BRITISH CHEMICAL ABSTRACTS

A., III.—Biochemistry

JANUARY, 1937.

Effect of variations in atmospheric carbon dioxide on the respiratory quotient and alkaline reserve of the frog. L. Dontcheff and C. Kayser (Compt. rend. Soc. Biol., 1936, **123**, 815—817).—Retention of CO_2 is practically nil with atm. [CO_2] of 0·6% and is const. with concns. of 0·9—2·2%. H. G. R.

Effect of variations in atmospheric temperature on the respiratory quotient and alkaline reserve of the frog. C. Kayser (Compt. rend. Soc. Biol., 1936, **123**, 818—820).—On lowering the temp. CO_2 is retained, but after 24 hr. the R.Q. returns to normal. H. G. R.

Stack of constant volume for human respiration experiments. F. G. Benedict (J. Biol. Chem., 1936, **116**, 307—320).—The principle of the apparatus depends on the stratification of the expired air at the bottom of the stack by control of temp. and humidity, and its slow diffusion with external air already in the stack. P. G. M.

[Determination of the] partial pressure of oxygen in arterial blood. F. K. Hick (Proc. Soc. Exp. Biol. Med., 1936, **33**, 582—587).—A modification of the aërotonometer method is described. Healthy persons exhibited appreciable differences as regards the O_2 saturation and tension of their blood, the average vals. being 96·1% and 79·5 mm. In diseased persons saturation was <93% and in persons exhibiting anoxæmia the tension was > would be expected from the saturation val. W. McC.

Gaseous composition of blood during anaphylactic shock. A. M. Melik-Megrabov (Ukrain. Biochem. J., 1936, **9**, 713—718).—The O_2 of arterial blood of rabbits falls by 50% during anaphylactic shock. A theory to account for this is advanced. F. A. A.

Mechanism of the aggregation of erythrocytes. B. Swedin (Biochem. Z., 1936, **288**, 155—206).—Electrodialysis of ox blood corpuscles (washed 1—3 times with physiological aq. sucrose) produces aggregation and subsequent hydrolysis as the concn. of electrolyte diminishes. Addition of increasingly small amounts of KCl, NaCl, or HCl to the aggregated suspension produces dispersion of the corpuscles; this action does not occur with $FeCl_3$, $CaCl_2$, or NaOH. The crit. concn. of $Na^{\cdot}$, $K^{\cdot}$, or Cl' for dispersion corresponds with a unimol. layer of hydrated ions completely covering the surface of the corpuscles; the ions are not absorbed. Corpuscles aggregated by electrodialysis and kept in a closed vessel for 3—4 hr. spontaneously disperse; κ of the suspension medium simultaneously increases. Aggregation is not accompanied by changes in resistance to hypotonicity or in cholesterol content. The aggregation by viscous preps. of salep or Na thymonucleate is not accompanied by adsorption or, as also with tragacanth gum or citrated plasma, changes in η; such aggregation is inhibited by electrolytes in concn. approx. thrice that necessary for dispersion of corpuscles aggregated by electrodialysis. The determination of erythrocyte sedimentation rate by optical methods indicates that approx. 90% of the incident light is dispersed from the corpuscular surface, but the val. decreases on aggregation. The characteristics of normal and pathological erythrocytes under varying conditions are described. F. O. H.

Cholesterol content of human red blood corpuscles. G. C. Brun (Biochem. Z., 1936, **287**, 420—423).—Normal human erythrocytes contain only free cholesterol (I) and no esterified (I). The (I) content varies within very narrow limits (mean 0·140%) and is the same for cells of the blood of both sexes. P. W. C.

Permeability of erythrocyte membrane after hypotonic hæmolysis. E. Ponder (Proc. Soc. Exp. Biol. Med., 1936, **33**, 630—633).—The osmotic and electrical behaviour of the ghosts obtained on "reversing" hæmolysis in suspensions of erythrocytes indicates that membranes surrounding the ghosts are highly semipermeable. Since the membranes are semipermeable when hæmolysis occurs, it is possible that they undergo "repair" after lysis. W. McC.

Purine content of thrombocytes and erythrocytes. F. Koller (Z. physiol. Chem., 1936, **244**, 23—30).—In human and ox thrombocytes approx. 2% of the total N occurs as purine-N. The corresponding val. for the erythrocytes appears to be 0·15—0·3%. In the erythrocytes of the hen the val. is 3·5% and in the thymus of the calf 11—12%. These vals. suggest that purines are characteristic constituents of the nuclei of cells and that the nuclei of the megacaryocytes are concerned in the production of thrombocytes. W. McC.

Chondriome from the red cells of vertebrate blood. P. Joyet-Lavergne (Compt. rend. Soc. Biol., 1936, **123**, 754—755).—This has similar properties to chondriome in general. H. G. R.

Lipin content and number of white blood cells. E. M. Boyd and D. J. Stephens (Proc. Soc. Exp. Biol. Med., 1936, **33**, 558—560).—In the blood of 25 patients no relation could be traced between the no. of leucocytes and the total lipin, neutral fat, fatty acid, total, free, and esterified cholesterol (I), or phospho-

lipin (II) contents. The free (I) and (II) contents varied in parallel. W. McC.

Change of phagocyte under influence of sodium bromide or iodide. L. Vajda (Orvosi Het., 1935, **79**, 941—947).—Corpuscles of phagocytes are decomposed by treatment with aq. NaBr or NaI. Ch. Abs. (*p*)

Total dissociation of horse hæmoglobin. J. Steinhardt (Nature, 1936, **138**, 800—801).—In unbuffered dil. salt solutions at the isoelectric point, the native hæmoglobin of the horse is totally dissociated into mols. of half the normal mol. wt. when high concns. of urea, NH_2Ac, or $HCO{\cdot}NH_2$ are present. There is no evidence of denaturation. Methæmoglobin (I) and alkaline hæmochromogen prepared from totally dissociated protein are spectroscopically unchanged, and the process of denaturation is still required for the production of hæmochromogen. (I) changes within a day to a substance with a parahæmatin spectrum. The bearing of these results on current theory is discussed. L. S. T.

[Characteristics of] human blood. V. Determination of hæmoglobin, erythocyte count and dimensions, and hæmoglobin content per erythrocyte and per μ^2 of erythrocyte surface in old persons. H. Biedenkopf (Z. Biol., 1936, **97**, 445—453).—Average vals. for 20 men and 20 women aged 60—70 years were, respectively, hæmoglobin (I) content 15·89, 15·06%; erythrocyte count 5·00, $4{\cdot}67 \times 10^6$ per cu. mm.; (I) content per erythrocyte 31·9, $32{\cdot}3 \times 10^{-12}$ g.; erythrocyte diameter 8·00, 7·93 μ; erythrocyte surface 100·6, 98·8 μ^2; (I) content per μ^2 of erythrocyte surface 31·7, $32{\cdot}8 \times 10^{-14}$ g. The data are compared with corresponding vals. for young people. F. O. H.

Thermochemistry of the oxygen–hæmoglobin reaction. II. Comparison of the heat as measured directly on purified hæmoglobin with that calculated indirectly by the van 't Hoff isochore. F. J. W. Roughton [with G. S. Adair, J. Barcroft, S. Goldschmidt, W. Herkel, R. M. Hill, A. B. Keys, and G. B. Ray] (Biochem. J., 1936, **30**, 2117—2133).—The heat of reaction of O_2 with purified hæmoglobin solutions, measured directly, agrees within experimental error with the heat of reaction calc. by the van 't Hoff isochore from the effect of temp. on the O_2 dissociation curves, both at p_H 6·8 (9350 g.-cal.) and p_H 9·5 (13,300 g.-cal.). The existence of intermediate compounds is discussed. It is shown that calc. and measured heats of reaction should agree even in the presence of foreign buffers. F. A. A.

Action of sodium azide on cellular respiration and on some catalytic oxidation reactions. D. Keilin (Proc. Roy. Soc., 1936, **B**, **121**, 165—173).—Methæmoglobin forms a compound with NaN_3, the brown solution turning red and showing absorption bands at 575 and 542·5 mμ. One mol. of NaN_3 is consumed per Fe atom. NaN_3 inhibits the activity of indophenol and pyrocatechol oxidases, catalase, peroxidase, and the oxidation of cysteine by hæmatin. The O_2 uptake of yeast is also inhibited, at $p_H < 7{\cdot}5$. F. A. A.

Relationship between globular volume and concentration of iron. Significance of the hæmatocrit value. W. L. Dulière and M. Adant (Bull. Soc. Chim. biol., 1936, **18**, 1589—1599).—The concn. of Fe and of hæmoglobin and the capacity for fixation of O_2 of red corpuscles can be deduced from the globular vol. of the venous blood, the accuracy being within 5—6%. In many cases the hæmatocrit val. gives an indication of the no. of red cells. P. W. C.

Ultra-violet spectrum of hæmoglobin and its derivatives.—See A., I, 8.

Extravisceral origin of bilirubin in man. I. Arterial and venous blood-bilirubin. Venous blood-bilirubin after stasis. G. C. Dogliotti and E. Slavich (Boll. Soc. ital. Biol. sperim., 1936, **11**, 665—666).—Normally the bilirubin (I) levels of arterial and venous blood are equal, but in hyperbilirubinæmia the latter is sometimes slightly the higher; also, blood stasis increases blood-(I), whilst the effect is less marked in normal men. F. O. H.

Blood of *Alligator mississippiensis*. M. B. Rosenblatt (J. Biol. Chem., 1936, **116**, 81—86).—Detailed analyses are given of alligator blood in spring. There is a reversed albumin–globulin ratio of the blood plasma-proteins and a high cellular non-protein-N. These findings are discussed from a phylogenetic point of view. J. N. A.

Properties of blood-albumin of the horse. M. Grinstein (Anal. Asoc. Quím. Argentina, 1936, **24**, 30—46).—The purified albumin (cf. A., 1936, 1400) has an isoelectric point of p_H 5·0, Au no. approx. 0·04, and $[\alpha]$ −61·15°. The absorption spectrum and n for aq. solutions are also recorded. F. R. G.

Proportion of albumin to globulin in serum of healthy animals. A. Wladasch (Biochem. Z., 1936, **287**, 337—341).—Vals. for the total protein, albumin (I), and globulin (II) contents and the (I)/(II) ratios of horse, ox, hen, and dog serum are tabulated. The abs. vals. with horse and ox serum differ little from one another and the ratio of (I)/(II) is approx. 1. In dogs, however, the (I), and in hens the (II), content considerably predominates. P. W. C.

Protein and water of serum and cells of human blood. Measurement of red cell volume. A. J. Eisenman, L. B. Mackenzie, and J. P. Peters (J. Biol. Chem., 1936, **116**, 33—45).—Equations give the relations between H_2O and protein in serum and hæmoglobin (I) in cells, and H_2O and protein in cells. For normal adults the mean concns. of (I) and protein per 100 c.c. of cells are 32·7 g. and 33·1 g., respectively. J. N. A.

Autoclave decomposition of blood-albumin by carbonate. V. S. Sadikov, G. Novoselova, and V. Rozanova (Ukrain. Biochem. J., 1936, **9**, 779—790).—The distribution of N between NH_2-N, *cyclo*peptide-N, and heterocyclic N of the Et_2O and $CHCl_3$ extracts of the solid and liquid phases resulting from the carbonate decomp. of blood-albumin is described. F. A. A.

Maternal and fœtal blood: proteins and polypeptides. M. Chambon and S. Cellière (Compt.

rend. Soc. Biol., 1936, **123**, 595—596).—The polypeptide content of fœtal is > that of maternal blood. H. G. R.

Variations in blood-polypeptides and -proteins during uterine involution in the post-partum period. M. Chambon and S. Cellière (Compt. rend. Soc. Biol., 1936, **123**, 597—599).—The polypeptides immediately increase and reach a max. after 6 days. H. G. R.

Double nitrogen [determinations for evaluation of the peptide-nitrogen of blood]. Nature of the constituent fractions. R. Martens (Bull. Soc. Chim. biol., 1936, **18**, 1551—1568).—Determinations of the peptide-N on certain pathological cases are made by the "double N" method (cf. A., 1929, 339). The NH_2-acid contents of the $CCl_3{\cdot}CO_2H$ and phosphotungstic acid (I) filtrates are frequently not identical, especially when the serum polypeptide-N is abnormally high. Determination of the non-protein-N of these filtrates after addition to the serum of arginine, lysine, histidine, or proline shows that a considerable amount of the first two acids is pptd. by (I). Determination of NH_2-N before and after hydrolysis shows that (I) filtrates contain complex mols. Leucylglycylglycine and glutathione are not, however, pptd. by (I). The (I) ppt. contains some substances which are neither protein nor polypeptide. P. W. C.

Simplification of the Permutit process for determination of histamine in the blood. A. Schwartz and A. Riegert (Compt. rend. Soc. Biol., 1936, **123**, 801—804; cf. A., 1936, 1530).—10 c.c. of plasma are shaken with 1 g. of Permutit for 1 hr., and histidine is eluted with saturated aq. NaCl and determined by Pauly's reaction. H. G. R.

Lipin content of livers of non-immunised and immunised horses. A. Wadsworth, J. W. Hyman, and R. R. Nichols (Amer. J. Path., 1935, **11**, 419—427).—In immunised horses vals. for phospholipins (I) were <, and for free cholesterol (II) and neutral fats >, those in non-immunised or resting horses. The ratio (I)/(II) is related to the extent of the injury resulting from immunisation with bacterial toxins. Ch. Abs. (*p*)

Lipin–protein combination in blood-serum. Analysis of physico-chemical factors of the extractability of serum-lipins by ether in presence of various substances. B. Delage (Bull. Soc. Chim. biol., 1936, **18**, 1603—1612).—Et_2O extracts only traces of lipin from blood-serum. One group of substances, *e.g.*, the primary alcohols, *cyclo*hexanol, $COMe_2$, added to the serum enable Et_2O to extract in the cold 60—80% of the total lipin present, whereas another group, *e.g.*, glycols, and variation of p_H have no such effect. Substances of the first group are sol. in Et_2O and considerably lower the Et_2O–H_2O interfacial tension, whilst those of the second group are almost insol. in Et_2O and only slightly depress the interfacial tension. P. W. C.

Extractability of serum-lipins by ether as a function of p_H. B. Delage (Bull. Soc. Chim. biol., 1936, **18**, 1600—1602).—Adjustment by *N*-NaOH or *N*-H_2SO_4 of the p_H of serum to vals. between 1·7 to 13·3 hardly affected the amount of lipin extracted by Et_2O at 20°. P. W. C.

Gravimetric determination of small amounts of plasma-lipins. H. R. Street (J. Biol. Chem., 1936, **116**, 25—31).—The method determines total lipins in 2—5 c.c. of plasma. Bloor's oxidative method (A., 1928, 662) gives vals. 9·2—15·9% < those given by the new method. J. N. A.

Unknown substances in the unsaponifiable fraction of blood. W. Brandt (Biochem. Z., 1936, **288**, 257—260).—The cholesterol-free unsaponifiable fraction of blood-lipins (ox, man) yields an oil (partly cryst. at low temp.), free from N and P, and giving positive sterol colour reactions and ppts. with picric and picrolonic acids but not with digitonin. This substance is probably a source of error in determinations of blood-cholesterol. F. O. H.

Ultra-violet spectrographic determination of free and conjugated phenols in pure solution and in blood. G. Barac (Bull. Soc. chim. Belg., 1936, **45**, 641—646).—The usual methods of observing the fate of PhOH in mammalian blood are inaccurate; PhOH and $PhKSO_4$ contents of aq. and of blood solutions can be accurately determined by ultra-violet spectrographic examination of an Et_2O extract. R. F. P.

Effect of glucose ingestion on cholesterol fractions of blood. W. M. Sperry (J. Biol. Chem., 1936, **116**, 65—70).—In contrast to the findings of Fitz and Bruger (A., 1936, 496) employing abnormal patients, there was no significant change in the concn. of total and free cholesterol in blood-serum when determined before and after administration of glucose in healthy man. J. N. A.

Cases of high blood-sugar without glycosuria. R. H. Major (J. Lab. Clin. Med., 1935, **20**, 1111—1112).—High blood-sugar vals. in these cases are due to fermentable sugars only. Ch. Abs. (*p*)

Effect of intravenous, subcutaneous, and intramuscular injections of acetylcholine on blood-sugar. F. Jourdan, P. Galy, and L. Galloni (Compt. rend. Soc. Biol., 1936, **123**, 604—605).—Hyperglycæmia lasting an hr. or longer was observed. H. G. R.

Effect of intravenous injections of suspensions of solids on blood-sugar. A. Lumière and P. Meyer (Compt. rend. Soc. Biol., 1936, **123**, 606—608).—The extent of the hyperglycæmia observed depends on the physical nature of the particles. H. G. R.

Blood-sugar content of arterial and venous blood. A. Knapp (Biochem. Z., 1936, **287**, 342—344).—In oxen and hens, the arterial blood-sugar is always > the venous level, the mean differences being 0·0085 and 0·017%, respectively. P. W. C.

Colorimetric copper determination of blood-glucose. E. Lasausse, R. Kermarec, and I. Frocrain (J. Pharm. Chim., 1936, [viii], **24**, 461—466).—Blood (0·2 c.c.) is deproteinised with H_2WO_4 (Folin), reduced by a large excess of Fehling's solution, and the pptd. Cu_2O is dissolved in HNO_3–HCl, Cu being determined colorimetrically by Na dithiocarbamate (cf. A., 1936, 536). F. O. H.

Micro-determination of blood-sugar by ceric sulphate titration. G. Giragossintz, C. Davidson, and P. L. Kirk (Mikrochem., 1936, **21**, 21—34).—The deproteinised blood is heated at 100° with aq. $K_3Fe(CN)_6$ and Na_2CO_3, acidified with H_2SO_4, and the $K_4Fe(CN)_6$ produced is titrated with $Ce(SO_4)_2$. A blank test is carried out simultaneously. Within 1%, 10 equivs. of $Ce(SO_4)_2$=1 mol. of glucose. The results agree with those of other methods. J. W. S.

Reciprocal relation between glycæmia and chloræmia. J. Loiseleur (Compt. rend. Soc. Biol., 1936, **123**, 491—494). H. G. R.

Variations in erythrocyte and plasma hydræmia and chloræmia after injection of mercurial diuretics. J. Decourt, C. O. Guillaumin, and Sapin (Compt. rend. Soc. Biol., 1936, **123**, 466—468).—The differences are more distinct in the erythrocytes than in the plasma and depend on the diuresis obtained and the presence of œdema. H. G. R.

Micro-determination of chloride in blood. S. Lewinson (Bull. Soc. Chim. biol., 1936, **18**, 1537—1541).—The method depends on pptn. of blood-proteins of 0·1 c.c. blood with $Zn(OH)_2$ and titration of the Cl′ in the filtrate with 0·01*N*-$AgNO_3$ using K_2CrO_4–indigo-carmine as indicator. P. W. C.

High blood-urea-nitrogen not due to chronic nephritis. M. G. Wohl and R. W. Brust (J. Lab. Clin. Med., 1935, **20**, 1170—1179).—High blood-urea is often associated with deficient fluid intake or with conditions involving loss of body-fluids and depletion of blood-electrolytes. The mechanism of N retention in conditions not due to glomerular nephritis is closely related to changes in H_2O and salt metabolism. Ch. Abs. (*p*)

Determination of serum-phosphorus. N. Luengo (Rev. Sanid. Hig. publ., 1936, **11**, 385—394).—Best results were obtained with a semi-micro- or micro-modification applicable to all P fractions in blood and serum, of the Fiske and Subbarow technique. Nutr. Abs. (*m*)

Micro-determination of phosphatases in blood-plasma and inorganic phosphorus in blood. E. Lundsteen and E. Vermehren (Compt. rend. Trav. Lab. Carlsberg, 1936, **21**, Ser. Chim., 147—166).—Methods are given for determining the plasma-phosphatase (I) and inorg. P in whole blood, using 50 cu. mm. of blood in each case. (I) is inhibited strongly by barbituric buffers but less so by NH_4Cl–NH_3 buffers. The p_H optimum depends on the duration of reaction (for 70 hr. 8·65, for 1 hr. >9·65). An alkaline p_H favours both the enzymic reaction and destruction of (I). The extent of reaction $\propto$ (I) concn. $Mg^{\cdot\cdot}$ must be added to the substrate to obtain a const. activation independent of the serum concn. Vals. are given for the (I) content of the blood-plasma of healthy individuals. E. A. H. R.

Effect of hypercoagulating substances on blood-calcium. M. Alves (Compt. rend. Soc. Biol., 1936, **123**, 613—616).—Total and ultrafilterable Ca is increased by injection of Na citrate or gelatin. H. G. R.

Iron. XI. Separation of blood-catalase from "readily eliminated" iron. XII. Hæmoglobin and "readily eliminated" iron in adsorption and cataphoresis. G. Barkan and O. Schales (Z. physiol. Chem., 1936, **244**, 81—88, 257—265; cf. A., 1936, 747).—XI. Al_2O_3 adsorbs the catalase (I) from blood solutions but not the "readily eliminated" Fe (II). Hence no part of this Fe is identical with (I).

XII. When washed hæmolysed erythrocytes are used instead of blood solutions, the hæmoglobin is separated (by adsorption on Al_2O_3) from (II) in one operation. No separation takes place on cataphoresis, by which, however, the non-identity of (II) with (I) is confirmed. W. McC.

***o*-Toluidine reaction in the medico-legal detection of blood.** F. Nicoletti (Diag. tec. lab. (Napoli), Riv. mens., 1935, **6**, 529—536).—The reaction is sufficiently sensitive and sp. Ch. Abs. (*e*)

Callicrein of blood. E. Werle (Biochem. Z., 1936, **287**, 235—261; cf. A., 1934, 224).—Callicrein (I) from blood-serum is not identical with urinary and pancreatic (I), since serum-(I) but not urinary and pancreatic (I) is inactivated by cysteine and glutathione and since the behaviour towards various inactivating substances from organs and fluids is different. Common properties are destruction by powerful oxidising agents (I, $KMnO_4$, H_2O_2) and ultra-violet light and high mol. wt. (inability to dialyse). All substances other than (I) which reduce blood-pressure are destroyed by boiling in neutral solution for short periods. (I) is partly purified by adsorption on caseinogen and by fractional pptn. with $(NH_4)_2SO_4$. W. McC.

Resistance of red cells to hæmolysis in hypotonic solutions of sodium chloride: blood disorders. G. A. Daland and K. Worthley (J. Lab. Clin. Med., 1935, **20**, 1122—1136).—Max. and min. resistance to hypotonic NaCl is determined in various anæmias and leucæmia. Ch. Abs. (*p*)

Calculations for isotonic solutions. Graphical method. W. Nixon (Pharm. J., 1936, **137**, 568—569).—Calculations for isotonic mixtures of two substances of known isotonic equivs. are simplified by the use of graphs. Examples are given. F. O. H.

Isotonic solutions for injection. F. Wokes (Quart. J. Pharm., 1936, **9**, 455—459).—The hæmolysing [NaCl] for human blood is approx. 0·40—0·47%. The ratio of isotonic to hæmolysing concn. of substances used (B.P. Codex 1934) for the prep. of isotonic solutions is generally 2—3, an exception being H_3BO_3 which hæmolyses at concns. of 0·5—5·0%. F. O. H.

Chemistry of blood coagulation. III. Chemical constituents of blood platelets and their rôle in blood clotting; activation of clotting by lipins. E. Chargaff, F. W. Bancroft, and M. Stanley-Brown (J. Biol. Chem., 1936, **116**, 237—251; cf. A., 1936, 1285).—Platelets from horse blood are separated and fractionally extracted. The lipin fraction contains kephalin (I), lecithin, and sterols. The phos-

phatide fraction contains a potent activator of the clotting of chicken plasma. The (I) fractions from soya beans, cotton-seed, yeast, and muscle extracts contain a similar activator. The defatted blood platelets contain a H_2O-sol. inhibitor of blood clotting. F. A. A.

Action of metals. IV. Influence of metals on blood clotting. H. Häusler and L. Vogel (Biochem. Z., 1936, **287**, 405—410).—Inhibition of blood clotting by metals *in vitro* depends on the partial or complete pptn. of fibrinogen (I). After a single injection of a heavy-metal salt solution into rabbits, a temporary inhibition of blood clotting occurs with simultaneous decrease of blood-(I) content. After injections repeated over a long period, acceleration of clotting occurs accompanied by increased blood-(I) content. P. W. C.

Non-essential nature of calcium in the action of thrombin on fibrinogen. H. Weitnauer and E. Wöhlisch (Biochem. Z., 1936, **288**, 137—144).—Complete removal of Ca from thrombin (I)–fibrinogen systems does not inhibit coagulation. Contrary results by other workers are probably due to alterations in or decomp. of (I). F. O. H.

Blood coagulation. II. H. Dyckerhoff, W. von Behm, N. Goossens, and H. Miehler (Biochem. Z., 1936, **288**, 271—291; cf. A., 1936, 497).—The coagulation of fresh blood is readily affected by addition of various substances and hence recalcified oxalated plasma is used for comparative measurements. Injection of Nd salts renders the blood uncoagulable *in vivo* for several hr. The inhibition of *in-vitro* coagulation by Nd and heparin is irreversible. F. O. H.

Rôle of carbon dioxide in certain properties of blood-serum. R. O. Prudhomme (Ann. Inst. Pasteur, 1936, **57**, 545—564).—The observation of Chorine and Koechlin (Compt. rend. Soc. Biol., 1934, **116**, 19) that the flocculation of sera of patients suffering from paludism shows diurnal variations has been confirmed. Similar but smaller variations occur in normal sera and in isolated euglobulin solutions, and are due to variations in the CO_2 tension of the solutions, produced by the methods of storage. Change of CO_2 tension by other means produces similar effects; the CO_2 acts by varying the p_H. F. A. A.

Clinical immunity. (Sir) W. Willcox (Lancet, 1936, **231**, 911—913).—An address. L. S. T.

Protoplasmic specificity. E. E. Just (Science, 1936, **84**, 351—352). L. S. T.

Serum-precipitin in anaphylaxis in the rabbit. C. Jackson (J. Immunol., 1935, **28**, 225—239).—A quant. study. Ch. Abs. (*p*)

Anaphylactic shock *in vitro*. Liberation of an active substance from the isolated lung of a sensitised guinea-pig. G. Ungar and J. L. Parrot (Compt. rend. Soc. Biol., 1936, **123**, 676—678).—The lung, but not the liver, of a sensitised animal gives anaphylactic reactions *in vitro*. H. G. R.

Antigenic action of phosphatides: purified kephalin. A. Wadsworth, E. Maltaner, and F. Maltaner (J. Immunol., 1935, **28**, 183—191).—Purified kephalin showed no antigenic properties. Ch. Abs. (*p*)

Antigenic action of cholesterol. A. Wadsworth, E. Maltaner, and F. Maltaner (J. Immunol., 1935, **29**, 135—149).—Reactions obtained with cholesterol (I) and sera of rabbits inoculated with mixtures of (I) and swine serum are due to the effect on the complement of the increased anticomplementary properties of these sera, together with fluctuations in the stability of (I) suspensions caused by changes in the amount of protective serum-colloids in dilutions of antisera prepared with physiological saline. Ch. Abs. (*p*)

(A) Isoantigenic properties of casein. (B) Effect of deamination on antigenic properties of casein. J. H. Lewis (J. Infect. Dis., 1934, **55**, 168—171, 203—206).—(A) The antigenic action of casein (I) from various milks must be similar. Injection into a goat of (I) from its own milk caused the production of antibodies for both goat and cow (I).

(B) Deamination of (I) with HNO_3 does not destroy its antigenic reaction nor prevent its reaction with anti-(I) serum. (I) reacts with antiserum for deaminised (I). Ch. Abs. (*p*)

Influence of manganese on antibody formation. M. Dechigi and L. Torelli (Boll. sez. Ital., 1936, **8**, 50—52).—Traces of $MnCl_2$ injected into rabbit blood increase the agglutinating and lytic power of serum, but large doses cause a transitory diminution owing to a partial pptn. of blood-protein interrupting the normal rate of antibody formation. Repeated injections of small doses of $MnCl_2$ increase the content of the agglutinating antibody. W. R. D.

Relative importance of reticulo-endothelial tissues and circulating antibody in immunity. II. Hypersensitiveness and immunity to foreign proteins. F. H. Teale (J. Immunol., 1935, **28**, 161—182).—Immunity to foreign proteins depends on the capacity of the tissues to deal with the proteins: the circulating antibody, even if it could saturate the inoculated antigen before being taken up by the tissues, is probably unable to aid the work of the tissues in dealing with the inoculated dose. Ch. Abs. (*p*)

Relation of allergy to the antibody content in animals vaccinated with B.C.G. B. J. Clawson and A. B. Baker (J. Infect. Dis., 1935, **56**, 297—300).—No definite proportion or necessary relation exists between bacterial allergy and antibodies in the blood. Ch. Abs. (*p*)

Immunochemical system, sheep blood–anti-sheep blood serum. E. Brunius (Arkiv Kemi, Min., Geol., 1936, **12**, B, No. 10, 1—3).—Highly purified Forssman antigen is resistant to proteolytic enzymes, HNO_2, and PhNCO but largely loses its immunological character when treated with CH_2N_2. Proteolytic enzymes completely destroy the activity of the antibody, which is also destroyed by HNO_2 and PhNCO. E. A. H. R.

Influence of aminophenylstibinates on the toxin–antitoxin complex. H. Goldie (Compt.

rend. Soc. Biol., 1936, 123, 768—770).—The toxin or the complex is adsorbed by the stibinate and pptd. H. G. R.

Apparent and real titres of antitoxic sera. M. Weinberg and M. Guillaumie (Compt. rend. Soc. Biol., 1936, 123, 661—664).—Variations in the titre can be reduced by using a toxin prepared from a single cell culture. H. G. R.

(A) **Nature of the antibodies for sheep-cells in infectious mononucleosis.** C. A. Stuart, A. M. Griffin, M. Fulton, and E. G. E. Anderson. (B) **Thermostable antigen in ox cells.** C. A. Stuart, A. M. Griffin, K. M. Wheeler, and S. Battey (Proc. Soc. Exp. Biol. Med., 1936, 34, 209—212, 212—215).—(A) Sheep-cell antibodies in infectious mononucleosis are not Forssman antibodies. (B) The antigen of ox and sheep cells which adsorbs the antibodies of infectious nucleosis is thermostable and insol. in and resistant to EtOH. It is therefore neither an isophile fraction nor a Forssman heterophile antigen. The type-sp. antigens K_3 and K_5 in rabbits are probably of a similar type. A. G. P.

Precipitinogenic action of human plasma and its constituents. L. Hektoen and W. H. Welker (J. Infect. Dis., 1934, 55, 271—275).—Intramuscular injection of human plasma or serum, especially when adsorbed on $Al(OH)_3$, causes a production of sp. precipitins which may be continued for months. Ch. Abs. (*p*)

Ultramicro-technique for precipitation and agglutination reactions. C. L. Hudson and S. Mudd (J. Immunol., 1935, 28, 311—320). Ch. Abs. (*p*)

Non-identity of jack-bean agglutinin with crystalline urease. J. B. Sumner and S. F. Howell (J. Immunol., 1935, 29, 133—134).—The cryst. urease has no agglutinating action on washed rabbit erythrocytes (cf. Hotchkiss and Tauber, A., 1932, 531). Ch. Abs. (*p*)

Extraction of labile bacterial antigen by disruption of the bacterial cells at low temperature. E. J. Czarnetzky (Science, 1936, 84, 355—356).—Disruption at liquid air temp. is described. L. S. T.

Use of gelatin in rapid test preparations of *Bacterium abortus* antigen. Variation in the effect of gelatin on agglutination titres of bovine sera. C. R. Donham and C. P. Fitch (J. Infect. Dis., 1935, 56, 203—209).—Gelatin in antigen preps. increases their sensitivity for some but not all sera. Ch. Abs. (*p*)

Concentration and purification of antimeningococcus serum. P. P. Murdick and S. M. Cohen (J. Immunol., 1935, 28, 205—208). Ch. Abs. (*p*)

Ultracentrifugal concentration of pneumococcic antibodies. R. W. G. Wyckoff (Science, 1936, 84, 291—293).—Type I antibody is associated with a mol. having a sedimentation const. 16×10^{-13} cm. per sec. per dyne. L. S. T.

Antigenic characteristics in man of certain products of the pneumococcus: comparison with vaccine. L. D. Felton, W. D. Sutliff, and B. F. Steele (J. Infect. Dis., 1935, 56, 101—110).—Certain fractions produce a protective antibody in man, the response being comparable with that obtained by vaccine. Fractions made by autoclaving at 17 lb. for 15 min. are inactive. Ch. Abs. (*p*)

Hæmolysin and antihæmolysin of tetanus toxin. E. Lemétayer (Compt. rend. Soc. Biol., 1936, 123, 742—745).—Tetanospasmin and tetanus toxin are neuro-toxins and the presence of the hæmolysin is not related to that of the poison. H. G. R.

Neutralisation of the tetanus toxin hæmolysin by normal sera. E. Lemétayer (Compt. rend. Soc. Biol., 1936, 123, 745—747).—The antihæmolysin found in normal sera is not due to natural immunisation by tetanus antigen. H. G. R.

Flocculating and immunising properties of antitoxins purified by precipitation with trichloroacetic acid. G. Ramon, A. Boivin, and R. Richou (Compt. rend., 1936, 203, 634—636; cf. A., 1936, 1423).—The antitoxin (I) of diphtheria or staphylococcus, pptd. with $CCl_3 \cdot CO_2H$, is dissolved in a little PO_4''' buffer at p_H 8, and brought to the same concn. as the original (I) with Ringer's solution or a culture broth. The tendency of either prep. to flocculate is the same as that of (I). All three exhibit the same antigenic characteristics *in vitro*, but *in vivo* (guinea-pig or rabbit) the immunising action of the ppt. diluted with Ringer's fluid is >, and that diluted with broth <, that of (I). J. L. D.

Production of diphtheria antitoxins from toxins prepared with Pope and Llewellyn-Smith's medium. I. Fjord-Nielsen (Compt. rend. Soc. Biol., 1936, 123, 725—729).—Immunisation with toxins prepared with the medium give a strong reaction and a low production of antitoxin, both of which can be improved by ultrafiltration. H. G. R.

Precipitation of diphtheria toxin by organic compounds of antimony. H. Goldie (Compt. rend. Soc. Biol., 1936, 123, 648—651).—Diphtheria toxin can be pptd. by aminophenylstibinates at p_H 4, the latter being removed by 1 : 4 : 6 : 8-$NH_2 \cdot C_{10}H_4(SO_3Na)_3$. H. G. R.

Concentration and purification of toxins and toxoids by ultrafiltration. F. Modern and G. Ruff (Compt. rend. Soc. Biol., 1936, 123, 69—70).—Using the technique of Quigley (A., 1934, 1326), a ten-fold concn. is obtained without appreciable loss. H. G. R.

Polarimetry, refractometry, and protein content of immunised [anti-diphtheria] horse sera. F. Modern and G. Ruff (Compt. rend. Soc. Biol., 1936, 123, 501).—Parallel variations, not $\propto$ the antitoxic power, were observed. H. G. R.

Isolation of immunologically pure antibody. B. F. Chow and H. Wu (Science, 1936, 84, 316).—The antibody isolated by the process described is a protein. L. S. T.

Physiology of the kidneys. T. Gayda (Boll. Soc. ital. Biol. sperim., 1936, 11, 475—527).—A lecture. F. O. H.

Effect of age on the phosphorus compounds of the brain. S. E. Epelbaum, B. I. Chaikina, and E. B. Skvirska (Ukrain. Biochem. J., 1936, **9**, 613—636).—A higher content of total P and acid-sol. P is found in the brains of very young rabbits (7—30 days) than in those of adult rabbits. The amount of adenosinephosphoric acid and other readily hydrolysable P compounds is small compared with the amount in muscle. F. A. A.

Iodine in poultry. R. Sasaki (J. Agric. Chem. Soc. Japan, 1936, **12**, 1069—1076).—The amount of I in the eggs and organs of white Leghorn hens and cocks fed a basal ration alternately with the same ration containing KI varied from organ to organ, the thyroid gland being the least affected. J. N. A.

Presence and distribution of aluminium in animal tissues. P. Meunier (Compt. rend., 1936, **203**, 891—894).—Al was found in the muscles and organs of the herbivorous mammals and marine animals examined. The pancreas and the intestinal mucus have the highest Al content (5—30 mg. per kg.) in the cow and horse. In general, the Al content rises in descending the animal scale, but is only 1—2% of that of plants. F. A. A.

Water, calcium, and potassium content of the grey and white matter of the brain in experimental tetany. C. I. Parhon and M. Cahane (Compt. rend. Soc. Biol., 1936, **123**, 831—833).—Little variation in the H_2O content and a decrease in Ca and K were observed. H. G. R.

Contents of calcium and total solids in the bile of cadavers. W. Jelinghoff (Arch. exp. Path. Pharm., 1936, **183**, 310—318).—In the hepatic bile the Ca content (0·024—0·072%) varied with the period of time which had elapsed since food had been consumed. In the gall-bladder bile the Ca content at first decreased but later increased to a max. of approx. 0·12% as the concn. of solids in the bile increased. W. McC.

Distribution of nickel in organs of lamellibranch molluscs. R. Paulais (Compt. rend., 1936, **203**, 685—687; cf. A., 1925, i, 719).—Ni was determined in five species by a modification of Rollet's method (A., 1926, 930). The branchiæ and hepatopancreas contained most Ni, whilst muscle contained the least. *Cardium edule* contained much more Ni than the other species. J. N. A.

Chemical composition of bone in d'Albers-Schönberg disease. K. V. Bebeschin (Ukrain. Biochem. J., 1936, **9**, 511—519).—In this disease, the bones contain less H_2O than, and 2½ times as much ash as, normal bones. The content of org. substances, Ca, Mg, and P remains almost unchanged, collagen is reduced to half, and the fat content is insignificant, compared with normal bones. F. A. A.

Mineral metabolism of dental tissue. V. V. Kovalski. **Mineral structure of dental tissue of the guinea-pig.** V. V. Kovalski, O. M. Glezina, V. Baranski, G. Kogan, R. Rutberg, and N. Tschitschkina (Ukrain. Biochem. J., 1936, **9**, 637—654).—Na, K, Ca, and Mg are differently distributed between the functionally different teeth (molars and incisors) of the guinea-pig. Differences also exist between teeth from the upper and lower jaws, and right and left sides. F. A. A.

Physico-chemical properties of nervous tissue. II. Electrical conductivity, viscosity, and p_H. S. V. Fomin and D. M. Strashesko (Ukrain. Biochem. J., 1936, **9**, 897—915).—The differences observed in the properties of extracts of various parts of the nervous system (cerebrum, cerebellum, spinal cord, ischiadic nerve, grey and white matter from cerebral hemispheres) depend largely on their content of mineral substances. F. A. A.

Comparative biochemistry of muscle. III. Phosphagen in molluscs and crustacea. G. Bagdasarjantz (Ukrain. Biochem. J., 1936, **9**, 573—581).—The muscles of three species of molluscs examined, whose habitats are sea-H_2O, fresh H_2O, and land, respectively, and of crabs and certain lower crustacea, contain argininephosphoric acid (0·015—0·059%) and free arginine. Creatine and creatinephosphoric acid are absent. F. A. A.

Free and protein-bound glycogen in liver. H. Bierry, B. Gouzon, and C. Magnan (Compt. rend. Soc. Biol., 1936, **123**, 762—764). H. G. R.

Molecular structure of glycogen from the whole tissues of *Mytilus edulis*. D. J. Bell (Biochem. J., 1936, **30**, 2144—2145).—The earlier conclusion (A., 1936, 1403) that glycogen of *M. edulis* contains 18 glucose units per mol. instead of the normal 12 units is confirmed by the results of acetylation and methylation. Hydrolysis of the methylated glycogen gave 1 mol. of 2 : 3 : 4 : 6-tetramethylglucose, 15 mols. of 2 : 3 : 6-trimethylglucose, and 2 mols. of dimethylglucoses. P. W. C.

Structure of animal and plant cellulose. II. Investigation by *X*-rays. F. May and R. Stühler (Z. Biol., 1936, **97**, 454—458; cf. A., 1936, 1011).—Tunicin (animal cellulose, prepared from *Phallusia mamillata*) has a cryst. structure and gives an *X*-ray pattern identical with that of plant cellulose (starch-free filter-paper, cotton) (cf. Herzog, A., 1926, 563). F. O. H.

Distribution of lipins in fresh ox skin. R. M. Koppenhoefer (J. Biol. Chem., 1936, **116**, 321—341).—The lipins of the corium consist of two groups, complex lipins and sterols, and triglycerides, the former being associated with the physiological activity of the skin. Increased saturation, OH-acid formation, and liberation of free fatty acid occur at the skin surface, and hydroxycholesterol is present in the epidermal layer of which the waxy constituent is characteristic. P. G. M.

Excitation of the fluorescence of cholesterol and of skin. F. Vlès and A. Ugo (Compt. rend. Soc. Biol., 1936, **123**, 226—231).—The spectra of cholesterol (I) and some cholesteryl esters have been examined: that of skin is due to proteins and fatty acids in addition to (I). H. G. R.

Biochemistry of the sterol group. I. Sterols, bile acids, and neutral saponins. II. Cardiac poisons and vitamin-*D*. III. Sex hormone group. A. Butenandt (Chem. and Ind., 1936, 753—759, 891—895, 990—998).—Lectures.

Floridin activation of cholesterol.—See A., II, 16.

Amino-acids of silkworms. C. HAYASHI (J. Chem. Soc. Japan, 1935, **56**, 946—951).—The N distribution of the silk gland and of the gland-free worms is recorded. CH. ABS. (*p*)

Difference between reactions with nitroprusside of reduced glutathione, cysteine, acetone, and creatinine: rôle of p_H. P. D. ZIMMET and J. P. PERRENOUD (Bull. Soc. Chim. biol., 1936, **18**, 1704—1709).—Glutathione gives a transitory rose colour increasing from p_H 7·8 to 10 (limit of sensitivity 1 in 20,000). Cysteine gives a similar tint, the p_H optima being 12 and 13 (limit 1 in 50,000). Creatinine has p_H optima 12 (after 15 min.) and 13 (after 20 sec.) (limit 1 in 5000). $COMe_2$ (10%) reacts slowly at p_H 10 and 0·1% at p_H 13. P. W. C.

Choline and acetylcholine in invertebrates. Organs of *Helix pomatia*. C. MENTZER, A. KASWIN, E. CORTEGGIANI, and J. GAUTRELET (Compt. rend. Soc. Biol., 1936, **123**, 668—670).—The acetylcholine content of the ganglia is high, traces only being found in the hepato-pancreas. Choline is present in the former but was not detected in the latter. H. G. R.

Liberation of acetylcholine from a complex in the nervous centres by heat. E. CORTEGGIANI, J. GAUTRELET, A. KASWIN, and C. MENTZER (Compt. rend. Soc. Biol., 1936, **123**, 667—668).—The acetylcholine content of the brain is increased by approx. 300% by heating to 70°. H. G. R.

Liberation of acetylcholine from the liver by enzymes. J. GAUTRELET, E. CORTEGGIANI, A. KASWIN, and C. MENTZER (Compt. rend. Soc. Biol., 1936, **123**, 664—666).—Choline and acetylcholine (or a similar substance) are liberated from guinea-pig's liver by enzymic action. H. G. R.

Refractive index of proteins. P. PUTZEYS and J. BROSTEAUX (Bull. Soc. Chim. biol., 1936, **18**, 1681—1703).—The sp. increment is not a measure of n of dissolved protein. n cannot be calc. accurately from the Gladstone–Dale equation but is given by that of Lorenz and Lorentz. A const. relationship exists, however, between n calc. by these two methods. The n of amandin and of hæmocyanin of *Helix pomatia* are determined for 4 wave-lengths. The dispersion obeys Cauchy's rule. The n of ovalbumin, serum-albumin and -globulin, hæmoglobin, and edestin are recalc. using the Lorenz–Lorentz equation. All the simple proteins have n_D 1·600. P. W. C.

Composition of bonito-meat (*Katsuwonus pelamis*, L.); properties of proteins. K. KONDO, T. MIHARA (J. Agric. Chem. Soc. Japan, 1936, **12**, 1088—1098).—46—47% of the body of the fish is edible, and the flesh consists of H_2O approx. 70% and protein 23%. The latter consists of approx. 25% of H_2O-sol. and 50% of dil. alkali-sol. protein. This last-named contains more $(NH_2)_2$-acids (especially histidine) than the H_2O-sol. fraction. The isoelectric points of the proteins have been determined. J. N. A.

Composition of meat of the flat fish (*Pseudorhombus cinnamomeus*, T. and S.). K. KONDO, K. FUJIOKA, S. SHINANO, and H. MITSUDA (J. Agric. Chem. Soc. Japan, 1936, **12**, 1099—1105).—51—53% of the body of Ganzo-Hirame is edible, and the fish consists of H_2O (71—80%), protein (approx. 20%), fat (0·6—5·07%), and ash (approx. 1·2%). The protein content varies inversely with that of H_2O and fat. No sexual difference could be found in the proteins except in the amount of lysine. J. N. A.

Sensitivity to γ-rays of proteins and their constituent compounds. H. HIRSCHER (Biochem. Z., 1936, **288**, 110—115).—The replacement of normal edestin (I) in the diet of rats by (I) which has been exposed to γ-irradiation from meso-Th results in a diminution in total N excretion and urinary N, C, and "vacate"-O_2. The effect is due to certain definite NH_2-acid constituents of (I), all NH_2-acids not being equally sensitive to γ-rays (cf. Olbrich, A., 1936, 632). F. O. H.

Poisonous substance of the larvæ of *Dendrolinus undans*, Walk., var. *excellens*, Butler. S. MIYACHI (Folia Pharmacol. Japon., 1935, **20**, 177—180).—Two poisons, a globulin and an albumin, are isolated, and their effects are examined. CH. ABS. (*p*)

Chemical nature of a hæmatopoietic substance occurring in liver. H. D. DAKIN, C. C. UNGLEY, and R. WEST (J. Biol. Chem., 1936, **115**, 771—791; cf. A., 1935, 885).—Further purification of the active principle (I), leading to preps. of about twice the former potency, is described. These are free from glucosamine; otherwise the fission products (indicating a peptide) are similar to those of earlier preps. Ultrafiltration data suggest a mol. wt. of 2000—5000. (I) is not hydrolysed by depepsinised gastric juice whilst the action of rennin does not produce plastein. (I) is not obtained from kidney, brain, or salivary gland tissues by the process used, and differs from the preps. described by other workers. F. A. A.

Pernicious anæmia principle in liver. III. Isolation and properties of a substance with primary therapeutic activity. Y. SUBBAROW, B. M. JACOBSON, and V. PROCHOWNICK (J. Amer. Chem. Soc., 1936, **58**, 2234—2236).—Details are given for the isolation of an active substance [as *sulphate* (I), decomp. >290°, $[\alpha]_D^{28}$ −85·4±2° in H_2O] from the purine-free liver extract in a yield of 2 mg. per 100 g. of fresh liver. Aq. solutions of (I) show intense blue fluorescence in ultra-violet light; the absorption spectrum has an inflexion between 248 and 256 mμ. H. B.

Identification of a compound isolated from scallop mussel. E. MOORE and D. W. WILSON (Amer. J. Med. Sci., 1935, **190**, 143—144).—A *substance*, $C_9H_{18}O_4N_4$, is isolated from the adductor of the deep-sea mussel. Two CO_2H groups may be present and the compound contains an asymmetric C; reactions indicate a mono-substituted guanidine grouping. CH. ABS. (*r*)

Presence and significance of a chromotropic substance in the walls of veins. F. FEDELI and B. ROSSI (Arch. Ist. Biochim. Ital., 1936, **8**, 299—316).—Differential stains indicate the presence of a chromotropic substance in the veins of normal animals and men which increases when the veins are

diseased. The origin and nature of the substance are discussed. F. O. H.

Cytochromes. III. Hæmatins of animal and vegetable tissues and cytochrome-*a*. J. Roche and M. T. Bénévent (Bull. Soc. Chim. biol., 1936, **18**, 1650—1673).—The absorption spectra of reduced cytochrome (I) from animal, vegetable, and micro-organism tissues although possessing bands characteristic of (I) are frequently incomplete and an attempt is made to identify the hæmatin (II) constituting the prosthetic group of the (I) from the varying sources. A (II) isolated from horse heart gives a C_5H_5N-hæmochromogen (III) having two bands, and is convertible into a second (II) which gives a single-banded (III). The two hæmatins correspond each to a constituent of (I)-*a*. By oxidation of proto-(II) in C_5H_5N, a third (II) is obtained which gives a similar (III) spectrum. The three hæmatins like the (III) of (I) show a strong absorption at 580—590 mμ and are grouped as hæmatins-*a*. The spectrophotometric behaviour of the (III) of these hæmatins and of chlorocruoro-(II), green (II), and of C_5H_5N extracts of animal, vegetable, and micro-organism tissues is investigated and the various absorption curves are given (cf. A., 1936, 247). P. W. C.

Regeneration of visual purple in solution. S. Hecht, A. M. Chase, S. Shlaer, and C. Haig (Science, 1936, **84**, 331—333).—Kühne's original observation that after being bleached by light a solution of visual purple regenerates some of its colour in the dark has been confirmed. The kinetics of the regeneration, which is confined to a narrow p_H range, approx. 6·6—8·0, has been measured. The absorption spectrum of the regenerated visual purple is reproduced. L. S. T.

Chemical identity of certain basic constituents present in the secretions of various species of toads. H. Jensen and K. K. Chen (J. Biol. Chem., 1936, **116**, 87—91).—Direct comparison of various derivatives shows that bufotenidine (Wieland *et al.*, A., 1934, 1232) is present in ch'an su and in secretions of *Bufo bufo gargarizans*, *B. fowleri*, and *B. formosus*, and bufotenine is present in *B. vulgaris*, and *B. viridis viridis*. The basic constituent $C_{12}H_{14}ON_2$ (1 NMe, no OMe), darkens 200°, m.p. 240° (decomp.) (*acetate*, decomp. 210°, m.p. 215°; *hydriodide*, darkens 220°, m.p. 238°), isolated from *B. marinus* and *B. arenarum* is identical with the substance obtained by hydrolysis of bufothionine (Wieland *et al.*, A., 1930, 1466) with 2*N*-HCl. J. W. B.

Bee poison. I. G. Hahn and H. Ostermayer (Ber., 1936, **69**, [*B*], 2407—2419).—The initial mixture of bee sting, poison bladder, and exuded poison is completely extracted by three treatments with cold dil. HCO_2H whereas much more protracted treatment is required with H_2O. Considerable amounts of the poison are extracted by dil. NH_3, partly owing to its solubility in H_2O, partly owing to a chemical change accompanied by the separation of a very sparingly sol. cryst. *compound* (I) (P 25·39, N 9·66%) in which C and H are present in such small amount that they possibly arise from occluded org. matter. Hot dil. HCO_2H destroys the neurotoxic components without affecting the other properties. The crude poison (II) thus obtained cannot be enriched by adsorption and only with great losses by fractional pptn. When absolutely dry it loses only physiologically inactive material to abs. EtOH, after which 90% and 80% EtOH dissolve only inactive components. 60% EtOH dissolves the poison in amount about one half of (II). Subsequently 50%, 40%, and 30% EtOH remove only minimal amounts of inactive material, leaving a physiologically inert residue. Repetition of the extractions with the residue left from the extraction with 60% EtOH gives an almost colourless, non-hygroscopic powder of high physiological activity which gives a clear solution in H_2O, stable when boiled. On treatment with NH_3 it affords (I). With increasing degree of purity the % N, S, and P increases. The poison diffuses rapidly through membranes. The most active products appear to be closely allied to the proteins in their reactions. They are destroyed by proteolytic enzymes. Hydrolysis with mineral acids destroys all but the hæmolytic action. H. W.

Analogy between bee and snake (*Crotalus*) poisons. C. Tetsch and K. Wolff (Biochem. Z., 1936, **288**, 126—136).—Bee poison and the venom from *C. terrificus* yield protein toxins of similar composition (N 13·6, 14·7; S 2·6, 3·6%, respectively), toxicity in mice, and action on the isolated guinea-pig's intestine. F. O. H.

Wool fat.—See B., 1936, 1214.

Higher saturated fatty acids of butter fat. G. E. Helz and A. W. Bosworth (J. Biol. Chem., 1936, **116**, 203—208).—The higher-boiling fractions of the Me esters of the acids from butter fat yield hexacosanoic (cerotic) acid. F. A. A.

Flavins of milk. C. T. Roland (J. Chem. Educ., 1936, **13**, 481—482).—A summary. L. S. T.

Biological properties of lactalbumin. K. Teichert (Pharm. Ztg., 1936, **81**, 1320—1321).—The biological val., precipitin reactions, and the uses of lactalbumin in bacteriological media are discussed. W. L. D.

Oxidase reaction of human milk. O. S. Rougichitch and E. Dumitrescu (Arch. Dis. Childhood, 1936, **11**, 61—64).—The reaction became intense from the 3rd to the 6th month and then gradually grew less until the end of lactation. There was no definite relationship between intensity of reaction and milk yield or the time at which the milk was drawn. In five cases of mastitis the reaction of the milk was similar to that obtained with colostrum. At the beginning of menstrual flow the reaction was very intense. Nutr Abs. (*m*)

Determination of tyramine in cerebrospinal fluid and blood serum. P. Muller (Compt. rend. Soc. Biol., 1936, **123**, 128—130).—Tyramine is produced in cerebrospinal fluid and serum by hypertensive substances. H. G. R.

Human mucins. D. A. Birjukov (Ukrain. Biochem. J., 1936, **9**, 521—529).—η_i of human saliva is influenced by reflex reactions (*e.g.*, as a result of drinking H_2O). The mucins of human sperm and gastric mucus are unstable. F. A. A.

Variations in bile-sugar in hyperglycæmia. G. Baltaceanu, C. Vasiliu, and T. Budeanu (Compt. rend. Soc. Biol., 1936, **123**, 843—846).—Both free and protein-bound sugar are increased in the bile. H. G. R.

Loss of bilirubin introduced into the intestine. M. Royer (Compt. rend. Soc. Biol., 1936, **123**, 75—76).—After 2—4 hr., the bilirubin diminishes by 30—75%. H. G. R.

Variations in blood- and bile-bilirubin of intestinal origin. M. Royer (Compt. rend. Soc. Biol., 1936, **123**, 76—78).—After introduction of bilirubin into the intestines, that of the bile and the high mesenteric veins is considerably increased. H. G. R.

Reciprocal influence of urobilin and bilirubin of the blood on their biliary elimination. M. Royer and A. Speroni (Compt. rend. Soc. Biol., 1936, **123**, 78—80).—Injection of bilirubin (I) causes a considerable increase of (I) in the bile together with an increase in urobilin (II), whilst injection of (II) shows a large increase in (II) with a smaller increase in (I). H. G. R.

Bile acids of alligator tortoises.—See A., II, 20.

Relation between the rate of flow of the bile and the urine during starvation. G. Baltaceanu and C. Vasiliu (Compt. rend. Soc. Biol., 1936, **123**, 846—848).—The secretions of bile and urine decrease rapidly and remain parallel during the period of starvation. H. G. R.

Dissociation of the functional properties of the gastric glands under the influence of fat. A. Alley, D. W. MacKenzie, jun., and D. R. Webster (Amer. J. Digest. Dis. Nutrition, 1934, **1**, 333—336).—Fat affects gastric secretion in two phases, one inhibitory and one excitatory. Fat inhibits the nervous phase of secretion, but in large amounts depresses the chemical phase and the secretory effect of histamine. In its inhibitory phase fat diminishes the vol., acidity, and peptic power of the secretion; in the excitatory phase secretion provoked by a stimulant is increased, acidity is slightly and peptic power greatly lowered. Ch. Abs. (*p*)

Fine structure of phosphate urinary stones. E. Szold (Orvosi Het., 1935, **79**, 776, 778).—Stones contained irregular groups of very fine crystals (secondary deposits), differing from the primary urate stones. Ch. Abs. (*p*)

Normal urinary fluorine excretion. Problem of mottled enamel. W. F. Machle (Dent. Cosmos, 1936, **78**, 612—615).—For 101 normal subjects with a wide geographical distribution, and 38 hospital patients, urinary F was 0·5—2·8 mg. per litre (range in 54 cases 0·9—1·09 mg.). Excretion of F is thus a normal occurrence. Drinking H_2O containing >1—2 mg. of F per litre appears regularly to cause mottled enamel, but amounts in excess of these vals. may be excreted by normal individuals. Food appears to be a more important source of F than H_2O alone. F intake and absorption are best measured by determination of urinary and total F excretion. Nutr. Abs. (*m*)

Preservation of urine containing phenylpyruvic acid. M. Rhein and R. Stoeber (Compt. rend. Soc. Biol., 1936, **123**, 807—808).—$CHCl_3$ is added and the p_H adjusted to 4 with dil. HCl. H. G. R.

Value of Hanke and Koessler's method for determination of glyoxaline in urine. P. Lelu (Bull. Soc. Chim. biol., 1936, **18**, 1636—1649).—The errors arising in applying the method (A., 1920, ii, 67) to urine are critically investigated. The vals. obtained are not exact but are useful as an approximation. P. W. C.

Determination of cystine in urine. M. X. Sullivan and W. C. Hess (J. Biol. Chem., 1936, **116**, 221—232).—In urine, the original Sullivan procedure must be modified by reduction with alkaline CN′, washing the sediment produced, and using more naphthaquinone. Normal urines contain about 0·01% of free cystine; an additional 0·0025% is liberated from complexes on keeping, and further amounts are obtained by acid or alkaline treatment, and by hydrolysis. Homocystine does not interfere with the determination, and interference by ascorbic acid is prevented by the use of alkaline CN′. F. A. A.

Concentration of a hyperglycæmic factor from urine. B. Harrow, A. Mazur, I. M. Chamelin, and A. Lesuk (Proc. Soc. Exp. Biol. Med., 1936, **34**, 688—690).—The active principle is adsorbed on BzOH, which is then removed with EtOH. It is further purified by dialysis, treatment with $Ba(OAc)_2$ to remove SO_4'', and pptn. with EtOH. The activity is 83 units per g. P. G. M.

Control of the hepatic function: test for galactosuria. V. I. Balanesco and S. Oeriu (Compt. rend. Soc. Biol., 1936, **123**, 850—852).—Following ingestion of >0·5 g. of galactose per kg. body-wt., galactosuria is detected by an increase in the reducing power of the urine in cases of hepatic dysfunction. H. G. R.

Thormählen's reaction in melanotic urine. R. Zeynek and H. Waelsch (Z. physiol. Chem., 1936, **244**, 159—166; cf. J. Tierchem., 1887, **17**, 445).—The substance responsible for the colour reaction is dialysable, relatively stable to alkali, and very unstable to acids. It combines with NH_3 and amines. Attempts to isolate it by adsorption, pptn., and otherwise have not succeeded. W. McC.

Electrically charged groups in normal and abnormal conditions. R. Keller (Arch. exp. Path. Pharm., 1936, **183**, 509—524).—During asphyxiation, hunger, fever, menstruation, pregnancy, acute illness, etc., liver and muscles lose sugar, $K^{\cdot}$, PO_4''', and urea to, and gain $Na^{\cdot}$ from, the serum; considerable potential changes thus result. Addison's disease is characterised by disturbance of the electronegative potential of serum and connective tissue and decline of the positive potential of storage tissues. In eclampsia and inflammatory diseases similar potential changes occur. The sedimentation rate of red blood cells is greatly accelerated in these diseases. P. W. C.

Effects of desiccated hog stomach in achlorhydria. L. Schiff and T. Tahl (Amer. J. Digest Dis. Nutrition, 1934, **1**, 543—548).—Oral administration of single doses of ventriculin stimulates HCl secretion in amounts which may be > those produced by injection of histamine. Symptomology associated with achlorhydria is due to lack of an unknown substance which occurs in hog stomach.
Ch. Abs. (*p*)

Change of carbohydrate metabolism in allergic states and under histamine reactions. A. Dzsinich and M. Pély (Orvosi Het., 1935, **79**, 839—842).—Blood-sugar increased in attacks of asthma, anaphylactic shock, and histamine reactions.
Ch. Abs. (*p*)

Cerebrospinal fluid in tobacco-alcohol amblyopia. F. D. Carroll (Amer. J. Ophthalmol., 1935, **18**, 720—723).—The total protein in the fluid was > normal. Ch. Abs. (*p*)

Toxic amblyopia due to tobacco and alcohol. F. C. Cordes and D. O. Harrington (Arch. Ophthalmol., 1935, **13**, 435—444).—Vasodilator drugs ($NaNO_2$ and erythritol tetranitrate) corr. the toxic amblyopias.
Ch. Abs. (*p*)

Bovine anaplasmosis : chemotherapy. B. S. Parkin (Onderstepoort J. Vet. Sci., 1935, **4**, 269—280).—Promising results were obtained by injection of "Mercurochrome-220 sol." (dibromohydroxymercurifluorescein). Ch. Abs. (*p*)

Ætiologic relation of amidopyrine to agranulocytosis. F. Stenn (J. Lab. Clin. Med., 1935, **20**, 1150—1152).—Prolonged oral administration of amidopyrine to guinea-pigs, rabbits, and monkeys caused no appreciable granulocytopenia even in cases of experimental anæmia or bone-marrow injury.
Ch. Abs. (*p*)

Amidopyrine, barbital, phenylhydrazine, and benzene in relation to agranulocytic angina. V. L. Bolton (J. Lab. Clin. Med., 1935, **20**, 1199—1203).—Oral administration of large doses of amidopyrine (I) or of C_6H_6, Na barbital (II), or of (I) with (II) caused no change in the granulocytic ratio. Administration of $NHPh{\cdot}NH_2$ caused leucocytosis with anæmia. Ch. Abs. (*p*)

Hypochromic anæmia in gastrectomised dogs. Effect of beef, iron, and liver extract on blood-hæmoglobin. S. R. Mether, F. Kellogg, and K. Purviance (Proc. Soc. Exp. Biol. Med., 1936, **33**, 499—501).—In normal dogs receiving a standard bread ration daily, hæmoglobin (I) production was increased from 0·86 g. to 2·26 g. per 100 c.c. of blood by addition of beef to the ration. Gastrectomy reduced (I) production to 0·4 g. and to 0·21 g. when beef was added to the ration. In gastrectomised dogs bled frequently to maintain the (I) production at 6—9 g. per 100 c.c. administration of beef predigested *in vitro* with HCl and pepsin and of liver extract sp. for pernicious anæmia did not increase (I) production but it was very greatly increased by giving Fe NH_4 citrate. W. McC.

Early anæmia of premature infants : hæmoglobin level of immature babies in the first half-year, and the effect during the first three months of blood injections and iron therapy. H. M. M. Mackay (Arch. Dis. Childhood, 1935, **10**, 195—203).—In infants of low birth wt. the hæmoglobin (I) level at birth was > that of heavier infants but fell to a slightly lower level from 8 to 22 weeks of age. Neither injections of citrated blood nor oral administration of Fe NH_4 citrate affected the decline in the (I) level during the first 2—3 months. Ch. Abs. (*p*)

Effect of iron and copper therapy on hæmoglobin content of blood of infants. C. A. Elvehjem, A. Siemers, and D. R. Mendenhall (Amer. J. Dis. Child., 1935, **50**, 28—35; cf. A., 1934, 200).—Daily administration of Fe pyrophosphate and $CuSO_4$ increased the hæmoglobin content of the blood of normal infants and those with severe nutritional anæmia. Ch. Abs. (*p*)

Anæmic factor of goat's milk. R. Tschesche and H. J. Wolf (Z. physiol. Chem., 1936, **244**, I—III).—Uropterin (Koschara, A., 1936, 882) in daily doses of 0·001 mg. cures the anæmia produced in rats by a diet of goat's milk. The anæmia is prevented by small daily doses of Fe (0·01 mg.) and Cu.
W. McC.

Response of guinea-pig reticulocytes to substances effective in pernicious anæmia. (A) Biological assay of the therapeutic potency of liver extracts. (B) Assay, on guinea-pigs, of hæmatopoietic activity of human livers ; normal and pernicious anæmia. B. M. Jacobson (J. Clin. Invest., 1935, **14**, 665—677, 679—681).—(A) Ability to induce reticulocytosis is confined to materials effective in pernicious anæmia. The guinea-pig test is a valid indicator of the therapeutic activity of liver preps.
(B) Data are recorded. Ch. Abs. (*p*)

Modified pigeon method for the bioassay of anti-pernicious anæmia liver extracts. G. E. Wakerlin, H. D. Bruner, and J. M. Kinsman (J. Pharm. Exp. Ther., 1936, **58**, 1—13).—96—99·5% of the erythrocytes of the normal pigeon contain reticular material, an increase in the degree of reticulation due to active preps. being observed by a staining method involving the use of wet mounts.
H. G. R.

(A) Copper and iron content of tissues and organs in nutritional anæmia. (B) Copper content of blood in nutritional anæmia. M. O. Schultze, C. A. Elvehjem, and E. B. Hart (J. Biol. Chem., 1936, **116**, 93—106, 107—118).—(A) Restriction of the dietary Cu of rats depletes the body-Cu to very low vals.; retention of Cu fed with Fe at this stage is only 5%, although hæmatopoietic activity is maximal. Young pigs contain larger stores of Cu, but show anæmia due to deprivation of Fe, which responds to Fe treatment. In pigs deprived of both Fe and Cu, neither hæmoglobin nor erythrocytes are formed. Cu does not accumulate in the bone-marrow, even when hæmatopoiesis is rapid following Fe + Cu feeding of anæmic animals.
(B) In pigs suffering from nutritional anæmia due to Fe + Cu deficiency, the blood-Cu falls to very low levels ($7·8 \times 10^{-6}$%). Feeding Fe + 2—4 mg. of Cu daily rapidly increases the blood-Cu; smaller amounts of Cu produce only small effects, the min.

Cu content for continued hæmatopoiesis being about 20×10^{-6}%. F. A. A.

Maximum renewal of blood-hæmoglobin. G. Fontès and L. Thivolle (Compt. rend. Soc. Biol., 1936, **123**, 804—806).—Anti-anæmic tablets (Fe, Cu, and hæmatopoietic NH_2-acids) were more effective than calves' liver. H. G. R.

Alteration in serum-bilirubin and bromosulphalein retention in relation to morphological changes in liver and bile passages in cats with total biliary stasis. A. Cantarow and H. L. Stewart (Amer. J. Path., 1935, **11**, 561—581).—No relation between serum-bilirubin (I) and morphological changes was apparent. Individual variation in bromosulphalein retention was > that in bilirubinæmia and was unrelated to the duration of stasis, to (I), or to morphological changes in bile or liver ducts. Ch. Abs. (*p*)

Gall-bladder bile in pregnancy at term and in calculous and non-calculous cholecystitis. White bile. C. Kiegel, I. S. Ravdin, C. G. Johnston, and P. J. Morrison (Amer. J. Med. Sci., 1935, **189**, 881—882).—In all cases the concns. of $Ca^{\cdot\cdot}$ and bile salts were < and of Cl' > normal. Cholesterol vals. were high in pregnancy and cholecystitis and low in hydrops. Ch. Abs. (*p*)

Clinical significance of urobilinuria. E. Sestu (Arch. Ist. Biochim. Ital., 1936, **8**, 317—336).—Data of urinary and fæcal urobilin (I) and stercobilin (II) in men with neoplasm of the bile-duct and in dogs with biliary obstruction are discussed with reference to the tissue origin of (I). A high content of (I) may occur even when (II) is absent. F. O. H.

Nutrition and cancer. H. Auler (Ernährung, 1936, **1**, 150—167).—A crit. review. A. G. P.

Carcinogenic agent and organic disposition in the ætiology of tumours. E. M. Fraenkel (Acta Cancrologica, 1935, **1**, 365–378).—A review. Ch. Abs. (*p*)

Disturbance of lipin metabolism in patients with malignant tumours. R. Indovina and S. Fiandaca (Acta Cancrologica, 1935, **1**, 399—422).—Increased acidity in Et_2O extracts of sera of patients with tumour, diabetes, liver and kidney diseases is due to an increase in unsaturated and weakly bound aliphatic acids. The I val. of the extract is > normal, or in other pathological conditions. Ch. Abs. (*p*)

Glycolysis activator from normal and tumour tissues. W. M. Rubel and W. A. Belitzer (Acta Cancrologica, 1935, **1**, 317—322).—The glycolytic activity of liver tissue is unaffected by extracts of normal or tumour tissues or by EtOH-insol. material from these. It is increased by EtOH-insol. matter from an aq. NH_3 extract of the dried $COMe_2$-insol. powder prepared by Kraut and Bumm (A., 1928, 1274). Ch. Abs. (*p*)

Action of carotene on glycolysis of blood in cancer and in normal persons. C. Wetzler-Ligeti and R. Willheim (Acta Cancrologica, 1935, **1**, 289—300; cf. A., 1934, 1259).—The action of carotene (I) in accelerating glycolysis in normal blood is centred in the erythrocytes. Removal of co-enzymes from cells by washing eliminates the action of (I) which is restored by addition of yeast or muscle extracts. Washed cells treated with tumour extracts behave like cells from cancer sera and are not affected by (I). Glycolysis of normal cells is inhibited by dihydroxycarotene. Differences between normal and cancerous blood-cells in this respect are related to differences in oxidation–reduction potential. Ch. Abs. (*p*)

Effect of heavy colloidal metals on growth of transplanted tumours and their radiosensitivity. T. Kikuchi (Japan. J. Obstet. Gynecol., 1935, **18**, 88—104).—Injection of colloidal Bi and Pb inhibited the growth of rabbit sarcoma. Intratumoral administration slightly decreased tissue respiration and glycolysis. Intravenous injection accelerated tissue respiration. Accumulation of the metals was in the order liver > kidney > spleen. Ch. Abs. (*p*)

Value of lead compounds in treatment of malignant tumours. M. Datnow *et al.* (Amer. J. Cancer, 1935, **24**, 531—548).—The prep. is described of various Pb compounds containing $-NH_2$ and a complex ion formed by reaction with $Na_2S_2O_3$. Pharmacological properties are compared. Ch. Abs. (*p*)

Influence of diets containing proteins of various fishes on the growth of tumour in rats. II, III. S. Tokuyama and W. Nakahara (Sci. Papers Inst. Phys. Chem. Res. Tokyo, 1936, **30**, 200—215, 216—225; cf. A., 1936, 1406).—II. With proteins from skipper, *Sawara*, and hickory-shad tumour growth was as rapid as with horse-meat protein. Most other fish proteins caused slower growth. There was no relation between influence on tumour growth and classification of the fishes.

III. Fish proteins which produce good nutrition of the rat before implanting the tumour generally induce good body development and rapid tumour growth afterwards. A no. of exceptions to this rule are noted. J. N. A.

Treatment of tumours by hydrogen iontophoresis. N. Okunev (Acta Cancrologica, 1935, **1**, 357—364).—$H^{\cdot}$ passing between electrodes through mice tumours penetrated to a depth of 1·5 cm. and retarded tumour growth. Ch. Abs. (*p*)

Experimental production of sarcoma with thorotrast. F. R. Selbie (Lancet, 1936, **231**, 847—848).—The carcinogenic action of thorotrast, a colloidal solution of ThO_2, is confirmed. L. S. T.

Influence of caloric intake on growth of sarcoma 180. F. Bischoff, M. L. Long, and L. C. Maxwell (Amer. J. Cancer, 1935, **24**, 549—553).—A reduction of 50% in the caloric intake retarded tumour growth although loss in body-wt. was only slightly < that caused by a 33% reduction in intake. Ch. Abs. (*p*)

Potential determinations in tumour tissue. R. Bierich and A. Lang (Biochem. Z., 1936, **287**, 411—417).—E_H vals. are tabulated for various rat and human tumour tissues. The intact cancer cell does not possess a lower reduction intensity than does the normal cell. P. W. C.

Susceptibility of rats to dental caries. T. Rosebury, M. Karshan, and G. Foley (J. Amer. Dental Assoc., 1935, 22, 98—113).—Factors in the ætiology of caries include forcible impaction of fermentable food particles into the fissures of the molars and an abnormal relation in the Ca–P–vitamin-*D* complex. Ch. Abs. (*p*)

Possible relation between ammonia in saliva and dental caries. J. White and R. W. Bunting (J. Amer. Dental Assoc., 1935, 22, 468—473).—No relation was observed. Ch. Abs. (*p*)

Saliva and enamel decalcification. J. T. Gore (Dental Cosmos, 1935, 77, 942—950).—The complex carbohydrate segment in the mucin plaque is hydrolysed to a reducing sugar which yields lactic acid on bacterial fermentation. Saliva tends to neutralise the acid. Ch. Abs. (*p*)

Cholesterol content of cataractous human lenses. W. Salit and C. S. O'Brien (Arch. Ophthalmol., 1935, 13, 227—237).—The cholesterol content increases with age but is not affected by cataracts. Ch. Abs. (*p*)

Local quinine therapy in interstitial keratitis and old corneal capacities. E. Selinger (Arch. Ophthalmol., 1935, 13, 829—832). Ch. Abs. (*p*)

Blood-creatinine in dementia præcox. G. Cardinale (Minerva med., 1935, II, 208—209).—Vals. were within low normal limits. Ch. Abs. (*p*)

Blood-sugar determinations in certain cases of diabetes. E. P. Griffiths and L. C. Shrader (Pennsylvania Med. J., 1935, 38, 699—704).—In some diabetics high morning blood-sugar (I) and glycosuria occurred regardless of diet or insulin (II) intake. Frequent feeding with simultaneous administration of (II) maintained normal (I). Ch. Abs. (*p*)

Effect of experimental diabetes on the cornea of dogs; relation to administration of vitamin-*A*. E. P. Ralli, E. B. Gresser, and G. Flaum (Arch. Ophthalmol., 1935, 14, 253—262).—Vitamin-*A* is not the only factor concerned in ocular symptoms in depancreatised dogs. Ch. Abs. (*p*)

Phloridzin diabetes in man. II. Influence of phloridzin on the capillary and venous glycæmic curve during fasting and after ingestion of glucose. S. Battistini and L. Herlitzka (Minerva med., 1935, II, 199—202).—Injection of phloridzin into diabetics decreased and intensified the difference between glycæmia of capillary and venous blood after fasting and after glucose-tolerance test. Ch. Abs. (*p*)

Changes in blood-amino-acids due to ingestion of glucose by normal and diabetic men. E. Slavich and A. Torrini (Boll. Soc. ital. Biol. sperim., 1936, 11, 669—671).—Fasting for 12 hr. followed by ingestion of 75 g. of glucose decreased the NH_2-acid-N level of the blood by an average of 1·97 mg. (per 100 c.c.) in 10 normal men and 1·62 mg. in 14 out of 20 diabetics; the remaining 6 showed an increase (more transitory) of 1·82 mg. F. O. H.

Diabetes mellitus. I. Toxicity of ketones. II. Toxicity of hyperglycæmia. N. Hamanaka (Mitt. med. Akad. Kioto, 1936, 17, 349—352).—The O_2 uptake of rats' tissues in solutions containing β-hydroxybutyric acid, $COMe_2$, or high proportions of glucose indicates that the lowered resistance of diabetics is not due to increase of blood-ketones or of the sugar content of blood and tissue-fluids. Nutr. Abs. (*m*)

Diastase therapy in diabetes mellitus. W. Deichmann-Grübler and V. C. Myers (Biochem. Z., 1936, 288, 149—154).—Intravenous injection of taka-diastase preps. does not affect the blood-sugar of rabbits or guinea-pigs; intraperitoneally it produces hypoglycæmia and death. In normal men, subcutaneous injection diminishes alimentary hyperglycæmia and favourably influences carbohydrate metabolism in diabetics. The effect is probably due to a hypoglycæmic principle and not to the enzyme itself. F. O. H.

Hæmatological studies in epidemic dropsy. H. N. Chatterjee and M. N. Halder (Calcutta Med. J., 1935, 30, 1—15).—In cases examined the decrease in hæmoglobin was > that in total erythrocytes. Administration of Fe increased both factors. Leucocytes increased early in the disease but not later. Mononuclears and eosinophiles decreased with increasing severity of the disease and *vice versa*. Ch. Abs. (*p*)

Treatment of amœbic dysentery by enterovioform. R. L. Ramirez and J. C. Galan (Rev. Asoc. Med. Argentina, 1935, 49, 764—769).—Use and toxicity of vioform (a colloidal suspension of chloroiodoquinoline) are examined. Ch. Abs. (*p*)

Blood-lipins in eclampsia. E. M. Boyd (Amer. J. Obstet. Gynecol., 1935, 30, 323—332).—No significant variations in the lipins of blood, serum, or red or white cells were apparent. A method for determining the plasma-phospholipin : -total cholesterol ratio is described. Ch. Abs. (*p*)

Cause of baker's eczema. W. Frieboes (Ernährung, 1936, 1, 64—69).—The significance of flour constituents (protein products) and of improvers (notably persulphates) is considered. A. G. P.

Chronic galactæmia : carbohydrate studies. H. H. Mason and M. E. Turner (Amer. J. Dis. Children, 1935, 50, 359—374).—Abnormal sugar metabolism in a case of functional disturbance of the liver is examined. Ch. Abs. (*p*)

Prophylaxy of goitre as a nutritional problem; validity of the iodine-deficiency theory of the origin of endemic goitre. F. Fischler (Ernährung, 1936, 1, 119—126).—A review. A. G. P.

Blood-oxygen in exophthalmic goitre. E. H. Rynearson, B. T. Horton, and J. de J. Pemberton (West. J. Surg. Obstet. Gynecol., 1934, 42, 476—478).—Thyroid veins in goitre contain much arterial blood, the O_2 saturation being 90% (thyroid arteries 93%). Ch. Abs. (*p*)

Use of iodine in recurrent exophthalmic goitre. S. F. Haines (West. J. Surg. Obstet. Gynecol., 1934, 42, 449—455).—In many cases I therapy lowered the basal metabolic rate. When I treatment gave easy control, there was little or no regeneration of thyroid tissue after operation. Ch. Abs. (*p*)

Iodine for brood mares. B. W. Rodenwold and B. T. Simms (Amer. Soc. Animal Prod. Rec. Proc. 27th Ann. Meet., 1934, 89—92).—Goitrous conditions in foals and calves were prevented by feeding KI to mares and cows during the latter half of the gestation period. Ch. Abs. (*p*)

Blood-iodine in thyroid disease. G. M. Curtis, V. V. Cole, and F. J. Phillips (West. J. Surg. Obstet. Gynecol., 1934, **42**, 435—448).—Lack of correlation between blood-I and basal metabolic rate is demonstrated. Patients with other than thyroid disease show normal blood-I unless receiving I medication. Ch. Abs. (*p*)

Thyroid and parathyroid diseases. F. H. Lahey (J. Med. Soc. New Jersey, 1935, **32**, 479—482).—Goitre patients showed gastric acidity averaging +46. Hyperthyroidism does not produce hyperacidity. A micro-method for determining I is described. Disappearance of intravenously injected I is rapid in exophthalmic goitre. Blood-cholesterol (I) decreases in hyperthyroidism and increases in myxœdema and is a better index of thyroid disturbance than is the basal metabolic rate. (I) decreases during thyroid medication. Ch. Abs. (*p*)

Insulin–glucose therapy in heart disease. E. S. Nichol (Amer. J. Digest. Dis. Nutrition, 1935, **2**, 236—241).—Insulin (I) [in addition to glucose (II) and O_2] is necessary for the work of the heart muscle. (I) increases the ability of the muscle to utilise (II). This action is differentiated from the effect of (I)-hypoglycæmia on the circulation. Ch. Abs. (*p*)

Chemical treatment of hydatid disease. L. E. Barnett (Austral. New Zealand J. Surg., 1935, **4**, 211—218).—The efficiency of various drugs, of serum, and of *X*-irradiation is compared. Ch. Abs. (*p*)

Creatine content of hypertrophied rabbit's heart. G. Decherd, E. H. Schwab, G. Herrmann, and W. O. Brown (Proc. Soc. Exp. Biol. Med., 1936, **33**, 521—522).—The creatine content tended to decrease as the degree of experimental hypertrophy increased. W. McC.

Content of ascorbic acid in adrenals of guinea-pigs with experimental oxalate–phosphate hypocalcæmia. G. Domini (Boll. Soc. ital. Biol. sperim., 1936, **11**, 677—680).—The total ascorbic acid content is approx. 50% of the normal val., the diminution being mainly due to that of the reduced form. F. O. H.

Application of a quinine–calcium gluconate preparation in influenza. G. Obitz (Orvosi Het., 1935, **79**, 780—781). Ch. Abs. (*p*)

Rôle of serum-calcium fractions in the effect of viosterol on the bleeding tendency in jaundice. J. S. Gray and I. C. Ivy (Amer. J. Digest. Dis. Nutrition, 1935, **2**, 368—372).—The action of viosterol in restoring the normal bleeding time is not related to any changes in the total or ultrafilterable serum-Ca. Ch. Abs. (*p*)

Treatment of leprosy with oils obtained from salt- and fresh-water fishes. O. Calcagno (Semana méd., 1935, II, 557—562).—A review. Ch. Abs. (*p*)

Blood-cholesterol after administration of oil and cholesterol in health and disease. W. Fröhling (Arch. Verdauungs-Krankh., 1936, **59**, 205—219).—The free and total cholesterol (I) of the plasma of healthy subjects on diets deficient in fat and sterol increased during the day by 20—25% of the fasting val. and high vals. were obtained only by administration of very large amounts of (I) and then only irregularly. The presence, rather than the absence, of alimentary hypercholesterolæmia should be regarded as a pathological symptom in liver cirrhosis. Nutr. Abs. (*m*)

Basal metabolism and specific dynamic action of proteins in liver disease. J. Andréu Urra and J. Lozano (Rev. espan. Enferm. Aparat. digest. Nutric., 1936, **2**, 323—329).—The basal metabolism was increased, and the sp. dynamic action of proteins decreased, in 75% of cases suffering from parenchymatous disease of the liver. These facts support the theory that deamination of NH_2-acids in the liver is the real cause of the sp. dynamic action of proteins. Nutr. Abs. (*m*)

Quinine in malaria. B. C. Bhattacharji (Indian Med. Rec., 1934, **54**, 193—195).—Compound quinine–strychnine–digitalis preps are described. Ch. Abs. (*p*)

Treatment of myopathies with amino-acids. B. C. Roy and D. W. Chatterjee (Calcutta Med. J., 1935, **30**, 32—35).—Administration of glycine (I) causes a sharp increase in urinary creatinine and a secondary decrease in creatine. Use of (I) with ephedrine and NaH_2PO_4 gave better results than (I) alone. Ch. Abs. (*p*)

Renal insufficiency produced by partial nephrectomy. V. Diets containing whole dried meat. VI. Relation between kidney function, kidney weight, and surface area in intact and unilaterally nephrectomised rats fed whole dried meat diets. A. Chanutin and S. Ludewig. **VII. Relationship of urine-urea, blood-urea, and urea (Addis) ratio in rats on whole dried meat diets.** S. Ludewig, E. T. R. Williams, and A. Chanutin. **VIII. Comparison of the urea (Addis) ratio with results of other tests of renal function.** A. Chanutin and S. Ludewig (Arch. Int. Med., 1936, **58**, 60—80, 81—88, 89—94, 95—101).—V. As the meat content of the diet was increased hypertension was accentuated, an increased vol. of dil. urine was excreted, and pathological changes, together with increased wt., in the kidney remnant occurred.

VI. Kidney wt. ∝ surface area and the ratio urea (I) ratio : kidney wt. is a const. The ratio (I) ratio : surface area increases with the meat content of the diet, being ∝ the renal hypertrophy.

VII. The (I) concn. in the blood and urine at the same (I) ratio increases with the protein intake.

VIII. The (I) concn. in the blood after ingestion of (I) and the sp. gr. of urine are good tests for renal damage. The correlation between the vol. of urine (but not the protein content) and renal damage was good. H. G. R.

Lipin metabolism during experimental uranium nephritis. M. Politzer (Arch. Farm. sperim., 1936, **62**, 70—76).—Nephritis induced by $UO_2(OAc)_2$

in rabbits is accompanied by increased levels of free fatty acid, neutral fats, and, to a smaller extent, cholesterol, phosphatides, total fatty acids, and cholesteryl ester in the blood. F. O. H.

Storage of cystine in the reticulo-endothelial system and its association with chronic nephritis and renal rickets. D. S. Russell and H. J. Barrie (Lancet, 1936, **231**, 899—905).—Two cases of storage are described, as well as a third in which cystinuria and chronic nephritis were unaccompanied by cystine storage in the tissues. L. S. T.

Influence of viosterol and parathyroid extract on mineral metabolism in osteogenesis imperfecta. A. E. Hansen (Amer. J. Dis. Children, 1935, **50**, 132—157).—Deficiency in retention of Ca, P, and Mg was observed in osteogenesis imperfecta. Large doses of viosterol induced a negative balance in most minerals and an increased urinary output of Ca and P with a decrease in fæces. Parathyroid caused an excessive output of Ca, P, Mg, K, and Na, chiefly in urine. Phosphatase activity of blood was lowered by both treatments. Ch. Abs. (*p*)

Mineral metabolism in a case of osteopsathyrosis and one of ununited fracture. T. B. Cooley, G. C. Penberthy, L. Armstrong, H. A. Hunscher, F. Cope, and I. G. Macy (Amer. J. Dis. Children, 1935, **50**, 431—442).—Retentions of N, P, Ca, Mg, Na, K, and S are recorded. In both cases an initial period of extreme loss of Cl′ was followed by one of slight retention. Ch. Abs. (*p*)

Plasma-chlorides in pneumonia : their clinical significance. A. F. Fowler (Canad. Med. Assoc. J., 1935, **33**, 482—485). Ch. Abs. (*p*)

Polypeptidæmia during normal gestation. Estienny, Jean, and Jalibert (Compt. rend. Soc. Biol., 1936, **123**, 462—463). H. G. R.

Reaction for diagnosis of pregnancy. R. A. Ferrari and D. J. Francis (Semana méd., 1935, II, 555—556).—The Kapeller-Adler test (colour reaction of histidine in urine) is valueless. Ch. Abs. (*p*)

Pregnancy test : presence of histidine in urine of pregnant women. (A) H. Renton. (B) L. P. Bosman (S. African Med. J., 1935, **9**, 441—443, 514).—(A) A modification of the Kapeller-Adler test is described.

(B) Polemical. Histidine is not a regular constituent of urines in early pregnancy.

Ch. Abs. (*p*)

Mechanism of rheumatic fever. A. F. Coburn (Lancet, 1936, **231**, 1025—1030).—Serological developments following hæmolytic streptococcus pharyngitis are recorded. In the rheumatic subject development of the antibody response appears to be delayed. L. S. T.

Rickets in rats. XV. Effect of low-calcium–high phosphorus diets at various levels and ratios on production of rickets and tetany. A. T. Shoal [with S. B. Wolbach] (J. Nutrition, 1936, **11**, 275—291; cf. A., 1932, 1280).—Rickets may be produced, in the absence of vitamin-*D*, by high-Ca–low-P, low-Ca–high-P, and low-Ca–low-P diets. With the last-named the Ca/P ratio may be within limits usually recognised as normal. For any given ratio an increase in the abs. amounts fed may convert a rachitogenic into a non-rachitogenic diet. A. G. P.

Blood-sodium in essential hypertonus and Simmond's disease. E. Kylin and H. Elmquist (Acta med. scand., 1936, **88**, 507—516).—In 25 normal individuals serum-Na ranged from 316 to 377 mg. per 100 ml. (mean val. 348 mg.). In 10 cases of Simmond's disease the range was 305—357 mg., and in 27 cases of essential hyperpiesis 348—425 mg. The raised Na level in essential hyperpiesis is ascribed to over-function of the pituitary–adrenal "unit," whereas in Simmond's disease hypofunction causes lowered serum-Na level. Nutr. Abs. (*m*)

Snake bites and their treatment in India. R. N. Chopra and J. S. Chowhan (Calcutta Med. J., 1935, **29**, 459—485).—Prep. and use of antivenins and use of various chemicals are described.

Ch. Abs. (*p*)

Specific substance of syphilitic fluids. A. Vernes (Compt. rend., 1936, **203**, 684—685).—Serum and cerebrospinal fluid from syphilitics contain pallidin, which can be determined photometrically. By the action of C_2Cl_4 on syphilitic serum a ppt. is obtained, which when extracted with $COMe_2$, Et_2O, or H_2O gives a substance which causes a normal serum to act as a syphilitic serum. J. N. A.

"Dynarsan Egger," a new agent against syphilis. N. Gerencsér (Orvosi Het., 1935, **79**, 853—854).—The prep. (aq. solution of *m*-acetamido-*p*-hydroxyphenylarsinic acid derivatives) can be used in cases in which arsenobenzene must be avoided.

Ch. Abs. (*p*)

Relation of some iodine-binding substances (glutathione, ascorbic acid) to the carbohydrate economy in trypanosome infection. Intermediary regulation of metabolism. G. Scheff and Z. Csillag (Arch. exp. Path. Pharm., 1936, **183**, 467—477).—In trypanosome infection of guinea-pigs, the glutathione (I) and ascorbic acid (II) contents of the liver and blood vary, but the total I-binding substances are const. Reduced (I) and (II) are greatly decreased and oxidised (I) is increased. The behaviour of (I) is due to the deficiency of carbohydrate, and the consequent disturbance of oxidation–reduction potential. P. W. C.

Intravenous administration of styrylquinoline [No. 314] in equine trypanosomiasis. B. S. Parkin (Onderstepoort J. Vet. Sci., 1935, **4**, 287—288). Ch. Abs. (*p*)

Aluminium hydroxide in treatment of peptic ulcer. I. H. Einsel, W. L. Adams, and V. C. Myers (Amer. J. Digest. Dis. Nutrition, 1934, **1**, 513—516).—Colloidal $Al(OH)_3$ (I) controls peptic ulcers. It lowers free acidity in the stomach, which returns to normal when treatment is discontinued. Unlike $NaHCO_3$, (I) does not increase HCl output after the primary action. (I) probably stimulates secretion of mucin. No disturbance of the acid–base balance in blood follows (I) therapy.

Ch. Abs. (*p*)

"Okrin" as an adjuvant in the treatment of peptic ulcer. A. J. Atkinson (Amer. J. Digest. Dis. Nutrition, 1934, **1**, 713—714).—Beneficial effects of okrin (dried mucilaginous material from pods of the okra plant) are recorded. Ch. Abs. (*p*)

Metabolic activity of renal tissue. G. Quagliariello (Boll. Soc. ital. Biol. sperim., 1936, **11**, 608—627).—A lecture. F. O. H.

Determination of the basal metabolism in the rat. J. M. Joly (Compt. rend. Soc. Biol., 1936, **123**, 658—660).—The coeff. *K* in Meeh's formula decreases to a min. with increasing age of the rat and finally returns to the initial val. in the adult. H. G. R.

Differential reduction of Janus-green during development of the chick. O. Rulon (Protoplasma, 1935, **24**, 346—364). M. A. B.

Influence of the respiratory process on absorption and potential-formation of frog's skin. E. Huf (Biochem. Z., 1936, **288**, 116—122).—The O_2 consumption of isolated frog's skin is the same (30—100 cu. mm. per g. per hr. at 20°) in air or O_2 and is increased by injury and decreased by 0·001*M*-KCN. Presence of 0·005*M*-glucose or up to 0·01*M*-lactate or -pyruvate increases the O_2 consumption of normal skin but only the last two increase that of the skin of $CH_2Br{\cdot}CO_2H$-poisoned frogs. F. O. H.

Respiratory quotient of spermatozoa. E. E. Ivanov (Bull. Soc. Chim. biol., 1936, **18**, 1613—1622).—The R.Q. of sheep's spermatozoa in absence of glucose is 0·78 and in presence of glucose approximates to 1. Oxidation of lactate does not play any important rôle in the preservation of respiration in synthetic media. P. W. C.

Energy and gaseous metabolism of normal and deutectomised checks between ten and a hundred hours of age. H. G. Barott, T. C. Byerly, and E. M. Pringle (J. Nutrition, 1936, **11**, 191—210).—Calorimetric determinations of metabolic rates at a range of environmental temp. from 20° to 40° are recorded. A crit. temp. occurs at 35·5°, above and below which metabolism increases 15% for a 7° change. From 35·5° to 21·1° metabolism increases steadily. Vals. for the sexes were not significantly different. The g.-hr. rate for normal chicks is const. at a given temp. within the physiological range for the age studied. For deutectomised chicks the g.-hr. rate decreases continuously and in direct proportion to time after operation. A. G. R.

Gas metabolism of white rats fed gelatin, tyrosine, and tryptophan. M. Shimasaki (Folia Endocrinol. Japon., 1934, **10**, 79—80).—A protein-free diet supplemented with gelatin (I) or with (I) + tyrosine decreased body-wt. and lowered (rapidly at first) O_2 consumption and CO_2 production. O_2 consumption per kg. body-wt. was lowered at first but later became ≮ normal. With a similar diet supplemented with (I) + tryptophan, body-wt. was unchanged and gaseous exchange decreased at first but later became normal. In all cases the R.Q. was normal. Ch. Abs. (*p*)

Gas metabolism of white rats fed fungus growths. M. Shimasaki (Folia Endocrinol. Japon., 1934, **10**, 80).—Basal metabolism was increased by feeding powdered thyroid and to a smaller extent by fungus and was decreased by KI. The R.Q. was lowered by thyroid, increased by KI, and unchanged by fungus. Ch. Abs. (*p*)

Influence of physical exercise on the metabolism of adolescents. E. S. Savron, M. E. Karlson, and A. S. Uschakova (Ukrain. Biochem. J., 1936, **9**, 765—778).—The quantities of metabolic products (total N, creatinine, NH_3, and P) in the urine of adolescents increase after exercise such as wrestling, but as training proceeds, these increases become less marked. F. A. A.

Effect of work and training on the oxidation-reduction potential of muscle tissue. III. Changes in the potential of the muscles during training and work due to the influence of acid and alkaline diet. R. Tschagovetz (Ukrain. Biochem. J., 1936, **9**, 917—924).—The shapes of the curves showing the decrease in anaërobic oxidation-reduction potential with time of extracts from both control and worked muscles alter with the nature of the diet. F. A. A.

Relation between animal and human nutrition. E. Mangold (Ernährung, 1936, **1**, 21—25).—Digestive and metabolic processes are discussed. The applicability of results of experiments with animals to problems of human nutrition is considered. A. G. P.

English diets. I. Men. E. M. Widdowson. **II. Women.** E. M. Widdowson and R. A. McCance (J. Hyg., 1936, **36**, 269—292, 293—309).—I. The average kg.-cal. intake of men on freely chosen diets was 3067 (variation, 1772—4955). A definite lowering of cal. intake with increasing age was observed. No correlation existed between cal. intake and body-wt. The proportion of cal. taken from fat was high. The total Ca, P, and Fe intakes were 0·87, 1·61, and 0·0168 g. per day, respectively, 98% of the P and 66% of the Fe being in the available form.

II. The average daily kg.-cal. consumption of women was 2187 (variation, 1453—3110). Thus woman val./man val. is 0·7. The average daily protein intake was 67 g. Fat and carbohydrate contributed equally to the cal. val. The average daily Ca, total and available P intakes were 0·67, 1·32, and 1·09 g., respectively. W. L. D.

Effect of diet, range, and fattening on the physical and chemical composition of cockerels. H. M. Harshaw (J. Agric. Res., 1936, **53**, 357—368).—In most cases the nature of the diet had no influence on the composition of the birds. Effects of fattening on the relative wts. of leg and breast muscle and of other edible portions are examined. The composition of the various portions was unaffected. A. G. P.

Effect of the reaction of fodder on the oxidative processes in horses. M. F. Guli, P. J. Ribak, and M. A. Kolomitschenko (Ukrain. Biochem. J., 1936, **9**, 535—553).—Determinations of the urinary excretion of PhOH subcutaneously injected into groups

of horses, fed on two rations, one more alkaline than the other, shows that oxidation processes are more complete with the less alkaline diet. The quantity of conjugated PhOH follows the quantity of total PhOH excreted, but is independent of the alkalinity of the diet. F. A. A.

Acid- and alkali-forming foods. J. A. Tobey (Amer. J. Publ. Health, 1936, 26, 1113—1116).—A review. The nature of the food has no significant effect on the acid–base balance. E. C. S.

Influence of acidic and alkaline diets on growing rats. O. C. Comes (Boll. Soc. ital. Biol. sperim., 1936, 11, 683—686).—Acidic and alkaline diets produce growth < that due to normal diets by approx. 11—13% but nutrition is generally unaffected. F. O. H

Significance and accuracy of biological values of proteins computed from nitrogen metabolism data. H. H. Mitchell, W. Burroughs, and J. R. Beadles (J. Nutrition, 1936, 11, 257—274).—Determinations of biological vals. of proteins by the N balance method are subject to an average standard deviation of 3·7. The nutritive equivalence of protein mixtures for maintenance and growth is substantially the same whether evaluated by means of the N balance or by the paired feeding method supplemented by carcase analysis. Vals. for beef and certain nut proteins are determined. The depression of digestibility and biological val. of peanut protein by roasting is small. A. G. P.

Protein-minimum and protein-optimum [in nutrition]. K. Felix (Ernährung, 1936, 1, 31—35).—A review. A. G. P.

Utilisation of protein and the protein content of foods. C. Lauresco (Arch. internat. Physiol., 1935, 42, 145—158; Chem. Zentr., 1936, i, 1042—1043).—The coeff. of utilisation of protein (I) by rats increases with the (I) content of the ration up to approx. 20% and declines to a substantially const. level as the proportion of (I) fed is further increased. True coeffs. of utilisation should be expressed not as abs. vals. but as functions of the (I) content of the diet. A. G. P.

Relative digestibility of caseins in their artificial and natural environments. K. Bhagvat and M. Sreenivasaya (Current Sci., 1936, 5, 134—135).—Of a no. of milks examined, buffalo milk has the lowest and ass' milk the highest casein (I) dispersion, whilst the albumin content increases with the extent of (I) dispersion. The relative rates of digestion of the (I) from cow's and ass' milk are determined *in vitro*. F. N. W.

Rate of protein formation in organs and tissues. I. After caseinogen feeding. T. Addis, L. J. Poo, and W. Lew (J. Biol. Chem., 1936, 116, 343—352).—Changes in the protein content of liver and kidney are large after caseinogen feeding, but small in the heart or muscle, each organ or tissue exhibiting characteristic protein formation. Skin- and muscle-protein increase relatively to that of internal organs during fasting. P. G. M.

Action on the urinary quotients of mixtures of two plant proteins of different metabolic action. K. H. Lehmann (Biochem. Z., 1936, 287, 433—439).—The C : N and "vacate"-O_2 : N urinary quotients of rats were determined on diets containing as a source of protein a mixture of one third oatmeal protein and two thirds wheat-gluten protein and compared with vals. obtained under the same conditions but feeding only oatmeal protein or caseinogen. Lower abs. vals. for C and "vacate"-O_2 were obtained with the mixture, suggesting more complete utilisation. P. W. C.

Cereals and rickets. VIII. Intestinal hydrolysis of phytin. J. T. Lowe and H. Steenbook (Biochem. J., 1936, 30, 1991—1995; cf. A., 1936, 1161).—The substantial part of the P of phytin (from wheat bran) available to rats is rendered almost completely non-available by addition of 3% of $CaCO_3$ to the ration. $MgCO_3$, $SrCO_3$, $BeCO_3$, Al_2O_3, and Fe_2O_3 act like $CaCO_3$. The effect of $CaCO_3$ is unchanged by substituting whole wheat or rolled oats for yellow maize in the ration and by adding lard or lactose. W. McC.

Glucose yield of glycinin. J. S. Gray (Proc. Soc. Exp. Biol. Med., 1936, 34, 144—145).—The yield of glucose (I) from the glycinin of soya bean determined by administration to phloridzinised dogs (Janney, A., 1915, i, 475) was 61% whilst that of caseinogen was 42%. The (I) yield of a protein cannot be predicted by calculating the amount of (I) which the component glucogenic NH_2-acids are capable of producing in the animal organism. W. McC.

Influence of carbohydrates, fats, and proteins on the respiratory coefficient and basal metabolism of man at rest and in thermal equilibrium. R. Lecoq and J. M. Joly (Compt. rend. Soc. Biol., 1936, 123, 680—682).—Similar changes in the coeff. and basal metabolism was observed when glucose, olive oil, or peptone was ingested. H. G. R.

Purine metabolism in the dog. Effect of metabolic condition on the inhibitory action of Indian ink on uricolysis. F. Chrometzka, R. Dreyer, and K. Dümlein (Arch. exp. Path. Pharm., 1936, 183, 286—293).—In dogs on meat-rich or -free diets, uricolysis is restricted, especially after intravenous injection of Indian ink, by administration of Na_2CO_3. When large doses of Na_2CO_3 are given, intravenously injected uric acid is partly or wholly unoxidised. W. McC.

Histological changes in endocrine organs of white rats fed tryptophan. M. Shimasaki (Folia Endocrinol. Japon., 1934, 10, 65—66).—Gelatin diets without tryptophan atrophied the organs. Ch. Abs. (*p*)

Relation of leucine, *iso*leucine, and norleucine to growth. M. Womack and W. C. Rose (J. Biol. Chem., 1936, 116, 381—391).—By the use of protein-free diets, leucine and *iso*leucine were shown to be indispensable for the growth of rats. The position of norleucine is uncertain. P. G. M.

Formation and disappearance of adenylic acid in muscles. D. L. Ferdman and Z. M. Okun (Ukrain. Biochem. J., 1936, 9, 863—878).—Free

adenylic acid in the muscles of frogs rises from 4% of the total adenine nucleotide to 30·8% as a result of fatigue. This val. returns slowly to normal on resting, together with disappearance of inorg. P_2O_7''''. F. A. A.

Adenosinetriphosphoric acid exchange in the muscles of hibernating animals. O. Feinschmidt (Ukrain. Biochem. J., 1936, 9, 851—862).—Muscles of hibernating marmots have a lower adenosinetriphosphoric acid (I) content than those of the active animals. The pyrophosphate fraction from active animals contains mainly (I), with very little inorg. P_2O_7'''', but in hibernation the latter constituent rises to 32—68%, and free adenylic acid (II) reaches 30% of the total adenine nucleotide. On awakening, an NH_3 compound is formed in the muscles by deamination of (II). F. A. A.

Creatine–phosphagen metabolism during ontogenesis in mammals. A. M. Rjabinovskaja (Ukrain. Biochem. J., 1936, 9, 761—763). F. A. A.

Creatinuria after ingestion of meat during the exhaustion of carbohydrate supplies in the organism. S. I. Vinokurov and J. A. Trotzki (Ukrain. Biochem. J., 1936, 9, 583—591).—Marked creatinuria results when meat is eaten after physical exercise performed under such conditions that the carbohydrate store is exhausted, but does not occur when the store is maintained by previous ingestion of carbohydrate. F. A. A.

Relation between urinary creatinine and total body-creatine, surface area, and body-weight. F. W. Kinaird, J. C. Aull, jun., and J. van de Erve (Amer. J. Med. Sci., 1935, **190**, 237—241).—In rats the daily urinary creatinine (I) [but not the (I) coeff.] is directly related to the total body-creatine, (II), surface area, and body-wt. The % (II) [but not the % "organic" (II)] is related to the average daily (I) and the (I) coeff. The "organic" body wt. and daily urinary (I) are highly correlated. Ch. Abs. (*p*)

Growth-promoting ability of di-*N*-methylhomocystine and *N*-methylmethionine in connexion with a cystine-deficient diet.—See A., II, 9.

Nitrogen balance in cattle using urea and "amide flakes" as protein substitutes. E. Mangold and H. Stotz (Landw. Versuchs-Stat., 1936, **127**, 97—118).—Replacement of 25% of the N of a normal ration by urea did not alter the N balance of bull calves. A similar replacement by "amide flakes" (urea–potato flakes) increased N retention. A. G. P.

Formation of histamine from histidine by animal tissues. E. Werle (Biochem. Z., 1936, **288**, 292—293).—On shaking rabbit's kidney (but not liver, brain, or spleen) slices in Tyrode's solution containing histidine, histamine is produced especially in absence of O_2 and in slightly alkaline solution. F. O. H.

Detoxication of phenylacetic acid by the chimpanzee. F. W. Bower (Proc. Soc. Exp. Biol. Med., 1936, **33**, 598—600).—A chimpanzee which consumed 4 doses of about 160 mg. per kg. of $CH_2Ph{\cdot}CO_2H$ (I) exhibited no untoward symptoms and about 80% of the (I) was recovered from the urine as phenylacetylglutamine. The urinary vol. per 24 hr. was reduced by (I). W. McC.

Flavin content of the eggs and embryos of *Selachii* during development. M. Fontaine and A. Gourévitch (Compt. rend. Soc. Biol., 1936, **123**, 443—445).—A diminution was observed. H. G. R.

Organic phosphorus compounds. I. Lecithin and phosphorus metabolism. M. Corrazza (Arch. Farm. sperim., 1936, **62**, 42—52).—Subcutaneous or, to a smaller extent, oral administration of egg-lecithin to rabbits with approx. const. excretion of P diminishes both the urinary and fæcal elimination of P. With both treated and untreated rabbits, fæcal is > urinary P excretion. F. O. H.

Influence of choline on lipin metabolism. F. Cedrangolo and R. Conte-Marotta (Boll. Soc. ital. Biol. sperim., 1936, **11**, 657—658).—A fat-rich diet in rats increases the liver-fat (I) and -glycogen (II) levels as compared with rats on a normal diet. Addition of choline to the fat-rich diet results in a comparative decrease in (I) and a much greater increase in (II), indicating conversion of fat into carbohydrate. F. O. H.

Effect of various diets, cholesterol, and choline on the lipins of the rat's liver. A. V. Stoesser I. McQuarrie, and J. A. Anderson (Proc. Soc. Exp. Biol. Med., 1936, **33**, 595—597).—The total fatty acid, cholesterol (I), and phospholipin (II) contents of the dried livers of rats on a standard adequate diet for 105 days were 14·34, 1·03, and 12·37%, respectively. These vals. were as follows when the diet was replaced for the same period by diets with: 85% of fat 33·05, 1·45, 16·72%; 80% of carbohydrate 24·32, 1·25, 13·65%; 80% of protein 15—69, 1·16, 33·92%. The vals. were increased by addition of 2·5 and 5·0% of (I) to the standard diet, the (II) content being increased by 50%. Added choline prevented increase due to (I) in the (II) and neutral fat contents but only partly prevented increase in the (I) content. W. McC.

Liberation of iodine from iodised fat in the animal body and its relationship to intermediary fat metabolism. G. Sato (Tôhoku J. Exp. Med., 1936, **28**, 503—521).—In rabbits receiving intravenous injections of KI the rate of urinary excretion of I was > that found when iodised fat was given. When fat metabolism was increased by fasting and by administration of thyroxine the rate following iodised fat was = or > that following KI. Hence degradation of the fat and elimination of I from it take place concurrently in the body. The rate of I excretion diminished following extirpation of the thyroid but increased after insulin administration. In rabbits poisoned with P and $CHCl_3$ the rate was decreased and the I content of the liver greatly increased. Blockade of the reticulo-endothelial system did not affect the rate or result in increased I retention in the liver. Nutr. Abs. (*m*)

Effect of neutral fat, fatty acids and glycerol on the metabolism of ethyl alcohol. M. Ney-

MARK and E. M. P. WIDMARK (Skand. Arch. Physiol., 1936, **73**, 260—266).—Oleic acid (I) deflected a certain portion of administered EtOH from its usual course of metabolism in the dog, as shown by the reduced EtOH concn. in the blood, but arachis oil was without effect. When glycerol (II) was given together with (I) the effect of (I) in reducing the EtOH concn. was greatly enhanced. (II) alone had no perceptible influence on EtOH metabolism, and did not increase the effect of glycine and citric acid. Glycerophosphoric acid had no effect, and when given with (I) did not increase its activity. NUTR. ABS. (*m*)

Utility of hardened fats in human metabolism. C. MASSATSCH and H. STEUDEL (Deut. med. Woch., 1935, **61**, 1918—1919; Chem. Zentr., 1936, i, 1043).—Utilisation of hardened and of natural fats is similar. The Et_2O extract, soap, and free fatty acid contents of fæces are the same in both cases, and urinary N is unaffected. A. G. P.

Ketosis following fat ingestion by obese and non-obese patients. E. L. KEENEY, J. W. SHERRIL, and E. M. MACKAY (Amer. J. Digest. Dis. Nutrit., 1936, **3**, 231—235).—In man ketonuria usually appeared when the blood-ketone level exceeded 4 mg. per 100 ml. of plasma. Following a meal rich in fat, obese patients usually showed more marked ketonuria than did non-obese patients. NUTR. ABS. (*m*)

Inanition and carbohydrate reserves. H. BIERRY, B. GOUZON, and C. MAGNAN (Compt. rend. Soc. Biol., 1936, **123**, 760—762).—No complete disappearance of glycogen (I) was observed in frogs even after protein starvation. This is not due to a (I) reserve but to a process of synthesis. H. G. R.

Carbohydrate metabolism of brain. I. Determination of glycogen in nerve tissue. S. E. KERR. **II. Effect of varying carbohydrate and insulin supply on glycogen, free sugar, and lactic acid in mammalian brain.** S. E. KERR and M. GHANTUS (J. Biol. Chem., 1936, **116**, 1—7; 9—20).—I. A modification of Pflüger's method (A., 1904, ii, 595) for determining glycogen (I) in brain is described. The main points of the method are avoidance of post-mortem changes in tissue, rapid dissolution of the latter with hot KOH–EtOH, separation of cerebrosides by hot MeOH–$CHCl_3$, and a correction for non-fermentable reducing substances formed during acid hydrolysis. Mammalian brain frozen *in situ* contains 0·07 to 0·13% of (I).

II. The cerebra of well fed or fasting dogs contained 0·077—0·15% of (I), those of rabbits 0·07—0·099%. The vals. are not affected by, nor are the amounts of lactic acid and phosphocreatine in brain altered by, fasting, over-feeding, injection of glucose with or without insulin (II), phloridzin poisoning followed by adrenaline, or pancreatectomy. Large doses of (II) caused a marked decrease in brain-(I) of dogs and rabbits. The free sugar of the brain varied from 0·035 to 0·075% in rabbits, and from 0·045 to 0·086% in dogs. Increase or decrease of blood-sugar caused a similar effect in brain sugar. J. N. A.

(A) Changes in blood-sugar and glycogen content of liver and muscle after administration of monosaccharides. (B) Effect of insulin on the blood-sugar and the glycogen content of liver and muscle. (C) Change in blood-sugar and glycogen content of liver and muscle after administration of disaccharides. Y. SUNABA (Mitt. med. Akad. Kioto, 1936, **17**, 335—336, 336—337, 338).—(A) Glucose (I), fructose (II), mannose (III), and galactose (IV) caused large increases in blood-sugar, when 4 g. per kg. body-wt. were given orally to rabbits. Liver-glycogen (V) increased considerably in the rabbits given (I); with (II) and (IV) it increased less and with (III) only slightly. Muscle-glycogen (VI) did not increase.

(B) Injection of insulin (VII) caused a decrease in blood-sugar. (V) did not decrease as much as in rabbits given no (VII) but the fall in (VI) was greater. With large doses of (VII) (V) decreased more rapidly than in control rabbits. After injection of (VII) into rabbits, given (I) orally, the increase in (V) was < in rabbits given no (VII).

(C) Sucrose (VIII) and maltose (IX) given orally increased the blood-sugar and the (V). Lactose (X) caused a smaller increase in blood-sugar and had little effect on (V). (VIII) produced a slight increase in (VI), but (IX) and (X) were without effect. NUTR. ABS. (*m*)

Utilisation of sugars of different configuration—glucose, fructose, galactose, sucrose, lactose, maltose, starch, and mannan (ivory nut)—by carnivorous animals. G. FINGERLING and R. SCHOENEMANN (Landw. Versuchs-Stat., 1936, **127**, 119—122).—Supplementary feeding with glucose, maltose, fructose, or sucrose resulted in the same C balance. Fat production was similar with all sugars but increased when these were replaced by starch. Carbohydrate metabolism is influenced to some extent by the stimulus exerted by the sugars on the digestive process. A. G. P.

Formation of hexose phosphate esters in frog muscle. G. T. CORI and C. F. CORI (J. Biol. Chem., 1936, **116**, 119—128).—Data on anaërobic frog muscle and its behaviour when treated with adrenaline and dinitrophenol or caffeine, and when breakdown of hexose diphosphate (I) to lactic acid is inhibited by $CH_2I{\cdot}CO_2'$, indicate that (I) is formed from hexose, using the phosphate groups of adenosine triphosphate (II). (II) is re-formed at the expense of phosphocreatine phosphate, and hexose monophosphate from inorg. phosphate. F. A. A.

Age of host and cell metabolism in lymphatic leucæmia in the mouse. J. VICTOR and J. S. POTTER (Proc. Soc. Exp. Biol. Med., 1936, **33**, 609—611).—In mice 6—8 months old glycolysis in transmitted leucæmic cells in presence of glucose is less pronounced than in mice 6—8 weeks old but if the cells are transmitted through the young into the old mice the reverse holds. The age of the host does not modify the constitution of the cells but has a determining effect on their metabolism. W. McC.

Metabolism of sodium acetoacetate intravenously injected into dogs. T. E. FRIEDEMANN (J. Biol. Chem., 1936, **116**, 133—161).—When $CH_2Ac{\cdot}CO_2Na$ (I) is injected intravenously into dogs under amytal anæsthesia, the quantity retained ∝ the

rate of injection, to a limit of tolerance of about $5 \times 10^{-3}M$ per kg. per hr. The limit is not decreased by fasting or pancreatectomy, nor increased by insulin or insulin + glucose. The ratio $OH{\cdot}CHMe{\cdot}CH_2{\cdot}CO_2H$: (I) increases with the rate of injection to a max. val. of about 2·1, both in blood and in urine. Storage of ketones does not appear to take place in the tissues. Base is excreted as $NaHCO_3$, corresponding with the injected (I). F. A. A.

Effect of labour and training on the lactic acid content and the synthesising capacities of the muscles of normal and avitaminous guinea-pigs. L. I. Palladina and B. I. Chaikina (Ukrain. Biochem. J., 1936, 9, 719—731).—The lactic acid content of muscles of both normal and scorbutic guinea-pigs is increased by fatigue (28 and 40%, respectively). Previous training results in no increase being shown by normal, but a 21% increase by scorbutic, animals. The capacity of normal muscles for synthesising P compounds is diminished by 20% by fatigue, and increased by training. Muscles of scorbutic animals lose this capacity completely during fatigue. F. A. A.

Utilisation of glycerol by normal and phosphorus-poisoned rats. H. Delaunay and P. Accoyer (Compt. rend. Soc. Biol., 1936, 123, 694—695).—The capacity for utilisation of glycerol is reduced in P poisoning. H. G. R.

Effect of metabolic changes (oxidative processes) on the rate of oxidation of alcohol in the organism. E. S. Rozovska (Ukrain. Biochem. J., 1936, 9, 751—760).—The rate of oxidation of EtOH *in vivo* in dogs is increased by administration of dinitrophenol in doses (10—15 mg. per kg.) which do not cause hyperthermia. Smaller increases in the rates of oxidation are produced by hyperthyroidism. F. A. A.

Distribution and metabolism of methyl alcohol in the dog. M. Neymark (Skand. Arch. Physiol., 1936, 73, 227—236).—Widmark's method of micro-oxidation with $K_2Cr_2O_7$ is suitable for the determination of MeOH in blood if certain modifications are made. When orally administered to dogs, the distribution of MeOH in the body was similar to that of EtOH, but the rate of fall in concn. in the blood was one tenth of that of EtOH. Oral administration of 2 : 4-dinitrophenol increased the rate of fall. When food was taken at the same time as MeOH there was no decrease in the MeOH concn. in the blood comparable with that shown when food was administered simultaneously with EtOH. Nutr. Abs. (*m*)

Occurrence of formic acid in urine following an apple diet. K. Voit and H. Friedrich (Klin. Woch., 1935, 14, 1792—1793; Chem. Zentr., 1936, i, 1043).—Fission of apple pectin in the intestine yields MeOH, which is resorbed and after oxidation appears in urine as HCO_2H. A. G. P.

Metabolism of women during the reproductive cycle. VII. Utilisation of inorganic elements (a continuous case study of a multipara). F. C. Hummel, H. R. Sternberger, H. A. Hunscher, and I. G. Macy (J. Nutrition, 1936, 11, 235—255; cf. A., 1936, 513).—Mean daily balances of Ca, Mg, Na, K, P, S, and Cl′ over a prolonged period are recorded and discussed. A. G. P.

Calcium metastases. S. Takahashi (Mitt. med. Akad. Kioto, 1936, 17, 341—343).—In rats, pigeons, rabbits, guinea-pigs, and frogs feeding of S and compounds containing S for 2—3 months produced severe acidosis and typical Ca metastases. Decalcification of the bones and teeth resulted. The Ca which had gone into solution was redeposited principally in the stomach, kidneys, and lungs, and to some extent in other organs. There was a rise in blood-S and -Ca. Ca-rich bladder stones, prostate stones, and pancreas stones were observed. Nutr. Abs. (*m*)

Physiology and pathology of calcium metabolism in man. A. Dzsinich and P. Falus (Arch. exp. Path. Pharm., 1936, 183, 274—277).—In healthy persons the Ca content of 100 c.c. of blood was increased by 1·0—2·1 mg. by oral administration of 20 g. of a mixture of $CaCO_3$, Ca lactate, and Ca phosphate. The increase was 0·30—0·45 mg. in persons having the intestinal contents made alkaline by a milk diet, 0·3—0·6 mg. when 50 units of parathyroid hormone (I) were given together with the mixture, and 1·5—1·8 mg. when 100 units were given. In a patient suffering from osteoporosis, the increase was 3·0 mg. after the mixture and 0·4 mg. after the mixture + 50 units of (I). W. McC.

Calcium in therapeutics. Hardikar (Indian Med. Rec., 1934, 54, 153—156).—Utilisation of Ca is associated with dietary fat and vitamin-*D*, and with exposure to ultra-violet light. The Ca requirement of adults is 650 mg. in 1 pint of milk; 40% of this is not absorbed. Of the blood-Ca, 50% is diffusible and 20% is ionic. Ch. Abs. (*p*)

Calcium and phosphorus retention in growth, in relation to the form of carbohydrate in the food. M. Speirs and H. C. Sherman (J. Nutrition, 1936, 11, 211—218).—Retention of Ca and P by rats was unaffected by the carbohydrate given (maize sugar, maize syrup, maize starch, dextrin, sucrose). A. G. P.

(A) Rôle of calcium and phosphorus in reproduction. (B) Mineral composition of young rats. W. M. Cox, jun., and M. Imboden (J. Nutrition, 1936, 11, 147—176, 177—190).—(A) A Ca/P ratio of 1·0 and Ca content 0·49% in the diet produced optimum gestation and lactation in rats. When based on the wt. of 21-day-old young the optimum ratio ∝ the Ca level. Excessive proportions of minerals (2—45%) gave poor results irrespective of the ratio. With a const. intake of P (0·245%) increasing the Ca content of the maternal diet (within limits) gave better reproduction. Still larger proportions of Ca induced rachitic tendencies. Excess of P was tolerated better than excess of Ca.

(B) The composition of the ash of 21-day-old rats is substantially const., irrespective of maternal intake, and may be utilised to calculate the Ca and P contents of the gross body-wt. or (except in cases of high-P diets) of bone ash or calcification. The Ca, P, and ash contents of female rats (21 days) are > those of males. A. G. P.

Factors controlling assimilation of minerals in the animal organism. I. Effect of magnesium compounds on calcium excretion by kidney and intestine. J. Bečka (Sborn. čsl. Akad. Zeměd., 1935, **10**, 368—377).—The effect of Mg compounds administered to rabbits on the excretion of Ca in urine and fæces depends not only on $Mg^{\cdot\cdot}$ but also on the anion. Urinary and fæcal excretion are affected (increased or decreased) sometimes in the same and sometimes in opposite ways, and the same holds in relation to method of administration (oral and intravenous). Nutr. Abs. (*m*)

Comparison of mineral and biological potassium in diet experiments. A. Lasnitzki and M. Lasnitzki (Nature, 1936, **138**, 799—800).—Experiments on mice to decide whether K of mineral origin is equiv. to that of biological origin were inconclusive. L. S. T.

Function of the liver in salt metabolism. I. Sodium chloride content of organs and tissues. II. Sodium chloride of blood and its excretion in bile and urine. III. Absorption of sodium chloride from the gut. K. Tsushima (J. Chosen Med. Assoc., 1936, 26, 5—6, 11—12, 12—13).—I. When the liver function in rabbits was disturbed by P poisoning, ligature of the bile duct, or other means, the NaCl content of organs and tissues other than the liver did not appear to be affected.

II. In normal rabbits introduction of aq. NaCl into the duodenum caused a rise in blood-NaCl, reaching a max. in 2—5 hr.; in rabbits with deranged liver function a similar max. rise was not obtained for 8—10 hr. The [NaCl] in bile and urine rose parallel with that in the blood.

III. In rabbits with deranged liver function absorption of NaCl from a solution introduced into the intestine was upset. Nutr. Abs. (*m*)

Ion action and permeability to water: coacervate theory of the plasma membrane. I. de Haan (Protoplasma, 1936, 24, 186—197).—Previous conflicting results on the effect of inorg. salts on the permeability of protoplasmic membranes to H_2O are due to the fact that, whereas salts with univalent cations increase the permeability at all concns. investigated, those with multivalent cations cause a decrease at low and an increase at higher concns. Protoplasmic membranes probably consist of an auto-complex system of phosphatide coacervate and the permeability min. corresponds with the neutral point of the system. M. A. B.

Fate of deuterium in the mammalian body. P. K. Smith, J. Trace, and H. G. Barbour (J. Biol. Chem., 1936, **116**, 371—376).—One sixth of the tissue H of mice is readily exchangeable for the D of D_2O. The N-rich fraction of tissues contains thrice the amount of exchangeable H present in the Et_2O extract. D can be fixed in stable form in mammalian tissue. P. G. M.

General action of Röntgen rays. IV. E. Woenckhaus (Arch. exp. Path. Pharm., 1936, **183**, 294—309; cf. A., 1932, 542).—In man, withdrawal, defibrination, and re-injection of 200 c.c. of blood produces a decrease of short duration in the sugar and leucocyte contents of the blood but when the defibrinated blood is exposed to *X*-rays before re-injection, the blood-sugar and rate of coagulation increase. W. McC.

Ammonia formation in irradiated tissues. H. G. Crabtree (Biochem. J., 1936, **30**, 2140—2143).—Irradiation of tissues (rat liver, brain, testes, Jensen's rat sarcoma) *in vitro* accelerates NH_3 formation. With tumour tissue the effect is independent of the activity of the glycolytic system. P. W. C.

Effects of intense sound vibrations on ovalbumin. E. W. Flosdorf and L. A. Chambers (J. Immunol., 1935, 28, 297—310).—Sonic irradiation of ovalbumin solutions lowers their antigenic activity and alters their specificity. Ch. Abs. (*p*)

Connexion between muscle metabolism and weather. IV. O. Riesser [with K. Bloch] (Biochem. Z., 1936, **288**, 238—249; cf. A., 1935, 890).—Variations in the muscle-glycogen and -P_2O_5 levels of guinea-pigs at altitudes of 1550 and 2660 m. are discussed with reference to possibly related changes in the weather. F. O. H.

Rates of cleavage of sea-urchin eggs in different latitudes. H. M. Fox (Nature, 1936, **138**, 839).—The rates of cleavage are adapted to the temp. of the seas inhabited. Eggs of a Mediterranean species at a given temp., *e.g.*, 20°, cleave more slowly than those of a northern species. L. S. T.

Influence of p_H on the diffusion of acetylcholine. H. Handovsky and S. Farber (Compt. rend. Soc. Biol., 1936, **123**, 121—123).—Following stimulation, liberation and diffusion are most marked at p_H 6·5—7. H. G. R.

Protein coagulation as a result of fertilisation. A. E. Mirsky (Science, 1936, **84**, 333—334).—The changes in the protein of the sea-urchin egg which occur soon after fertilisation are described. Approx. 12% of the total protein in the cell becomes insol. L. S. T.

Anaërobic recovery of muscle. R. Margaria and G. Moruzzi (Boll. Soc. ital. Biol. sperim., 1936, **11**, 662—665).—The energy developed by frog's gastrocnemius muscle on tetanic stimulation under anaërobic conditions and with varying periods of rest was determined. Muscle poisoned by $CH_2I{\cdot}CO_2H$ does not exhibit anaërobic recovery. The recovery process of lactic acid formation from glycogen is 50% completed in 15—20 sec. F. O. H.

Influence of trauma on the sugars of frog's brain. G. Gorodisskaja and P. Simakov (Ukrain. Biochem. J., 1936, **9**, 603—612).—Mechanical trauma of frog's brain results in an increase in sugar content dependent on the degree of trauma. F. A. A.

Explosive gases formed during electrotransurethral resections. B. F. Hambleton, R. W. Lackey, and R. E. Van Duzen (J. Amer. Med. Assoc., 1935, **105**, 645—646).—Gases produced during heat cautery contained CO_2, O_2, C_2H_2, C_2H_4, CO, and H_2. Ch. Abs. (*p*)

Carbohydrate tolerance following ligature of the pancreatic ducts of the dog. P. Houssa

(Compt. rend. Soc. Biol., 1936, **123**, 519—521).—Tolerance is lowered at first and then returns to normal or slightly subnormal. H. G. R.

Autocatalytic stimulation of the functions of the lungs. N. B. Medvedeva (Ukrain. Biochem. J., 1936, **9**, 705—712). F. A. A.

Deuterium and its compounds in relation to biology. H. C. Urey (Cold Spring Harbor Symp., 1934, **2**, 47—56).—A review. Ch. Abs. (*p*)

Does heavy water influence physiological processes? H. Erlenmeyer and F. Verzár (Z. Biol., 1936, **97**, 519—521).—Heavy water containing 13—80% D_2O has a significant action on the physiological processes of muscle and heart but preps. containing <10% are inactive (cf. Verzár and Haffter, A., 1936, 632; von Dungern, *ibid.*, 1019). F. O. H.

Acidosis and hyperglycæmia [in the rabbit] caused by the ammonium ion. R. Hazard and C. Vaille (Compt. rend. Soc. Biol., 1936, **123**, 576—578). H. G. R.

Action of metals. V. Effect of metals on alimentary hyperglycæmia. L. Vogel. **VI. Action of copper on the heart.** H. Häusler (Arch. exp. Path. Pharm., 1936, **183**, 198—210, 211—224; cf. this vol., 5).—V. In rabbits hyperglycæmia produced by administration of glucose (1·25—2·5 g. per kg.) is diminished or prevented by administration of Cu and Zn (2—4 mg. per kg.) but not by that of Mn. The fasting blood-sugar levels are not affected by administration of Cu and Zn.

VI. In the frog's heart poisoned with Cu, the metal is deposited in the connective tissue and on the surface of the cells but does not penetrate into them. Normal activity is restored by application of substances which form Cu complexes. W. McC.

Effect of various iron compounds on growth and histological picture of cultures of fibroblast. I, II. Y. Nakazawa (Folia Pharmacol. Japon., 1935, **20**, 325—346, 358—370).—I. Fe^{III} citrate, Na ferro- and ferri-tartrates, $Fe(NH_4)_2(SO_4)_2$, $FeCl_2$, and $FeCl_3$ in small concns. increased and at higher concns. inhibited the growth of fibroblast.

II. Colloidal solutions and a hæmolytic solution prepared from chick embryo erythrocytes in small concns. increased and at higher concns. inhibited the growth of fibroblast. In the case of ferratin, solubility was too small for toxic concns. to be attained. Ch. Abs. (*p*)

Absorption of ferrous and ferric compounds from the intestines of rabbits. O. Fürth and R. Scholl (J. Pharm. Exp. Ther., 1936, **58**, 14—32).—Following injection of $FeCl_2$, glutamiron, $FeSO_4$, and Fe^{III} salts into ligated intestinal loops (rabbit), the Fe absorbed was 61·6, 76·0, 39·7, and 19·8—30·5%, respectively. The absorption of Fe^{II} is reduced by an acid reaction of the intestinal contents and more Fe is retained by the walls when injected in the Fe^{III} state. The rate of absorption could not be correlated with the toxicity but a limited analogy was observed with the rate of diffusion. H. G. R.

Preservation of fertility in male and female rats on a supplemented milk diet. H. L. Keil and V. E. Nelson (Proc. Soc. Exp. Biol. Med., 1936, **33**, 490—492).—No appreciable sterility or degeneration of the sexual organs of male and female rats resulted from feeding a diet consisting of cow's milk containing $CuSO_4$ and $FeCl_3$. In female rats excretion of NH_3, creatine, and creatinine was affected by the diet. W. McC.

Occurrence of chrysiasis following treatment by gold salts. W. C. Fowler (Tubercle, 1935, **16**, 539—541).—Chrysiasis fluctuates according to the degree of exposure to light and is associated with deposition of Au in the deeper layers of the skin. Ch. Abs. (*p*)

Influence of mercury on cultivated tissue. IV. Mercury exhibits a cumulative action on cultures of fibroblast *in vitro*. V. Secondary effects. K. Hirashima (Folia Pharmacol. Japon., 1935, **20**, 24—29, 45—55; cf. A., 1936, 108).—IV. Small doses of $HgCl_2$ accelerate growth of chick-embryo and Hg accumulates in the tissue.

V. Accelerated growth due to Hg treatment gradually returns to normal. Ch. Abs. (*p*)

Non-protein nitrogen in blood. III. Influence of fluorine on the non-protein-nitrogen of rabbit's blood. H. S. Lee (J. Chosen Med. Assoc., 1936, **26**, 16—17).—A single injection of 0·2 g. of NaF did not produce a significant change in the non-protein-N of rabbit's blood, but continued daily injection of 0·1—0·2 g. of NaF caused an increase. Nutr. Abs. (*m*)

Biological activity of an amino-acid with fluorine in the nucleus (fluorotyrosine). G. Litzka (Arch. exp. Path. Pharm., 1936, **183**, 427—435).—Inorg. F compounds are unsuitable for human therapy. 3-Fluorotyrosine is readily tolerated both as a single dose of 6 mg. and as a daily dose of 1 mg. for several weeks both by men and animals. The substance appears to show the sp. properties of F′ without possessing the properties of a cellular and protoplasmic poison. P. W. C.

Antithyrotoxic action of fluorotyrosine. G. Litzka (Arch. exp. Path. Pharm., 1936, **183**, 436—458).—F and tyrosine both act antagonistically to thyroxine (I). Fluorotyrosine (II) in animal experiments and cases of hyperthyroidism exerts a sp. action several hundred times stronger than, and is without the toxicity of, F′. (II) does not possess antithyroid or antithyrotropic activity but is powerfully antithyrotoxic. (II) inhibits the loss of liver- and muscle-glycogen due to administration of (I) or the thyrotropic hormone of the anterior pituitary gland and the loss of wt. occurring in hyperthyroidism. Administration of (II) to mice diminishes their resistance to MeCN and inhibits the increase in resistance due to (I). (II) lowers the blood-sugar of healthy men but not in cases of Basedow's disease. P. W. C.

Effect of iodine on absorption of cholesterol. F. H. Shillito and K. B. Turner (Proc. Soc. Exp. Biol. Med., 1936, **33**, 600—604).—In dogs, absorption of cholesterol from the gastro-intestinal tract is not prevented by previous administration of aq. KI. W. McC.

Effect of sodium hydrogen carbonate on the antipyretic action and toxicity of acetanilide. P. K. Smith (J. Pharm. Exp. Ther., 1936, **58**, 192—198).—$NaHCO_3$ in a mol. ratio 2 : 1 causes max. reduction in NHPhAc toxicity. Other effects are little changed. E. M. W.

Influence of concentrated potassium thiocyanate solutions on the structure and volume of the vitreous body. J. Goedbloed (Biochem. J., 1936, **30**, 2073—2076).—The decrease in vol. of the vitreous body in conc. aq. KCNS is largely irreversible, KCNS acting as a hydrating agent and in the last resort causing peptisation of the greater part of the vitreous proteins. P. W. C.

Relation of experimental skin infection to carbohydrate metabolism. Effect of hypertonic glucose and sodium chloride solutions injected intraperitoneally. D. M. Pillsbury and G. V. Kulchar (Amer. J. Med. Sci., 1935, **190**, 169—177). Ch. Abs. (*p*)

Influence of varying conditions on the resorption of sodium iodide from muscle. III. R. Shimazu (Folia Pharmacol. Japon., 1935, **20**, 201—205).—Surface application of EtOH on the injected area accelerates absorption of the NaI. Mustard and turpentine first accelerate and later depress absorption. Skin irritants affect absorption from skin > that from muscle. Ch. Abs. (*p*)

Substances reported to affect the motility of the gall bladder. W. L. Voegtlin and A. C. Ivy (Amer. J. Digest. Dis. Nutrition, 1934, **1**, 174—177).—Effects of numerous org. and inorg. substances are compared. Ch. Abs. (*p*)

Hydration and permeability of unfertilised *Fucus* eggs (*F. vesiculosus*, L.). B. Resühr (Protoplasma, 1935, **24**, 531—586).—The power of penetration of various chemical substances into the unfertilised eggs appeared to depend on their lipin-solubility. M. A. B.

Alimentary disturbance caused by uric or oxalic acid in the diet of the pigeon. R. Lecoq (Compt. rend., 1936, **203**, 627—629; cf. A., 1935, 1015; 1936, 904).—A dose of yeast which protects adult pigeons against polyneuritis fails when 10% of uric acid or 2% of $H_2C_2O_4$ is incorporated in the diet. About four times the dose is sufficient in the former case. The effect is not central. J. L. D.

Acetonæmia in guinea-pigs. Effect on blood-calcium. L. Di Prisco (Riv. Patol. sper., 1936, **16**, 461—468).—In guinea-pigs oral administration and inhalation of $COMe_2$ led to degenerative changes in liver and kidneys, appearance of calcareous deposits in kidneys, and reduction in serum-Ca. Nutr. Abs. (*m*)

Comparison of toxic effect of pyridine derivatives on ciliated cells of the oyster gill. S. Nomura and T. Imai (Bull. Inst. Phys. Chem. Res. Japan, 1936, **15**, 1202—1208).—The non-movement of the terminal cilia at the ventral margin of the gill was used as a criterion of death of the tissue after immersion in a solution of the compound. Using KCN and $HgCl_2$ for comparison, the degree of toxicity is as follows: $Cd(CNS)_2,3C_5H_5N < KCN < Cu(CNS)_2,C_5H_5N < CdSiF_6,4C_5H_5N < CuSiF_6,4C_5H_5N,H_2O < HgCl_2 < HgCl_2,C_5H_5N$. J. N. A.

Unusual case of esterification in muscle. G. T. Cori and C. F. Cori (J. Biol. Chem., 1936, **116**, 129—132).—Dinitrophenol does not significantly alter the hexose monophosphate (I) content of anaërobic frog muscle, but greatly increases its production in the presence of adrenaline (II). Lactic acid production is accelerated, and phosphocreatine diminishes. Caffeine does not increase the esterification, its action with (II) being additive. The (I) rapidly disappears in the presence of O_2. F. A. A.

Sterilising action of chloropicrin on eggs of the bed bug (*Cimex lectularius*, Mer.). H. Gounelle and Y. Raoul (Compt. rend., 1936, **203**, 689—691).—Chloropicrin (I) is toxic to the eggs when the latter are exposed for 48 hr. to an atm. containing 5 g. of (I) per cu. m. During treatment the p_H of the interior of the egg changes from 5·08 to 4·56 (mean vals.). J. N. A.

[Pharmacology of] phenanthrene derivatives. VII. Comparison of analogous phenanthrene and dibenzfuran derivatives. N. B. Eddy (J. Pharm. Exp. Ther., 1936, **58**, 159—170).—The analgesic and toxic effects of dibenzfuran derivatives are > those of the corresponding phenanthrene derivatives. The relation of analgesic to toxic doses is approx. the same. Variation in analgesic effect is parallel in the two series. E. M. W.

Action of benzpyrene on the testes. H. Tuchmann and M. Demay (Compt. rend. Soc. Biol., 1936, **123**, 686—690).—Necrosis of the seminal tubules, an œstrogenic action (< that of folliculin), and inhibition of spermatogenesis were observed in rats. H. G. R.

Influence of various substances on the change of state of uric acid in serum. III. Y. Nukita (Folia Pharmacol. Japon., 1935, **20**, 236—241).—Excretion of uric acid was increased by cinchophen and Na taurocholate and decreased by NaOBz, more so by Na salicylate, and also by urea + glycine. Ch. Abs. (*p*)

Hypertension. I. Production of experimental hypertension; correlated effect on nitrogen distribution in blood-proteins. H. A. Rafsky, A. Bernhard, and G. L. Rohdenburg (Amer. J. Med. Sci., 1935, **190**, 187—199).—Injection of U nitrate into rabbits produced nephritis and hypertension, that of cholesterol and guanidine carbonate a mild hypertension, and that of aspartic acid a hypertension which was not dependent on the NH_2 or C_2O_4 groups. In the last-named case the $(NH_2)_1$-N of the serum increased and the basic NH_2 decreased. Ch. Abs. (*p*)

Mechanism of the irreversible diffusion of dyes through the frog's skin. A. Eckstein (Pflüger's Arch., 1936, **237**, 125—142).—Basic dyes [methylene-blue (I) and Me-violet] diffuse more readily through the frog's skin from the serous to the epithelial coat than in the opposite direction; with acid

dyes the opposite is true. These effects were the same when the membrane had been killed with KCN and are therefore not due to the physiological activity of the membrane. In the case of (I) the effect is due to reduction (probably enzymic) of the dye by the serous coat, but not by the epithelium, and re-oxidation after diffusion. The effect is probably due to different partition coeffs. of (I) between solvent and membrane on the two sides. The action of the frog's skin was imitated by using parchment soaked in oleic acid–NH_2Ph as a "two-phase" membrane. (I) diffused more rapidly from the soaked side. M. A. B.

Secretion of dyestuffs by the stomach. I. Matsuo (Japon. J. Gastroenterol., 1934, 6, 495—546).—Factors affecting the secretion are examined, and the measurement of stomach function by dye secretion is discussed. Ch. Abs. (*p*)

Influence of amino-acids on the adrenaline-iodic acid value. K. Terai and H. Ichitsubo (Folia Pharmacol. Japon., 1935, 20, 206—218).—Addition of NH_2-acids has no influence on the HIO_3 val. of adrenaline. In alkaline solution vals. decrease rapidly and NH_2-acid retards this decrease. Ch. Abs. (*p*)

Action of amino-acids on the isolated toad heart. S. Iwo (Folia Pharmacol. Japon., 1935, 20, 230—235).—The ionotropic action of 13 NH_2-acids is examined. No chronotropic action was apparent. Ch. Abs. (*p*)

Influence of aminoacetopyrocatechol on blood-sugar picture and on the glycogen content of liver and muscle. K. Tachibana (Folia Pharmacol. Japon., 1935, 20, 191—200).—Aminoacetopyrocatechol (I) causes hyperglycæmia and inhibits the action of yohimbine even after double splanchnectomy. Cocaine increases and pituitrin decreases its action. In barbital narcosis (I) markedly increases liver-glycogen; muscle-glycogen is only slightly diminished. Ch. Abs. (*p*)

Influence of cerebral cortex on calcium metabolism. R. Uchihashi (Folia Pharmacol. Japon., 1935, 20, 219—229).—"Urethan," a cerebral depressant, accentuates the hypocalcifying action of picrotoxin and veratrine. Paraldehyde and small doses of $CHCl_3$ act similarly: large doses of $CHCl_3$ have the opposite effect. Decorticated animals react more readily than controls. A cortical regulation of Ca metabolism is postulated. Ch. Abs. (*p*)

Physiology of carnitine and acetylcarnitine. P. Weger (Biochem. Z., 1936, 287, 424—432).—Carnitine is without action on the frog's heart in low concns. but in conc. solutions (3—5%) it irreversibly injures the heart and is only partly inhibited by atropine. Acetylcarnitine (I) exerts a reversible inhibition of the heart, the action being inhibited by atropine and increased by eserine. (I) is inactivated by keeping with frog's heart extract but is not inactivated if the extract is first heated to 56°. P. W. C.

[Effects on blood pressure of] ethers of choline and allied compounds. R. Hunt and R. R. Renshaw (J. Pharm. Exp. Ther., 1936, 58, 140—154).—The increase in blood pressure produced by the Ph ether of α-methylcholine is reduced by introducing Me, Et, Pr^{β}, or NH_2 into the mol., and also by β-*o*-tolyloxyethyltriammonium bromide and like compounds. Me and Et ethers of β-methylcholine cause a fall of pressure which is prevented by atropine (I). Small doses of the Pr^{β} ether cause a fall and larger doses a fall followed by a rise; after (I) a rise only is produced. The ethers of $NHEt_3$ salts prevent rise of pressure; certain heterocyclic compounds slightly increase it. E. M. W.

Influence of histamine on acetylcholine action. G. Bayer and T. Wense (Arch. exp. Path. Pharm., 1936, 182, 533—536).—Pretreatment of leech preps. with histamine enhances the action of acetylcholine (I), due to inhibition of hydrolysis of (I) by blood-esterase (cf. Minz, A., 1932, 966). F. O. H.

Inhibitory effect of histamine on gastric secretion. A. Alley (Amer. J. Digest. Dis. Nutrition, 1935, 1, 787—794).—Mechanism of the action is examined. Ch. Abs. (*p*)

Effect of autoclaved pancreas on lipins of blood and liver in depancreatised dogs maintained with insulin. A. Kaplan and I. L. Chaikoff (Proc. Soc. Exp. Biol. Med., 1936, 34, 606—607).—Autoclaved pancreas in the diet maintains the total fatty acids of the liver at about the normal val. (2·7—2·9%). P. G. M.

Hypoglycæmic action of liver extract. A. Briganti (Riv. Patol. sper., 1936, 16, 469—496).—Liver extract contains a substance capable of reducing the blood-sugar level, the effect being marked in diabetics and depancreatised dogs, but much weaker in normal subjects. The substance probably increases the deposition of glycogen in the liver. Nutr. Abs. (*m*)

Effect of extracts of guinea-pig organs on the perfused isolated rabbit lung. I. Tominaga (Folia Endocrinol. Japon., 1934, 10, 56—57).—Extracts of lung, intestine, liver, and kidney caused a decrease in the amount of treated lung perfused, in the amplitude of the respiration curve, and in the wt. of the lung preps. The activity of the extracts decreased in the order named. Ch. Abs. (*p*)

Anti-growth effect of lipin fractions of tissue extracts. F. A. McJunkin and J. W. Henry (Amer. J. Path., 1935, 11, 353—363).—Injection into young rats of lipin extracts from kidney, myocardium, and liver produced anti-growth effects on kidney and liver. The inhibitory substance is probably in the phospholipin fraction. Ch. Abs. (*p*)

Effect of acid-alcohol or acetone extracts of thyroid gland on nitrogen metabolism. I. Normal white rats. II. Hyperthyroid rats. J. Matsui (Folia Endocrinol. Japon., 1934, 10, 53—54, 54—55).—I. The extracts increased the total urinary N in rats, $COMe_2$ extracts being the more active.

II. The increased N metabolism produced by oral administration of epithelial cellular material was lowered by the extracts given orally. The $COMe_2$ extract was the more effective. Ch. Abs. (*p*)

Influence of mucilaginous substances on the emptying of the stomach. H. Necheles, H. I. Sapoznik, R. Arens, and J. Meyer (Amer. J. Digest.

Dis. Nutrition, 1934, 1, 684—688).—Hog mucin, okra, olive oil, and agar decrease the emptying time. Okra does not impair digestion of meat but decreases gastric secretion. CH. ABS. (*p*)

Pharmacological action of tuberculoprotein in normal and tuberculous animals. M. I. SMITH (Amer. Rev. Tuberc., 1935, 32, 98—112).—Tuberculoprotein has a primary toxicity to normal animals but a much greater toxicity to tuberculous animals. Anaphylactic and tuberculin hypersensitiveness are distinct and independent phenomena. CH. ABS. (*p*)

Tissue reactions of the lung to intratracheal injection of particulate sericite. W. S. LEMON and G. M. HIGGINS (Amer. Rev. Tuberc., 1935, 32, 243—256). CH. ABS. (*p*)

Epithelial anæsthesia. L. STAMBOVSKY (Drug Cosmetic Ind., 1935, 37, 175—176, 192).—Comparative effects of alkyl *p*-aminobenzoates on sunburn are examined. Action of these compounds on epidermal tissue is related to their solubility in oil, and that on mucous membrane to solubility in H_2O. Activity is diminished by substitution or addition in the alkyl or NH_2 groups. CH. ABS. (*p*)

Intravenous anæsthesia with evipan. E. VAN ACKER (Ann. Bull. Soc. Roy. med. Gand, 1934, 13, 216—217).—A review. CH. ABS. (*p*)

Surface anæsthesia in ophthalmology. J. G. BELLOWS (Arch. Ophthalmol., 1934, 12, 824—832).—The order of effectiveness was, *p*-butylaminobenzoyldimethylaminoethanol hydrochloride > nupercaine > butyn > cocaine > phenacaine > metycaine. CH. ABS. (*p*)

Experimental injection of ethyl alcohol into the lumbar subarachnoid space. R. B. AIRD and H. C. NAFFZIGER (West. J. Surg. Obstet. Gynecol., 1935, 43, 377—387). CH. ABS. (*p*)

Hydrodynamics of analgesics in the subarachnoid fluid of man. Diazotised procaine in artificial dural sacs. G. R. VEHRS (West. J. Surg. Obstet. Gynecol., 1935, 43, 16—32). CH. ABS. (*p*)

Prolonged analgesia in malignancies. C. A. DE PUY (West. J. Surg. Obstet. Gynecol., 1935, 43, 105—112).—Effects of subarachnoid injections of abs. EtOH are described. CH. ABS. (*p*)

Toxicity and local anæsthetic activity of alkyl esters of 2-furoic acid. N. M. PHATAK and G. A. EMERSON (J. Pharm. Exp. Ther., 1936, 58, 174—177).—Toxicity of the alkyl esters of 2-furoic acid increases from Me to Pr and local anæsthetic activity from Me to amyl. The lower toxicity of Bu and amyl esters may be due to their lower solubility. E. M. W.

Anæsthetic properties of tetrahydrofuran. R. W. STOUGHTON and B. H. ROBBINS (J. Pharm. Exp. Ther., 1936, 58, 171—173).—Tetrahydrofuran anæsthesia in mice and dogs is marked by certain toxic symptoms. E. M. W.

***N*-Alkylbarbituric acid derivatives.** E. E. SWANSON (J. Amer. Pharm. Assoc., 1936, 25, 858—859).—The anæsthetic and lethal action of 14 derivatives determined in rats indicates that *N*-alkyl (Me or Et) substitution reduces the duration of action. F. O. H.

[Pharmacology of] barbiturates. XVII. Effect of prolonged chloroform anæsthesia on duration of action of barbiturates. T. KOPPANYI, J. M. DILLE, and C. R. LINEGAR. **XVIII. Peripheral action of barbiturates.** C. R. LINEGAR, J. M. DILLE, and T. KOPPANYI (J. Pharm. Exp. Ther., 1936, 58, 119—127, 128—134).—XVII. $CHCl_3$ anæsthesia for 2 hr. prolongs the anæsthetic action of pentobarbital (I), and barbital (II), given 24 hr. later, increases the depth of anæsthesia and the speed of reaction of animals, and induces greater retention of (I) and (II) in blood and organs. $CHCl_3$ probably injures the central nervous system, thus facilitating the action of barbiturates.

XVIII. The peripheral vagus is paralysed by moderate doses of amytal, pernocton, and (I), and by large doses of (II) but not by phenobarbital. The central vagus is not paralysed by barbiturates. Pilocarpine and acetylcholine, and to some extent eserine, restore peripheral vagus activity. Barbiturate action is on the peripheral ganglionic cells of the heart. E. M. W.

Spinal anæsthesia in general: nupercaine. P. E. SPANGLER (West. J. Surg. Obstet. Gynecol., 1934, 42, 597—603, 646—649). CH. ABS. (*p*)

Effect of antipyretics on the action of soporifics. O. GIRNDT and O. HUHN (Arch. exp. Path. Pharm., 1936, 183, 236—255).—In rabbits, pyramidone antagonises the hypnosis produced by bromural. W. McC.

Influence of narcotics on the vitamin-*C* content of spinal fluid and brain. F. PLAUT and M. BÜLOW (Klin. Woch., 1935, 14, 1716—1717; Chem. Zentr., 1936, i, 1045).—Narcotics have no effect. A. G. P.

(A) Effect of narcotics of the fatty series on the sensitivity of the external ear and skin of the back of guinea-pigs. (B) Effect of opium alkaloids. (C) Surface anæsthesia in the external ear of the guinea-pig. II—IV. S. IKEBE (Folia Pharmacol. Japon., 1935, 20, 347—350, 351—357; Opera Orig., 1—9, 10—17, 37—44; cf. A., 1935, 1410).—(A) Administered subcutaneously ethylurethane gave complete analgesia; paraldehyde and chloral hydrate showed hypalgesia.

(B) Morphine, heroin, pantopon, codeine, and papaverine, given subcutaneously, produced analgesia or hypalgesia, the relative action being in the (descending) order named.

(C) II. The local anæsthetic effect of cocaine (I) and procaine (II) was increased by EtOH, PhOH, *p*-cresol (III), by increasing p_H, and, slightly, by menthol and salicylic acid.

(C) III. Skin sensitivity was decreased by K, Li, Ca, and Sr but not by Mg or NH_4 chlorides. Local anæsthetic action of (I) and (II) was increased considerably by K, less by Ca, very little by Sr, NH_4, and Li, and not at all by Mg salts.

(C) IV. Anæsthetic action of (I) and (II) was increased by NaOH, EtOH, and KCl and that of nupercaine by (III) and $C_5H_{11}\cdot OH$. PhOH and

(III) were particularly effective in presence of adrenaline. Ch. Abs. (*p*)

Minimal hypnotic effect, toxicity, and pathological effect of the sodium and magnesium salts of phenobarbital. W. F. Taylor and R. W. Lackey (Proc. Soc. Exp. Biol. Med., 1936, 33, 621—624).—The min. lethal dose of Na and Mg phenobarbital is about 215 mg. per kg. for rats and 115 mg. for dogs. For dogs the min. hypnotic doses are 20 mg. per kg. (orally) and 15 mg. (intravenously). The hypnotic effect of the Mg salt is > that of the Na salt when given intravenously to dogs in doses of 30 mg. per kg., but there is no such difference when the salts are given orally. W. McC.

Influence of diallylmalonylurea on metabolic response of the cat to dinitrophenol. G. Brewer (J. Pharm. Exp. Ther., 1936, 58, 135—139).—The increase in metabolic rate of the cat produced by dinitrophenol (I) is prevented by the administration of diallylmalonylurea shortly before or after (I). E. M. W.

Creatine dynamics in pigeon's muscle under the influence of various pharmacological agents. II. Poisons of the central and vegetative nervous systems. A. D. Schteinberg (Ukrain. Biochem. J., 1936, 9, 943—959).—The effect produced depends on the place and mode of action of the agent. Compounds such as C_6H_6 and picrotoxin, which influence the sub-cortical centres, cause a marked rise in the muscle-creatine (I) of pigeons. Caffeine produces a rise of short duration, followed by a diminution. Deep narcosis by $CHCl_3$ or Et_2O decreases (I) for 24 hr.; slight narcosis increases (I). Morphia produces a transitory diminution in (I), followed by a small rise approx. to normal vals. Adrenaline produces first a rise, and after 3 hr. a fall. Parasympathetic-stimulating substances (arecoline, pilocarpine) diminish (I). F. A. A.

Earthworms as test objects for determining the value of drugs to be used in human intestinal helminth infestations. P. D. Lamson and C. B. Ward (Science, 1936, 84, 293—294).—A study of the toxicity of various substances towards earthworms and pig *Ascaris* showed no correlation of action. L. S. T.

Chemotherapy of germanin and arsinic acids. I. M. Oesterlin (Zentr. Bakt. Par., 1935, I, 135, 347—364).—A microchemical method for determining therapeutic vals. of As compounds is described. The activity of As–protein compounds depends on the mol. wt. of the protein. Hæmoglobin increases the index of atoxyl (I). Peptone has no effect. Combination with a high-mol. protein induces activity in the normally inactive arsanilic acid (II). (I) is accumulated by trypanosomes without change of mol. structure. Therapeutic properties of casein (III)–(I) and of (III)–diazotised (II) are examined. A. G. P.

***cyclo*Propane [pharmacology].** R. M. Waters (Brit. Med. J., 1936, No. 3959, 1013—1017).—A discussion of recent experimental work. A. G. P.

Pharmacology of pinacolone. J. C. Krantz, jun., C. J. Carr, R. Musser, and F. F. Beck (J. Amer. Pharm. Assoc., 1936, 25, 852—855).—1% aq. $COMeBu^{\gamma}$ has no significant bactericidal action. No hypnotic properties were observed. F. O. H.

[Physiological] action of *p*-hydroxybenzylguanidine. IV. Relation of thyroid gland, spleen, and iodine to blood-coagulating action and detoxication of *p*-hydroxybenzylguanidine. V. Relation of pituitary, pancreas, and adrenal. A. Kuroda (Folia Pharmacol. Japon., 1935, 20, Op. Orig., 18—36, 59—70; cf. A., 1935, 894).—IV. Thyroid increases and spleen decreases the clotting time. Thyroid and I detoxicate the drug.

V. Extracts of anterior pituitary detoxicate and decrease the clotting power of the drug. Thyroxine has a strong action. Extracts of posterior pituitary, pancreas, and adrenals have no action. Ch. Abs. (*p*)

Change in shape of melanophores in frog skin. II. Influence of adrenaline and histamine on extension of melanophores produced by posterior pituitary extract. III. Influence of cocaine and related drugs. K. Matsuda (Folia Pharmacol. Japon., 1935, 20, 90—116, 117—131).—II. The effect of pituglandol (I) on the melanophores is counteracted by adrenaline, adrenalone, *dl*-3 : 4-dihydroxyphenylalanine, tyramine, tetrahydronaphthylamine, histamine, and ephedrine, the activity of the drugs being in the (descending) order named.

III. Cocaine, tutocaine, and procaine also counteract the effect of (I). Ch. Abs. (*p*)

Influence of various purine derivatives on growth and morphological picture of cultures of fibroblast *in vitro*. M. Maeda (Folia Pharmacol. Japon., 1935, 20, 293—310).—The growth of fibroblast cultures from the ventricle of chick embryo was increased by small and inhibited by higher concns. of caffeine, theobromine, theophylline, xanthine, caffeine Na benzoate, theobromine Na salicylate and acetate. Ch. Abs. (*p*)

(A) Influence of salicylic acid, sodium salicylate, and of soluble aspirin on growth of cultures of fibroblast *in vitro* from the ventricle and on pigmented epithelial cells of the iris: histological changes caused by these drugs. (B) Influence of certain drugs of the antipyretic group on the cultures. K. Saito (Folia Pharmacol. Japon., 1935, 20, 269—283, 284—292).—(A) Low concns. of the drugs increased and higher concns. decreased the growth of both tissues.

(B) Antipyrine, pyramidone, salipyrine, and NHPhAc produced effects similar to the above. Ch. Abs. (*p*)

Effect of intra-arterial injection of substances which injure the capillaries on internal gaseous metabolism and oxygen utilisation. O. Klein and E. Spiegel (Arch. exp. Path. Pharm., 1936, 183, 542—560).—By intra-arterial injection of various substances which affect capillary tonus [pituitrin, histamine, perabrodil, uroselectan, catalysin (I), hypertonic NaCl] the liberation of O_2 in the vascular region of the artery is considerably or totally inhibited. Injections of (I) and Ca salts bring about this result only in high concns., low concns. having the opposite

effect. The CO_2 exchange between blood and tissues is not or only slightly affected. P. W. C.

Experimental modification of the velocity of absorption. I. Inhibition of absorption of subcutaneously injected poisons by substances of the adrenaline series. H. ROTTER (Arch. exp. Path. Pharm., 1936, **183**, 595—606).—Adrenaline, when subcutaneously injected into mice at the same site as a lethal dose of strychnine, has a protective action > that of any of the adrenaline-like substances (ephedrine, sympathol, etc.) examined and, although the most toxic, has the highest therapeutic val. as an antidote. P. W. C.

Effect of myocardial destructive agents on the creatine content of the rabbit's heart. G. DECHERD, G. HERRMANN, and P. ERHARD (Proc. Soc. Exp. Biol. Med., 1936, **33**, 519—520).—Intravenous administration of caffeine followed by adrenaline (I) and of (I) alone usually increases the creatine content of the heart by 20—25% during 12 hr., the val. diminishing thereafter until 66% of the normal val. is reached and death occurs. The decrease is possibly a measure of the extent of myocardial damage. When the decrease is not so great the content rises again to normal and recovery ensues. W. McC.

Action of ephedrine on isolated rabbit intestine. I, II. Y. NUKITA (Folia Pharmacol. Japon., 1935, **20**, 153—161, 242—256).—I. Adrenaline reinforced the action of small doses of ephedrine (I) but antagonised that of larger doses; ergotoxine increased the action of large doses. Nicotine had no effect.

II. Influence of acetylcholine, atropine, papaverine, *apo*morphine, emetine, and Ba on the action of (I) is examined. CH. ABS. (*p*)

Action of vegetable stimulants on emulsions. G. BAYER and T. WENSE (Protoplasma, 1935, **24**, 281—285).—Staining with Os and microscopical examination showed that the phase inversion produced in oil-in-H_2O emulsions by $BaCl_2$ is inhibited by adrenaline (I) and ephedrine, whereas pilocarpine (II), choline (III), and acetylcholine increased the effect of $BaCl_2$. Eserine had no effect. Atropine inhibited the action of (II) and (III) but increased that of (I). Curare did not affect the action of (III), nor ergotamine that of (I). M. A. B.

Absorption of adrenaline and nicotine by the pericardium. G. BALTACEANU, C. VASILIU, and A. NOVAC (Compt. rend. Soc. Biol., 1936, **123**, 833—836).—Adrenaline is not oxidised and only slightly absorbed whereas nicotine is very readily absorbed. H. G. R.

Effects of nicotine, coniine, piperidine, and sparteine on growth and morphological picture of *in vitro* cultures of fibroblast. H. YAMADA (Folia Pharmacol. Japon., 1935, **20**, 311—324).—Small concns. of the drugs promote growth and larger concns. kill the tissue. CH. ABS. (*p*)

Poisoning by nicotine. A. PALMER (Med. J. Australia, 1935, **1**, 624).—In a case of poisoning considerable amounts of nicotine were found in kidney, liver, and spleen. CH. ABS. (*p*)

Amino- and acylamino-nicotines.—See A., II, 38.

Action of veratrine, picrotoxin, and cocaine on the rabbit uterus *in situ*. K. KUNISHO (Folia Pharmacol. Japon., 1935, **20**, 371—379).—Stimulative effects of the drugs are recorded. The effects were prevented by yohimbine (I) but not by atropine (II). On the isolated uterus the drugs had similar action, but neither (I) nor (II) had any inhibitory influence. CH. ABS. (*p*)

Curare-like action of *Erythrina americana*. A. J. LEHMAN (Proc. Soc. Exp. Biol. Med., 1936, **33**, 501—503).—The pharmacological action of *E. americana* resembles that of curare. W. McC.

Pharmacology of the principal alkaloids and of mixtures of total alkaloids of cinchona bark. A. SIMON and P. ZSOLDOS (Arch. exp. Path. Pharm., 1936, **183**, 459—466).—The effect of administration of quinine (I), quinidine (II), cinchonine (III), and cinchonidine (IV) on the temp. of normal and febrile rabbits is investigated. (II) has the greatest antipyretic action. After intravenous administration of (IV), the pressor action of adrenaline is reversed. Ephedrine and sympathol are antagonised whilst extracts of posterior lobe of the pituitary gland are synergised in their pressor action. The toxicity of (I) hydrochloride and of mixtures with the other alkaloids is determined. The toxic, antipyretic, uterine, and cardiac actions of the alkaloid mixture closely resemble those of (I). The protective action against the cardiac action of aconitine in cats gives the order (II)>(I)>(III), (IV). P. W. C.

Hepatic damage in dogs by feeding cinchophen. W. C. HUNTER and G. A. C. SNYDER (West. J. Surg. Obstet. Gynecol., 1934, **42**, 288).—Continuous feeding of cinchophen produced no liver damage. CH. ABS. (*p*)

Reaction of embryonic chick heart to (*a*) quinidine, cinchonine, cinchonidine, optoquin, eucupine, and vuzine, (*b*) sinomenine, parasinomenine, dihydrosinomenine, and deoxy-4H-sinomenine, with special reference to the developmental material of these hearts. T. NAKANO (Folia Pharmacol. Japon., 1935, **20**, 1—14, 15—23).—(*a*) Optoquin has the greatest and cinchonine the weakest depressive effect on heart action. Atropine does not remove the depression.

(*b*) All the drugs stimulate heart action, parasinomenine being the most effective. CH. ABS. (*p*)

[Effect of] combinations of quinine with other uterine tonics on the human uterus. K. KUNISHO (Folia Pharmacol. Japon., 1935, **20**, 145—152).—Adrenaline potentiated the action of pituitrin and histamine on strips of uterus. Ba produced varied effects and quinine showed no potentiation. CH. ABS. (*p*)

Effect of papaverine hydrochloride and sodium nitrate on the perfused, isolated rabbit lung, especially one altered by histamine. I. TOMINAGA (Folia Endocrinol. Japon., 1934, **10**, 57—58).—Disturbances in lung circulation caused by histamine were lessened by papaverine hydrochloride and intensified by $NaNO_2$. CH. ABS. (*p*)

Effects of syntropan, enatin, bromosalizol, and eupaverine on the human ureter. K. Samaan and M. I. E. Asreegy (Brit. J. Urol., 1935, 7, 116—123).—The action of syntropan in relaxing excised muscle of the human ureter resembled but was weaker than that of atropine. Enatin (I) and bromosalizol (II) relaxed the muscle by direct action but were inferior to visammin. As an antispasmodic eupaverine was more effective than papaverine, (I), or (II). Ch. Abs. (*p*)

Influence of strychnine on growth and on histological picture of cultures of fibroblast *in vitro*: cumulative action of the drug. K. Hirashima (Folia Pharmacol. Japon., 1935, 20, 132—141).—Low concns. of strychnine temporarily accelerate and higher concns. inhibit the growth of fibroblast. Ch. Abs. (*p*)

Action of yohimbine on the vegetative nervous system. P. Weger (Upsala Läkarefören. Förhandl., 1934, 40, No. 1/2, 113—167).—Pharmacological action of yohimbine (I) alone and with Ba or adrenaline (II) is examined. (I) antagonised the action of (II) on isolated rabbit uterus and was more rapidly leached from the tissue than was ergotamine. Ch. Abs. (*p*)

Pharmacological action of flavonol glucoside of species of *Forsythia*. A. G. Czimmer (Arch. exp. Path. Pharm., 1936, 183, 587—594).—Blooms of *F. suspensa viridissima* etc. contain a pharmacologically active substance (I), m.p. 172—178°, belonging to the flavonol group and probably identical with quercetin glucoside. (I) greatly increases the activity of the fatigued or hypodynamic, but not that of the normal, frog's heart. Given parenterally, (I) is not toxic to rabbits, rats, guinea-pigs, and cats. In rats (I) has a diuretic action but not in other animals. P. W. C.

Action of quercitrin and quercetin on uninjured and poisoned frog's heart. Vitamin-B_1. A. von Jeney and A. Czimmer (Arch. exp. Path. Pharm., 1936, 183, 571—586).—The activity of the normal or fatigued heart is increased by quercitrin (I) and quercetin (II). Hearts stopped by $CHCl_3$, urethane, or quinine hydrochloride are restarted by (I) and (II), the toxic action being inhibited and the original amplitude and frequency regained. (I) and (II) increase the heart activity after previous inhibition by lactic acid. (II) and probably other flavonol pigments present in the lactic acid-dehydrogenase of heart-muscle play, in addition to vitamin-B_1, the rôle of co-enzyme. P. W. C.

Absorption of digitalin and ouabain by the pericardium. G. Baltaceanu, C. Vasiliu, and A. Novac (Compt. rend. Soc. Biol., 1936, 123, 837—839).—The effect of these substances is prolonged on account of slow absorption. H. G. R.

Creatine content of normal and hypertrophied rabbit's heart after administration of digitalis. G. Herrmann, G. Decherd, E. H. Schwab, and P. Erhard (Proc. Soc. Exp. Biol. Med., 1936, 33, 522—524).—Administration of digalen and digifolene increased the creatine content of the normal hearts. W. McC.

True glucosides of *Digitalis lanata*. I. Comparative toxicities. A. Rabbeno (Boll. Soc. ital. Biol. sperim., 1936, 11, 674—677).—The 50% lethal dose to *Discoglossus pictus* gives a ratio for the toxicities of total digilanid and digilanid-*A*, -*B*, and -*C* of 1 : 1·2 : 3·7 : 0·66, respectively. The vals. are compared with those for *Rana esculenta*. F. O. H.

Activity of constituents of digitalis leaf and of strophanthin on application to various parts of the alimentary canal: change of activity induced by addition of ethyl alcohol and glycerol. III. H. Koike (Folia Pharmacol. Japon., 1935, 20, 257—266).—The action of strophanthin was increased by EtOH (> 10%) and by glycerol (I) (> 25%). Higher concns. had the reverse effect. In the intestinal tract the effect of both substances was smaller, (I) showing the greater activity. Ch. Abs. (*p*)

Therapeutic and toxic effects of strophanthin. F. Isamat and F. Grünbaum (Arch. exp. Path. Pharm., 1936, 183, 256—266).—The differences between therapeutic dose and toxic or min. lethal dose and between toxic and min. lethal dose for *g*-strophanthin and, to a smaller extent, ouabain are < the corresponding differences for *k*-strophanthin. W. McC.

Pharmacology of the kidneys. A. Benedicenti (Boll. Soc. ital. Biol. sperim., 1936, 11, 630—656).—A lecture. F. O. H.

Plant poisoning in stock: development of tolerance. D. G. Steyn (Onderstepoort J. Vet. Sci., 1935, 4, 417—420).—The toxic principle of *Urginea burkei*, Baker, is of the digitalis group. Ch. Abs. (*p*)

Antidotal action of potassium permanganate. R. A. Hatcher (J. Amer. Med. Assoc., 1935, 105, 502—504).—$KMnO_4$ is effective in cases of poisoning by aconitine, amidopyrine, antipyrine, morphine, or strychnine, and in alkaline solution destroys HCN or NaCN in the stomach, but is useless in poisoning by yellow P, cocaine, or atropine. Ch. Abs. (*p*)

Toxicity of poisonous plants in the Union of S. Africa. D. G. Steyn Onderstepoort J. Vet. Sci. 1935, 4, 399—415).—Various cyanogenetic plants are examined. Ch. Abs. (*p*)

Toxic action of quinol. H. Oettel (Arch. exp. Path. Pharm., 1936, 183, 319—362).—The lethal dose for cats is 60—100 mg. per kg. No appreciable amount of methæmoglobin (I) appears in the blood of living cats receiving quinol (II) but (I) appears abundantly after death. (II) in milk is less toxic than (II) in H_2O. Cats acquire tolerance, persisting for months, to sublethal doses of (II). (II) should not be used as a preservative. W. McC.

Toxicity of dioxan. A. Fairley, E. C. Linton, and A. H. Ford-Moore (J. Hyg., 1936, 36, 341—347).—1 : 4-Dioxan (I) is oxidised *in vitro* to $H_2C_2O_4$ and diglycollic acid. Renal changes can be produced in rabbits by the intravenous injection of both $Na_2C_2O_4$ and Na diglycollate or by applying $Et_2C_2O_4$ to the skin. The lesions are similar to those produced by (I). W. L. D.

Methæmoglobin formation during poisoning by glyceryl trinitrate. G. Orestano (Boll. Soc.

ital. Biol. sperim., 1936, **11**, 658—660).—Intramuscular injection into rabbits of the nitrate (0·5—1·0 g. per kg.) produces death during which 38·5—77·4% of the total hæmoglobin is converted into methæmoglobin. F. O. H.

Toxicology of formic acid. F. Ballotta (Boll. Chim. farm., 1936, **75**, 577—580).—The normal occurrence and detection of HCO_2H in tissues and body-fluids are discussed. HCO_2H in tissues is detected by extraction with aq. Na_2CO_3, distillation of the acidified extract, and treatment of the distillate with Mg; thereafter tests for CH_2O (*e.g.*, morphine–H_2SO_4) are applied. F. O. H.

Hydrocyanic acid and glucose. F. Domenici (Boll. Soc. ital. Biol. sperim., 1936, **11**, 689—691).—Hyperglycæmia induced by subcutaneous injection of glucose or pancreatectomy delays the death of rabbits or dogs due to administration of min. lethal doses of KCN. Addition of small amounts of KCN to blood *in vivo* or to defibrinated blood significantly increases the reducing power (Hagedorn–Jensen method). F. O. H.

Ocular lesions resulting from thallium acetate poisoning. C. M. Swab (Arch. Ophthalmol., 1934, **12**, 547—561).—Rodents had higher tolerance than dogs. Ch. Abs. (*p*)

Poisoning by sodium bismuth tartrate injections. J. H. Dowds (Lancet, 1936, **231**, 1039—1040).—A record of three fatal cases. L. S. T.

Toxicity to fowls of sodium arsenite and poisoned locusts. J. K. Chorley (Rhodesia Agric. J., 1935, **32**, 322—326).—The min. lethal dose of As_2O_3 (as Na_2HAsO_3) is 0·5—0·7 grain. A cock receiving 0·3 and 0·6 grain of As_2O_3 daily in poisoned locusts showed beneficial effects, the As being gradually excreted in fæces. Ch. Abs. (*p*)

Arsenic content of hair etc. from industrial sources. L. Schwarz and W. Deckert (Arch. Hyg. Bakt., 1936, **115**, 268—271).—In cases of mild As poisoning from drinking As-contaminated wine, fingernails contained 4—20 and hair 14—108 $\times 10^{-6}$ g. of As per g. Urine contained 4—116 $\times 10^{-6}$ g. per litre. Hair of workers in a lead shot factory contained 11—26 $\times 10^{-6}$ g. of As per g. Workers exposed to an atm. containing As gave 16·3 $\times 10^{-6}$ g. of As per g. in the liver and 1·36 $\times 10^{-6}$ g. per g. in muscle. W. L. D.

Elimination of arsenic as a function of the dose. I. Inorganic compounds. G. Orestano and M. Abbate (Boll. Soc. ital. Biol. sperim., 1936, **11**, 660—662).—As_2O_3, intravenously injected into rabbits, is excreted within 2—3 days to the extent of <40 and 40—60% (as As) with doses of <2 and 2—4·3 mg. per kg., respectively. Na_2HAsO_4 is excreted within 1—2 days to the extent of 20—40 and 40—60% with doses of 1·5—3 and 3·8—7·5 mg. per kg., respectively. F. O. H.

Mode of [pharmacological] action of arsenic trihydride. K. Wolff (Biochem. Z., 1936, **288**, 79—92).—Hæmoglobin (I) and serum absorb AsH_3 in proportion to their protein content and to an extent > does 0·9% NaCl. In presence of O_2, AsH_3 is catalytically oxidised by (I) (AsH_3O, which possibly causes the concomitant hæmolysis, being an intermediary), (I) being simultaneously decomposed, probably to hæmatin. AsH_3 reduces methæmoglobin to (I). F. O. H.

Importance of synthetic organic catalysts for the theory of enzyme action. W. Langenbeck (Chem.-Ztg., 1936, **60**, 953—955).—A review.

Maintenance and origin of optical activity in nature. W. Langenbeck and G. Triem (Z. physikal. Chem., 1936, **177**, 401—408).—Experiments on the formation of *l*-menthyl oxalate from $(COCl)_2$ and menthol and of *l*-tyrosine anhydride from *l*-tyrosine Me ester have confirmed the theoretical deduction that if two substances, each optically impure, *i.e.*, a mixture of stereoisomerides, enter with each other into a reaction which is prevented from going to completion the resultant will be optically purer than the reactants, *i.e.*, will be further from being a racemic mixture. This seems to be the only generally possible way in which optical purity can increase in the cell. The result will be similar when an optically impure enzyme brings about the incomplete reaction of an optically impure substrate, a reaction which must be of the same type as those in which enzymes themselves are formed. R. C.

Conductometric determination of enzyme activity. B. N. Sastri and M. Sreenivasaya (Ind. Eng. Chem. [Anal.], 1936, **8**, 458—459).—The activities of preps. of urease, arginase, trypsin, and emulsin determined conductometrically and chemically agree well except in the case of emulsin, with which only small changes in conductivity occur as hydrolysis proceeds. J. L. D.

Liver xanthine oxidase. E. A. H. Roberts (Biochem. J., 1936, **30**, 2166—2176).—The observed rate of self-respiration of minced liver is due mainly to purine base (I) oxidation and is controlled by the rate of formation of (I) by nucleosidase. MeCHO does not accelerate O uptake and inhibits CO_2 output of minced liver. The kinetics of oxidation of MeCHO is measured manometrically, a correction being made for the non-enzymic autoxidation of MeCHO on the KOH surface. EtCHO and to a smaller extent MeCHO destroy the oxidising enzyme. Liver xanthine (II) oxidase contains sufficient catalase (III) to protect it against H_2O_2. CN' inhibits (II) oxidation indirectly by poisoning (III). Aërobically a mixture of (II) and EtCHO is oxidised at the same rate as (II) alone. P. W. C.

Ascorbic acid oxidase from drumstick, *Moringa pterygosperma*. M. Srinivasan (Biochem. J., 1936, **30**, 2077—2084).—A detailed account of work previously summarised (A., 1936, 893). P. W. C.

Malic dehydrogenase of animal tissues. D. E. Green (Biochem. J., 1936, **30**, 2095—2110).—Malic dehydrogenase (I), from pig's heart muscle, is inactivated by small concns. (0·001*M*) of the oxidation product, oxaloacetic acid (II). This inhibition is removed by addition of ketonic reagents, the best being CN'. Besides (I), the catalytic system comprises co-enzyme *I*, carrier, and malate; as carriers methyl-

ene-blue, pyocyanine, lactoflavin, and adrenaline are the most effective. The system specifically oxidises *l*(−)-malic acid. The so-called fumaric dehydrogenase of Szent-Györgyi *et al.* (A., 1935, 1406) consists of (I) and fumarase together. (I) is not identical with the lactic enzyme. Fumaric acid can dismute anaërobically, forming (II) and succinic acid. F. A. A.

Amino-acid dehydrogenases in germinating seedlings. M. Damodaran and K. R. Nair (Current Sci., 1936, **5**, 134).—Determination of dehydrogenase activity in two-day old seedlings, using Thunberg's technique with *l*(+)-alanine, *l*(+)-glutamic acid, glycine, *l*(−)-leucine, *l*(−)-histidine, *l*(−)-tyrosine, and *l*(−)-aspartic acid as substrates, shows that only the first two accelerate the reduction of methylene-blue. F. N. W.

Catalase activation in living cells. K. Yamafuji (Biochem. Z., 1936, **288**, 145—148).—The addition of H_2O_2 to yeast emulsions, living yeast (*S. colliculosa*), or silkworm egg preps. increases the catalase activity. This probably explains the similar effect of ultra-violet irradiation (A., 1936, 1296). F. O. H.

Ionic effects, catalase activity, and the function of [plant] cells. F. Boas (Angew. Bot., 1936, **18**, 13—16).—The action of anions in increasing catalase activity is in the order $SO_4'' > PO_4''' > Cl' > NO_3'$. The physiological significance of SO_4'' is considered. A. G. P.

Properties of catalase hæmatin. D. Keilin and E. F. Hartree (Proc. Roy. Soc., 1936, B, **121**, 173—191).—Catalase (I) preps. show the characteristic absorption spectrum of a hæmatin compound (bands at 629·5, 544, 506·5 mμ). It is shown spectrographically that the (I)-hæmatin combines with the agents which affect the catalytic activity of the enzyme or which form reversible compounds with methæmoglobin. Slow addition of H_2O_2, or of other peroxides, to azide- or NH_2OH-(I) changes its colour from greenish-brown to red (bands at 590 and 554 mμ). The compounds so formed combine with CO, are oxidised by O_2, and are Fe^{II} derivatives. (I) inhibitors belong to two classes, (*a*) those like H_2S and KCN, which prevent the formation of an intermediate reduced compound, (*b*) those like azide, NH_2OH, and N_2H_4, which stabilise the intermediate compound. F. A. A.

Oximes and their inhibition of catalase action. I. M. G. Sevag and L. Maiweg (Biochem. Z., 1936, **288**, 41—69).—The inhibitory action on blood-catalase of diacetyl-di- (I) and -mon-oxime, acetaldoxime, and *cyclo*hexane-1 : 2-dionedioxime (II) induced by pretreatment with acid (A., 1934, 1136) is dependent on p_H and presence of H_2O (*e.g.*, dry HCl is ineffective) but independent of acid concn., is more rapid at 91° than at 22°, and is not diminished by subsequent neutralisation. Treated oximes have an inhibitory action > that of KCN, the inhibition being related to the presence of one or more :N·OH but not to stereoisomeric configuration. The inhibition of the decomp. of H_2O_2 by catalase at 3° is > that at 37°. The inhibitory oximes have a marked catalytic and stabilising influence on each other. Acid-treated (II) can revert to its original form. NH_2OH and Ac_2 (2 : 1 mol.) do not react as free substances in solution but form an additive product which acquires inhibitory activity on acid treatment. Excess of Ac_2 causes acid-treated (I) and (II) to lose both the inhibitory activity and the property of forming Ni complexes. It is concluded that the active form produced by acid treatment is due to the rearrangement ·CR:N·OH → ·CR:NH:O. F. O. H.

Stereochemical problem of enzymic equilibrium. The fumarase system. K. P. Jacobsohn and J. Tapadinhas (Bull. Soc. Chim. biol., 1936, **18**, 1674—1680).—Using *dl*-malate (I) as substrate for fumarase, the equilibrium of the system is not defined by the const. $K_T = [l\text{-(I)}]/[\text{fumarate (II)}]$. A displacement of equilibrium in favour of *l*-(I) occurs in presence of the antipode. Also the velocity of conversion of *l*-(I) into (II) is inhibited by the presence of the antipode. The enzyme probably possesses an affinity for *d*-(I) but cannot convert it into (II). P. W. C.

Placental enzymes : fumarase. D. P. Da Cunha and K. P. Jacobsohn (Compt. rend. Soc. Biol., 1936, **123**, 609—611).—Placenta, washed free from blood, contains fumarase and is probably the source of the latter in fœtal blood. H. G. R.

Biochemical synthesis of organic sulphur compounds. F. B. Pereira (Compt. rend. Soc. Biol., 1936, **123**, 620—621).—An org. S compound is formed if H_2S is added to *l*-malate in presence of fumarase. H. G. R.

Effect of halogen salts on salivary and pancreatic amylase. W. M. Clifford (Biochem. J., 1936, **30**, 2049—2053).—Chlorides, bromides, and iodides of Li, Na, K, NH_4, Mg, Ca, and Ba accelerate hydrolysis of starch by pancreatic and salivary amylases, the relative potencies being in the order $Cl' > Br' > I'$. Ba halides are least potent. NaF, KF, and NH_4F do not accelerate amylolysis, which is inhibited by higher concns. of KF, NH_4F, LiI, NH_4I, MgI_2, and CaI_2. P. W. C.

Hormones and enzymes. I. Influence of certain hormones on amylase. L. E. Rozenfeld and T. P. Schesterikova (Ukrain. Biochem. J., 1936, **9**, 741—749).—Adrenaline (I), insulin (II), and thyroxine (III) have no action on amylase *in vitro*. In the isolated liver, (II) and (III) have no action, but (I) has a slight activating effect. *In vivo*, (I) and (II), but not (III), produce activation. F. A. A.

Enzymic hydrolysis of some β-glucosides of tertiary alcohols. S. Veibel and H. Lillelund (Compt. rend., 1936, **203**, 692—694; cf. A., 1936, 1297).—Amylene hydrate β-*d*-glucoside, m.p. 127—128° $[\alpha]_D^{20}$ −17·90°, *methyldiethylcarbinol* β-*d-glucoside*, m.p. 110—111°, $[\alpha]_D^{20}$ −16·95°, and *triethylcarbinol* β-*d-glucoside* (I), m.p. 96·5—97·5°, $[\alpha]_D^{20}$ −13·44°, on hydrolysis by emulsin give vals. of 0·49, 5·1, and 2·2 (mean), respectively, for $k \times 10^4$. With (I) there is a steady fall in the coeff. due to the great affinity of the carbinol for emulsin. Comparison with other glucosides shows that the rate of hydrolysis is small if the C carrying the glucoside linking is also united to three identical groups of atoms. J. N. A.

Preparation of the *A*-protein of fermentation enzyme. E. NEGELEIN (Biochem. Z., 1936, 287, 329—333).—The prep. of the *A*-protein from Lebedev's maceration extract is described. The activity of the protein is lost on drying, slowly decreases in aq. solution at p_H 6·8 and 0°, and rapidly decreases at p_H <6 and at p_H 7·8. The protein is stable in half-saturated aq. $(NH_4)_2SO_4$. P. W. C.

Oxidation of the Robison ester by triphosphopyridine nucleotide. O. WARBURG and W. CHRISTIAN (Biochem. Z., 1936, 287, 440—441).—Triphosphopyridine nucleotide combined with the carrier protein of yeast oxidises the Robison ester to phosphohexonic acid. The oxidation in presence of other yeast proteins is more extensive, as indicated by O_2 uptake and CO_2 output. P. W. C.

Lactoflavin as co-enzyme; active substance and carrier. R. KUHN and H. RUDY (Ber., 1936, 69, [*B*], 2557—2567).—The rate of absorption of O_2 by the system, Neuberg ester–co-enzyme from blood cells–intermediate enzyme from yeast, in presence of a const. amount of colloidal carrier (I) attains a max. in the presence of 0·64% of lactoflavinphosphoric acid (II). Absorption is scarcely noticeable in presence of an equiv. amount of lactoflavin (III) but the rate increases with further addition and finally approximates to that given by (II). Cryst. (III) from yeast or milk and synthetic (III) behave identically so that catalytic activity cannot be ascribed to traces of impurity. In absence of (I), (III) is practically without action. The change is controlled by the equilibria, (III) + (I) $\rightleftharpoons$ (III)$\cdots$(I) which in dil. neutral solution of equiv. amounts is displaced almost completely towards the left, and (II) + (I) $\rightleftharpoons$ yellow enzyme (IV) which in neutral solution lies completely towards the right. The difference in co-enzyme action of (II) and (III) is therefore purely quant. 6 : 7-Dimethyl-9-*l*- but not -9-*d*-araboflavin gives a readily dissociable, catalytically active protein compound. 3 : 6 : 7-Trimethyl-9-*d*-riboflavin and its 5′-phosphoric acid are inactive. Formation of a flavin enzyme is possible only if $NH_{(3)}$ is free; replacement of NH by NMe renders all flavins incapable of forming non-fluorescent alkali salts and non-fluorescent, catalytically-active protein compounds. Next in importance are the structure of the side-chain at 9 and the stereochemical arrangement of the OH groups. Only those yield flavin-enzymes which contain $OH_{(2')}$ on the left of the formula as usually written. Acetylation of all OH groups nullifies co-enzyme action completely. The flavin-9-glucosides, corresponding with the nucleosides, do not yield flavin-enzymes. $Me_{(6)}$ and $Me_{(7)}$ may not be absent simultaneously. If the above conditions are fulfilled, esterification with H_3PO_4 is not essential for the development of catalytic activity but is important for the retention of pigment by carrier. Comparison of the results obtained in the above test with those of the growth tests on animals shows a close parallelism except with regard to the effect of acetylation. It may therefore be very useful for orientation purposes since very probably catalytically inactive flavins are also biologically inactive. The structure of (IV) is discussed. H. W.

Highly purified cozymase. H. VON EULER, H. ALBERS, E. ALBERS, F. SCHLENK, and G. GÜNTHER (Arkiv Kemi, Min., Geol., 1936, **12**, B, No. 4, 1—6).—Highly purified cryst. preps. of cozymase are obtained by fractional pptn. with EtOH. E. A. H. R.

Phosphorylation of cozymase. D. M. NEEDHAM (Compt. rend., 1936, **203**, 615—616; cf. A., 1935, 1278).—Cozymase, free from adenylic acid, is not deaminated by muscle extracts and when added to extracts of rabbit muscle forms pyrophosphate more slowly than does adenylic acid. It is phosphorylated probably by phosphopyruvic acid. J. L. D.

Binding of cozymase [to colloidal carriers] and a fermentation inhibitor present in yeast. H. VON EULER and E. ADLER (Arkiv Kemi., Min., Geol., 1936, **12**, B, No. 5, 1—6).—Evidence for the binding of cozymase to various dehydrogenases is afforded by its slower rate of dialysis in the presence of a lactic dehydrogenase solution prepared from top yeast. This solution contains a thermolabile fermentation inhibitor which was also found in an autolysate of bottom yeast. E. A. H. R.

Participation of adenosine triphosphate in the enzymic dehydrogenation of hexoses. H VON EULER and E. ADLER (Arkiv Kemi, Min., Geol., 1936, **12**, B, No. 6, 1—6).—The complete hexose monophosphate dehydrogenase system is able, in the presence of adenosine triphosphate, to oxidise both fructose and glucose. E. A. H. R.

Pyridine, the hydrogen-transporting constituent of fermentation enzymes. (Pyridine nucleotides.) O. WARBURG and W. CHRISTIAN (Biochem. Z., 1936, 287, 291—328).—The co-enzyme of fermentation consists of a phosphorylation co-enzyme (I) (the adenosinetriphosphoric acid of Lohmann or the diadenosinepentaphosphoric acid of Ostern) together with Euler's cozymase (II) (now shown to be not adenine nucleotide but a dinucleotide containing adenine and nicotinamide (IV) and now called diphosphopyridine nucleotide) and a similar H-transporting co-enzyme now called triphosphopyridine nucleotide (III). Methods are given for the isolation of (I), (II), and (III) from horse erythrocytes, for the isolation of (IV) from (II) and (III), and for its determination. The hydrogenation and dehydrogenation of (II) and (III) is determined in terms of ultra-violet absorption, the dihydropyridine band appearing on reduction and disappearing on oxidation. (II) and (III) contain respectively 18·3 and 16·6% of adenine, 17·6 and 15·6% of (IV), 8·9 and 12·1% of P, and 2 and 3 mols. of H_3PO_4 per mol. of (IV). (IV) itself on isolation from (II) and (III) is not, but the related trigonelline and the methiodide of (IV) are, reversibly hydrogenated as with (II) and (III). In the hydrogenation of (II) and (III) with $Na_2S_2O_4$ and of their protein compounds with carbohydrates, identical absorption spectra are obtained, carbohydrate thus converting the (IV) of (II) and (III) into the dihydronicotinamide. P. W. C.

Choline-esterase in invertebrates. C. S. KOSCHTOJANTZ (Ukrain. Biochem. J., 1936, **9**, 665—670).—The hæmolymph of molluscs (snail, mussel, anodonta) contains a choline-esterase (I) capable of

rapidly decomposing acetylcholine. (I) is unstable in air, losing all activity in 24 hr. The hæmolymph of fresh-H_2O crabs does not contain (I). F. A. A.

Asymmetric hydrolysis of esters by enzymes. X. Configuration specificity of component-esterase. Natural synthesis and artificial synthesis by enzymes. E. Bamann and C. Feichtner (Biochem. Z., 1936, 288, 70—78; cf. A., 1934, 694).—The action of liver-esterase and pancreas-lipase, alone or admixed, on the synthesis of Me butyrate and the optical specificity of the enzymes in their action on Et mandelate do not confirm the hypothesis of Kraut and von Pantschenko-Jurewicz (A., 1935, 251). F. O. H.

Conditions of action and specificity of *Ricinus* lipase. L. Reichel and W. Reinmuth (Z. physiol. Chem., 1936, 244, 78—80).—The lipase (I) hydrolyses triolein (II) most effectively at p_H 4·7—5·0 and with (II) concn. of 0·0031*M*, the degree of hydrolysis being independent of the (I) concn. At p_H 4·9 (I) is destroyed at 45—50°. (I) does not hydrolyse Ph salicylate, *p*-hydroxybenzoyl-*p*-hydroxybenzoic acid, or cholesteryl benzoate, oleate, or stearate. W. McC.

Biological splitting of conjugated bile acids. M. Frankel (Biochem. J., 1936, 30, 2111—2116).—Histozyme from dog liver is capable of splitting hippuric acid, but not the conjugated bile acids (I). Ox liver does not give an enzyme capable of splitting either. Soil, human and dog intestines, and human fæces contain bacteria which can be grown on, and which split, (I). These bacteria grow *in vitro* at 25°, and not at 37°, but split (I) at 37°. F. A. A.

Enzymic hydrolysis of lactalbumin. L. Miller and H. O. Calvery (J. Biol. Chem., 1936, 116, 393—408).—Rapid hydrolysis of lactalbumin by pepsin occurs during the first 4 hr., after which the rate progressively decreases. Further digestion liberates with trypsin-kinase 7·8, protaminase 9—10, amino-polypeptidase 16·0, and dipeptidases 29—40% of the total N. Max. enzymic hydrolysis (68%) was obtained by pepsin followed by pancreatic extract. The N liberated was mainly NH_2- and not NH-N. P. G. M.

Proteolytic digestion and the problem of the pancreas in the ammocoete larva of *Lampetra planeri*. E. J. W. Barrington (Proc. Roy. Soc., 1936, B, 121, 221—232).—A proteolytic enzyme (I) of the tryptic type is found at the anterior end (which contains zymogen cells) of the intestine of the ammocoete. The p_H optimum of (I) is between 7·5 and 7·8, but it has some activity in more acid solutions. The pancreas-like organ of these larvæ is not essential for the production of (I). F. A. A.

Proteinase of fibrin. A. Schmitz (Z. physiol. Chem., 1936, 244, 89—98).—The dissolution of fibrin in salt solutions (fibrinolysis) is a proteolytic process caused by a trypsin-like proteinase (I) and a kinase (II) which are destroyed by heating for 1 hr. at 60° and are not ultrafilterable. (I) is separated from fibrin by extraction with 0·1*N*-AcOH and (II) is separated after removal of (I) by extraction with 0·1*N*-Na_2CO_3. Some proteins are attacked by (I) alone, some only by (I)+(II), (II) increasing the effect of (I) in every case. Tripeptides are not attacked by (I) or (I)+(II). (II) probably acts by removing inhibitors. W. McC.

Nephelometric micro-determinations of antitryptic activity. C. Wunderly (Mikrochem., 1936, 21, 88—97).—0·4 c.c. of trypsin solution (0·1 or 0·01%), 0·5 c.c. of casein solution (0·25% in 0·006*N*-NaOH), 0·5 c.c. of *M*/15 buffer solution (p_H 8·14), and 0·4 c.c. of blood solution (5% of serum in 0·9% aq. NaCl) are mixed and kept at 37° and after known periods 0·3 c.c. is withdrawn, and mixed with 0·6 c.c. of 25% HCl and 0·1 c.c. of H_2O to stop further action; 0·3 c.c. of 20% aq. sulphosalicylic acid is then added and after 15 min. the solution is tested for turbidity. The difference between the results obtained for two different periods and for corresponding measurements with 0·9% aq. NaCl controls indicates the antitryptic titre. J. W. S.

Proteinases in tissues of chick embryo. B. Goldschtein and M. Gintzburg (Ukrain. Biochem. J., 1936, 9, 593—602).—The catheptic action on gelatin of glycerol extracts of egg-yolk and embryonic membranes appears on the 9th day of incubation and rapidly reaches a max. and const. val. The difference between the amounts of H_2S-activated and H_2S-non-activated cathepsin is high, especially in the early period. The behaviour is similar to that of placenta-cathepsin. F. A. A.

Modification of cathepsin in autolysis of muscular tissue. I. A. Smorodincev and N. V. Nicolaeva (Compt. rend. Acad. Sci. U.R.S.S., 1936, 3, 375—377).—During autolysis of beef at 1° to −4°, the activity of the cathepsin (I) decreases by 40—55% in the first 24 hr. During 5 days, there is a further diminution of 20%. Activation by H_2S doubles the activity of (I). The stabilisation of the proteins at the end of 24 hr. is due to the decrease in activity of (I). J. N. A.

Phosphatase activity of emulsin. H. Bredereck, H. Beuchelt and G. Richter (Z. physiol. Chem., 1936, 244, 102—104).—Sweet almond emulsin (I) contains a phosphatase (II) which hydrolyses guanylic, cytidylic, uridylic, yeast-adenylic and -nucleic, and thymus-nucleic acids, the optimum p_H being 4·5—5·5. The (II) content of (I) remains approx. const. when the β-glucosidase content varies greatly. The action of (II) is inhibited by NaF but is scarcely affected by Na_3AsO_4. W. McC.

Plant phosphatases. I. Phosphatase of *Aspergillus oryzæ*, a mixture of isodynamic phosphoesterases. E. Bamann and W. Salzer (Biochem. Z., 1936, 287, 380—399).—Various samples of takaphosphatase in citrate buffer showed max. hydrolysis of both α- and β-glycerophosphoric acid (I) at p_H 4·1. When such solutions are adjusted to, and kept for 0·5 hr. at, p_H 8—8·2, selective inactivation of one phosphatase occurs and the resulting solution shows max. activity at p_H 6·2 which is now independent of the presence of citrate. The enzyme of optimum p_H 4·1 attacks α-(I) and of optimum p_H 6·2 β-(I) more rapidly. Commercial enzymes probably contain varying amounts of these two phosphatases. They also contain a difficultly dialysable

substance which inhibits the phosphatases and also a readily dialysable anti-inhibiting substance which resembles in its action and can be replaced by citrate ions. F′ inhibits the phosphatase of optimum p_H 4·1 without seriously inhibiting that of p_H 6·2, the solution then attacking α-(I) preferentially. Neither phosphatase is activated by $Mg^{\cdot\cdot}$ using either citrate or veronal buffer. P. W. C.

Yeast phosphatases. H. Albers and E. Albers (Arkiv Kemi, Min., Geol., 1936, **12**, B, No. 3, 1—6).—A yeast phosphatase (I), with a p_H optimum of 3·5 and inhibited by $Mg^{\cdot\cdot}$, which acts on β-glycerophosphate and hexose diphosphate, is described and the name hexosediphosphatase suggested for it. (I) remains attached to the cellular residue after autolysis, and is obtained in solution by digestion of the residue with dried green malt. Dialysis of (I), despite a rapid removal of $Mg^{\cdot\cdot}$ and PO_4''', causes at first no diminution of activity, but after a given time the activity decreases progressively to a const. end val., which is not enhanced by addition of the dialysate. E. A. H. R.

Effect of methods of preparation on the fermentative activity of yeast zymin. E. I. Fulmer and K. G. Dykstra (Proc. Soc. Exp. Biol. Med., 1936, **33**, 492—494).—The activity of the zymin is increased by storage of the yeast at 5° for 14 days (no activity after 20 days) and by drying at room temp. in a vac. instead of at 45°. The increases are correlated with increased esterification of inorg. PO_4''' in presence of glucose. W. McC.

Autolysis of cultured yeasts. B. Drews (Biochem. Z., 1936, **288**, 207—237).—The press-juice from various types of brewer's, baker's, and press-yeast has p_H 5·41—6·04, the val. being influenced by the CO_2 content. The proteolytic activity of the yeast, which is dependent on the conditions of growth, exhibits a latent period related to the self-fermentative action; thus a glycogen-free yeast showing no self-fermentation has no latent period of proteolysis. Poly- and di-peptidase activity is > that of proteinase. Storage of yeast at low temp. decreases the $[H^{\cdot}]$ of the resultant press-juice but storage at higher temp. has the opposite effect due to increased proteolysis. The various yeasts differ in their optimum p_H (between 4·25 and 5·0) for proteinase action; these p_H vals. depend on the nature of the protein substrate. The p_H optima indicated by CH_2O titration or solubility of N are approx. coincident at 7·4—7·6 and indicate a peptidase. Changes in p_H during the course of hydrolysis and the correlation between p_H optima of autolysis and stability of the yeasts are discussed. F. O. H.

Top yeast. H. von Euler (Arkiv Kemi, Min., Geol., 1936, **12**, B, No. 11, 1—4).—A discussion of the quant. differences in top and bottom yeasts. The term ergone is suggested for cellular activators (hormones, vitamins, etc.) in general. A substance of enzymic character where the ergone is the prosthetic group is called an ergozyme and the protein carrier a zyme. E. A. H. R.

Processes in the synthesis of yeast-substance and the possible yields in yeast cultivation. R. Lechner (Z. Spiritusind., 1936, **59**, 391—392, 399—400).—Theories as to the mode of synthesis of nitrogenous and non-nitrogenous components of the yeast cell are outlined and critically reviewed, with especial reference to the work of Effront and Claassen and the max. theoretical yields when yeast is cultivated on nutrient solutions. I. A. P.

Biological protein synthesis. H. Lüers and E. Mörike (Z. Spiritusind., 1936, **59**, 383—384, 386—387).—Of several micro-organisms tried *Torula utilis* is most suitable for protein synthesis from both glucose and wood-sugar wort. The traces of org. N in the latter have a growth-promoting effect. Addition of org. N often increases the yield. E. A. H. R.

Action of morphine on the respiration of *Saccharomyces ellipsoideus* in absence or presence of extract of thymus gland. P. Mascherpa (Boll. Soc. ital. Biol. sperim., 1936, **11**, 682—683).—The addition of 0·02—0·1% of morphine to cultures of *S. ellipsoideus* reduces the O_2 consumption by 30—60%, the effect not being significantly modified by presence of thymus extracts. F. O. H.

Influence of carbon monoxide on the respiration of the yeast cell in different media. Physiology of fertilisation. Å. Örström (Protoplasma, 1935, **24**, 177—185).—The respiration of unfertilised sea-urchin eggs is increased, and that of fertilised eggs is decreased, by CO. Respiration of yeast cells alone and in presence of formate is increased by CO, and in presence of $AcCO_2Na$, Na lactate, NaOAc, MeCHO, and EtOH is decreased, giving inhibition curves similar to those of the fertilised eggs, but characteristic of each substrate and each concn. KCN produced the same effects as CO. Different substrates are probably oxidised during respiration before and after fertilisation of the eggs. M. A. B.

Intermediate products in the fermentation of maltose. H. Winberg and K. M. Brandt (Svensk Kem. Tidskr., 1936, **48**, 213—221).—The phosphorylation of maltose and glucose and the decomp. of the esters formed have been studied without any definite conclusions being reached. M. H. M. A.

Production of bacterial growth stimulants by yeast. L. H. Pulkki (Ann. Acad. Sci. Fenn., 1935, **41**, No. 1, 132 pp.; Chem. Zentr., 1936, i, 1038).—Yeast synthesises a thermostable substance stimulating the growth of *B. mycoides*. It is not an ash constituent and does not pass into extracts of living yeast cells, but is obtained from heat-killed yeast preferably by extraction with 0·025*M*-PO_4''' buffer of neutral or slightly alkaline reaction. Max. activity occurs in extracts of yeast cultures 4—8 days old. Production of the stimulant is optimum in cultures of p_H 7·0, is influenced by the amount but not by the nature of the N source, is diminished by aëration of the culture, but is unaffected by temp. or exposure to ultra-violet light. A. G. P.

Physiology of dry rot (*Merulius lacrymans domesticus*, Falck). R. Gistl (Arch. Mikrobiol., 1936, **7**, 177—187).—NO_3' is superior to $NH_4^{\cdot}$ as N-source for the organism. PO_4''' produces long mycelial growth without increasing the total yield. Ca and Mg in small concns. favour and in larger proportions

inhibit growth. Aq. extracts of mycelium contain relatively large amounts of the cell-division growth-substance which promotes rapid increase in yeast growth. A. G. P.

Effects of heavy metals essential for the nutrition of *Aspergillus niger* on its growth. R. A. Steinberg (Amer. J. Bot., 1936, **23**, 227—231).—Effects of Fe, Zn, Mn, and Cu are examined. The optimum concns. of metals for growth of the mould are higher in more alkaline media ($p_H > 8{\cdot}0$). A. G. P.

Effects of barium salts on *Aspergillus niger* and their bearing on the sulphur and zinc metabolism of the fungus in an optimal solution. R. A. Steinberg (Bot. Gaz., 1936, **97**, 666—671).—With nutrient media containing Cu, Fe, Zn, and Mn addition of H_2SO_4, Na_2SO_4, or Na_2S increased the growth of the mould. Ba has little direct toxic action, but by partial pptn. of SO_4'' and the resultant modification of physiological balance of the nutrient induces deficiency symptoms resembling those due to lack of N, P, Mg, Fe, or Zn. A. G. P.

Preservation of strains of *Aspergillus niger*. T. Paley (Arch. Mikrobiol., 1936, **7**, 206—209).—Dry spores, stored for a year, retain their ability to produce citric acid. A. G. P.

Lipase production by *Penicillium oxalicum* and *Aspergillus flavus*. D. Kirsh (Bot. Gaz., 1935, **97**, 321—333).—The organisms produce a H_2O-sol. enzyme effecting hydrolysis of olive oil. Max. amounts occur at the period of complete sporulation. EtOH ppts. from extracts of *P. oxalicum* an enzyme containing 8·5 times the amount of lipase per unit of protease of a commercial high-lipase trypsin. A. G. P.

Determination of traces of arsenic in biological material with *Penicillium brevicaule*. S. Breiter (Arch. Hyg. Bakt., 1936, **115**, 291—302).—Growths of *P. brevicaule* in bread cultures containing As were examined for amounts of CO_2 evolved, $KMnO_4$ oxidising val. and I absorption val. of other evolved gases. It was found impossible to determine As by this method. W. L. D.

Hydrogen-ion concentration of media for mould culture. E. Masera (Boll. sez. Ital., 1936, **8**, 52—53).—Mould growth depends on the initial p_H of the media, the composition of the nutrients, yield of mould material, and the temp. of incubation. The effect on p_H of excreted material during vigorous growth is stressed. W. L. D.

Origin of an earthy or muddy taint in fish. I. Nature and isolation of the taint. A. C. Thaysen. **II. Effect on fish of the taint produced by an odoriferous species of *Actinomyces*.** A. C. Thaysen and F. T. K. Pentelow (Ann. Appl. Biol., 1936, **23**, 99—104, 105—109).—I. The pungent "earthy" odour produced by certain *Actinomyces* is due to a brown amorphous org. substance, volatile in steam, sol. in Et_2O, slightly sol. in H_2O and in EtOH. Small amounts (2 p.p.m.) impart an earthy odour to H_2O especially if the latter is slightly alkaline. Pollution of salmon streams by such a substance is discussed.

II. Trout flesh becomes tainted by material produced by odoriferous *Actinomyces*. The taint is acquired *via* the gills, is carried in the blood stream, and can be eliminated by clean flowing H_2O. A. G. P.

Chemistry of cell division. IV. Influence of hydrogen sulphide, hydrocyanic acid, carbon dioxide, and some other chemicals on mitosis in *Amœba proteus*. C. Voegtlin and H. W. Chalkley (Protoplasma, 1935, **24**, 365—383).—H_2S and HCN caused reversible inhibition of mitosis, EtOH and CO_2 incompletely reversible inhibition. H_2O_2, As_2O_3, methylene-blue, $CuCl_2$, and $HgCl_2$ were without influence, as also was CO in the absence of light and O_2. M. A. B.

Protozoa in relation to narcosis. P. Makarov (Protoplasma, 1935, **24**, 593—606).—Intra-vital staining and microscopical examination of protozoa treated with EtOH, urethane, $CHCl_3$, or Et_2O indicated that the action of narcotics depends on alterations in the colloidal state of the cell (decrease in dispersion) and in the adsorptive power of the living matter. M. A. B.

Comparison of distribution of intestinal protozoa of Norway rat, wood rat, and guinea-pig with reference to hydrogen-ion concentration determined by the glass electrode. C. A. Kofoid, E. McNeil, and A. E. Bonestell (Univ. Calif. Publ. Zool., 1935, **41**, 1—8). Ch. Abs. (*p*)

Effect of aëration and CO_2 lack on growth of bacteria-free cultures of protozoa. T. L. Jahn (Proc. Soc. Exp. Biol. Med., 1936, **33**, 494—498).—Cultures of *Glaucoma piriformis* aërated with ordinary and CO_2-free air grew at the same rate as but less rapidly than did unaërated cultures. The rates of growth of cultures of *Chilomonas paramecium* form the series unaërated > aërated with ordinary air > aërated with CO_2-free air. W. McC.

Comparative spectroanalytical investigation of *Cryptozoon proliferum* and the mineral waters of Saratoga Springs, New York. O. Baudisch (Arkiv Kemi, Min., Geol., 1936, **12**, B, No. 9, 1—5). E. A. H. R.

Carbarsone: action on *Trichomonas hominis* and on rat trichromonads *in vitro*. A. Gabaldson (Amer. J. Hyg., 1935, **22**, 326—328).—0·30% solutions of carbarsone (*p*-carbamylphenylarsinic acid) are lethal to both organisms. Ch. Abs. (*p*)

Production of *d*- and *l*-α-hydroxy-γ-methylthiolbutyric acids. Nutritive value of the acids. K. Akobe (Z. physiol. Chem., 1936, **244**, 14—18).—*Oidium lactis* converts *l*-methionine (I) into *d*-α-hydroxy-γ-methylthiolbutyric acid (II) (*Ba* salt; *Zn* salt, $[\alpha]_D$ +32·35° in H_2O), small amounts of MeSH and Et_2S (but no H_2SO_4) being also produced. *B. subtilis* or $Ba(NO_2)_2$ converts (I) into *l*-α-hydroxy-γ-methylthiolbutyric acid (III) (*Ba* salt; *Zn* salt, $[\alpha]_D$ −31·03° in H_2O). (II) and (III) stimulate growth in rats losing wt. on a diet poor in methionine and cystine. W. McC.

Deamination of *l*-alanine. E. Aubel and F. Egami (Bull. Soc. Chim. biol., 1936, **18**, 1542—1550).—*l*-Alanine is deaminated by suspensions of soil

bacteria only in presence of O_2 or NO_3' with the formation of NH_3 and $AcCO_2H$, the greater velocity being obtained anaërobically in the presence of NO_3'. The action of NaF, KCN, PhMe, octyl alcohol, and phenylurethane on deamination in presence of O_2 or NO_3' is comparable, suggesting an analogous mechanism. The mechanism of deamination is discussed (cf. A., 1936, 640). P. W. C.

Soil micro-organisms and cationic absorption. Variations in the Ca/Mg ratio. E. Castellani (Boll. sez. Ital., 1936, 8, 56—59).—Inoculating sterile soil with a soil infusion and incubating for 16—20 weeks depressed the H_2O-sol. Ca/Mg ratio by 20% without glucose and raised it 9% with glucose in 16 weeks but with glucose the ratio decreased 35% in 20 weeks. The ratio of exchangeable Ca/Mg remained the same without glucose but decreased 20% with glucose. W. L. D.

Effect of small quantities of agar on the growth and nitrogen fixation of *Azotobacter* and on other microbiological processes. A. Rippel (Arch. Mikrobiol., 1936, 7, 210—234).—Addition of agar (0·05—0·1%) to nutrient media increased the growth of *Aspergillus*, the growth and N fixation of *Azotobacter*, and the production of glycine by intestinal bacteria. Neither the ash contents nor growth substances in agar are concerned in this action. The lowering of the surface tension of aq. media favours freer growth of moulds. The increased buoyancy of the agar medium facilitates the supply of O_2 to *Azotobacter* as a result of colloidal absorption. Rapid fixation of N in soil is related to the presence of colloids therein. A. G. P.

Biological oxidation of ammonia by nitrite formers. G. G. Rao and K. M. Pandalai (Arch. Mikrobiol., 1936, 7, 32—48).—H_2O_2 oxidises NH_3 to NO_2' and NO_3' independently of the presence of Fe. Biological oxidation of NH_3 probably does not involve a peroxide–peroxidase system, and NH_2OH is unlikely to be an intermediate product. Respiratory poisons (various cyanides) reversibly inhibit the oxidation system irrespective of the [Fe$^{\cdot\cdot}$] of the substrate. Hæmatin and hæmoglobin (0·0025%) inhibit the oxidation process by approx. 50%. Biological oxidation of NH_3 is a surface catalytic action occurring at certain active centres on the bacterial cell. A. G. P.

Detection of oxygen elimination in the assimilation process of *Thiorhodaceæ*. V. Czurda (Arch. Mikrobiol., 1936, 7, 110—114).—Elimination of O_2 in amounts > equiv. to S consumed is demonstrated in a special culture tube. A. G. P.

Oxygen uptake of marine bacteria. F. H. Johnson (J. Bact., 1936, 31, 547—556).—The O_2 intake of a no. of species is examined, together with the influence thereon of glucose and Na alginate and of temp. changes. A. G. P.

Utilisation of lactose by *Escherichia coli-mutabile*. C. J. Deere, A. D. Dulaney, and I. D. Michelson (J. Bact., 1936, 31, 625—633).—The A.O.A.C. method for determining lactose (I) gives accurate vals. for (I) broth without preliminary removal of nitrogenous material. The white form of the organism utilises little or no (I) before (I)-fermenting variants are formed. In plain broth the red and white forms produce similar changes in p_H and NH_3 content of the medium. In (I) broth the white strain produces more NH_3. The white form probably cannot utilise (I) but obtains its energy from N compounds in the medium. A. G. P.

Dissociation and lactase activity in slow lactose-fermenting bacteria of intestinal origin. A. D. Hershey and J. Bronfenbrenner (J. Bact., 1936, 31, 453—464).—Organisms of the *B. coli-mutabile* type show stable metabolic characters distinct from *Escherichia coli*. Colonial dissociation occurs concomitantly with metabolic variation. Fermentation of lactose by the bacteria is a function of an intracellular lactase. A. G. P.

Diversion of the normal heterolactic dissimilation by addition of hydrogen acceptors. M. E. Nelson and C. H. Werkman (J. Bact., 1936, 31, 603—610).—MeCHO and CHAcMe·OH are readily hydrogenated when added to glucose cultures of *Lactobacillus lycopersici* and cause an increase in the AcOH and CO_2 and a decrease in EtOH, lactic acid, and glycerol formed. A. G. P.

Invisible parasite of lactic bacteria. P. Mazé (Compt. rend. Soc. Biol., 1936, 123, 565—566).—The parasite is destroyed in 5—6 min. at 67° and appears to exist inside the organism. H. G. R.

Respiration of propionic acid bacteria. R. W. Stone, C. Erb, and C. H. Werkman (Proc. Soc. Exp. Biol. Med., 1936, 33, 483–484).—In the presence of resting $EtCO_2H$ bacteria succinic (I) and to a smaller extent fumaric acid (II) donate H to methylene-blue and *o*-chlorophenol-indophenol and (I) donates H to $NaNO_3$. Malic acid (III) scarcely donates H to these acceptors. In buffered suspensions of the bacteria O_2 uptake is marked when (I), lactic acid (IV), and $AcCO_2H$ are the substrates and much less when (II) and (III) are the substrates. In N_2 the bacteria liberate much CO_2 from (I), (IV), and $AcCO_2H$ and smaller amounts from (II) and (III). (I) is probably converted into $EtCO_2H$ by direct decarboxylation. W. McC.

Is vitamin-B_2 the accelerating factor in the fermentation of sugar by propionic acid organisms? V. G. Lava, R. Ross, and K. C. Blanchard (Philippine J. Sci., 1936, 59, 493—504).—Substances stimulating the fermentation occur in the vitamin-B_2 fraction. A. G. P.

Aërobic dissimilation of lactic acid by propionic acid bacteria. C. Erb, H. G. Wood, and C. H. Werkman (J. Bact., 1936, 31, 595—602).—The organisms utilise O_2 in the dissimilation of lactic acid, optimum conditions for O_2 intake being p_H 5·3—5·6. $AcCO_2H$ is among the products. A. G. P.

Oxidation of glucose by *Bacterium gluconicum*, Hermann. S. Hermann and P. Neuschul (Biochem. Z., 1936, 287, 400—404).—The amounts of gluconic acid (I) formed by *B. gluconicum* at 20° and 30° for various periods in solutions of 5—6% of glucose in yeast-H_2O were determined. At 20°, the optimum initial sugar concn. was 20% and the yield

of (I) after 30 days was 72%, whereas at 30° the optimum concn. was 40% and the yield 51·6%. 50% sugar solutions were oxidised only at 30°, whilst with concns. >55%, no oxidation occurs. P. W. C.

Acid production and protein degradation of some acid-proteolytic cocci. N. R. Knowles (J. Dairy Res., 1936, 7, 176—181).—The nature and extent of proteolysis in milk cultures of various organisms are examined. A. G. P.

Analysis and synthesis of the lysogenic power of *B. megatherium*. A. Gratia (Compt. rend. Soc. Biol., 1936, 123, 506—508).—The lysogenic power of certain species is an acquired characteristic. H. G. R.

Conditions affecting production of toxin and porphyrins by diphtheria bacillus. M. W. Wheeler and M. O'L. Crowe (J. Bact., 1936, 31, 519—521).—Both toxin and porphyrins (I) occur in cultures grown in an atm. containing <1% each of O_2 and CO_2; with small concns. of O_2 and CO_2 growth continued but little or no toxin was produced. (I) had no influence on the toxigenic properties of either toxigenic or non-toxigenic strains but tended to increase pigment formation. A. G. P.

Physiological rôle of the codehydrogenases for *Hæmophilus parainfluenzæ*. A. Lvov and M. Lvov (Compt. rend., 1936, 203, 896—899; cf. A., 1936, 1562).—These bacteria, deprived of the growth factor, only very slowly reduce methylene-blue or oxidise glucose and other substrates, but on addition of codehydrogenase (I) the rates are greatly increased. The oxidation of lactate and succinate is little affected by (I). On the addition of (I), an incubation period of 90—150 sec. is necessary, independent of the substrate. The bacteria appear to effect the reaction pyridine nucleotide diphosphate $\rightleftharpoons$ triphosphate rapidly when supplied with (I), but to be less capable of effecting the reaction Warburg's co-enzyme → cozymase. (I) appears to exist in the bacteria in both free and combined forms. F. A. A.

Nutrition of *Staphylococcus aureus*. Necessity for uracil in anaërobic growth. G. M. Richardson (Biochem. J., 1936, 30, 2184—2190).—A medium containing NH_3-acids, $AcCO_2H$, etc., which is sufficient for aërobic growth of *S. aureus*, requires also the addition of a "factor III" to permit anaërobic growth. Factor III is identified with uracil (I) since this alone of 21 pyrimidines and purines examined permitted anaërobic growth. The significance of this to the distribution and function of (I) in nature is briefly discussed. P. W. C.

Experimental *Staphylococcus* food poisoning. Growth of a food-poisoning *Staphylococcus* and production of an enterotoxic substance in bread and meat. F. C. Kelly and G. M. Dack (Amer. J. Publ. Health, 1936, 26, 1077—1082).—In two human subjects severe food poisoning symptoms followed the ingestion of bread or meat containing approx. 10^9 organisms per g. of a "food-poisoning" strain of *Staphylococcus*. A third subject was unaffected. The organism thrived on meat containing a concn. of salt sufficient to prevent the growth of rod forms. E. C. S.

Action of aldehydes on certain cultures of *Streptococcus liquefaciens* in milk. B. W. Hammer (J. Bact., 1936, 31, 479—487).—In milk cultures of *S. liquefaciens*, EtCHO, Pr$^{\alpha}$CHO, and Bu$^{\alpha}$CHO as well as MeCHO increased the yield of CHAcMe·OH. Homologues of Ac_2 were not produced except possibly in the case of Bu$^{\alpha}$CHO. CH_2O and furfuraldehyde did not affect the fermentation products. A. G. P.

Phosphatide acid of human tubercle bacilli. K. Bloch (Z. physiol. Chem., 1936, 244, 1—13; cf. A., 1936, 1028).—The P-containing lipin of human tubercle bacilli consists of the Mg salt of a N-free phosphatide acid (I) mixed with NH_4 salts, a H_2O-sol. polysaccharide, and wax. After removal of the Mg with dil. HCl, conversion into Pb salt with $Pb(OAc)_2$, and removal of the Pb with dil. HCl, a dibasic diglycerophosphoric acid containing 3·8% of P is obtained. The wax, mol. wt. approx. 890, yields on hydrolysis the K salt of an acid identical with that obtained by Anderson (A., 1927, 1114). Bovine tubercle bacilli yield a phosphatide very similar to (I). W. McC.

Physico-chemical problem of tuberculin. G. Sandor (Ann. Inst. Pasteur, 1936, 57, 565—582).—Tuberculin (I) is not identical with the proteins of the tubercle bacillus. Its activity is independent of the denaturation of the proteins, and it can be dialysed through membranes impermeable to the proteins. (I) is not a member of the sugar group. In the living bacteria, (I) is associated with lipins, but is not itself a lipin, since during fractionation of EtOH–Et_2O extracts (I) loses its solubility in org. solvents and becomes H_2O-sol. F. A. A.

Method for investigating electrophoresis [of bacterial cells]. L. S. Moyer (J. Bact., 1936, 31, 531—546).—Suitable apparatus is described and examples of its use are given. A. G. P.

Production of protective proteinases after parenteral injection of killed bacteria. R. Abderhalden (Fermentforsch., 1936, 15, 233—244).—Protective enzymes can be detected within 24 hr. of parenteral injection of killed bacilli whilst the Widal reaction gives a positive reaction much later. The production of protective enzymes is probably the first method of defence against infection elaborated by the body. E. A. H. R.

Bacteriophage as related to the root nodule bacteria of lucerne. S. C. Vandecaveye and H. Katznelson (J. Bact., 1936, 31, 465—477).—A potent lytic principle against *R. meliloti* occurs in soils carrying lucerne for >3 years, and probably also in nodules. The phage is probably responsible for poor nodulation and growth of lucerne in certain cases. A. G. P.

Bactericidal action of bacteriophage. V. Sertic and N. A. Boulgakov (Compt. rend. Soc. Biol., 1936, 123, 778—779).—The bactericidal action is probably due to an enzyme secreted by the bacteriophage. H. G. R.

Neurotropic virus of horse sickness. II. Physical and chemical properties. R. A. Alex-

ANDER (Onderstepoort J. Vet. Sci., 1935, 4, 323—348).—The thermal death range was 55—60°. Suspensions were stable at p_H 7—10 but were killed at 5·90—5·98. The viricidal action of PhOH and cresol varied with temp. and was influenced by the presence of Et_2O. Et_2O did not inactivate the virus. Methylene-blue had a photodynamic inactivating action. CH. ABS. (*p*)

Boric acid as a selective bacteriostatic agent. E. M. M. BLAIR (J. Hyg., 1936, 36, 446—448).—0·5% H_3BO_3 in lactose–peptone medium shows a marked selective action for bacterial growth in 24 hr. at 37°. Strains capable of growth are probably of fæcal origin. With 1% Na_2SO_3, the growth of *B. coli* is not inhibited as is that of *B. lactis aërogenes*. W. L. D.

Bacteriostatic action of certain furan derivatives. N. M. PHATAK and C. D. LEAKE (J. Pharm. Exp. Ther., 1936, 58, 155—158).—The variation in bacteriostatic action of certain furan derivatives is similar to that of the corresponding C_6H_6 compounds. E. M. W.

Hexamine as a urinary antiseptic. I. Rate of hydrolysis at different hydrogen-ion concentrations. II. Antiseptic power against various bacteria in urine. R. ST. A. HEATHCOTE (Brit. J. Urol., 1935, 7, 9—32).—The rate of hydrolysis of $(CH_2)_6N_4$ at 0·1—1·1° is largely controlled by the p_H, which is also an important factor at higher temp. Presence of neutral salts and of undissociated fractions of acid salts is also influential. CH. ABS. (*p*)

Influence of amino-acids on nutrient media and bacteria. W. LOELE (Zentr. Bakt. Par., 1935, I, 135, 386—391).—In the presence of OH′ phenols (notably *o*-phenols), H_2O_2, glucosides, many dyes, and alkaloids liberate NH_3 from NH_2-acids, probably through the intermediate formation of aldehydes. Liberation of NH_3 from amines, N-containing phenols, and basic dyes by NaOH is depressed by addition of NH_2-acids. The significance of these reactions on changes in bacterial cultures is indicated. A. G. P.

Rice bran extracts and the growth of micro-organisms. R. W. DUNN and A. J. SALLE (J. Bact., 1936, 31, 505—516).—Rice bran contains substances (possibly including pantothenic acid) which stimulate carbohydrate fermentation by bacteria and yeasts. Aged extracts show diminished potency. Fresh extracts from fresh and from old bran affected bacteria similarly, but yeast was influenced only by extracts from fresh bran. With the possible exception of PO_4''' all necessary nutrients for *E. coli* and other organisms are present in bran extracts. A. G. P.

Extract from silkworm pupæ as a useful substitute for meat extract in the preparation of bacteriological culture media. M. NUKADA (Philippine J. Sci., 1936, 60, 11—18). E. A. H. R.

Selective passage of hormones across the uterine epithelium. D. S. ELEFTHÉRIOU (Compt. rend. Soc. Biol., 1936, 123, 231—233).—The epithelium can selectively absorb the hormone from aq. or oily solution. H. G. R.

Hormone action in the light of the protective proteinase reaction. E. ABDERHALDEN and G. SHIMIDZU (Fermentforsch., 1936, 15, 177—182).—Parenteral injection of thyrotropic hormone leads to the formation of protective enzymes acting at first on substrates prepared from the thyroid, and later on those from other hormone-secreting organs, especially the pancreas. With thyroxine, pituitary substrate is the first attacked, then the thyroid, and, much later, those of other organs. E. A. H. R.

Adrenaline synthesis *in vitro* under physiological conditions. II. Production of tyramine from tyrosine in surviving tissue. Relation to adrenaline synthesis. W. SCHULER, H. BERNHARDT, and W. REINDEL (Z. physiol. Chem., 1936, 243, 90—102; cf. A., 1935, 1014).—Surviving guinea-pig's kidney converts tyrosine (I) (but not $NH_2{\cdot}CH_2{\cdot}CH_2Ph$) into tyramine (II), the optimal conditions being: p_H 8, (I) concn. 20—30 mg. per 100 c.c., concn. of kidney 0·9 g. per 15 c.c., time 3 hr., in air. The conversion is not due to bacteria. Liver does not produce (II) from (I) or from $NH_2{\cdot}CH_2{\cdot}CH_2Ph$. W. McC.

Method of obtaining active adrenaline and acetylcholine perfusates. N. GAVRILESCU and N. IONESCU (Compt. rend. Soc. Biol., 1936, 123, 840—841).—The vagi of the frog are stimulated electrically during perfusion of Ringer's solution. Strong and weak stimuli cause secretion of acetylcholine and adrenaline, respectively. H. G. R.

Rôle of lactic acid in the "liberation" and the "binding" of adrenaline. A. M. UTEVSKI (Ukrain. Biochem. J., 1936, 9, 833—849).—The medullary substance of the adrenal gland contains lactic acid (I). Adrenaline may exist in this body free (easily washed out), loosely combined (not capable of being washed out, but giving colour reactions), and in a more stable, combined form (capable neither of being washed out nor of giving colour reactions). (I) has a sp. effect in promoting fixation in the stable form. Succinic acid and AcOH do not have this property, and pyrotartaric acid shows the opposite effect. F. A. A.

Effect of adrenaline injection on blood of patients with and without spleens. A. J. PATEK and G. A. DALAND (Amer. J. Med. Sci., 1935, 190, 14—21).—All cases showed leucocytosis and none showed change in concn. of red cells, hæmatocrit val., or hæmoglobin. CH. ABS. (*p*)

Effect on heart and blood-vessels of adrenaline, ephedrine, and related compounds. A. STURM, K. GIETZ, and K. KEMPTE (Arch. exp. Path. Pharm., 1936, 183, 363—379).—Measurements of increase of blood-pressure show that in man, so far as the primary effect is concerned, ephedrine and sympathol chiefly affect the heart, adrenaline acts independently on heart and blood-vessels, and *m*-hydroxynorephedrine and adrenalone act almost exclusively on the blood-vessels. W. McC.

Action of adrenaline in the normal human eye. S. C. HOWELL (Arch. Opthalmol., 1934, 12, 833—841). CH. ABS. (*p*)

Influence of oxidation–reduction system on adrenaline action. IV. K. Terai and S. Nomura (Folia Pharmacol. Japon., 1935, **20**, 56—73; cf. A., 1936, 116).—In warm- and cold-blooded animals adrenaline can be changed from the inactive into the active form by I and quinol or $NaHSO_3$.
Ch. Abs. (*p*)

Rôle of the corpora lutea in prolonging the life of adrenalectomised rats. F. E. Emery and E. L. Schwabe (Endocrinol., 1936, **20**, 550—555).—The increase in survival period produced by pituitary implants or extracts is not due to the pituitary or sex glands or to theelin, but is probably concerned with secretion from active corpora lutea. R. N. C.

Effect of environmental temperature and of salts on the survival period of adrenalectomised rats. R. S. Weiser and E. R. Norris (Endocrinol., 1936, **20**, 556—560).—Rubin and Crick's salt solution increases the time of survival, particularly in older animals. There is an optimum environmental temp. of 30°. R. N. C.

Effect of cortical hormone on mineral metabolism. S. Fiandaca and S. Sorce (Riv. Patol. sper., 1936, **16**, 407—418).—The influence has been studied of injection of the principles *A*, *B*, and *C* of the adrenal cortex on the Ca, K, Mg, and P contents of the tissues, fæces, and urine of rabbits. *A* caused a reduction in the P vals. particularly in the liver, brain, and bones. The Ca content of the bones, muscles, and brain was reduced, but that of the kidneys, liver, and skin increased. K and Mg showed in general no significant changes. The excretion of Ca and P was increased in the fæces and particularly in the urine. *B* and *C* caused a similar lowering of P in the tissues, and an increased excretion. The other elements showed no marked changes. *C* produced less marked changes. Nutr. Abs. (*m*)

Bitterling ovipositor lengthening produced by adrenal extracts. B. O. Barnes, A. E. Kanter, and A. H. Klawans (Science, 1936, **84**, 310).—Of the many tissues of dog examined, only adrenal extracts produced artificial lengthening. Similar extracts from other animals gave a positive reaction. Cryst. androsterone gave none. L. S. T.

Preparation of extracts containing adrenal cortical hormone. G. F. Cartland and M. H. Kuizenga (J. Biol. Chem., 1936, **116**, 57—64).—The method consists essentially in extracting the hormone by means of $C_2H_4Cl_2$ from a $COMe_2$ and light petroleum extract of the glands. Extracts assaying 2500 dog units per kg. of fresh gland and 100 dog units per mg. of extracted solids are easily obtained. These extracts are practically free from adrenaline.
J. N. A.

Adrenal cortex. III. Isolation of two new physiologically inactive compounds. O. Winterstein and J. J. Pfiffner (J. Biol. Chem., 1936, **116**, 291—305).—*Compound* F, $C_{21}H_{28}O_5$, m.p. 203—209° (decomp.), $[\alpha]_D^{25}$ +209° in 95% EtOH [*p-nitrobenzoate*, m.p. 220—221°; *disemicarbazone*, m.p. >250° (decomp.)], a diketone (not pptd. by digitonin), was obtained by fractional crystallisation from EtOH of the "$CHCl_3$-insol. fraction," preferably after an initial purification with Girard's reagent. A *compound* G, $C_{21}H_{34}O_3$, m.p. 264° (decomp.), $[\alpha]_D^{26}$ +38° in 95% EtOH [*semicarbazone*, m.p. 263—265° (decomp.)], was also obtained. P. G. M.

Adrenal cortex. II. Substance having the qualitative action of cortin; its conversion into a diketone related to androstenedione.—See A., II, 25.

Rôle of pituitary and adrenal glands in pancreatic diabetes of the toad. B. A. Houssay and A. Biasotti (Compt. rend. Soc. Biol., 1936, **123**, 497—500).—The diabetes is diminished by destruction of the adrenals or principal pituitary lobe, but reappears on injection of an extract of the latter. H. G. R.

Action of pituitary extracts on blood-fats and -ketones in obesity. G. Borruso (Policlinico, 1936, **43**, 125—152).—In normal subjects the fasting val. for blood-ketones was 0·29—1·84 mg. per 100 ml.; ingestion of olive oil slightly increased the level, whilst injection of extract of the posterior lobe of the pituitary slightly decreased it; lipoitrin had the same effect. Injection of material from the anterior lobe increased the fasting level. In obese subjects the fasting val. for blood-fat was 67—122 mg. per 100 ml.; olive oil caused an increase of 18—123 mg., which is subnormal and was diminished by extract of the posterior lobe and lipoitrin; the fasting val. for blood-ketones was 0·58—2·72 mg. per 100 ml.; olive oil caused an average increase of 3·57 mg., which was more markedly diminished by extract of the posterior lobe than in normal subjects; lipoitrin also diminished the alimentary ketonæmia; material from the anterior lobe increased the blood-ketone level but less markedly and less regularly than in normal subjects.
Nutr. Abs. (*m*)

Action of pituitary hormone on blood-ketones in endogenous cachexia. G. Borruso (Policlinico, 1936, **43**, 153—163).—The effects were determined of ingestion of 100 ml. of olive oil and afterwards of 100 ml. of olive oil by mouth + 25 units of lipoitrin (I) intramuscularly on the blood-ketones of normal, obese, and pathologically thin people during a fast. In all subjects the oil alone caused an increase in ketones, most marked in the obese, at 1 and 4 hr. after ingestion, when blood sampling was stopped. (I) diminished the ketonæmia in the normal and obese but slightly increased it in the cachectic subjects. The ketone content of the blood varied within normal limits in the obese and cachectic. In another series of experiments (I) suppressed in 4 cachectic cases the lipæmia which normally follows ingestion of 100 ml. of olive oil. Nutr. Abs. (*m*)

Specific dynamic action of proteins and pituitary functions. J. Mahaux (Compt. rend. Soc. Biol., 1936, **123**, 82—86).—A decrease in the sp. dynamic action after ingestion of glycine is suggested as a test of pituitary dysfunction in the absence of hepatic insufficiency. H. G. R.

Blood-sugar in hypofunction of the rabbit pituitary; influence of glucose, adrenaline, and insulin. G. Saito (Folia Endocrinol. Japon., 1934, **10**, 35—47).—Administration of glucose or adrenaline

produces a greater increase in blood-sugar in normal than in hypophysectomised rabbits. The latter are extremely sensitive to insulin. CH. ABS. (*p*)

Effect of complete and partial hypophysectomy in adult rats on nitrogen, calcium, and phosphorus metabolism. D. PERLA and M. SANDBERG (Endocrinol., 1936, **20**, 481—488).—Urinary N increases to > double the normal val. during the first 3 weeks after operation, and remains high for the next 9 weeks. The disturbance in N balance is less pronounced in animals deprived of the posterior and only part of the anterior lobe. Creatinuria occurs for 3 weeks after operation in males, but not in females. Ca excretion increases, particularly in the fæces, the balance remaining approx. zero even with a moderately high Ca intake. Ca metabolic disturbance lasts only 3 weeks in partly hypophysectomised animals. Fæcal P increases progressively, but urinary P remains const. Cu and Fe metabolism show no significant changes. R. N. C.

Composition of weight-loss and the nitrogen partition of tissues in rats after hypophysectomy. M. LEE and G. B. AYRES (Endocrinol., 1936, **20**, 489—495).—Loss of wt. over 1—33 days in hypophysectomised rats is 20% > that in controls restricted to the same low food intake. Controls lose no body-N, but the loss of body-fat is > that in hypophysectomised animals, which also lose N. Total energy metabolism is the same in both groups, but < that in normal controls fed unrestrictedly. NH_2-acid-, urea-, and total non-protein-N of the livers of hypophysectomised animals are > those in controls; similar smaller differences are found in other tissues, but other N constituents are not significantly affected. R. N. C.

Effect of hypophysectomy and of phyone injections on the pancreas and liver of the newt. A. E. ADAMS and E. N. WARD (Endocrinol., 1936, **20**, 496—502).—Hypophysectomy decreases liver-glycogen (I) and increases liver-fat (II), whilst phyone decreases (I) and changes (II) only very slightly. R. N. C.

Glycogen disappearance and carbohydrate oxidation in hypophysectomised rats. R. E. FISHER, J. A. RUSSELL, and C. F. CORI (J. Biol. Chem., 1936, **115**, 627—634).—With approx. equal amounts of muscle-glycogen (I) available at the start of a fasting period, the rats lost more (I) and had correspondingly higher vals. of R.Q. than did normal rats; the N excretions were approx. equal. The difference is diminished by intraperitoneal injection of alkaline extracts of anterior pituitary lobe which probably depress carbohydrate oxidation and thus effect maintenance of carbohydrate level. F. O. H.

Diuresis in hypophysectomised toads after deprivation and injections of water. R. Q. PASQUALINI (Compt. rend. Soc. Biol., 1936, **123**, 71—73).—Diuresis depends chiefly on an increased renal permeability for H_2O, skin and tissues having a secondary effect. H. G. R.

Diabetogenic function of the pituitary anterior lobe and the pancreas. B. A. HOUSSAY and V. G. FOGLIA (Compt. rend. Soc. Biol., 1936, **123**, 824—827).—An extract of the anterior lobe diminishes the secretion of insulin, but the presence of the liver is necessary to maintain the hyperglycæmia since hepatectomy produces hypoglycæmia. H. G. R.

Determination of the gonadotropic activity of pituitary anterior lobe extracts. R. CAHEN and P. ARDOINT (Compt. rend. Soc. Biol., 1936, **123**, 547—549).—The method depends on the increase in wt. of the uterus of the adolescent rat (cf., Bülbring and Burn, A., 1936, 527). H. G. R.

Action of some posterior pituitary preparations on blood pressure and on smooth muscle organs. K. TACHIBANA (Folia Pharmacol. Japon., 1935, **20**, 191—200).—Pituitrin (I), pitressin (II), and pitocin (III) increased blood pressure, which was only partly diminished by yohimbine. The stimulatory effect of these preps. on various smooth muscles was not counteracted by atropine. (I) and (II) were more active than (III) except in the case of the uterus. CH. ABS. (*p*)

Relation between external temperature and (i) the testes, (ii) the ovary, with respect to fat metabolism. S. KANAUCHI (Folia Endocrinol. Japon., 1934, **10**, 31—32, 33—34).—The influence of environmental temp. on the changes in fat content of various organs following the feeding of (i) powdered testes, (ii) interstitial tissue or corpus luteum powder, are recorded. CH. ABS. (*p*)

Augmentation of ovary-stimulating action of gonadotropic preparations. A. A. HELLBAUM (Proc. Soc. Exp. Biol. Med., 1936, **33**, 568—570).—Material obtained from male human urine increases the effect on the ovaries of rats of pituitary extracts but not the effect of the follicle-stimulating and luteinising fractions of the extract when used alone. The material does not increase the action of human pregnancy urine and of blood-serum from pregnant mares. Extracts of milk, egg, liver, thyroid, and lemon increase the effects of pituitary extracts apparently in the same way as does the urinary material. W. McC.

Relative gonadotropic augmentative action of plasma and formed elements from the blood of cattle. L. E. CASIDA (Proc. Soc. Exp. Biol. Med., 1936, **33**, 570—572).—The increase in the effect on the ovaries of rats of anterior pituitary extracts produced by the formed elements of cow's blood is ⩾ that produced by the blood-plasma. W. McC.

Age and the ovarian response to gonadotropic hormone from the mare in the immature rat. F. J. SAUNDERS and H. H. COLE (Proc. Soc. Exp. Biol. Med., 1936, **33**, 504—505).—No ovulation or production of corpora lutea followed the injection of the hormone into female rats aged 18 days, but when the dose was large development of interstitial tissue was promoted. Follicular growth, ovulation, and production of corpora lutea followed the injection in rats 21 and 25 days old. W. McC.

Means of augmenting the ovarian response to gonadotropic substances. F. J. SAUNDERS and H. H. COLE (Proc. Soc. Exp. Biol. Med., 1936, **33**, 505—508).—In immature female rats the ovarian development induced by injection of crude pituitary

extract is significantly increased by adding caseinogen (I) and ovalbumin (II) and increased threefold by adding $ZnSO_4$ to the extract. The effect produced by $ZnSO_4$ is not increased by addition of (I). The effect of injection of untreated serum from the pregnant mare is not increased by addition of $ZnSO_4$. Possibly (I), (II), and $ZnSO_4$ act by delaying absorption of the active principle of the extract. W. McC.

Nature of antigonadotropic substances. G. H. Twombly (Endocrinol., 1936, **20**, 311—317).—The gonadotropic hormone of human pregnancy urine injected into rabbits causes formation of protective substances (I) in the serum which prevent luteinisation in the ovaries of mice. The evidence suggests that (I) are protein antibodies. R. N. C.

Impairment of anterior pituitary functions by follicular hormone. B. Zondek (Lancet, 1936, **231**, 842—846).—Administration of the hormone to rats or birds over several months leads to the elimination of certain functions of the anterior lobe of the pituitary and ultimately produces eunuchoid rats or cocks. The follicular hormone does not inhibit production of the gonadotropic hormones in the anterior pituitary cells, but prevents their entry into the blood-stream. L. S. T.

Inhibitory effect of the follicular hormone on the anterior pituitary in humans. M. S. Jones and T. N. MacGregor (Lancet, 1936, **231**, 974—975).—Administration of dimenformone to women past the menopause resulted in an inhibition of the gonadotropic but not of the diabetogenic principle of the anterior pituitary. L. S. T.

Action of folliculin on vaginal p_H. J. A. Schockaert and G. Delrue (Compt. rend. Soc. Biol., 1936, **123**, 306—308).—Administration of folliculin after the climacteric or ovariectomy increases the lowered vaginal p_H to normal vals. H. G. R.

Progestin content of blood. P. W. Bloch (Endocrinol., 1936, 20, 307—310).—Traces of progestin occur in the circulating blood of the sow and pregnant rabbit, but cannot be detected in 500 c.c. of blood of pregnant women. R. N. C.

Chemical fractionation of the prolans with formaldehyde. A. Brindeau, H. Hinglais, and M. Hinglais (Compt. rend. Soc. Biol., 1936, **123**, 393—394).—Prolan-*B* is gradually inactivated by contact with CH_2O whereas -*A* is scarcely affected. H. G. R.

Chemical studies on prolan (from urine of pregnancy). F. Bischoff and M. L. Long (J. Biol. Chem., 1936, **116**, 285—290).—The standardisation is equally accurate whether wt. of ovaries, seminal vesicles, or prostate or the appearance of corpora lutea is taken as the criterion of activity. Prolan is inactivated (>90%) by acetylation, benzoylation, and reaction with β-naphthaquinonesulphonate or H_2O_2. Unlike the pituitary gonadotropic hormone, it is stable to Me_2SO_4 in alkaline solution, and also to HNO_2, CH_2O, $CH_2I{\cdot}CO_2H$, MeCHO, and I at p_H 3·5, whilst it is destroyed by I at p_H 8·5. CS_2, PhNC, and PhN_2SO_3H produce partial inactivation. 0·1*N*-HCl inactivates it rapidly at 40° and in 24 hr. at room temp. P. G. M.

Comparison of the Corner–Allen and Clauberg tests for assay of progestin. L. E. Young (Proc. Soc. Exp. Biol. Med., 1936, **34**, 96—99).—A Clauberg unit of progestin is about ½ of a Corner–Allen unit. The former's method of assay is less accurate than the latter's unless a much larger no. of rabbits is used. W. O. K.

Migraine and ovarian deficiency. S. J. Glass (Endocrinol., 1936, **20**, 333—338).—The normal prolan-*A* (I) and œstrin (II) ratio in young women is reversed in migraine with ovarian dysfunction. (II) gives relief by suppression of (I) secretion. R. N. C.

Œstrogenic hormone and mechanism of corpus luteum production in the rabbit. C. Bachman (Proc. Soc. Exp. Biol. Med., 1936, **33**, 551—554).—In the adult female rabbit during œstrus administration of œstrone does not cause luteinisation of the ovarian granulosa or increase the in wt. of the pituitary gland. W. McC.

Occurrence of œstrogenic substance in blood and tissues under pathological conditions. VI. Comparison of amounts in blood and organs. F. Silberstein, P. Engel, and K. Molnar. **VII. Destruction of menformone in blood and organs.** F. Silberstein, K. Molnar, and P. Engel (Klin. Woch., **12**, 1693—1694, 1694—1695; Chem. Zentr., 1936, i, 97—98).—VI. Organs (except testicles and adrenals) of irradiated dogs contained less œstrogenic substance than would be expected from the blood vals.

VII. Destruction of the hormone by blood is preceded by a change by which it is rendered insol. in EtOH–$COMe_2$. A. G. P.

Effect of œstrogenic hormone on experimental pancreatic diabetes in the monkey. W. O. Nelson and M. D. Overholser (Endocrinol., 1936, **20**, 473—480).—Œstrone (I) reduces hyperglycæmia and glycosuria in monkeys given crude pituitary extract or when partly depancreatised. It increases the survival period of totally depancreatised animals and usually reduces hyperglycæmia and glycosuria. Œstriol *per os* is ineffective. Pituitary extract given during (I) treatment increases glycosuria. The effect of (I) is due to suppression of pituitary control of carbohydrate metabolism. R. N. C.

Effect of œstrogenic substance on blood-volume. M. Friedlander, N. Laskey, and S. Silbert (Endocrinol., 1936, **20**, 329—332).—Blood-vol. is increased if initially < normal. R. N. C.

Œstrogenic substances in blood and urine after castration and the menopause. R. T. Frank, M. A. Goldberger, and U. J. Salmon (Proc. Soc. Exp. Biol. Med., 1936, **33**, 615—616).—In women the œstrogenic factor is excreted in the urine and excessive production of the gonadotropic factor occurs after ovariectomy, castration with *X*-rays, and the menopause. W. McC.

Determination of theelin with diazobenzenesulphonic acid. M. J. Schmulovitz and H. B.

WYLIE (J. Biol. Chem., 1936, **116**, 415—421).—Theelin (< 5 rat units in 8·5 c.c.) is coupled with the acid to give a red dye which is compared colorimetrically with standard solutions of β-$C_{10}H_7$·OH similarly treated. The method is suitable only for pure preps. P. G. M.

Colorimetric determination of urinary œstrin. G. PINCUS, G. WHEELER, G. YOUNG, and P. A. ZAHL (J. Biol. Chem., 1936, **116**, 253—266).—Different colorimetric procedures for the determination of œstrone (I), œstradiol (II), and œstriol (III) in human and rabbit urine extracts at various stages of the cycles are compared with biological determinations. The OH·C_6H_4·SO_3H test (Cohen and Marrian, A., 1934, 1269) gives trustworthy vals. for (III) in human urines from the 6th to 9th months of pregnancy, but during the earlier months, and in all rabbit urines, other substances interfere, leading to high apparent vals. For (I), this test gives high vals. at all stages. Results with other tests, using BzCl [colour with (I) and (II), not with (III)], and using H_3AsO_4 [sp. for (III)] are given. F. A. A.

Intravaginal assay of urinary œstrin. W. R. LYONS and H. J. TEMPLETON (Proc. Soc. Exp. Biol. Med., 1936, **33**, 587—589).—Cornification is detected in ovariectomised rats following introduction into the vagina of material from 0·1—0·8 c.c. of normal woman's urine. W. McC.

Antagonism between testicular extracts and certain hypnoanæsthetics. R. FALK (Compt. rend. Soc. Biol., 1936, **123**, 779—781).—A sp. antagonism was observed between testicular extracts and certain barbiturates. H. G. R.

Sparrow's bill as indicator for the male sex hormone. I. Sensitivity. E. WITSCHI (Proc. Soc. Exp. Biol. Med., 1936, **33**, 484—486).—In normal male and female sparrows during the quiescent sex period and in castrated and ovariectomised sparrows the bill darkens when male sex hormone (I) is injected. Advantage may be taken of this fact in testing for (I) and a sparrow unit (equiv. to > 0·1 rat unit and to approx. 0·5 Chicago capon unit) is adopted. W. McC.

Enolacetates from progesterone and testosterone.—See A., II, 25.

Hypoglycæmic substances in various organs other than the pancreas. I. Salivary glands, liver, and some parenchymatous organs. II. Mucosa of the digestive tract. III. Effect of these substances on the action of adrenaline and insulin on blood-sugar. IV. Physical and chemical properties of the substances: similarity to those of insulin and yeast extract. K. MAEHARA (Folia Endocrinol. Japon., 1934, **10**, 29—30, 30—31, 50, 50—51).—I, II. Aq. and EtOH–acid extracts of the organs contained active materials.

III. Acid-EtOH extracts of liver and of the mucous membrane of the small intestine retarded adrenaline hyperglycæmia and intensified insulin hypoglycæmia in rabbits.

IV. The action of the extracts was unaffected by heating at 100° for 30 min., was decreased by 0·05% of *N*-HCl or -NaOH, and was lost by adsorption on animal C or by the action of trypsin. Insulin and yeast behaved similarly. CH. ABS. (*p*)

Influence of insulin on heart-glycogen. V. ZAGAMI (Atti R. Accad. Lincei, 1936, [vi], **23**, 524—528).—Insulin, injected into fasting rabbits, rats, or pigeons, increases the glycogen content of the heart and diminishes that of the skeletal muscle. F. O. H.

Effect of insulin on alimentary hyperglycæmia and on the alcohol content of blood after consumption of alcohol. K. R. KANITZ (Arch. exp. Path. Pharm., 1936, **183**, 380—386).—In rabbits given sugar and EtOH, the blood-EtOH is either unaffected or diminished by administration of insulin (I), the effect depending on the ratio in which the substances are given. The intoxication can be terminated or alleviated by (I) without concomitant reduction in blood-EtOH. W. McC.

Effect on the isolated heart of the preservative present in insulin solutions, B.P. M. M. O. BARRIE (Quart. J. Pharm., 1936, **9**, 485—492).—Injection of 1 c.c. (20 units) of insulin (20·6 units per mg.) in dil. HCl at p_H 3·6 slightly increases the amplitude of beat of the isolated rabbit's heart, whilst the normal rabbit dose of 1·25 units has no effect. Similar solutions containing 0·3% of cresol (B.P. 1914) or 0·2—0·5% of PhOH + 0·2% of NaCl markedly decrease the amplitude. F. O. H.

Degradation of insulin to a substance which increases the blood-sugar. F. CHROMETZKA and J. SCHULTE (Arch. exp. Path. Pharm., 1936, **183**, 278—285).—Cryst. insulin (I) injected into a doubly ligated intestinal loop in living rabbits and cats increases the blood-sugar. Similar increases are produced by fluid taken from the loop after (I) injection and by the material produced from (I) by the *in-vitro* action of intestine, enterokinase, muscle, and kidney preps. Probably an enzymic degradation product of (I) is responsible for the effect. W. McC.

Biological effects of pineal extract (Hanson). L. G. ROWNTREE, J. H. CLARK, A. STEINBERG, and A. M. HANSON (Endocrinol., 1936, **20**, 348—359). R. N. C.

Action of acid and alkali on parathyroid hormone. W. R. TWEEDY, C. H. SMULLEN, and W. P. BELL (J. Biol. Chem., 1936, **116**, 163—167).—The total N (14·74%) of parathyroid hormone is distributed as humin-N 0·95, dibasic N 21·13, acid amide-N 4·39, and non-basic N 71·53%. Acid hydrolysis (boiling 0·05*N*-HCl) results in an increase in NH_2-N, parallel with loss of hormonal activity. Activity is also lost by treatment with 0·05*M*-NaOH at 38°; NH_3 is produced in the reaction, corresponding with 0·27% of the total N. F. A. A.

Glutathione and cathepsin of tissues during hyperthyroidism. K. I. KATKOVA (Ukrain. Biochem. J., 1936, **9**, No. 1, 93—110).—In rabbits, thyroid feeding does not alter the cathepsin content of the liver or kidneys. W. O. K.

Tissue-glutathione and -cathepsin after extirpation of the thyroid gland. K. I. KATKOVA (Ukrain. Biochem. J., 1936, **9**, No. 1, 111—124).—In thyroidectomised rabbits glycerol extracts of the

iver showed no cathepsin activity whilst those of the kidneys were weaker than normal. No relation could be established between proteolytic activity and glutathione content. W. O. K.

Metabolism of isolated fat-tissue. IV. Fat metabolism and hormones. T. Oestreicher (Arch. exp. Path. Pharm., 1936, **182**, 589—616; cf. A., 1936, 629).—The normal metabolic rate (Q_{O_2} —0·13) of isolated surviving testicular and subcutaneous fat (rat) in serum is unchanged by thyroidectomy but increased (to approx. ×2) by continuous administration of thyroxine (I); direct addition of (I) to, or pre-treatment with fresh thyroid gland of, fat- or liver-tissue *in vitro* does not increase O_2 consumption (Paal, A., 1935, 410). Addition of thyrotropic anterior pituitary principle (II), but not that of other pituitary factors, increases O_2 consumption of fat- but not liver-tissue whilst administration of (II) to rats causes a localised fusion of subcutaneous fat depôts and an increase in the *in-vitro* O_2 consumption of the skin- but not testicular fat; the anaërobic glycolysis of both fats increases. Aq. extracts of anterior pituitary gland contain a "fat metabolism hormone" (Anselmino and Hoffmann, A., 1932, 780; Magistris, A., 1933, 1210) which acts like (II). F. O. H.

Creatine studies in thyroid disorders. G. W. Thorn (Endocrinol., 1936, **20**, 628—634).—Creatine (I) retention is reduced in patients with thyrotoxicosis; it is raised by administration of I. The change in (I) metabolism may persist for some time after partial thyroidectomy to relieve thyrotoxicosis. Creatinuria often precedes the metabolic rise following administration of thyroid to patients with myxœdema; (I) retention is decreased by thyroid administration. Cortical hormone does not reduce creatinuria in thyrotoxicosis. R. N. C.

Effect of internal secretory organs on composition of skeletal muscle. I. Effect of thyroid gland. S. Osada (Folia Endocrinol. Japon., 1934, **10**, 72—73).—Changes in the N distribution of rabbit muscle due to feeding thyroid powder and to thyroidectomy are recorded. Ch. Abs. (*p*)

Action of epithelial cellular and colloidal material of the thyroid gland. III. Effect on blood-sugar, adrenaline- and insulin-blood-sugar. IV. Influence on protein metabolism of normal white rats. J. Matsui (Folia Endocrinol. Japon., 1934, **10**, 48, 49).—III. Administration of the cellular material to rabbits increased blood-sugar, retarded insulin action, and promoted adrenaline action. The colloidal material produced the reverse effects.

IV. In rats receiving cellular material there was an increase in total, urea-, NH_3-, creatinine- (I), and creatine- (II) -N of the urine. Feeding of colloidal material, decreased the total and urea-N, slightly increased the NH_3, and did not affect the (I) and (II) excreted. Cellular material increased and colloidal material lowered protein metabolism. Ch. Abs. (*p*)

Comparative calorigenic action of normal and pathological thyroid glands administered in equi-thyroxine doses. W. W. Palmer and J. P. Leland (J. Clin. Invest., 1935, **14**, 619—631).—The calorigenic activity of desiccated thyroid or the thyroxine (I) content. The activity of racemic (I) was approx. 50% of that of thyroid preps., due probably to the smaller action of *d*-(I). Ch. Abs. (*p*)

Effect of alcohol- or acetone-extracts of thyroid gland on urinary excretion of iodine. G. Tanaka (Folia Endocrinol. Japon., 1934, **10**, 71—72).—After small injections of extracts, excretion of I was delayed, the period of excretion of I was prolonged and the total I excreted was decreased. Large doses increased the rate of I excretion and the total amount excreted. Ch. Abs. (*p*)

Changes in endocrine glands, especially the thyroid, in white rats fed fungus growths or potassium iodide and tyrosine. M. Shimasaki (Folia Endocrinol. Japon., 1934, **10**, 64—65).—Addition of fungus to a basal diet caused hyperfunction of the thyroid and the thymus became hyperæmic. Supplements of KI + tyrosine affected the thyroid similarly but no other glands were affected. Ch. Abs. (*p*)

Use of thyroxine in ophthalmology. P. C. Jackson (Arch. Opthalmol., 1934, **12**, 635—643).—Thyroxine acts as a local metabolic stimulant. Its penetrative property is associated with its high org. I content. Ch. Abs. (*p*)

Metabolic action of thyroxine in cold-blooded animals. G. Mansfeld and A. Lánczos (Arch. exp. Path. Pharm., 1936, **183**, 267—273).—In spring, summer, and early autumn (but not in late autumn and winter) the urinary N excretion of *Rana esculenta* is greatly increased by administration of single and repeated doses of 0·2—0·5 mg. of thyroxine (I). The low urinary N excretion of frogs in autumn and winter is only partly due to lower temp. and is not affected by (I) or rise of temp. W. McC.

Bioassay of galactin, the lactogenic hormone. W. H. McShan and C. W. Turner (Proc. Soc. Exp. Biol. Med., 1936, **34**, 50—51).—Galactin may be conveniently assayed by its action on the proliferation of the crop-gland of the pigeon. W. O. K.

Effect of lactogenic hormone on embryonic tissues cultivated *in vitro*. A. J. Salle and I. L. Shechmeister (Proc. Soc. Exp. Biol. Med., 1936, **34**, 603—606).—The hormone does not stimulate *in-vitro* growth of epithelial cells of the immature pigeon crop, nor has it any effect on non-sp. tissues. P. G. M.

Mobility and gastric secretion during hypoglycæmia following ineretin administration. J. La Barre (Compt. rend. Soc. Biol., 1936, **123**, 275—276).—The increased mobility, hypersecretion, and hyperchlorhydria occur 2—3 hr. after the injection when the blood-sugar has fallen to 0·05—0·06%. H. G. R.

Occurrence of melanophore hormone-like substances in urine. P. E. Simola and L. Rivas (Suomen Kem., 1936, **9**, B, 24).—Urine of pregnant women and mares contains a substance which causes the expansion of the melanophore cells on frog skin. The urine from men and normal women gives a

positive reaction in only a few cases, whilst that from stallions, mares, and normal and pregnant rats gives no distinct reaction. The p_H of the immersion solution must be 7, and several dilutions of urine must be used. The active substance is adsorbable on C, and is probably not identical with the pituitary melanophore hormone. J. N. A.

Synergism and antagonism of vitamins. W. Stepp (Ernährung, 1936, **1**, 26—31).—A review. A. G. P.

Identification of vitamins by molecular distillation. K. Hickman (Nature, 1936, **138**, 881—882).—Vitamins present in oils can be identified by mol. distillation. The amount of vitamin distilled with the oil over a range of temp. follows a typical "elimination" curve, deviations from which show the presence of different vitamins or vitamin compounds. Celanthrene Red 3B or dimethylaminoanthraquinone can serve as distillation pilots. Vitamin-*A* in cod- and halibut-liver oils exists almost entirely as esters, -*D* occurs in cod-liver oil partly free and partly as a mixture of esters. Calciferol and -*D* react producing other antirachitic substances. L. S. T.

Influence of carotene on experimental calculosis in avitaminosis-*A*. A. Escudero and P. Bosq (Semana méd., 1935, **42**, 1632—1634; Chem. Zentr,. 1936, i, 100).—Formation of calculi in kidneys of avitaminotic rats is decreased by administration of carotene. A. G. P.

Relation of the colour and carotene contents of butter fat to its vitamin-*A* potency. R. Treichler, M. A. Grimes, and G. S. Fraps (Texas Agric. Exp. Sta. Bull., 1935, No. 513, 34 pp.).—Effects of various feeding stuffs on the carotene (I) content and -*A* potency of butter fat are recorded. The (I) content of milk from cows on pasture continued to increase after the -*A* potency had reached max. vals. The (I) content of the fat was directly related to that of the food. Butter fat of goats at pasture had low (I) and high -*A* contents. The ability of goats to transform (I) into -*A* is > that of cows. High colour in butter is generally but not always accompanied by high-*A* potency. A. G. P.

Hepato-hormonal regulation of vitamin-*A* metabolism and the ætiology of ostitis deformans Paget. E. Schneider and E. Widman (Klin. Woch., 1935, **14**, 1786—1790; Chem. Zentr., 1936, i, 1044).—The thyroid hormone regulates carotene and vitamin-*A* exchange. Ostitis results from a disturbance of this exchange. A. G. P.

Effects of vitamin-*A* on incidence and severity of colds among students. H. C. Cameron (J. Amer. Diet. Assoc., 1935, **11**, 189—204).—Use of cod-liver, halibut-liver, and carotene oils reduced the duration and severity but not the no. of colds. Ch. Abs. (*p*)

Effect of carotene and vitamin-*A* in diabetes mellitus. III. Effect of daily administration of carotene on blood-carotene in normal and diabetic individuals. E. P. Ralli, A. C. Pariente, H. Brandaleone, and S. Davidson (J. Amer. Med. Assoc., 1936, **106**, 1975—1978).—Daily administration of 1 ml. of 0·3% solution of carotene (I) in oil during 1—4 months to normal and diabetic patients caused a greater increase of blood-(I) with a slower return to the fasting level in the diabetics. When the blood-(I) level was raised by a preliminary large dose, further administration of 5 ml. daily caused a still greater increase above the normal and carotenæmia in the diabetic patients. In some of the normal and diabetic patients, the blood-cholesterol rose with the blood-(I). Nutr. Abs. (*m*)

Carotenæmia in diabetes. W. Heymann (J. Amer. Med. Assoc., 1936, **106**, 2050—2052).—Curves showing changes in the carotene (I) content of the blood-serum were obtained after administration of 2 ml. of 0·3% solution of (I) in oil to 10 diabetic children in 3 daily doses. The curves differed from those obtained from healthy children, the initial level being often high and the curve tending to remain high without the normal decline. Faulty utilisation of (I) is assumed. Nutr. Abs. (*m*)

Biological determination of vitamin-*A* and its pro-vitamin in the milk of Nordic women, in dog-rose fruits, and in black currants. E. Svensson (Skand. Arch. Physiol., 1936, **73**, 237—254).—The response (growth and healing of xerophthalmia) of rats depleted of vitamin-*A* when receiving 0·003 mg. daily of β-carotene, was about the same as with 0·05 g. of rose hip flesh, 1·0 g. of black currant fruit, 1·0 ml. of mixed colostrum or 2·0 ml. of mixed milk from Nordic women in Feb. and March. Rose hip contained 60—100, black currant 3—5, colostrum 3—10, and milk 2—5 international units of -*A* per g. and ml., respectively. Nutr. Abs. (*m*)

Determination of vitamin-*A*. T. Rosendal (Nord. med. Tidskr., 1936, **11**, 589—601).—Oil from fish and mammalian liver shows a biological activity in rat experiments which is attributed to vitamin-*A* and possibly an unknown substance, the separate existence of which has not been proved. In determinations of -*A*, the biological and spectroscopic methods with the unsaponifiable fraction give best agreement, but discrepancies occur which are considerably > the errors of the methods. Nutr. Abs. (*m*)

Skin lesions of the rat associated with the vitamin-*B* complex. L. R. Richardson and A. G. Hogan (Missouri Agric. Exp. Sta. Res. Bull., 1936, No. 241, 36 pp.).—Irradiation of -*B* carriers in powder form destroys 50—60% of the antineuritic and 75—85% of the anti-dermatitis factor. Irradiation in <10% solution destroys <10% of the former and >90% of the latter factor. A. G. P.

Proteinogenous toxicosis. III. Rôle of the vitamin-*B* complex in processes of detoxication. L. A. Tscherkes and N. D. Dukler (Ukrain. Biochem. J., 1936, **9**, 925—941).—The toxicosis resulting from protein feeding can be restricted by addition of foods containing the vitamin-*B* complex. The amount necessary decreases with increasing age of the animal. The detoxicant is stable to heat and alkali. F. A. A.

Chemical determination of vitamin-B_1. V. A. Deviatnin (Compt. rend. Accad. Sci. U.R.S.S., 1936, **4**, 67—71).—1 c.c. of the test solution is added to a mixture of 6 c.c. of Kinnersley and Peters' reagent

[$Hg(OAc)_2$–$PtCl_4$], 2 c.c. of diazotised 0·5% aq. sulphanilic acid, and 3 drops of 40% CH_2O. The colour developed after heating for 10 min. at 90—95° is matched against standards. A. G. P.

Flavin balance in the animal organism. F. Vivanco (Arkiv Kemi, Min., Geol., 1936, **12**, A, No. 3, 1—8).—The organs of the rat richest in flavin (I) are the liver, kidneys, and heart. The adrenal gland is less rich, whilst spleen and muscle contain very little. During B_2-avitaminosis the (I) content of the above organs falls to 30% of its normal val. (I) continues to be excreted in the fæces but not in the urine. (I)-free urine is a criterion of B_2-avitaminosis. The wt. curve of the rat runs parallel with the amount of (I) excreted in the urine. E. A. H. R.

Fixation of ascorbic acid by tissues. H. C. Hou (Proc. Soc. Exp. Biol. Med., 1936, **34**, 833—835).—Scorbutic tissues take up more ascorbic acid from Ringer's solution than does normal tissue. Various tissues take up the vitamin in the following descending order: adrenal, muscle, skin, intestine, kidney. P. G. M.

Histochemistry. VIII. Relation between concentration of vitamin-*C* and development of pineal gland. D. Glick and G. R. Biskind (Proc. Soc. Exp. Biol. Med., 1936, **34**, 866—870).—The vitamin-*C* content of the pineal gland of the calf falls with increasing age, following a rise (to 0·27 mg. per g.) during the fœtus stage. P. G. M.

Vitamin-*C* and glutathione. Changes in blood-glutathione following parenteral administration of vitamin-*C*. G. C. Dogliotti, O. Meloni, and T. Castellani (Boll. Soc. ital. Biol. sperim., 1936, **11**, 667—669).—Parenteral administration of large doses of vitamin-*C* increases blood-glutathione in guinea-pigs (normally 0·030—0·037%) and men. F. O. H.

Vitamin-*C* requirement during pregnancy and lactation. W. Neuweiler (Klin. Woch., 1935, **14**, 1793—1794; Chem. Zentr., 1936, i, 1045).—In pregnancy the -*C* requirement is > and during lactation ⩾ normal, as judged by the amounts excreted. A. G. P.

Biological action of ascorbic acid. I. Neutralising effect on diphtheria toxin. E. Schwarz and F. Cislaghi (Minerva med., 1935, II, 202—205).—Ascorbic acid exerts an antitoxic effect at p_H 3, but not at p_H 7·0, when injected simultaneously with the toxin. When injected separately from the toxin no effect was shown. Ch. Abs. (*p*)

Vitamin-*C* deficiency in Addison's disease. J. F. Wilkinson and C. A. Ashford (Lancet, 1936, **231**, 967—970).—The degree of vitamin-*C* subnutrition paralleled the severity of the disease. The relationship of -*C* to pathological pigmentation is discussed. L. S. T.

State of vitamin-*C* in animal tissues. T. Masayama and K. Tatematsu [with K. Nogi and A. Yoneda] (Z. physiol. Chem., 1936, **244**, 19—22).—The ascorbic acid (I) in the testes of the ox yields an orange osazone not identical with the red osazone obtained from cryst. (I). The red compound is converted into the yellow by heating with dil. aq. Na_2CO_3. The autoxidation of cryst. (I), but not that of (I) in the testes, is prevented by addition of sliced liver. It is concluded that (I) in the ox testes is the free acid, not the lactone form. W. McC.

Examination of cerebrospinal fluid in diagnosis of vitamin-*C* deficiency. Delayed excretion of ascorbic acid in cases with low ascorbic acid content in the fluid. F. Plaut and M. Bülow (Z. ges. Neurol. Psychiat., 1936, **154**, 481—485).—Six institution patients showed varying levels of ascorbic acid (I) in the fluid. Administration of 600 mg. of (I) daily led to an earlier rise in urinary excretion in those with a high level in the fluid than in those with a low level. Vals. obtained with the fluid are possibly representative of the degree of saturation of the organism. Nutr. Abs. (*m*)

Seasonal variations in vitamin-*C* content of cerebrospinal fluid. G. K. Stürup (Hospitalstidende, 1936, **79**, 628—636).—The vals. for children were > those recorded by Plaut and Bülow and there was a marked decrease with age. The vals. in mentally abnormal but otherwise healthy patients in Nov. were definitely > those in Jan., Feb., and especially March. Nutr. Abs. (*m*)

Physico-chemical processes in nervous tissue. III. Ascorbic acid content of the marmot brain during hibernation. S. V. Fomin (Ukrain. Biochem. J., 1936, **9**, 879—895).—The ascorbic acid (I) content of the cerebellum and cerebral hemispheres of the marmot when hibernating is approx. 26% < that in the awakened state. No significant change occurs in the (I) content of the medulla oblongata. F. A. A.

Effect of ingestion of acid and alkali on the amount of urinary vitamin-*C*. E. E. Hawley, J. Fraser, L. Button, and D. J. Stephens (Proc. Soc. Exp. Biol. Med., 1936, **34**, 218—219).—In healthy persons consuming equal amounts of vitamin-*C* the -*C* content of the urine is diminished by alkalinity (p_H 7·5—8·1) and increased by acidity in the urine. Possibly alkalinity such as is caused by ingestion of $NaHCO_3$ facilitates increased storage of -*C* in the body. W. McC.

Urinary excretion of ascorbic acid. E. E. Hawley and D. J. Stephens (Proc. Soc. Exp. Biol. Med., 1936, **34**, 854—858).—In unsaturated subjects little increase in the rate of excretion of vitamin-*C* occurred in the first few hr. after oral or intravenous administration. In saturated subjects 80—85% of the total 24 hr. excretion occurred during the first 12 hr. P. G. M.

Isolation of vitamin-*C* from human placenta. R. Ammon (Biochem. Z., 1936, **288**, 93—101).—Placenta pulp (containing approx. 0·005% of ascorbic acid), following deproteinisation with $CCl_3{\cdot}CO_2H$, neutralisation by $NaHCO_3$, and acidification with HCl, was treated with 2 : 4-dinitrophenylhydrazine and the resulting ppt. fractionated (cf. this vol., 46) to yield the corresponding *osazone* of dehydroascorbic acid, m.p. 271—273°. F. O. H.

Reducing power and vitamin-*C* content of transplantable tumours of the rat and guinea-

pig. A. F. Watson (Brit. J. Exp. Path., 1936, 17, 124—134).—The reducing power of 1 g. of dried Jensen rat sarcoma was equiv. to that of 1·1—1·5 mg. of ascorbic acid (I) and that of 1 g. of dried guinea-pig sarcoma to ≯0·35 mg. The latter val. was reduced in guinea-pigs on a scorbutic diet. Injections of 50 mg. of (I) daily restored the normal reducing power to the liver, adrenals, and tumours of scorbutic guinea-pigs, but 1 mg. daily failed to do so, although it promoted a steady wt. recovery and repair in the teeth and bones. A dose of 1 g. of dried Jensen rat sarcoma possessed for scorbutic guinea-pigs the curative effect of 1 mg. of (I). Guinea-pig tumours showed little -*C* activity even when fed in large amounts. Some evidence was obtained that tumour cells utilise -*C*. Nutr. Abs. (*m*)

Effect of fatigue and training on the ascorbic acid content of muscles. B. M. Koldaev and R. M. Gelman (Ukrain. Biochem. J., 1936, 9, 655—663).—0·01—0·02 mg. of ascorbic acid (I) is present per g. of resting rabbit leg muscles. Fatigue, by electrical stimulation, usually decreases, and training, by repetition of the same stimulation, increases (11—44%), the (I) content. Local fatigue of the leg muscles does not affect the (I) content of the adrenals or liver. F. A. A.

Vitamin-*C* content of the adrenals of castrated rats. L. Sas (Biochem. Z., 1936, 287, 334—336).—The vitamin-*C* content of the liver of male rats was not but that of the adrenals in 8 of 11 rats was increased (by 34%) within 10 days of castration. P. W. C.

Reduced glutathione and vitamin-*C* in the granular venom of the toad (*Bufo vulgaris*). D. Zimmet and H. Dubois-Ferrière (Compt. rend. Soc. Biol., 1936, 123, 654—656).—The venom contains 0·0266 of vitamin-*C* and 0·25—0·35% of reduced glutathione. H. G. R.

Distribution of vitamin-*C* in the organs of the toad (*Bufo vulgaris*). D. Zimmet and H. Dubois-Ferrière (Compt. rend. Soc. Biol., 1936, 123, 798—800). H. G. R.

Antiscorbutic value of preserved foods. A. Giroud, A. R. Ratsimamanga, M. A. Macheboeuf, H. Cheftel, and M. L. Thuillot (Bull. Soc. sci. Hyg. aliment., 1936, 24, 228—239).—By feeding a diet of preserved vegetables only to guinea-pigs deficient in ascorbic acid (I) the (I) content was partly restored. Hence preserved materials retain a significant amount of their (I) content. A method of determining the (I) content of the organs of a guinea-pig by the injection of acid $AgNO_3$ into the blood stream is described. Nutr. Abs. (*m*)

Vitamin-*C* content of potatoes. I. Old stored potatoes of the 1935 crop. A. Scheunert, J. Reschke, and E. Kohlemann (Biochem. Z., 1936, 288, 261—270).—The content of vitamin-*C* (determined by 2 : 6-dichlorophenol-indophenol; titration by I gives high vals.) varied considerably in different tubers even of the same sort; the highest vals. were approx. 0·030%. Boiling of the peeled potatoes in aq. NaCl considerably reduced the content, but the diminution was slight when the whole potatoes were steamed. F. O. H.

Influence of meat and of maté on human and experimental scurvy. C. Gatti, P. Menendez, and A. Knallinsky (Arch. Farm. sperim., 1936, 62, 37—41).—Maté preps. did not prevent or modify an outbreak of human scurvy. Fresh meat had a protective action even after boiling for several hr. in open vessels, whilst dried meat and corned beef were inactive. These observations were confirmed by experiments on guinea-pigs. F. O. H.

Antiscorbutic activity of tomatoes submitted to various manufacturing processes. S. V. Fomin and P. T. Makarova (Ukrain. Biochem. J., 1936, 9, 387—394).—Whole tomatoes ("King Humbert") can be kept without loss of vitamin-*C*, but tomato paste is partly, and tomato purée completely, inactivated by the processes investigated, which involve heating in Cu vessels. F. A. A.

Preservation of vitamin-*C* in dried vegetables. V. I. Demin (Ukrain. Biochem. J., 1936, 9, 395—408).—Potatoes, onions, cabbages, carrots, and turnips, dried at 80—95° in an air stream for 3—4 hr., lose their vitamin-*C* activity, as tested chemically and biologically. F. A. A.

Determination of true vitamin-*C* content. P. E. Simola, S. Jalas, and E. Ylinen (Suomen Kem., 1936, 9, B, 23—24).—Various chemical methods for determining -*C* are criticised. It is recommended to determine the reducing capacity towards dichlorophenol-indophenol before and after addition of an oxidase from a pumpkin extract. Normal urine contains 5—20 mg. of ascorbic acid per litre. The true -*C* contents of most plant tissues agree very well with the vals. obtained by the direct titration. J. N. A.

Chemical determination of ascorbic acid. II. Process of purification. Determination in urine. P. Manceau, A. A. Policard, and M. Ferrand (Bull. Soc. Chim. biol., 1936, 18, 1623—1635).—The treatment of biological fluids with $Hg(OAc)_2$ in the determination of ascorbic acid (I) in order to remove interfering reducing substances leads to the loss of only very small amounts of (I). Such treatment in neutralised $CCl_3{\cdot}CO_2H$ media leads to the complete removal of SH-compounds. The use of $Pb(OAc)_2$ instead of the Hg salt leads to considerable loss of (I) and does not completely remove SH substances. Such purification is essential especially prior to determination in urine, for which details of technique are given. P. W. C.

Vitamin-*C* content of blood. O. Deggeller, jun. (Diss., Univ. Utrecht, 1936, 88 pp.).—The ascorbic acid (I) content of human blood was 1·33—17·09 mg. per litre. A quantity >13 mg. is thought to be "excellent" (saturation), 10—13 mg. "good," 5—10 mg. "sufficient," <5 mg. "insufficient." No difference in the (I) content of the blood was found between people with surgical diseases (*e.g.*, hernia, fracture, commotio cerebri) and those suffering from internal diseases. There is an annual variation with a min. in Jan.–Mar. and a max. in June–Oct. Healthy people, living on a diet containing little or no (I) can be saturated with 1·5—3 g. People suffering from pulmonary tuberculosis need 2·5—4 g. With vals.

of 9—15 mg., urinary excretion of (I) occurs in people who have been saturated with (I) by one dose, the normal diet being deficient in (I). The capillary resistance determined by Göthlin's method cannot be used for the determination of a " pre-deficiency " condition. NUTR. ABS. (*m*)

Determination of ascorbic acid in urine. W. TSCHOPP (Z. physiol. Chem., 1936, **244**, 59—77).—The urine should be as fresh as possible, but where necessary can be kept at 0° for >2 hr. with addition of 8—10% of AcOH. Interference by the colour of the urine is partly eliminated by 5- to 10-fold dilution with H_2O. All the chemical methods so far suggested for the determination of ascorbic acid (I) in urine are non-sp., although some give accurate results with (I) in H_2O. Normal urine probably contains no (I), but the increased reducing power observed after oral or parenteral administration of large amounts of (I) is due to (I), which is best determined by the procedure of Jezler and Niederberger (Klin. Woch., 1936, **15**, 710). The methods of Wachholder *et al.* (A., 1935, 793), Emmerie and Eeckelen (A., 1934, 1043), and Fujita *et al.* (A., 1935, 793) are untrustworthy. W. McC.

Detection of ascorbic acid in urine by means of 2 : 4-dinitrophenylhydrazine. K. HINSBERG and R. AMMON (Biochem. Z., 1936, **288**, 102—109).—Treatment of acidified (HCl) urine with the reagent yields a considerable ppt. of osazone which affords the osazone of ascorbic acid (which exhibits mutarotation in C_5H_5N–AcOH) on extracting with cold EtOH and $Et_2C_2O_4$, in which it is insol. Ascorbic acid (even after its addition) could not be thus isolated from a normal sugar- and protein-free urine. F. O. H.

Metaphosphoric acid in the extraction and titration of vitamin-*C*. R. R. MUSULIN and C. G. KING (J. Biol. Chem., 1936, **116**, 409—413).—A 2% concn. of HPO_3 protects a solution of ascorbic acid against air oxidation even in the presence of Cu or $CCl_3{\cdot}CO_2H$, but does not interfere with the 2 : 6-dichlorophenol-indophenol reaction. P. G. M.

Mode of action and metabolism of vitamin-*D*. W. HEYMANN (J. Pediat., 1936, **8**, 480—488).—Administration to rabbits of large single doses of viosterol (200,000 international units of vitamin-*D*) was followed in 5 days by a rise in blood-P, lasting 5—10 days but unaccompanied by any rise in blood-Ca. Daily intramuscular injection of 0·6 ml. of the serum of the treated rabbits cured rachitic rats in 8—10 days. Since the antirachitic substance in the serum was sol. in Et_2O and oil, was destroyed by continued ultra-violet irradiation, and did not pass through the ultra-filter there was no evidence that any substance other than irradiated ergosterol was involved. -*D* remained in the blood-stream for 2—3 months. NUTR. ABS. (*m*)

Comparative antirachitic value of crystalline vitamin-*D* administered in milk, corn oil, or propylene glycol. J. M. LEWIS (J. Pediat., 1936, **8**, 308—314).—Single doses of 145 or 290 U.S.P. units of cryst. vitamin-*D*, were administered to infants in the day's supply of milk, or dissolved in maize oil or propylene glycol. The first method of administration afforded far greater protection against rickets than did the other two. Satisfactory protection against rickets in winter was afforded by 1450 U.S.P. units of cryst.-*D* daily dissolved in oil or by the addition of 333 units to a quart of milk. NUTR. ABS. (*m*)

Line test assay for vitamin-*D*. A. L. BACHARACH, E. ALLCHORNE, and H. E. GLYNN (Biochem. J., 1936, **30**, 2004—2006; cf. Coward and Key, A., 1934, 931).—In rats receiving a more severely rachitogenic diet than that usually employed for the test the curative effect of vitamin-*D* supplements measured by the line test is significantly less when the single-dose method is adopted than when the dose is divided. Male rats respond somewhat better to the treatment than do female. W. McC.

Effect of cholesterol feeding on growth of rats. R. OKEY, H. L. GILLUM, and L. S. GODFREY (Proc. Soc. Exp. Biol. Med., 1936, **34**, 131—133).—The growth of young rats on adequate and vitamin-deficient diets was not affected by addition of 1% of cholesterol (I). Retarded growth following addition of (I) to very similar diets (cf. Sperry *et al.*, J. Nutrition, 1935, **9**, 131) was probably due to the absence from Sperry's diets of some factor (not vitamin-*A*, -*D*, -B_1, or -B_2) necessary for normal growth, coincident with storage of much esterified (I) in the liver. W. McC.

Vitamin nature of flavones. A. BENTSÁTH, S. RUSZNYÁK, and A. SZENT-GYÖRGYI (Nature, 1936, **138**, 798).—Curves show the effect of " citrin," the cryst. flavone fraction of lemon juice, in prolonging the life of scorbutic guinea-pigs. Vitamin-*P* (cf. A., 1936, 1162) appears to have a sp. effect on the capillary system. The results suggest that experimental scurvy is a deficiency disease caused by the combined lack of -*C* and -*P*. L. S. T.

Transport in the cotton plant. VI. Interchange between tissues of the corolla. E. PHILLIS and T. G. MASON (Ann. Bot., 1936, **50**, 679—697; cf. A., 1936, 1162).—During the night preceding anthesis N, P, K, Mg, and Cl are imported into the corolla, and again exported on the succeeding night through the peduncle to the parent branch. Both movements probably take place through the phloem. Sap concns. are low during import and increase during the day of anthesis, because of the drying out of corolla tissue and the conversion of insol. into sol. materials. The distribution of sugar between tissues conforms to the distribution of solutes between liquids of different solvent capacity (cf. A., 1933, 988). The mechanism of the change of direction of solute movement is discussed. A. G. P.

Physiological resistance [to salts] of cultivated grasses. L. I. SERGEEV and A. M. LEBEDEV (Planta, 1936, **25**, 84—103).—Winter rye showed the greatest and hard durum wheat the least resistance to salt solutions. Resistance of winter wheats generally was $>$ that summer varieties. In concns. of 0·1—0·4*M* Na_2SO_4 was less injurious to winter cereals than was NaCl. For summer varieties Na_2SO_4 was the more harmful at all concns. The

general order of toxicity was $Na_2CO_3 > Na_2SO_4 >$ NaCl. Resistant varieties absorb less salts than do sensitive varieties. Sensitivity is paralleled by permeability to salts, except in the case of hard wheat in which high sensitivity is attributed to lowered resistance of plasma colloids. Colloids of soft summer wheats are less hydrophilic than are those of winter strains. Resistance to frost and to salts is controlled by similar factors. A. G. P.

Death of plant cells in single and balanced salt solutions. V. S. Iljin (Protoplasma, 1935, **24**, 409—430).—Moderate concns. of NaCl and KCl were more toxic to plant tissues than more conc. or very dil. solutions. Addition of $CaCl_2$ or of a balanced nutrient solution decreased the toxicity of NaCl and KCl. $CaCl_2$ alone was in general more toxic than NaCl and KCl and its toxicity increased continuously with increasing concn. Resistance to $CaCl_2$ increased with increasing Ca content of normal sap. The sap of poisoned tissues showed a ppt., probably of CaC_2O_4. M. A. B.

Relation between exosmosis and salt absorption by potato tuber tissue previously treated with various salt solutions. G. F. Asprey (Protoplasma, 1935, **24**, 497—504).—Treatment of potato tuber tissue with NaCl, KCl, and LiCl increases and with $CaCl_2$ decreases both its subsequent absorption of $NH_4^{\cdot}$ and exosmosis of electrolytes into distilled water. $AlCl_3$ decreases $NH_4^{\cdot}$ intake but increases exosmosis probably due to the acidity of its solutions. These effects are reduced by washing after salt treatment. They are probably due to alterations in the permeability of the tissue and do not indicate a quant. relationship between absorption and exosmosis. M. A. B.

(A) Drought-resistance in wheat. The "bound" and "free" water of expressed sap from wheat leaves in relation to time and soil moisture. (B) Diurnal variation in "bound" and "free" water and other factors in sap expressed from leaves of *Phalaris tuberosa*. J. Calvert (Protoplasma, 1935, **24**, 505—524, 525—530).—(A) Total and "free" H_2O in the sap vary directly with the soil moisture. A decrease in free H_2O is compensated by an increase in bound H_2O. As the free H_2O decreases the *d* of the sap increases. Straight regression lines of the % of bound H_2O had slopes agreeing with the reputed order of drought-resistance of the three wheats examined.

(B) The total and free H_2O (expressed per 100 g. of sap and per g. of dry matter) are higher in the morning than in the afternoon. Bound H_2O per 100 g. of sap is higher in the afternoon and per g. of dry matter in the morning. Results are discussed in relation to H_2O status and transpiration. M. A. B.

Seasonal changes in the carbohydrates of the wheat plant. H. R. Barnell (New Phytol., 1936, **35**, 229—266).—The % of sugars in the plant was sucrose (I) > glucose (II) > fructose (III). The proportions varied little during the winter, but in spring increased to reach maxima in a definite time sequence in the order, (II), (I), (III). After ear emergence sugar contents declined and that of starch increased. Exposure of plants to low temp. caused an increase in sugar content, notably of (I). The mechanism of these changes is discussed. Two varieties examined showed similar general changes but a difference in the sensitivity of the (I) concn. to alteration during low-temp. treatment. A. G. P.

Effects of nutrient concentration on anatomy, metabolism, and bud abscission of sweet pea. G. T. Nightingale and R. B. Farnham (Bot. Gaz., 1936, **97**, 477—517).—Sand-cultured plants were grown with complete nutrients of the same composition but different concn. With low-concn. media plants produced vigorous and succulent growth, light green leaves, low % abscission of flower buds, high proportions of young active cells with dense protoplasm in roots and tops, and slow differentiation of tissue and maturation. High-concn. media had the reverse effects. Both series of plants had high NO_3' contents. Those in dil. media had low carbohydrate (I) and high org. N (II) contents with much of the elaborated N as amides and NH_2-acids. Conc. nutrients produced high (I) and low (II) contents, the elaborated N being chiefly complex protein. The effect of conc. media resembled, in some respects, that of a low-N nutrient since the no. of active cells was relatively small and protein synthesis was limited. At the wilting point the soil solution becomes sufficiently conc. to cause early maturation of tissues. A. G. P.

Automatically-operated sand-culture equipment. F. M. Eaton (J. Agric. Res., 1936, **53**, 433—444).—Apparatus for the maintenance of a const. flow of plant nutrients is described. A. G. P.

Calcium requirement of lower algæ. H. Waris [Warén] (Planta, 1936, **25**, 460—470).—Ca is essential for the growth of *Eremosphaera viridis* but not for *Microspora* spp. Mn is injurious to *E. viridis* in the presence of Ca. *Microspora* is injured by Mn only under conditions of Ca deficiency. A. G. P.

Distant action of lead on plants. W. Stempell, G. F. von Romberg, and R. Ulpts (Protoplasma, 1935, **24**, 622—626).—A Pb plate had no apparent influence on germinating seeds of *Sinapis alba* at a distance of 1—2 mm. M. A. B.

Distribution of potassium in growing plants. II. Response of certain cultivated plants to light intensity and potassium supply. A. Frank (Bodenk. Pflanzenernähr., 1936, **1**, 133—168).—The effects of varying levels of K and N supply on the growth and K and N "density" (*i.e.*, wt., per unit area) of leaves together with the influence of shading are examined (cf. A.,1936, 257). A. G. P.

Phosphorus relations of lemon cuttings grown in solution cultures. A. R. C. Haas (Bot. Gaz., 1936, **97**, 794—807).—In culture media cuttings showed deficiency symptoms with 0—0·2 p.p.m. of PO_4''', irrespective of the frequency of change of nutrient solution. Slight deficiency was apparent with 1·0 but not with 2·0 p.p.m. of PO_4'''. With conc. media (105 p.p.m.) cuttings grew well provided the nutrient was vigorously aërated. The % P in field-grown citrus leaves decreased with advancing

maturity. In mature original leaves of cuttings the P content increased with that of the medium. Max. % of reducing sugars in mature leaves occurred with 1—10·5 p.p.m. in the nutrient. The % of non-reducing sugars increased with the [PO_4'''] of the medium. A relation is shown between the [PO_4'''] of the nutrient and the dry matter and sucrose content of leaves. Acidity is greater in P-deficient than in healthy leaves. Absorbed NO_3' remains largely unchanged in P-deficient plants (cf. B., 1936, 612, 1171). A. G. P.

Phosphorus nutrition of citrus.—See B., 1936, 1171.

Physiology of tannin in the plant cell. W. Hauser (Protoplasma, 1935, 24, 219—224).—Pptn. of gelatin (I) by tannin (II) was prevented by treatment of (II) with NaOH to a faint alkalinity, thus giving conditions similar to those in the plasma. Under these conditions (II) retarded aggregation of (I) particles. By a similar action in the plant (II) probably regulates permeability, assimilation, etc. M. A. B.

Apparent nitrogen assimilation of germinating peas. P. W. Wilson (Biochem. Z., 1936, 287, 418—419).—The view that assimilation occurs still remains to be proved. P. W. C.

Nature of the excretion of nitrogen compounds from legume nodules. A. I. Virtanen (Nature, 1936 138, 880—881).—Excretion occurs only in media (especially kaolin, sand, or soil) capable of absorbing the excreted NH_2-acids; in H_2O cultures it is negligible. It is helped by the presence of other plants. Excretion is marked in ordinary pot culture of legumes and non-legumes when other bacteria decompose aspartic acid and enable the non-legumes to utilise all the excreted N. Potatoes may deprive peas of N to such an extent that growth is seriously impaired. The extent of excretion varies with different strains of the nodule organisms, and a relatively low [NO_3'] appears to lower excretion more than the N fixation. L. S. T.

Reduction of nitrates to nitrites by expressed juice of higher green plants. A. L. Sommer (Plant Physiol., 1936, 11, 429—436).—In juices containing NO_3' and glucose and in which the activity of micro-organisms was prevented by PhMe, no evidence of catalytic reduction of NO_3' to NO_2' in the absence of light was obtained. A. G. P.

Effects of nitrogen supply on rates of photosynthesis and respiration in plants. K. C. Hamner (Bot. Gaz., 1936, 97, 744—764).—Increased supplies of NO_3' to tomato plants having high carbohydrate (I) reserve caused increased transpiration. The extent of the response $\propto$, and the period preceding its appearance inversely $\propto$, the reserve (I) content. Generally similar results were obtained with wheat. A relatively high rate of photosynthesis may be maintained in leaves of high (I), low chlorophyll, and low sol. N contents. A. G. P.

Effect of carbohydrate and of nitrogen deficiency on microsporogenesis and the development of the male gametophyte in the tomato (*Lycopersicum esculentum*, Mill.). F. S. Howlett (Ann. Bot., 1936, 50, 767—803).—Carbohydrate deficiency suppressed the development of the male organs and induced degeneration of microspores and sterility in pollen. Deficiency of N had little influence on the development of the sexual organs. The bearing of these results on sex suppression and reversal in plants is discussed. A. G. P.

Anatomy of the testa of Leguminosæ. Hard-shelled seed and the significance of the strophiolum. K. Zimmermann (Landw. Versuchs-Stat., 1936, 127, 1—56).—Hardness of seed is probably related to the thickness of the palisade layer and to its pectin content. A. G. P.

Influence of temperature treatment on carbohydrate metabolism, respiration, and morphological development of the tulip. II. L. Algera (Proc. K. Akad. Wetensch. Amsterdam, 1936, 39, 971—981; cf. A., 1936, 1568).—Cool storing prior to planting advances the period at which reducing sugars increase after planting. Cooling promotes starch (I) decomp., shifts the equilibrium, (I) $\rightleftharpoons$ non-reducing sugars, towards higher sugar concn., and tends to increase the proportion of sucrose. Gaseous exchange in stored bulbs tends to be high at low temp. A. G. P.

Metabolic changes in unevenly illuminated seedlings. P. Metzner (Ber. deut. bot. Ges., 1936, 54, 455—471).—Exposure to light lowers the sugar concn. of the expressed sap, and decreases the acidity and catalase activity. These changes are discussed in relation to the phototropic response of plants. A. G. P.

Growth [of plants] in relation to ultra-violet radiation. B. N. Singh, G. P. Kapoor, and R. S. Choudri (Bot. Gaz., 1936, 97, 649—665).—Effects of irradiation for varying periods at different intervals on germination, growth, and maturation are recorded. Results are ascribed to modification of net assimilation rate and the carbohydrate/N ratio. A. G. P.

Effect of narrow ranges of wave-lengths of radiant energy and other factors on the reproductive growth of long-day and short-day plants. N. A. Schapelle (Cornell Univ. Agric. Exp. Sta. Mem., 1936, No. 185, 33 pp.).—Effects of irradiation, temp. and nutrient conditions are examined. A. G. P.

Effect of light on absorption of salts by *Elodea canadensis*. C. T. Ingold (New Phytol., 1936, 35, 132—141).—Absorption of $K^{\cdot}$, Cl', and PO_4''' is markedly increased by light. The final p_H of culture solutions in light was > that in darkness, probably due to preferential retention of cations in illuminated cultures. A. G. P.

Cell sap concentration in cereals. A. Mudra (Z. Zuchtung [Pflanzenzucht.], 1936, A, 21, 59—67).—Seasonal variations in sap concn. are recorded. They are not paralleled by stomatal movements. Sun and shade have considerable influence on sap concn. Vals. are usually high in high-yielding varieties. A. G. P.

Influence of the various assimilating organs on the seed yield of wheat. A. E. H. R. Boonstra (Z. Zuchtung [Pflanzenzucht.], 1936, A, 21, 115—147).—

The effect of reduced C assimilation, caused by removal of various parts of plants, on grain yields is examined. The carbohydrate present in ripe grain is formed in approx. 5 weeks. A. G. P.

Measurement of respiration and carbon fixation of plants under controlled environmental conditions. J. W. MITCHELL (Bot. Gaz., 1935, 97, 376—387).—Appropriate apparatus and technique are described. A. G. P.

Effects of light and darkness on responses of plants to growth substances.—See B., 1936, 1171.

(A) Causes of pre- and post-floral movements of peduncles and scapes [of the genera *Papaver*, *Crepis*, and *Tussilago*]. (B) Development of the female gametophyte and the production of the growth-promoting hormone by flower buds. V. M. KATUNSKI (Compt. rend. Acad. Sci. U.R.S.S., 1936, 3, 343—346, 347—349).—(A) The drooping of the peduncle during development is related to over-production of growth-promoting substance (I) derived from the growing ovules. Subsequent normal erection and the premature straightening following decapitation are due to diminished supplies of (I) and to the resultant decrease in plasticity of the peduncle, which then shows the normal geotropic response.

(B) The production of (I) in flower-buds becomes max. during the stage of development of the female gametophyte at which cell division is most vigorous. A. G. P.

Hormonal theory of plant development. M. C. TSCHAJLACHJAN (Compt. rend. Acad. Sci. U.R.S.S., 1936, 4, 79—83).—The blossom hormone (" florigen ") passed from the leaves of a stock to the grafted scion of several species. It is not species-sp. A. G. P.

[Plant] cell elongation and the micellar theory. J. BONNER (Jahrb. wiss. Bot., 1935, 82, 376—412).—The mechanism of elongation of the cellulose framework of living cells is examined, and the action of growth-promoting substance on *Avena* coleoptiles is explained. A. G. P.

Effect of certain accessory growth-substances on the sporulation of *Melanospora destruens* and of some other fungi. L. E. HAWKER (Ann. Bot., 1936, 50, 699—717).—Addition of *i*-inositol (I) to the (I)-free fraction of lentil extracts (Buston and Pramanik, A., 1931, 1458) was unnecessary for the sporulation of *M. destruens* but necessary for certain other fungi. Stimulatory effects are not attributable to carbohydrate or N food substances in the extract. Lentil extracts resembled active preps. obtained from fungi but contained more (I). A. G. P.

Vitamins and growth factors in plants. Action of vegetable extracts on development of *Phycomyces*. W. H. SCHOPFER (Arch. Mikrobiol., 1936, 7, 165—176).—Leaves of various plants placed in culture media exude substances which activate the growth of *Phycomyces*. The potency of the leaves is the same whether or not they contain chlorophyll. The growth factor is also extracted from leaves by EtOH and is adsorbed on animal C. The adsorbate contains 0·525% of N, is heat-stable in acid media, and resembles vitamin-B_1. A. G. P.

Correlation effect of storage organs and growth-substance. R. DOSTAL (Ber. deut. bot. Ges., 1936, 54, 418—429).—The influence of stored materials in tubers on root and shoot development resembles and is in some respects complementary to the action of hetero-auxin. A. G. P.

Influence of growth-substance- and acid-pastes on the growth of *Avena* and *Helianthus* seedlings and its dependence on the oxygen content of the air. F. BRECHT (Jahrb. wiss. Bot., 1936, 82, 580—612).—The influence of the method of application of growth-substance (I) on its action in plants is examined. Non-purified conc. preps. from urine affect growth through the normal activity of (I) and also by means of an acid effect. Restricted proportions of atm. O_2 (2—5%) restrict and exclusion of O_2 prevents the growth of *Avena* coleoptiles. Low O_2 tension induces optimum extension in *Helianthus* hypocotls. The action of (I) and of acid on normal growth are causally unrelated. A. G. P.

Is the [plant] growth-substance species-specific ? H. SÖDING (Jahrb. wiss. Bot., 1936, 82, 535—554).—Certain preps. of growth-substance (I) from various plant organs caused bending of *Cephalaria* but not of *Avena* coleoptiles. Differences are ascribed to relative sensitivity of the plants rather than to any fundamental difference in the action of (I). The *Avena* test is unsuitable for determining very small amounts of (I). (I) is not species-sp. A. G. P.

[Plant] growth-substance. H. DOLLFUS (Planta, 1936, 25, 1—21).—The distribution of growth-substance in several plant species is examined. Accumulation occurs in node and calyx of fruits. A. G. P.

Plant growth-substances. XXIII. Biotin and aneurin as phytohormones. Physiology of germination. F. KÖGL and A. J. HAAGEN-SMIT [with B. TÖNNIS, W. VAN HASSELT, and L. PONS]. **XXIV. Auto-inactivation of auxin-*a* and -*b*.** F. KÖGL, C. KONINGSBERGER, and H. ERXLEBEN (Z. physiol. Chem., 1936, 243, 209—226; 244, 266—278; cf. A., 1936, 1305, 1570).—XXIII. The biotin (I) contents of seeds of higher plants and the great differences sometimes observed between the contents of the various parts of the seeds are recorded. The growth of peas is greatly stimulated by very dil. solutions of (I), aneurin, and œstrone [*e.g.*, $1 : 125 \times 10^6$ for (I)] but is not affected by ascorbic acid.

XXIV. Oxidation of *ψ*-auxin-*a* (II) in EtOH with $KMnO_4$ in 0·02*N*-Na_2CO_3 and successive treatment of the lactone (III) of auxin-*a* (IV) in $CHCl_3$ with O_3 and $KMnO_4$ in 0·02*N*-Na_2CO_3 give auxin-glutaric acid. (II) and (IV) exhibit no characteristic absorption of ultra-violet light. (II) in $CHCl_3$ with O_3 gives an ozonide which on decomp. with H_2O and treatment with *p*-nitrophenylhydrazine gives the *p-nitrophenylhydrazone*, $C_{19}H_{29}O_3N_3$, m.p. 138·5°, of the intermediate product obtained by the action of O_3 on (III). Auxin-*b* (V), m.p. 183° (decomp.) (*semicarbazone*, m.p. 183°, $[\alpha]_D^{20}$ −2·7° in EtOH), obtained from malt and from (III) by heating with $KHSO_4$, exhibits an absorption bond at 250 mμ which persists in *ψ*-auxin-*b* (VI), the product of spontaneous inactivation

of (V). The light absorption curves of (V) and (VI) vary with the concn. of the solution similarly to those of $CH_2Ac{\cdot}CO_2Et$. The colour produced by addition of $FeCl_3$ to (V), irradiated in SiO_2, indicates that (V) undergoes keto-enol transformation. The conversion of (IV) into (II) probably involves the shift of a double linking in an allyl group. Crystallographic data are given for (IV), (III), and (V). W. McC.

Auxin and correlative inhibition. B. Le Fanu (New Phytol., 1936, **35**, 205—220).—Growth of axillary buds on single-node stem cuttings and of young stems on whole shoots is inhibited by placing shoot bases in solutions of heteroauxin (I). Growth of young internodes is inhibited by lanoline preps. of (I) placed on stems below and accelerated by those placed above them. Buds of cuttings are inhibited by (I) in gelatin placed above or below them, the effect being smaller in the latter case. Inhibited shoots contain little or no auxin and have only a feeble ability to transport it. A. G. P.

Theory of "yarovisation." H. G. Cholodni (Compt. rend. Acad. Sci. U.R.S.S., 1936, **3**, 391—394).—Mainly theoretical. "Yarovisation" is the shortening of the life cycle of the vegetable organism due to growth hormones adsorbed from the endosperm by a seedling lacking the possibility of normal growth. Roots of young maize seedlings in a moist atm. at 23—25°, when supplied with the growth hormone, blastanin, from pieces of endosperm, passed more quickly through all the stages of their development than control roots. J. N. A.

Physiological characteristics of yarovised and non-yarovised winter wheat. I. A. Filippenko (Compt. rend. Acad. Sci. U.R.S.S., 1936, **3**, 185—189).—Yarovisation influences the physico-chemical properties of plasma-proteins (increased H_2O-solubility, lowered thermostability) and increases the functional activity and chlorophyll content of the plant. A. G. P.

Investigation of growth-promoting substances. F. Laibach and R. Lotz (Biochem. Z., 1936, **288**, 250—256).—Methods and suitable apparatus for the extraction of growth-promoting substances (I) without heating and with exclusion of air, the removal of harmful constituents, the rapid detection of (I) in plant tissues, and the prep. of pastes of (I) in wool-fat and other media are described. F. O. H.

Detection of cell-division growth-substance by means of *Saccharomyces cerevisiæ* as test organism. K. Rippel (Ber. deut. bot. Ges., 1936, **54**, 487—492).—Appropriate technique is described. A. G. P.

Accuracy of determinations of growth-substance. I. Juel (Planta, 1936, **25**, 307—310).—Day-to-day variations in the bending of *Avena* coleoptiles following application of β-indolylacetic acid were 35%. A. G. P.

Growth-substance inactivator from *Phaseolus* seedlings. P. Larsen (Planta, 1936, **25**, 311—314).—The substance is obtained from the cut seedlings by means of agar or from the expressed sap. It is party thermolabile and probably destroys the growth-substance. A. G. P.

Heart rot of young sugar beet plants grown in culture solutions. E. A. Rowe (Ann. Bot., 1936, **50**, 735—746).—The necessary supply of B to sugar beet is maintained by 1 p.p.m. of H_3BO_3 in culture solutions. Effects of B on the structural development of the plants are recorded. A. G. P.

Biochemical detection of fluorine poisoning of plants. A. Contardi and C. Ravazzoni (Rend. Ist. Lombardo Sci. Lett., 1935, [ii], **68**, 363—373; Chem. Zentr., 1936, i, 123).—The method is based on the observation that dissolved HF in leaves remains sol. for a long time and influences the enzyme action of the acid phosphatases of the shoot cuticle, whereas the normally occurring insol. fluorides show no such action. H. N. R.

Barium content of Brazil-nuts. K. Wagner (J. pr. Chem., 1936, [ii], **147**, 110—112).—Brazil-nuts, free from shell, contain 0·24—0·26%, and shells 0·046% Ba. This Ba is not extracted by Et_2O, EtOH, H_2O, or dil. NH_3, but is dissolved by 0·15% HCl. No Ba was found in hazel-nuts or pea-nuts. J. W. S.

Distribution of manganese and iron in conifers in Quebec. P. Riou, G. Delorme, and Hormisdas (Compt. rend., 1936, **203**, 688—689).—Mn and Fe have been determined in the bark, sapwood, heartwood, branches, leaves, and fruits of the cedar, balsam fir, and hemlock-spruce. Cedar contains more Fe than Mn, which is entirely lacking from the heartwood. Spruce and fir contain more Mn than Fe. J. N. A.

Phytochemical notes. I. *Monarda menthæfolia*. R. S. Justice (J. Amer. Pharm. Assoc., 1936, **25**, 850—852).—Data are given for the content of H_2O, ash and its constituents, pentosan, crude fibre, tannin, and volatile oil of the flowers, leaves, stems, and roots and for the extractive action of various solvents on flowers, leaves, and stems. The 95% EtOH extract of flowers and leaves contains thymol, carvacrol, cymene, fatty acids, thymoquinol, and two yellow pigments, m.p. 216—218° and 204—205°, respectively. F. O. H.

Mimosin. J. Renz (Z. physiol. Chem., 1936, **244**, 153—158).—The sap from the tubular cells of young shoots and leaf stalks of *Mimosa pudica*, L., and *Leucaena glauca*, Benth., yields *mimosin* (I), an aromatic $OH{-}NH_2$-acid (probably $C_{16}H_{20}O_8N_4$), m.p. 227—228°, $[\alpha]_D^{23}$ −21° in H_2O, containing 2 NH_2 (one at α) and 3 CO_2H. (I) in concns. ≮0·0066% gives a violet colour with $FeCl_3$ and stimulates motion in the leaves of the plant at concns. ≮0·03*M*. With CH_2N_2 (I) yields an unstable substance, m.p. 104° (decomp.). W. McC.

Origin of uric acid in plants. D. Michlin and N. Ivanov (Planta, 1936, **25**, 59—63).—The presence of uric acid in several legumes is confirmed. No evidence was obtained of the occurrence of a xanthine oxidase. A. G. P.

Chemical composition of buds of *Populus balsamifera*. A. Goris and H. Canal (Bull. Soc. chim., 1936, [v], **3**, 1982—2009).—The buds are extracted with boiling 95% EtOH containing $CaCO_3$. The filtered extract, when cooled, deposits *l*-asparagine.

The extract is evaporated and sucrose and salicoside are isolated from the residue. The Et_2O extract of the residue or that obtained directly from the buds is shaken successively with aq. $NaHCO_3$, Na_2CO_3, and NaOH, thus leading to the isolation of $EtCO_2H$, $Pr^{\alpha}CO_2H$, 4-hydroxy- and 2 : 3-dihydroxy-benzoic acid, 3 : 4-dihydroxycinnamic acid, a *trihydroxymethylanthraquinone*, m.p. 218°, and an unidentified phenolic acid, m.p. 224°. The alkali-insol. portion gives cinnamyl and phenylethyl alcohol present as their cinnamic esters, a sesquiterpene alcohol, $C_{15}H_{26}O$ [phenylurethane, m.p. 150° (corr.)], COPhMe, and 2 : 6-*dihydroxy*-4-*methoxyphenyl* β-*phenylethyl ketone*, m.p. 168° (block), which is stable towards alkali but is decomposed by boiling HI into $CH_2Ph{\cdot}CH_2{\cdot}CO_2H$ and 1 : 3 : 5-$C_6H_3(OH)_3$; it is obtained synthetically by passing HCl into a solution of $CH_2Ph{\cdot}CH_2{\cdot}CN$, 1 : 3 : 5-$C_6H_3(OH)_3$, and $ZnCl_3$ in Et_2O and hydrolysis of the product to 2 : 4 : 6-*trihydroxyphenyl* β-*phenylethyl ketone*, m.p. 141° (corr.), which is methylated by KOH and Me_2SO_4. H. W.

Biochemical study of Salicaceæ ; *Salix daphnoides*, Vill. J. Rabaté (J. Pharm. Chim., 1936, [viii], **24**, 393—400; cf. A., 1936, 1571).—The H_2O-extract of the leaves of *S. daphnoides* affords salicoside (I) and *daphneflavonoloside*, m.p. 285° (decomp.) (block), $[\alpha]_D$ −79° in 85% EtOH (0·5 g. per 100 g. fresh leaves), hydrolysed by dil. HCl or 6% H_2SO_4 to glucose and *daphneflavonol*, m.p. 325°, which, fused with KOH, gives protocatechuic acid and an unidentified phenol. From the H_2O-extract of the twigs, (I) (1%) and populoside are isolated. Both extracts also contain sucrose. J. W. B.

Chief constituent of the ethereal oil of *Asa-fœtida*.—See A., II, 3.

Growth of plant cell-walls. W. Wergin (Angew. Chem., 1936, **49**, 843—845).—*X*-Ray examination of growing hairs of cotton seed reveal the presence of an unidentified precursor (I) of cellulose (II) giving a diagram distinct from that of (II). No (II) is detectable until the 35th day of growth, after which a mixed diagram of (I) and (II) is observed until (I) finally disappears. Photomicrographs show that the time of first appearance of (II) coincides with the commencement of thickening of the cell wall, the external diameter of which does not sensibly increase. (II) is therefore to be regarded as consolidating and strengthening a structure already produced by (I). F. L. U.

Analysis of carbohydrates of cell walls of plants. II. Determination of pentoses as single substances and in mixtures containing uronic acids and hexoses. S. Angell, F. W. Norris, and C. E. Resch (Biochem. J., 1936, **30**, 2146—2154).—Modified procedure for determining furfuraldehyde (I) is described. The relation between phloroglucide and (I)-yielding substances singly and in admixture and in presence of glucose or galactose is determined. The results are treated mathematically. P. W. C.

Hemicelluloses. V. Of maize cobs. VI. Of the hop (*Humulus lupulus*) flower. S. Angell and F. W. Norris (Biochem. J., 1936, **30**, 2155—2158, 2159—2165).—V. The optimum p_H for pptn. of the hemicellulose from NaOH extracts of the cell wall material of fraction *A* (cf. A., 1930, 383) by AcOH is 4·0—4·1. Failure to ppt. at this p_H leads to a low yield of fraction *A* and to its appearance at later stages. Improved yields of these fractions are obtained by pptg. with glycerol and $CuSO_4$ instead of Fehling's solution and by subsequent decomp. with AcOH instead of HCl.

VI. The optimum p_H for the most complete pptn. of fraction *A* hemicellulose (*loc. cit.*) is 3. Fractionation with glycerol–$CuSO_4$ shows that A_1 and B_2 are the largest fractions whilst C_2 and B_1 are very small. All fractions consist of anhydroxylose, anhydroglucose, and glycuronic anhydride in different proportions. Hop hemicellulose belongs, therefore, to the xylan class usually found in lignified tissues. P. W. C.

Isolation and characterisation of a starch polysaccharide from the leaf tissue of the apple (*Malus malus*). C. Niemann, A. B. Anderson, and K. P. Link (J. Biol. Chem., 1936, **116**, 447—455).—Leaves, autoclaved at 115° for 10 min. to inactivate enzymes, were rapidly dried at 65° and ground. The powdered material was extracted with boiling 85% EtOH containing 0·75% HNO_3 and washed with cold H_2O. Boiling H_2O then extracted the polysaccharide (I) which was pptd. from a conc. solution by 4 vols. of EtOH, and dehydrated with $COMe_2$–EtOH. After dissolution in H_2O and re-pptn. by EtOH, (I) was purified by prep. of the starch–iodide complex; yield, 1·6 g. from 960 g. of dried leaf. By acid and enzymic hydrolysis, (I) was shown to be a polyglucosan similar to β-amylose of cereal starches. P. G. M.

Pectate and araban in the pecto-cellulosic membrane. H. Colin and S. Lemoyne (Bull. Soc. Chim. biol., 1936, **18**, 1578—1588).—Tables summarise the rotation, N, furfuraldehyde, OMe, and CO_2 (separated by the action of HCl) of fractions obtained by progressive depectinisation of desaccharified beet pulp by warm H_2O (95—135°) and by diastatic action. Early aq. extracts contain preponderating amounts of pectate (I) and later extracts of araban (II). Diastatic action similarly liberates varying proportions of (I) and (II). Moreover material from which larger amounts of (I) have been removed by digestion with H_2O liberate larger amounts of (II) on subjection to diastatic action. The results do not support the view that the pectose is made up of (I) and (II) combined in definite proportions. P. W. C.

Distribution of mannan in some gymnosperms. A. Nowotnowna (Biochem. J., 1936, **30**, 2177—2183).—Conditions suitable for determination of mannose as phenylhydrazone are investigated. The determination of mannan (I) in woods and wood cellulose (II) is described. The major part of (I) in softwoods is associated with the (II) and considerable variation is found in the (I)/xylan (III) ratio of (II). (I) may be removed from (II) by dil. acid hydrolysis under the conditions used for extraction of (III). At the same time considerable loss of hexosan occurs. (I) and (III) are affected to different extents during treatment of (II) with alkalis. P. W. C.

Association of xylan with cellulose in certain structural celluloses. A. G. NORMAN (Biochem. J., 1936, **30**, 2054—2072).—The cellulose (I) of plants and woods differs from that of cotton in containing cellulosans (II) which are tenaciously retained and must be regarded as an integral part of the (I) aggregate. Drying by heat produces changes in both components leading to increased availability to extracting and hydrolysing agents. This effect may be observed repeatedly in the same sample, the xylan (III) fraction being affected to a greater extent. The H_2O-sol. material obtained by heat-treatment contains fractions of higher (III) content. Uronic groupings are also present and some oxidation is probable. The (III) may be separated from (I) by treatment with acid or alkali but concurrent loss of hexosan also takes place. The material removed by dil. acid hydrolysis is not hydrolysed completely to reducing sugars. Continued boiling with alkali removes hexosan more quickly than (III). (I) from different plants behaves differently towards hydrolytic and extraction agents. The results support the view that the (II) fraction of the cellulosic aggregate of plants and woods is oriented and participates in the micellæ, being retained by secondary valency forces identical with those between parallel (I) chains in pure cotton (I). P. W. C.

***X*-Ray diffraction patterns of crystalline tobacco mosaic proteins.** R. W. G. WYCKOFF and R. B. COREY (J. Biol. Chem., 1936, **116**, 51—55).—The patterns obtained from cryst. tobacco mosaic virus proteins, with many sharp reflexions between 8 mμ and 0·3 mμ, are the same as those from true crystals composed of large mols. Repeated recrystallisation did not alter the pattern, and no difference was found between the proteins of the ordinary and the aucuba strains of the disease. J. N. A.

Constituents of *Epimedium macranthum*, Morr and Decne. II. Constitution of a new flavone glucoside. Relationship between icaritin, anhydroicaritin, and β-anhydroicaritin and oxidation of anhydroicaritin. III. Synthesis of anhydroicaritol and anhydroicaritin trimethyl ether.—See A., II, 7.

Glucosides of the flavone series. III. Constituents of *Trifolium repens*, L.—See A., II, 7.

Constituents of the common poppy (*Papaver rhoeas*). W. AWE (Arch. Pharm., 1936, **274**, 439—445).—The colour reactions of rhoeadine are different from those of chelidonine, cryptopine, and hydrastine. It contains 1 OMe; rhoeagenine contains none (cf. Späth *et al.*, A., 1936, 1003). F. R. G.

Constituents of *Drosera rotundifolia*.—See A., II, 25.

Fruits of *Solanum xanthocarpum*.—See A., II, 39.

Resin alcohols of mistletoe.—See A., II, 28.

***Cuscuta reflexa*, Roxb. IV. Isolation of a new yellow flavone colouring matter from the seeds.**—See A., II, 29.

Polyterpenoids and their glucosides. VI. Saponin from the bark of *Schima kankaoensis*.—See A., II, 27.

Alkaloid of *Stephania cepharantha*, Hayata.—See A., II, 39.

Constituents of *Daphne genkwa*, Sieb. and Jucc. III. Synthesis of genkwanin.—See A., II, 29.

Determination of pressure of carbon dioxide in small amounts of liquids containing carbonic acid.—See A., I, 50.

Hydrogen electrode.—See A., I, 49.

Use of silver nitrate for the study of the texture of bones. M. PRENANT (Compt. rend. Soc. Biol., 1936, **123**, 472—473).—After treatment with dil. gelose, a dil. solution of $AgNO_3$ is used, when the fibres can be traced by the Ag_3PO_4 crystals. H. G. R.

Synthetic organic dyes as contrast media in roentgenography. III. Experimental studies on bladders of rabbits. S. ISAHAYA (Acta Dermatol., 1934, **24**, 82—96).—20 c.c. of 5% aq. dye solution were injected into the bladders of rabbits. The dyes which cast a clear roentgenogram shadow without forming any ppt. were; rose-Bengal, methyleosin, eosin 3G, erythrosin, rose-Bengal BT, phloxine B, and eosin C.P. bluish. CH. ABS. (*e*)

Determination of degree of fineness of *X*-ray "contrast substances" [barium sulphate].—See A., I, 44.

Determination of small amounts of benzene in biology. ANON. (Rev. pétrolifère, 1935, 1307—1308; Chem. Zentr., 1936, i, 1668).—The C_6H_6 is nitrated and weighed as $C_6H_4(NO_2)_2$. H. N. R.

Permanent standards for the turbidimetric determination of protein. E. J. KING and G. A. D. HASLEWOOD (Lancet, 1936, **231**, 1153).—The prep. of suitable standards is described. L. S. T.

Conductometric method for micro-determination of urea. V. RANGANATHAN and B. N. SASTRI (Biochem. J., 1936, **30**, 2135—2139).—The method is based on the change of conductivity resulting from the hydrolysis of urea by urease and gives good results with urine, blood, and milk. P. W. C.

Determination of iodine. B. F. STIMMEL and D. R. MCCULLAGH (J. Biol. Chem., 1936, **116**, 21—24).—The method (A., 1934, 1379) for determining I in blood and tissue is modified. J. N. A.

Micro-volumetric sodium method of Ball and Sadusk. B. HOLMES and P. L. KIRK (J. Biol. Chem., 1936, **116**, 377—380).—A modification of the method (A., 1936, 747) is described. P. G. M.

Determination of lead in organs, bones, and sera. A. J. HIJMAN (Meded. Dienst. Volksgesondh. Nederl-Indië, 1935, **24**, 139—141; Chem. Zentr., 1936, i, 1658).—The dithizone method is adapted. In Pb poisoning of children the Pb content of bones and pituitary is high. Small increases in spinal fluid and brain are recorded. Pb is pptd. in liver and kidneys. A. G. P.