blue val. 10^5, m.p. 5·5—6°, I val. 360, corresponding with 4 double linkings. Preliminary analyses indicate C 83·5, H 10·5% approx. L. S. T.

Vitamin-*A* content of Australasian fish liver-oils. I. W. Davies and D. J. Field (Biochem. J., 1937, **31**, 248—250).—A table summarises the vitamin-*A* contents, determined by non-biological methods, of the liver-oils of nine species of fish. All species (except one) give average vals. of >0·1%, and an increase occurs in early summer. Only one (school shark, *Galeorhinus australis*) appears to be of economic importance. P. W. C.

Carotene of milk-fat (butter). A. E. Gillam and M. S. El Ridi (Biochem. J., 1937, **31**, 251—253).—Pure carotene (I), m.p. 180—181°, absorption max. in CS_2 514, 482 mμ, was isolated from a mixed sample of colostrum and ordinary milk-fat and shown to be practically pure β-(I), α-(I) being either absent or present in amounts <0·3% of the total (I). P. W. C.

Discrepancy between biological assays and other methods of determining vitamin-*A*. II. H. Pritchard, H. Wilkinson, J. R. Edisbury, and R. A. Morton (Biochem. J., 1937, **31**, 258—265).—Various vitamin-*A*-rich concentrates are separated by extraction with aq. 83% EtOH into sol. fractions, the physical and chemical criteria of which correspond closely with those usually accepted for -*A*, and insol. fractions which possess much greater biological activity than would be anticipated from the "blue" vals., and exhibit an absorption max. at 285—290 mμ, often without an inflexion at 328 mμ. One of the latter fractions, from a mammalian liver-oil concentrate, contained no detectable -*A* but was biologically active (17,900 international units per g.). Similar but less striking fractions were obtained by chromatographic adsorption. P. W. C.

Evaluation of fish-liver oils.—See B., 1937, 258.

Vitamin-*B* group. E. Dane (Chem.-Ztg., 1937, **61**, 145—148).—A review.

Influence of avitaminosis-*B* on the compsoition of pigeon muscle. R. Duffau (Compt. rend., 1937, **204**, 192—195).—Avitaminosis-*B* lowers the proportions of reducing sugars, lactic acid, orthophosphates, and total acid-sol. P in pigeon muscle. Daily administration of 2 g. of yeast prevents all derangement of muscle metabolism. Dosages of 1 g. prevent symptoms of avitaminosis but muscle composition is characteristic of the avitaminotic condition. A. G. P.

Influence of vitamin deficiency on [after-effects of] surgical operations in south China. K. Boshamer (Münch. med. Woch., 1935, **82**, 2045—2047; Chem. Zentr., 1936, i, 2132—2133).—Deficiency of vitamin-B_1 affects post-operative changes; that of -*A* influences subsequent infections during healing. The significance of deficiencies as the causes of various diseases is also considered. A. G. P.

Effect of oryzotoxin on the growth of pigeons. G. Solarino (Boll. Soc. ital. Biol. sperim., 1935, **10**, 917—920; Chem. Zentr., 1936, i, 2133).—Oryzotoxin (I) occurs in the EtOH extract of polished rice. Effects of feeding an aq. emulsion of (I) on the beri-beri quotient of growing pigeons are examined. A. G. P.

Synthetic vitamin-B_1. R. R. Williams and J. K. Cline (J. Amer. Chem. Soc., 1937, **59**, 216—217).—Synthetic vitamin-B_1 chloride (A., 1936, 1276) is obtained with m.p. 232—234° from MeOH + Et_2O, and with m.p. 246—250° from MeOH + EtOH or H_2O + EtOH. The bromide behaves similarly. Both forms have the same absorption spectra and physiological activities. H. B.

Colorimetric determination of vitamin-B_1. I. Panschina-Trufanova (Biochimia, 1936, **1**, 597—602).—1 ml. of Ehrlich's diazo-reagent and 0·5 ml. of Kinnersley and Peters' buffer solution (A., 1934, 705) are added to 0·1 ml. of solution, followed by 0·06 ml. of N-H_2SO_4. The red coloration is completely developed in 1 min., and remains unchanged for ≤15 days. R. T.

Rates of digestion and absorption in avitaminosis-B_1 and -B_2. R. Reder and W. D. Gallup (Proc. Oklahoma Acad. Sci., 1935, **15**, 58—61).—Rates of digestion and absorption of carbohydrates by rats; deprived of vitamin-B_1 and -B_2 were < normal. Addition of -B_1 to the diet did not increase the rates; that of -B_2 induced the same rates as when both vitamins were supplied. Ch. Abs. (*p*)

Preparation of pure vitamin-B_1 and -B_2 (flavin), together with ergosterol, from yeast. A. V. Trufanov (Biochimia, 1936, **1**, 498—511).—The fresh yeast is boiled for 10 min. with an equal vol. of 0·1% AcOH, in presence of 0·1% of PhMe, the suspension is centrifuged, and the supernatant liquid is evaporated at 35—40° to 20% of its original vol. It is then deproteinised [144 ml. of $Pb(OAc)_2$ per litre of solution], filtered, and the warm filtrate is treated with 150 ml. of 25% $Ba(OH)_2$ suspension per litre. Vitamin-B_1 is absorbed from the filtrate from this operation, using finely powdered birch C activated by boiling with HCl; 50% of the original -B_1 content is recovered by acid elution of the adsorbate. Practically the entire ergosterol (I) of the yeast remains in the centrifugate after extraction. Flavin is recovered from the $Pb(OAc)_2$ ppt. by boiling for 1·5 hr. with 7% H_2SO_4, filtering, and absorbing on ascanite, from which it is eluted by C_5H_5N–MeOH–AcOH–H_2O mixture. The yields of cryst. products were: -B_1 0·9 mg., -B_2 0·22 mg., and (I) 4 g. per kg. of yeast. R. T.

Semiquinone of the flavine dyes, including vitamin-B_2.—See A., 1936, 1392.

Distinction between the antiscorbutic and antidystrophic activities of ascorbic acid in experimental scurvy. G. Mouriquand, H. Tete,

and G. Wenger (Compt. rend. Soc. Biol., 1937, **124**, 659—661).—Complete absence of ascorbic acid from the diet produces a general dystrophy, whilst with a partial deficiency, hæmorrhagic lesions without dystrophy occur. H. G. R.

Antiscorbutic power of complex salts derived from vitamin-*C* (sodium ferri- and ferro-scorbon). G. Mouriquand, F. Arloing, A. Morel, A. Josserand, and S. Armand (Compt. rend. Soc. Biol., 1937, **124**, 661—664).—The preventive doses of Na ferriscorbon (I) and ferroscorbon (A., 1935, 1526) are 5 and 1·5 times that of *l*-ascorbic acid, respectively, at this dosage (I) having an antidystrophic action. H. G. R.

Antiscorbutic action of monomethylvitamin-*C*. N. Bezssonoff and R. Sacrez (Compt. rend. Soc. Biol., 1937, **124**, 356—358).—The activity of 3-methylascorbic acid is < that of the cryst. substance isolated from cabbage juice (A., 1925, I, 751). H. G. R.

***l*-Ascorbic acid and cholesterol metabolism.** R. Tislowitz (Z. ges. exp. Med., 1935, **97**, 127—133; Chem. Zentr., 1936, i, 1908).—Brief or prolonged administration of ascorbic acid to dogs did not change the blood-cholesterol level. In respect of cholesterol metabolism vitamin-B_1 and -*C* are antagonistic to -*A* and -*D*. A. G. P.

Influence of ascorbic acid on melanogen elimination. H. Kahler and V. La Croix (Klin. Woch., 1935, **14**, 1851—1853; Chem. Zentr., 1936, i, 2133).—Melanogen production in red cells is inhibited by vitamin-*C*. A. G. P.

Effect of vitamin-*C* on the pathologically modified blood picture [leucocythæmia]. H. Eufinger and G. Gaehtgens (Klin. Woch., 1936, **15**, 150—151; Chem. Zentr., 1936, i, 2133).—The action of vitamin-*C* is centred on the bone marrow. A. G. P.

Ascorbic acid in lactating women. F. Widenbauer and A. Kühner (Z. Vitaminforsch., 1937, **6**, 50—75).—Examination of the vitamin-*C* metabolism in six lactating women indicated a -*C* deficiency, the content in -*C* of the milk of 0·0005—0·0022% being equiv. to a deficiency of 1·5—5·7 g. in the maternal organism. Administration of -*C* produced a level of 0·0038—0·0075% in the milk. When saturation in -*C* of the maternal organism occurs, urinary excretion is initiated and the -*C* content of the milk increases to an extent > that of the urine. The daily requirement of the mother is 80—100 mg. of -*C* in order that the suckling receives 40—50 mg. per day. Oral administration of -*C* increases erythrocyte, thrombocyte, and reticulocyte counts, hæmoglobin val., and blood coagulability lowered by avitaminosis-*C*; the leucocyte picture is also corr. F. O. H.

Metabolism of vitamin-*C*. T. Baumann and L. Rappolt (Z. Vitaminforsch., 1937, **6**, 1—50).—Methods of determining vitamin-*C* in urine and milk were investigated. In lactating women, the min. requirement of -*C* is 50 mg. per day; when the milk contains <0·004% of -*C*, the maternal organism is being depleted. The -*C* content of milk depends on that of the maternal organism and ultimately on that of the diet and amount of milk secreted. Generally the content in milk during spring is < that during summer and autumn. Prolonged accumulation of -*C* in the maternal organism is possible. With infants breast-fed on milk containing 0·0009—0·0015% of -*C*, avitaminosis-*C* was not evident. With infants receiving up to 100 mg. of -*C* per day, the urinary excretion of -*C* per kg. body-wt. at very high intakes is relatively < that at lower intakes. Other metabolic aspects of -*C* in normal and diseased children are discussed. F. O. H.

Vitamin-*C* metabolism of the new-born. W. Neuweiler (Z. Vitaminforsch., 1937, **6**, 75—82).—In infants aged 9—10 days, the excretion and saturation vals. of vitamin-*C* differed with the amount of -*C* received (*i.e.*, with breast- or artificial feeding). The -*C* requirement for the suckling is approx. 6 mg. per kg. daily, synthesis of -*C* not occurring in the organism. F. O. H.

Vitamin-*C* content of cow's milk. S. K. Kon and M. B. Watson (Biochem. J., 1937, **31**, 223—226).—The healthy mammary gland secretes -*C* only in the reduced form. Under South of England conditions the -*C* content of herd milk is unaffected by season or nutrition. The -*C* content of colostrum is only slightly > that of milk. Milk from a cow suffering from mastitis is much poorer in -*C*. J. N. A.

Vitamin-*C* in normal and paradentotic human saliva. D. Zimmet and H. Dubois-Ferrière (Arch. Sci. phys. nat., 1936, **18**, Suppl., 151—154).—The saliva of humans free from dental or mouth diseases contains about 0·0014% of ascorbic acid (I) (cf. Stuteville, A., 1936, 906). This val. does not vary with the time of day, and is unaffected by administration of (I). 50% lower vals. are found in patients with paradentosis; treatment with (I) effects clinical improvement. F. A. A.

Effect of tonsilectomy on the vitamin-*C* content of human saliva. D. Zimmet and H. Dubois-Ferrière (Compt. rend. Soc. Biol., 1937, **124**, 246—247).—A marked decrease in the concn. of vitamin-*C* was observed. H. G. R.

Vitamin-*C* and reduced glutathione in the human tonsils. D. Zimmet and H. Dubois-Ferrière (Compt. rend. Soc. Biol., 1937, **124**, 247—248).—The tonsils contain 0·02—0·025% of vitamin-*C* and 0·104—0·109 and 0·155—0·170% of reduced glutathione by Randoin and Fabre's and Zimmet's methods, respectively. H. G. R.

Diuretic action of vitamin-*C*. M. A. Abbasy (Biochem. J., 1937, **31**, 339—342).—An increase in urine elimination was regularly observed when large doses of -*C* were administered to rheumatic and normal children. R. M. M. O.

Synthesis of vitamin-*C* by orthoptera (*Blattella germanica*) grown aseptically. E. Wollman, A. Giroud, and R. Ratsimamanga (Compt. rend. Soc. Biol., 1937, **124**, 434—435).—The insects, grown aseptically over a period of 15 years on a vitamin-*C*-free diet, contain 0·01—0·02% of -*C*. H. G. R.

Biological rôle of vitamin-*C* in the plant. B. A. Rubin and K. Stratschitzki (Biochimia,

1936, **1**, 343—350).—Vitamin-*C* is absent in cabbage seed, but appears before the 4th day of germination. Along with catalase (II) and peroxidase (III) it continues to increase and reaches max. concn. when the plant has 8 leaves. The -*C* content then decreases, whilst those of (I) and (II) steadily increase until the period of ripening, when the -*C* and (I) activities fall; that of (II) continues to increase. W. O. K.

Vitamin-*C* in tea. I. A. Goljanizki and K. A. Brjuschkova (Compt. rend. Acad. Sci. U.R.S.S., 1936, **4**, 381—384).—Fermentation of Russian tea leaves (containing 0·113—0·187% of vitamin-*C*) activates the inactive -*C* content. F. N. W.

Biological assay of the vitamin-*C* content of Swedish apples. G. F. Göthlin (Kung. Landtbruks.-Akad. Handl., 1935, **74**, 884—962; Chem. Zentr., 1936, i, 2384).—Data for 12 varieties are recorded. Highest vals. occurred in Bramley's Seedling. A. G. P.

Enzymic action of ascorbic acid (vitamin-*C*). G. Woker and J. Antener (Helv. Chim. Acta., 1937, **20**, 144—150).—Preliminary experiments show no difference in the behaviour towards CH_2O–methylene blue (I) solution of crude boiled milk and that treated with ascorbic acid (II). (II) appears identical with the Schardinger enzyme of crude milk. In place of (I), S can function as acceptor. Peroxidase action of (II) is established, as is the diastatic action of the system (II)–dehydroascorbic acid. H. W.

Interaction of peroxidase and ascorbic acid in biological oxidations and reductions. H. Tauber (Enzymologia, 1936, **1**, 209—212).—Ascorbic acid is rapidly oxidised by peroxidase if quinone-forming substances are present. Oxidation is especially rapid in the presence of adrenal extracts, which contain an unknown substance much more powerfully phenolic than adrenaline. E. A. H. R.

Dehydroascorbic acid reductase. E. F. Kohman and N. H. Sanborn (Ind. Eng. Chem., 1937, **29**, 189—190).—If 2 : 6-dichlorophenol-indophenol (I) can be used to determine ascorbic acid, raw pea juice, but not the heated juice nor raw cabbage juice, contains a dehydroascorbic acid reductase, since in raw pea juice restoration of reducing val. towards (I) appears to be possible after its destruction by oxidation. I. A. P.

Autoxidation and inorganic catalysis and the activity of the ascorbic acid oxidase. J. Ettori and R. Grangaud (Compt. rend. Soc. Biol., 1937, **124**, 557—559).—Traces of Cu markedly increase the autoxidation of ascorbic acid at p_H 6·15. H. G. R.

Peculiarities of oxidation of vitamin-*C*. N. A. Bezssonoff [with M. I. Woloszyn] (Biochimia, 1936, **1**, 548—559).—The proportion of ascorbic acid (I) oxidised by atm. O_2 at 37° is inversely $\propto$ initial concn. of (I). The reaction involves formation of ascorbic ether (II), $(C_6H_7O_6\cdot)_2$. The resulting equilibrium is represented: (I)$\rightleftharpoons$(II)$\rightleftharpoons$dehydroascorbic acid (III). This equilibrium exists in lemon juice in presence of dichlorophenol-indophenol (IV), which oxidises $>$40% of the (I) present. In solutions of pure (I), (IV) completely oxidises (I), to give the equilibrium (II)$\rightleftharpoons$(III), as is shown by the negative Bezssonoff reaction and by biological tests. The reaction of decoloration of (IV) by (I) in lemon juice is less sensitive to variations in p_H than is the case with solutions of pure (I). It is concluded that in biological media (I) can take part in redox reactions involving free O_2, taking place at cell membranes. R. T.

Reduction of dehydroascorbic acid by lactic acid bacteria. E. S. Tkatschenko (Biochimia, 1936, **1**, 579—582).—Conversion of dehydroascorbic acid into ascorbic acid takes place in cultures of *B. bulgaricus*, *acidophilus*, and *Leichmanni*. R. T.

True vitamin-*C* content of the animal organism. P. E. Simola and E. Ylinen (Suomen Kem., 1937, **10**, B, 1).—Ascorbic acid is the only substance present in brain, kidney, thymus, thyroid, and intestine which reduces dichlorophenol-indophenol. Liver and adrenal extracts contain in addition small quantities of other reducing substances. E. A. H. R.

Determination of reduced ascorbic acid in blood. M. Pijoan, S. R. Townsend, and A. Wilson (Proc. Soc. Exp. Biol. Med., 1936, **35**, 224—226).—Determination in blood should be carried out within ½ hr. of collection, since the vals. are affected by storage even at 0°. P. G. M.

Spectrophotometric determination of ascorbic acid in tissues. A. Chevallier and Y. Choron (Compt. rend. Soc. Biol., 1937, **124**, 453—455).—Results obtained by measurement of the absorption band at 2650 A. are $<$ those obtained by chemical methods. H. G. R.

Determination of vitamin-*C*. N. Bezssonoff and V. Woloszyn (Compt. rend. Soc. Biol., 1937, **124**, 353—355).—Details are given of Bezssonoff's method (A., 1934, 1145). H. G. R.

Potentiometric determination of vitamin-*C*. E. Becker and J. di Gleria (Z. Vitaminforsch., 1937, **6**, 86—95).—Pure vitamin-*C* preps. can be determined by I (which gives the higher vals.) or 2 : 6-dichlorophenol-indophenol. In neutral or slightly acid media (p_H $>$4), -*C* is not stable. The oxidation–reduction potential of -*C* against a saturated Hg_2Cl_2 electrode is +329·5 mv. at p_H 0, the val. decreasing by approx. 58 mv. for each increase in p_H of 1·0. Determination of -*C* in foods by potentiometric titration is described. F. O. H.

Precipitation and colour reaction for ascorbic acid. Specificity of acidified sodium selenite solution. V. E. Levine (Proc. Soc. Exp. Biol. Med., 1936, **35**, 231—235).—Ascorbic acid is the only org. substance tested which reduces acidified selenite reagent to Se in the cold. P. G. M.

Ascorbic acid in the cell and its detection. A. Giroud, C. P. Leblond, R. Ratsimamanga, and M. Rabinowicz (Protoplasma, 1936, **25**, 115—123).—Bibliographical review. M. A. B.

New forms and sources of vitamin-*D*. C. E. Bills (J. Amer. Med. Assoc., 1937, **108**, 13—15).—A review.

Photochemical transformation of ergosterol into vitamin-*D*. O. F. F. Nicola (Rev. méd. Lat.-Amer., 1934, No. 220, 358—385; No. 231, 479—

510).—The transformation is influenced by the quality and purity of the solvents used, but is governed by the laws of photochemistry. Irradiation with λλ 300—284 mμ yields largest amounts of vitamin-*D*. At other λλ other substances without antirachitic potency are produced. Prolonged irradiation destroys -*D*. Ch. Abs. (*p*)

Effect of solvents on therapeutic activity of irradiated ergosterol. F. Erben (Münch. med. Woch., 1935, **82**, 1794—1795; Chem. Zentr., 1936, i, 2134).—Cryst. vitamin-*D* dissolved in propylene glycol (I) (0·03 g. per 100 c.c.) shows increased chemical activity. Irradiated ergosterol under these conditions is 2—3 times as active as when dissolved in oil. (I) is non-toxic. A. G. P.

Relation of bile to absorption of vitamin-*D*. N. B. Taylor, C. B. Weld, and J. F. Sykes (Brit. J. Exp. Path., 1935, **16**, 302—309).—Bile is necessary for the absorption of irradiated ergosterol from the intestinal tract. Only a small fraction of the vitamin-*D* administered orally or intravenously appears in the bile of dogs. Bile given to chicks does not enhance the antirachitic action of -*D*. Ch. Abs. (*p*)

Mode of action of vitamin-*D*. IV. Absorption of calcium chloride, xylose, and sodium sulphate from isolated loops of small intestine and of calcium chloride from the abdominal cavity of the rat. R. Nicolaysen (Biochem. J., 1937, **31**, 323—328; cf. this vol., 104).—The amount of injected $CaCl_2$ absorbed from loops isolated under physiological conditions during 5 hr. increases smoothly with increase in the amount injected, but is always less in vitamin-*D* deficiency. The latter has no effect on absorption of xylose or Na_2SO_4 or of $CaCl_2$ from the abdominal cavity, whence it is inferred that the action of -*D* is local and sp. The lower rate of Ca absorption as compared with that for other substances and the lower acidity of the intestinal contents in -*D* deficiency suggests that -*D* effects increased secretion of Ca into the intestine. R. M. M. O.

Influence of large doses of vitamin-*D* on composition of eggs. C. Antoniani and F. Usuelli (Biochim. Terap. sperim., 1935, **22**, 1—8; Chem. Zentr., 1936, i, 2133—2134).—Administration of large doses of vitamin-*D* to hens caused a slight decrease in egg-wt. but did not affect wt. of yolk or shell or the Ca and P contents of the latter. A. G. P.

Influence of vitamin-*D* on activity of phosphatase. G. Rath (Diss., Kiel, 1933: Bied. Zentr., 1935, **A**, **6**, 182).—Phosphatæmia curves of rabbits indicate inhibition of phosphatase activity following administration of vitamin-*D*. A. G. P.

Chemical activation of sterols. II. Activation of cholesterol and its derivatives. J. C. Eck, B. H. Thomas, and L. Yoder (J. Biol. Chem., 1937, **117**, 655—661).—Cholesterol (ordinary and purified), cholesteryl chloride, cholesterilene, dicholesteryl ether, cholestene, and Bu cholesteryl ether are all activated by heating at 85—90° with H_2SO_4–Ac_2O in AcOH, yielding a product (I) of the same antirachitic potency, whilst only ordinary cholesterol yields a potent antirachitic substance on irradiation. This proves that (I) is not derived from the provitamin-*D* of cholesterol. P. G. M.

Pro-vitamin from the sterol of pigskin. A. Windaus and F. Bock (Z. physiol. Chem., 1937, **245**, 168—170).—The pro-vitamin (I) content of the skin is ≫ that of internal organs. Pigskin, which contains up to 5·9% of (I), is the richest source of (I) yet encountered. (I) isolated from the crude sterols of the skin by adsorption on Al_2O_3 and fractional elution is identical with 7-dehydrocholesterol. W. McC.

Antirachitic vitamin from halibut-liver oil. H. Brockmann (Z. physiol. Chem., 1937, **245**, 96—102; cf. A., 1936, 1162).—The antirachitic vitamin of the oil, isolated as 3 : 5-dinitrobenzoate by the procedure formerly described, is -D_3. No other antirachitic vitamin could be obtained from the oil. W. McC.

Vitamin-*D* in tunny-liver oil. S. Schmidt-Nielsen and S. Schmidt-Nielsen (Norske Vid. Selsk., 1933, **6**, 218—221; Bied. Zentr., 1935, **A**, **6**, 181).—Oil is extracted from Na_2SO_4-dried liver by means of $CHCl_3$. Vitamin-*D* contents average 50,000—100,000 Oslo units, but vals. decline rapidly during storage for 1 year. A. G. P.

Antirachitic substance from tunny-liver oil.—See A., II, 100.

Antirachitic potency of vitamin-*D*.—See B., 1937, 287.

Effects of vitamin-*E* deficiency on the thyroid gland of the rat. E. Singer (J. Physiol., 1936, **87**, 287—290). R. N. C.

Gonadotropic activity of the pituitaries of vitamin-*E*-deficient rats. I. W. Rowlands and E. Singer (J. Physiol., 1936, **86**, 323—326).—The luteinising capacity of the pituitary of the non-pregnant rat is reduced in avitaminosis-*E*, and a similar condition occurs in early pregnancy. The gonadotropic hormone content of the pituitaries of rats that have been cured of avitaminosis-*E* is normal. R. N. C.

Antihæmorrhagic vitamin. H. J. Almquist (J. Biol. Chem., 1937, **117**, 517—523).—The highly active oil, N 0·23%, no S or P, obtained by mol. distillation (A., 1936, 1431) contains no ·OH and is optically inactive. It is unstable to EtOH–alkalis, and is destroyed by sunlight, absorbing strongly in the ultra-violet. The concentrate has mean mol. wt. 600, and gives positive tests for indole and unsaturated linkings. F. A. A.

Treatment of human pellagra with the "filtrate factor." P. J. Fouts, S. Lepkovsky, O. M. Helmer, and T. H. Jukes (Proc. Soc. Exp. Biol. Med., 1936, **35**, 245—247).—Human pellagra can be cured in patients on a maize diet by a liver filtrate (containing the chick antidermatitis factor) free from vitamin-B_2 and -B_6. P. G. M.

Dietary requirements for lactation. VI. Further experiments on factor L_2, a second lactation factor present in yeast. W. Nakahara, F. Inukai, and S. Ugami (Sci. Papers Inst. Phys. Chem. Res. Tokyo, 1937, **31**, 42—54; cf. A., 1936, 766).—

Factor L_2 is extracted from yeast by EtOH, carried down with the phosphotungstic acid ppt. and again with the $AgNO_3$ ppt. A. L.

Advances in the colloid chemistry of protoplasm in the last ten years. I—III. V. V. Lepeschkin (Protoplasma, 1935, **24**, 470—494; 1936, **25**, 124—149, 301—332).—A review. M. A. B.

Development and adaptation of plastids. R. Savelli (Atti R. Accad. Lincei, 1936, [vi], **24**, 156—159).—The nature and evolution of "eleochloroplastids" from normal plastids in plants such as xerophytes are discussed. F. O. H.

Action of *X*-rays on the cell elements of spring wheat. A. S. Afanassieva (Protoplasma, 1936, **25**, 77—91).—Doses up to 1000 *r* had no effect on wheat in contrast to rye. Higher doses produced adverse effects as in rye, including the appearance of chromatin masses in the cell plasma. M. A. B.

Action of α-rays on protoplasm and chloroplasts. R. Biebl (Protoplasma, 1935, **24**, 225—257).—Exposure of *Bryum* leaves to Po preps. varying from 0·8 to 17·2 mg. Ra equiv. caused characteristic injury or death of cells. The lethal time of exposure varied inversely with the strength of the prep. During the latent period between cessation of irradiation and death, the chloroplasts became smaller and rounded and the cells showed changes in type and rate of plasmolysis by KCl, urea, $CaCl_2$, and fructose. Plasma-η was increased. M. A. B.

Action of *X*-rays on dormant and germinating seeds. A. J. Atabekova (Protoplasma, 1936, **25**, 234—260).—Doses of 250 *r* hastened germination of pea seeds by 2—3 days and increased germinating power by 24·5%. Similar treatment of seedlings increased resistance to adverse conditions, rate and uniformity of ripening, and yield (by 12%). M. A. B.

Influence of mitogenetic radiation on cell permeability. A. Potozky (Protoplasma, 1936, **25**, 49—55).—Mitogenetic radiations produced by the interaction of $K_2Cr_2O_7$ and $FeSO_4$ or H_2O_2 and $KMnO_4$ increased the permeability of the cells of beetroot and flower petals as shown by diffusion of cell sap and pigment into the intercellular spaces or the surrounding medium and by fading of the petals. M. A. B.

[Plant] cell elongation; electrical properties of the cell wall. J. Bonner and A. N. J. Heyn (Protoplasma, 1935, **24**, 466—469).—The cataphoretic charge of suspensions of cell wall particles of *Avena* coleoptiles appears to depend not on pectins, cellulose, hemicelluloses, or phosphatides but on certain proteins which are very firmly bound to the cell wall and are not removable even by heating with HCl or NaOH. The charge is unaltered by additions of hetero-auxin and is the same in both whole and decapitated coleoptiles. M. A. B.

Oxidation–reduction potential of the cells of higher plants. N. Krassinsky (Protoplasma, 1936, **25**, 41—48).—Electrometric measurements on cell sap of beet, radish, pea, potato, and onion showed r_H 15·5—18·8 in storage organs and 20·9 in growing tissues. r_H of potato tubers increased by 1·5—2·0 on sprouting. M. A. B.

Effect of soil moisture content on the physiological processes and chemical composition of sugar-beet. A. Kirsanov, V. Blagovestschenski, and M. Kazakova (Bull. Moskauer Ver. Naturforsch., 1933, **42**, Ser. 2; Bied. Zentr., 1935, **A**, **6**, 218—219).—Low soil-H_2O contents (20% of total capacity) cause restricted C assimilation and increased respiration, increased chlorophyll and diminished xanthophyll contents, and high osmotic pressure in the cell sap. With excessive H_2O in the soil (100% capacity) the above effects are reversed. Max. yields of beet were obtained with 66% capacity. The % of sugar, N, and pectins reached highest vals. in the drier soils. A. G. P.

Absorption of solutes by leaves. D. Lewis (J. Pomology, 1937, **14**, 391).—Lettuce plants absorbed PO_4''' through the leaves when sprayed with dil. solutions. No absorption of N or K under these conditions was apparent. A. G. P.

Influence of environment on growth and metabolism of the tomato plant. II. Relationship between water content and assimilation. R. Melville (Ann. Bot., 1937, [ii], **1**, 153—174).—Prolongation of the normal night period induces an increase in the H_2O content of the plants. The dry wt. of plants increases with H_2O content to a max. beyond which dry wts. decrease rapidly with rising H_2O content. The optimum H_2O content is influenced by light. The influence of external factors on the C assimilation of plants is dependent on the previous history of the plant. A. G. P.

Cation selection by higher plants. R. Collander (Ber. deut. bot. Ges., 1937, **55**, 74—81).—Differences in the intake of $K^{\cdot}$ by different species of plants from nutrients containing 2 milli-equiv. each of $Na^{\cdot}$, $K^{\cdot}$, and $Rb^{\cdot}$ per litre were closely paralleled by those of $Rb^{\cdot}$ but showed no similarity with differences in the intake of $Na^{\cdot}$. Similarly the intakes of $Ca^{\cdot\cdot}$ and $Sr^{\cdot\cdot}$ were parallel but differed from those of $K^{\cdot}$. Differences in $Cs^{\cdot}$ intake resembled those of $K^{\cdot}$ and those of $Mg^{\cdot\cdot}$ (with some exceptions, *e.g.*, in Chenopodiaceæ) followed those of $Ca^{\cdot\cdot}$. $K^{\cdot}$ was more and $Na^{\cdot}$ less easily taken up (except in halophytes) than the alkaline earths. The ease of intake of Mn was similar to that of $Sr^{\cdot\cdot}$. A. G. P.

Potassium–sodium contrast. R. Keller (Protoplasma, 1936, **25**, 69—76).—Recent work on the contrasting electro-chemical properties of Na and K in biological material and the two groups of biologically positive and negative radicals is discussed. M. A. B.

Structure of the plant cell wall. A. Frey-Wyssling (Protoplasma, 1936, **25**, 261—300).—A review. M. A. B.

Granule-forming cell substances pass through the living plasma lemma. (Observations on epidermis cells of *Allium cepa*.) O. Bank and K. B. Esteråk (Protoplasma, 1935, **24**, 404—408).—Absorption of dyes (methylene-blue, Me-violet, crystal-violet, neutral-red, Me-green), followed by plasmolysis by neutral salts, causes colloidal substances, which

form granules with the dyes, to diffuse from the protoplasts of the epidermis cells through the plasma lemma, without injury to this or to the protoplasts. The granules show characteristic changes of form in warm (30—50°) NO_3' solutions. Wounding or plasmolysis with $AgNO_3$ has the same effect as treatment with dyes. M. A. B.

Visible structure of the secondary wall [in dicotyledons]: its significance in physical and chemical investigations of tracheary cells and fibres. I. W. Bailey and T. Kerr (J. Arnold Arboretum, 1935, **16**, 273—300).—The cellulosic matrix of the secondary wall is continuous but interspersed with non-cellulosic material (*e.g.*, lignin) and two interpenetrating continuous systems may result. Ch. Abs. (*p*)

Organic iron and hydrogen-ion concentration as factors affecting the rate of reproduction of *Lemna major*. C. L. Fly (Proc. Oklahoma Acad. Sci., 1935, **15**, 77—80).—In a modified Clark's nutrient in which $Fe^{\cdots}$ was supplied as citrate, best growth was obtained in neutral or slightly alkaline media. The regeneration time was varied from 2·5 to 6 days by regulating the $[Fe^{\cdots}]$ and p_H of the nutrient. Ch. Abs. (*p*)

Plasmolysis and deplasmolysis: influence of salts and hydrogen-ion concentration. V. S. Iljin (Protoplasma, 1935, **24**, 296—318).—Certain plants can tolerate plasmolysis for >20 hr. in 2*M*-sucrose at any p_H, some are tolerant only in an acid, others only in an alkaline, medium. All are highly sensitive to the presence of inorg. salts. Ca has little effect except on calcifuge plants and the best buffer is generally $Ca(HCO_3)_2$. Sensitivity to Na varies greatly. Plasmolysis by conc. solutions and deplasmolysis must be carried out in 40 or 50 steps over about 6—8 hr. More rapid plasmolysis causes death and a slower rate produces a solid layer on the surface of the protoplasts. M. A. B.

Nucleus and protoplast after vital nuclear staining. O. Bank (Protoplasma, 1936, **25**, 188—195).—In a plasmolysing salt solution Me-violet, crystal-violet, and gentian-violet produced rapid selective vital staining of the nucleus of plant cells in a few min., "prune pure" (I) and Me-green took several hr., Bismarck-brown and fuchsin S gave no staining even after a day. Toxicity to the protoplast decreased approx. in the same order, but for each dye was greater in plasmolysing solutions of lower concn. In *M*-KCl and 2*M*-$CaCl_2$ (I) often stained the vacuoles. Violet dyes produced a violet stain, green dyes a green, except Me-green which gave violet. Faint staining could be rendered visible by mechanical pressure on the cover slip. In stained nuclei pressure caused colour changes and ultimate bleaching. M. A. B.

Cell sap of the Characeæ. R. Collander (Protoplasma, 1936, **25**. 201—210).—Quant. spectrum analysis showed considerable variations in K, Na, Ca, Mg, Sr, and Cl according to species and growth medium, but, in general, uptake of cations decreased in the above order. M. A. B.

Reducing power of plant tissues. R. Savelli (Atti R. Accad. Lincei, 1936, [vi], **24**, 151—155).—Aq. Na_2TeO_4 (0·1—0·5%) is reduced to Te by the tissues of various plants (especially, *e.g.*, *Allium cepa*) to an extent differing with the various parts of each plant. With moulds, but not with the higher plants, formation of gaseous tellurides (? TeH_2) occurs. F. O. H.

Acidosis in plants. H. Engel (Bodenk. Pflanzenernähr., 1936, **1**, 73—109).—Rapid root injury following exposure to media of p_H 2·0—3·5 causes the passage of sap constituents from roots into the surrounding liquid. Under these conditions N compounds passing into the medium from lupins consisted largely of asparagine (I), those from *Vicia faba* of (I) and NH_2-acids in approx. equal proportions, and those from *Phaseolus* and *Pisum* were principally NH_2-acids. Fungi develop on the dead roots and decompose nitrogenous matter yielding NH_3. The cell nucleus resisted fungal attack for a considerable time. Acid media checked but did not change the course of the N metabolism of plants. Changes observed by Prianishnikov (B., 1932, 38) were post-mortal and not connected with the living cell. A. G. P.

Carbohydrate : nitrogen ratio of shoots of some tropical trees. R. H. Dastur and M. R. Raut (J. Indian Bot. Soc., 1935, **14**, 269—289).—Max. carbohydrate contents were reached during the vegetative and reproductive phases. N contents increased steadily from the beginning of the vegetative phase to the end of the flowering period in most cases and then decreased sharply. The C : N ratio was low at the ends of the vegetative and reproductive phases. High carbohydrate contents during the vegetative phase result from photosynthetic activity, and in the reproductive stage are due to upward translocation from storage organs. Ch. Abs. (*p*)

Mechanism of secretion of organic substances by algæ. B. S. Aleev (Biochimia, 1936, **1**, 94—100).—N compounds accumulate in culture media in amount $\propto$ the age of the culture, and originate probably from autolysis of dead algæ. R. T.

Biochemistry of sotetsu, the Japanese sago plant. II. Chemical constituents, especially sex differences in stems. K. Nishida and A. Yamada (Bull. Agric. Chem. Soc. Japan, 1934, **10**, 193—196).—The sugar, fibre, fat, and ash contents and peroxidase (I) activity of the cortex is $>$ of the pith and, in male shoots only, the starch content is also higher in the cortex. Recently flowered female shoots contain less polysaccharides but more sugar, protein, ash, and (I) than other shoots. Ch. Abs. (*p*)

Histochemistry. XII. Distribution of ascorbic acid in growing barley embryo. D. Glick (Z. physiol. Chem., 1937, **245**, 211—216; cf. A., 1935, 1025).—In barley seedlings the ascorbic acid (I) content of the first leaf increases rapidly from the time of appearance until the 10th day of germination. This is accompanied by a decrease in the (I) content of the coleoptile and, between the 1st and 4th days, in that of the whole shoot. The (I) content of the whole root decreases from the 2nd day onwards, vals. being

higher in the tip. In the whole seedling the (I) content increases during the first 2 days and then decreases although, without leaf and root, it increases continuously. A positive correlation between the (I) and pigment (chlorophyll) contents of the various parts of the seedling is indicated. W. McC.

Power of different varieties of wheat to form sugar. N. J. Sosedov and Z. B. Drozdova (Biochimia., 1936, **1**, 390—399).—The diastatic activity differed in the varieties of wheat examined and was not dependent on the locality in which the wheat was grown. W. O. K.

Rôle of phosphates in the accumulation of sugar in the sugar beet. N. M. Sisakjan (Biochimia, 1936, **1**, 301—320).—In the leaves of beet sugar plants grown in sand perfused with a nutritive salt solution, the synthetic action of the invertase (determined by the vac.-infiltration method) predominates during the early period of growth whilst the hydrolytic action becomes relatively more important at a later period. Removal of the PO_4''' from the nutritive solution at any stage of growth results in an increase in the hydrolytic and a decrease in the synthetic action, the total activity remaining const. The sucrose content of the leaves is in general agreement with these results. W. O. K.

Reversible action of invertase in plant cells, and the rôle of structural protoplasmic elements. A. L. Kursanov (Biochimia, 1936, **1**, 411—424).—Introduction of small amounts of yeast invertase (I) by vac. infiltration into cyclamen, crinum, and primula leaves leads to acceleration of synthesis and hydrolysis of sucrose, to an equal extent; further introduction of (I) accelerates only the latter reaction. These results support the view that (I) is responsible for both processes, of which synthesis takes place at the surface of structural elements (mitochondria etc.), and hydrolysis in the solution. After saturation of the surfaces further addition of (I) leads to increase in its concn. in solution, but not in adsorption. Digestion of structural elements by autolysis (activation by exclusion of O_2, or by addition of papayotin or cysteine) similarly favours inversion of sucrose. R. T.

Enzymic oxidation of morphine in poppy-head latex. V. I. Nilov, V. P. Nilova, and A. T. Troschtschenko (Biochimia, 1936, **1**, 165—182).—Oxidation of morphine, narcotine, and papaverine, but not of codeine, narceine, or thebaine, occurs in the latex under the influence of peroxidase and dehydrogenase. The loss of alkaloids in the opium amounts to 6·6—50% during two months, according to the variety of poppy. Oxidation in stored poppy-heads is > that in the latex, and is not inhibited by collection and storage at 0°. The p_H of the latex falls to 5 during two months; adjustment of the initial p_H to 3 partly, and addition of KF totally, inhibits oxidation. R. T.

Development of purine-nitrogen during germination. P. de Graeve (Compt. rend., 1937, **204**, 445—447).—In certain germinating leguminous seeds uric acid (initially 0·6 g. per kg. dry matter) disappears rapidly. Allantoin passes a max. in about 5 days; allantoic acid increases steadily and may account for >9% of the total N. R. M. M. O.

Photosynthesis in green plants. J. Weiss (J. Gen. Physiol., 1937, **20**, 501—509).—Only chlorophyll (I) mols. on the lipin–H_2O interface react with CO_2; those within the lipoid phase of the plastid communicate their photo-excitation to the former by some resonance effect. Such general mutual influence would explain difference in (I) absorption max. in living plastids and in solution. The lifetime of excited (I) mols. is of the order of the Blackman period. The ratio of surface to internal (I) determines the " photosynthetic unit " and is 1 : 500. R. M. M. O.

Effect of blue-violet rays on formation of carbohydrates in leaves. R. H. Dastur and S. Solomon (Ann. Bot., 1937, [ii], **1**, 147—152).—Carbohydrate formation in leaves is increased by enrichment of illumination with blue-violet rays. A. G. P.

Interaction of factors in the growth of *Lemna*. X. Interaction of nitrogen and light intensity in relation to respiration. H. L. White and W. G. Templeman (Ann. Bot., 1937, [ii], **1**, 191—204; cf. A., 1936, 908).—Respiratory rates calc. per unit leaf area or per unit dry wt. are diminished by N starvation. Increasing light intensity (300—1200 ft.-candles) causes increased respiration on an area basis as a result of increased photosynthesis and a consequent rise in carbohydrate level. On a dry-wt. basis respiration declines with increasing light intensity because of the more complete conversion of the photosynthate into non-respirable cellulose and reserve starch. The dependence of respiration rates on the contents of both N and carbohydrates is discussed. A. G. P.

Respiration process in pure cultures of higher plants. A. Kutepow (Diss., Würzburg, 1934; Bied. Zentr., 1935, **A**, **6**, 318).—In maize and sunflower, germinated under sterile conditions, respiration rates are influenced by introduction of micro-organisms. Both O_2 and CO_2 involved in the exchange are affected. A. G. P.

Respiration of roots and leaves of the rice plant (*Oryza sativa*, L.). E. Baptista (J. Indian Bot. Soc., 1935, **14**, 159—165).—The CO_2 evolution of roots was 82—200 and of leaves 163—400 mg. of CO_2 per hr. per 100 g. of dry matter. Respiration rates fell soon after transplanting. Ch. Abs. (*p*)

Respiratory quotient of seedlings of *Lupinus albus* during early stages of germination. F. N. Craig (J. Gen. Physiol., 1937, **20**, 449—453).—The R.Q. of seeds soaked for 1 hr. is 1·00, for 9 hr. 0·76, for 12 hr. 0·9, and gradually falls after longer periods. The fat oxidation system is activated early, but is probably not active from the first. R. M. M. O.

Effect of wounding on respiration in the starving leaves of *Aralia gurlfuylei*. A. B. Saran (J. Indian Bot. Soc., 1935, **14**, 299—304).—The CO_2 output of leaves varied with the period of starvation prior to wounding, and reached max. after a 2·5-hr. period. Injection of glucose increased the output when the initial val. was 4·7 mg. of CO_2 per hr., but

had no consistent effect when the initial val. was 6·4 mg. Ch. Abs. (*p*)

Plant hormones and mineral nutrition. G. S. Avery, jun., P. R. Burkholder, and H. B. Creighton (Proc. Nat. Acad. Sci., 1936, **22**, 673—678).—The amount of growth hormone present in shoot tips of *Helianthus annuus*, L., and *Nicotiana tabacum*, var. Turkish, varied with the proportions of the cations and anions in the nutrient medium. Under field trials differences in hormone contents of tips were small even when the plants themselves showed marked nutrient-deficient symptoms. A. G. P.

Action of β-indolylacetic acid on germination and development of seeds. T. Solacolu and D. Constantinesco (Compt. rend. Soc. Biol., 1937, **124**, 492—494).—0·01—0·04% of the acid decreases the germination with the production of intense hyperplasia. The formation of rootlets where the tissue is in contact with the acid is observed. H. G. R.

Effect of phenylacetic and indolylbutyric acids on growth of tomato plants. H. L. Pearse (J. Pomology, 1937, **14**, 365—375).—By spraying plants with solutions of $CH_2Ph{\cdot}CO_2H$ (I) or indolylbutyric acid (II) the same responses (epinasty, swelling of stems and petioles, root initiation on stems) were obtained as by local applications of the growth-substances. Daily spraying with (I) or (II) for a week increased the height of the plants and the length of the internodes and petioles. Both depressed leaf growth, whereas (I) depressed and (II) increased root growth. Apical bud growth was gradually inhibited by both substances, (II) acting rather more rapidly. The ratio of the leaf wt. (dry basis) of (I)-treated plants to that of controls was unchanged by spraying for 2—3 weeks. The corresponding ratio for stems and petioles increased progressively. The H_2O content of plants sprayed with (I) or (II) was > that of controls. A. G. P.

Two new chemical plant growth substances. R. Snow (Nature, 1937, **139**, 27).—When mixed with lanoline and applied to decapitated oat coleoptiles, Bz_2O and Bz_2O_2 markedly accelerate growth. The activity of Bz_2O is approx. 1/400 of that of hetero-auxin. L. S. T.

Growth-substances or hormones, and the rooting of cuttings.—See B., 1937, 170.

Effects of certain glandular products on plant growth. M. S. Dunn (Amer. J. Pharm., 1937, **109**, 9—17).—The addition of either thyroxine or anterior pituitary extract to the culture solution in which twigs of *Populus nigra italica* were growing slightly stimulated the growth of the buds. E. H. S.

Action of crystallised follicular hormone on cloves and radishes. C. Liebe (Biochem. Z., 1937, **289**, 198—200).—Administration of solutions of this hormone led to an increase in yield of both cloves and radishes. P. W. C.

Effect of exhausted frog muscle on growth of wheat seedlings. V. Dushková (Protoplasma, 1935, **23**, 217—220; Chem. Zentr., 1936, i, 2378).—Aq. extracts of exhausted muscle (but not those of non-exhausted muscle) had a stimulatory action. A. G. P.

Influence of bios on nodule bacteria and legumes. A. Influence of bios on legume seedlings. D. G. Laird and P. M. West (Canad. J. Res., 1937, **15**, C, 1—6).—When germinated on solid (agar) media containing bios 2, the hypocotls of red clover grew vertically upwards while the cotyledons rested on the surface and probably absorbed nutrients. After 8—10 days secondary roots developed from the inverted root tip and grew downwards into the medium. The concn. of bios 2 necessary to cause max. bending of roots was 4 times that producing optimum stimulation of nodule bacteria. When the bios-containing nutrient was covered with untreated agar, growing roots did not bend on passing from untreated to treated strata. Hypocotl bending is caused by the fraction bios 2*b*, which in this but not in other physiological properties resembles hetero-auxin. Bios 2*b* induces rapid cell multiplication when applied to the parenchymatous lining of bean pods, the effect resembling that of a wound. A. G. P.

Effect of thallium on plant growth.—See B., 1937, 273.

***Fomes fraxineus* and its effects on ashwood.** H. B. S. Montgomery (Ann. Appl. Biol., 1936, **23**, 465—486).—The fungus shows optimum growth at 26° and p_H 6·0. The presence of diastase, an emulsin, invertase, zymase, pectinase, catalase, oxidase, peroxidase, and a lipase in the mycelium is indicated. The effect of the N supply on the activity of the enzymes is correlated with that on growth. The actual N requirement is small. The fungus is moderately resistant to creosote, NaF, and $ZnCl_2$. A. G. P.

Distribution of boron in *Vicia faba* and *Gossypium herbaceum*. R. C. McLean and W. L. Hughes (Ann. Appl. Biol., 1936, **23**, 231—244).—In these plants the largest amounts of B occur in leaves. The proportion in stems is > in petioles. Only small amounts are present in roots. In seed B is found only in the cotyledons. Absorption of B by plants is not directly dependent on the [B] of the nutrient. A. G. P.

Determination of nitrites in green plants and plant extracts. F. Alten and E. Knippenberg (Bodenk. Pflanzenernähr., 1937, **2**, 245—251).—The method is based on the colour produced by coupling diazotised atoxycocaine with α-$C_{10}H_7{\cdot}NH_2$ (Jendrassik, A., 1933, 687). Plant extracts are cleared with basic Pb acetate after appropriate adjustment of the reaction with a borate buffer (p_H 10·5). Any residual colour in the extract is compensated in the colorimetric comparison by means of a second portion of the extract from which NO_2' has been removed by treatment with AcOH–$K_4Fe(CN)_6$. 1×10^{-6} g. of NO_2'-N may be detected. A. G. P.

Lichens, fungi and algæ. R. S. Hilpert, D. Becker, and W. Rossée (Biochem. Z., 1937, **289**, 179—192).—Tables summarise the elementary compositions of a no. of lichens, fungi, and algæ and their cellulose, lignin, chitin, and pentosan contents. The skeletal substances are essentially different in these organisms from those of higher plants. Lichens and fungi contain no cellulose and algæ only a trace, the

cellulose-like constituent being sol. in alkali and in $NaHSO_3$ and having the properties of a hemicellulose. Fungi differ from lichens in their high N content, which is probably not due to a high chitin content. The analytical vals. for fungi grown in light and in the dark show considerable differences. P. W. C.

Calcium pectate and manganese content of raspberries. W. Diemair and F. Mayr (Z. Unters. Lebensm., 1936, **72**, 470—475).—Spontaneous jelly formation in raspberry juice is dependent on the concn. of pectic substances and pectolytic enzymes and on acidity. The pectin content varies within wide limits. The Mn content of the ash varies from 0·01 to 1·5%. E. C. S.

Organic acids of rhubarb (*Rheum hybridum*). I. Malic acid of rhubarb and tobacco leaves. II. Organic acid composition of the leaves. G. W. Pucher, H. E. Clark, and H. B. Vickery (J. Biol. Chem., 1937, **117**, 599—604, 605—617).—I. The rhizomes, buds, petioles, and leaf blades of rhubarb and tobacco leaves contain only the *l*-isomeride of malic acid.

II. A group of unknown acids predominates in the blades of young leaves, followed by $H_2C_2O_4$, *l*-malic and citric acids. The petiole contains the acids in the order *l*-malic > $H_2C_2O_4$ > citric > unknown acids. The total concn. of org. acids is nearly const. in all parts of the leaf. No correlation exists between NH_3 and org. acid content. P. G. M.

Lichen fatty acids from *Nephromopsis endocrocea*.—See A., II, 134.

Non-sugar reducing substances in plant juices. F. S. Schlenker (J. Biol. Chem., 1937, **117**, 727—731).—The more sensitive $K_3Fe(CN)_6$ method gives higher vals. for both the non-fermentable fraction and for the total reduction of plant juices than does the alkaline Cu tartrate method. Both methods give the same vals. for fermentable sugar. Alcoholic extracts of tomato, chrysanthemum, bean, and beet also show the presence of non-fermentable substances which account for ⅓—½ of the total reduction. P. W. C.

Chemistry of the berries of *Rhus glabra*, L. G. H. McFadden and R. L. McMurray (J. Amer. Pharm. Assoc., 1936, **25**, 1154—1156).—Data for the solvent-extracted fractions, total N, total ash, and ash constituents of the shelled, air-dried berries are given. Extraction with light petroleum yields an oil, d^{20} 0·9227, n^{20} 1·4719, α 0°, acid val. 8·97, I val. 87·17, ester val. 150·23, sap. val. 159·2. F. O. H.

Composition of hanfangchi oil. C. F. Hsü (J. Chinese Chem. Soc., 1937, **5**, 14—21).—The oil (0·344%) extracted by 95% EtOH from powdered hanfangchi (*Stephania tetrandra*, S. Moore) contains unsaturated liquid fatty acids (48·60%) [oleic 41·61, α-linoleic 6·94, linolenic 0·72, and a trace of an *acid* (*bromide*, m.p. 121—122°)]; saturated acids (37·1%) (palmitic 15·44, stearic 16·83, arachidic 0·18, and an *acid*, m.p. 91—92°, 0·19), unsaponifiable matter (12·09%) containing a sterol (probably sitosterol) 5·12, and a fatty acid 6·97%, and an unidentified essential oil. J. W. B.

Pyrenium salts. XXVI. *i*-Inositol from red roses. W. Dilthey, W. Schommer, J. Thewalt, and S. Henkels (Z. physiol. Chem., 1937, **245**, 171—174; cf. A., 1936, 1120).—The isolation of quercetin (I) and *i*-inositol (II) from the flowers of *Rosa gallica rubra* is described. (I) probably occurs partly free and partly combined. (II) occurs only in combined forms. W. McC.

Composition of the wood of trunks and branches of principal indigenous trees. G. Bertrand and G. Brooks (Compt. rend., 1937, **204**, 162—164).—Wood of angiosperms yields, on acid hydrolysis, reducing sugars consisting principally of xylose. In gymnosperms mannose is the characteristic product. Plants of related species usually though not invariably yield similar proportions of the reducing sugar. In general, branches contain larger amounts of hydrolysable carbohydrate, ash, and N and less cellulose than do the corresponding trunks. A. G. P.

Stachyose in the stems and roots of *Verbena officinalis*, L., and in the underground parts of *V. venosa*, Gill and Hook. J. Cheymol (J. Pharm. Chim., 1937, [viii], **25**, 110—117).—The roots (1250 g.) and stems (1168 g.) of *V. officinalis* and the roots (1200 g.) of *V. venosa* yielded cryst. stachyose (29, 16, and 36 g., respectively). W. O. K.

Sterols and carbohydrates in fungi. I. *Boletus edulis*. A. Ratcliffe (Biochem. J., 1937, **31**, 240—243).—Extraction with Et_2O of the finely powdered fungus yielded ergosterol together with a very small amount of a sterol, m.p. 169° (acetate, m.p. 174—175°), which closely resembled spinasterol. Extraction of the residue with EtOH gave trehalose. P. W. C.

Hemicelluloses of the wood of English oak. III. Fractionation of hemicellulose-*A*. M. H. O'Dwyer (Biochem. J., 1937, **31**, 254—257; cf. A., 1935, 421).—Hemicellulose-*A* on digestion with H_2O at 100° gives polysaccharide fractions but glucose (I) is not split off whereas digestion at p_H 4·5 with taka-diastase gives two polysaccharides and, with -*A* from sapwood, 10% of the original material as (I). The blue colour given by -*A* of oak sapwood with I–KI is due to the portion of the complex which is split off as anhydroglucose residues on enzymic digestion. P. W. C.

Anatomy and microchemistry of the cotton-seed. M. Gurevitsch (Maslob. Shir. Delo, 1935, **11**, 301—302).—The colour reaction of resin glands with orcinol and phloroglucinol may be conditioned by the presence of gossypol and not by that of pentosans (I). (I) are present in the cellular integument of the ovule. Ch. Abs. (*p*)

Glucoside and enzyme in garlic, *Allium scorodoprasum*. K. Daigo (J. Chosen Med. Assoc., 1935, **25**, 439—470).—Hydrolysis of garlic extract yielded an essential oil, fructose (I), glucose (II), HCl, $MgCl_2$, EtOH, H_2CO_3, and Mg allyl sulphide (III). (I) is derived from inulin, EtOH and CO_2 from (II). (II), (III), and HCl are possibly constituents of a glucoside, *alliumin*, hydrolysis of which yields the odorous oil. Myrosin occurs in the extracts. Ch. Abs. (*p*)

Constitution of acacipetalin and a new cyanogetic glucoside from *Acacia lasiopetala*, Oliv., and *Acacia stolonifera*, Burch.—See A., II, 136.

Variations in the amino-acid composition of plant proteins, and their causes. A. Kiesel [with P. Agatov, E. Bezinger, and M. Kastrubin] (Biochimia, 1936, **1**, 201—217).—Changes in the different NH_2-acid fractions of wheat and rye gliadin, wheat albumin, and edestin at different stages of maturity are recorded. R. T.

Determination of tyrosine in plant materials. Y. Raoul (Compt. rend., 1937, **204**, 197—200).—Appropriate modifications of the method of Folin and Ciocalteu (A., 1927, 892) are described. A. G. P.

Djengkolic acid.—See A., II, 139.

(A) Nuclein complex of French-bean seedlings. A. N. Belozerski and S. D. Tschigirev. **(B) Nucleoproteins and nucleic acids of soya-bean seedlings.** A. N. Belozerski (Biochimia, 1936, **1**, 134—146, 255—265).—Nucleoproteins of variable composition are obtained from French or soya-bean seedlings; they are mixtures of nuclear nucleoprotein, containing thymonucleic acid, and of artefacts originating from combination of cytoplasmic protein with phytonucleic acids. R. T.

Proteins. V. Crystalline globulin from the Paradise nut, *Lecythis zabucayo*. B. Vennesland, M. B. Blauch, and F. Saunders (J. Amer. Chem. Soc., 1937, **59**, 174).—The globulin, isolated (method: A., 1931, 661) from the fat-free seed-meal, resembles excelsin except for its NH_2-N content. The N distribution is determined. H. B.

Chemical investigation of the "Giftblaar," *Dichapetalum cymosum* (Hook), Engl. C. Rimington (South African J. Sci., 1935, **32**, 152—153; Chem. Zentr., 1936, i, 2571).—It was not possible to isolate the toxic principle; a pyrocatechol tannin, a yellow dye, two bases, and trigonelline were recognised. H. N. R.

Pigment of the yellow tomato. K. Brass, A. Beyrodt, and J. Mattausch (Naturwiss., 1937, **25**, 60—61).—The absorption spectrum of the CS_2 extract of the pith and skin of the fruit of yellow-fruited *Solanum lycopersicum* indicates the existence of (? β-)carotene and xanthophyll in both skin and pith, and a little lycopene in the pith only. A. J. M.

Phytosterols.—See A., II, 148.

Resinol of *Olea Cunninghamii*.—See A., II, 159.

Bitter principle from a South West African *Cucumis* species.—See A., II, 160.

Ayapin.—See A., II, 161.

Structure of asebotin, a component of *Andromeda japonica*, Thumb.—See A., II, 106.

Vital staining by use of solutions in serum-albumin. G. Kiszely (Magyar orvosi Arch., 1935, **36**, 347—361; Chem. Zentr., 1936, i, 2597).—Serum-albumin acts as a protective colloid and prevents side-reactions of acid dyes (trypan-blue, pyrrole-blue). A. G. P.

Inexpensive recording manometer. F. J. Nutman (Ann. Bot., 1937, [ii], **1**, 205—206).—Apparatus suitable for examination of stomatal movements is described. A. G. P.

Filtration of reactive infusion fluids. C. Tui, K. L. McCloskey, M. H. Schrift, and A. L. Yates (Proc. Soc. Exp. Biol. Med., 1936, **35**, 297—300).—"Reactive" substances present in tap-water etc. pass the Berkefeld filter W but are adsorbed on a Seitz EK asbestos pad. They also pass all Zsigmondy "membran" filters coarser than the 200-sec. membrane. P. G. M.

Refractometric methods for determining total protein. C. Siebenmann (Biochem. J., 1937, **31**, 205—211; cf. A., 1934, 222).—The refractometric change which occurs during heat-coagulation at p_H 4·6 serves as a measure of the amount of protein in horse serum, and, for solutions containing 0·2—10% of protein, the results agree with those obtained gravimetrically. Reiss' method is developed as a graphic method. J. N. A.

Determination of galactose by Hagedorn and Jensen's method. E. F. Gale (Biochem. J., 1937, **31**, 234—235).—A method for determination of galactose in the presence of bacteria is described, and a table summarises the ml. of 0·005*N*-$Na_2S_2O_3$ corresponding with 0·097—0·438 mg. of galactose. P. W. C.

Copper–iodometric determination of very small amounts of sugar.—See A., II, 136.

Determination of free and esterified glyceric acid.—See A., II, 133.

Colorimetric determination of carotene. V. A. Kirsanova (Biochimia, 1936, **1**, 446—449).—A simplified modification of Russell's method (A., 1935, 1434) is described. The coloration of a light petroleum extract is compared with that of standard (0·036%) $K_2Cr_2O_7$. R. T.

Colorimetric determination of free and combined cholesterol. R. M. Smith and A. Marble (J. Biol. Chem., 1937, **117**, 673—684).—Cholesterol digitonide is dissociated in hot AcOH and the cholesteryl acetate (which gives the same colour as an equiv. amount of free cholesterol) can be determined by the Bloor method after pptn. of the digitonin with light petroleum. A modification of the Bloor–Knudson method for cholesteryl ester is suggested. P. G. M.

Quantitative precipitation of cholesterol digitonide in the presence of bile salts. J. T. Bashour and L. Bauman (J. Biol. Chem., 1937, **117**, 551—553).—Cholesterol digitonide is quantitatively pptd. in the presence of bile salts if EtOH containing HCl slightly > the equiv. of the bile salts is added. F. A. A.

Determination of iron [in biological material]. Colorimetric *o*-phenanthroline method.—See A., I, 199.

Micro-magnetic determination of iron and its application to biology.—See A., I, 199.