BRITISH CHEMICAL ABSTRACTS

A., III.—Biochemistry

MAY, 1937.

Respiratory capacity, gaseous exchange, alveolar tension, and circulatory transport in normal man. E. Cicognani (Boll. Soc. ital. Biol. sperim., 1936, **11**, 873—874).—Average vals. for 60 men and 30 women are given. F. O. H.

Apparatus for studying changes in expired air during expiration. F. Grosse-Brockhoff and W. Schoedel [with A. Hampel] (Pflüger's Archiv, 1936, **238**, 204—212). M. A. B.

Blood of *Cobitis fossilis*. II. Periodic cycle of variation in composition and relation of certain states of the blood to respiration. H. Lupu (Ann. Sci. Univ. Jassy, 1935, **21**, 407—455).—This fish undergoes periodic fluctuations in the red corpuscle count. Fluctuations in viscosity are parallel but extend to the serum, indicating that serum-proteins are also implicated in the total process. CO_2 accumulates in the blood at the same time as the hæmocytosis develops. Physiological and histological studies and some notes on the chemical displacements are given. R. M. M. O.

Porphyrin in erythrocytes. K. Lageder (Klin. Woch., 1936, **15**, 296—298; Chem. Zentr., 1936, i, 2966).—In certain diseases there is a marked increase of porphyrin in erythrocytes. A. G. P.

Sedimentation of erythrocytes in solutions of albumin, fibrinogen, and peptone. S. P. Lucia and J. W. Brown (Proc. Soc. Exp. Biol. Med., 1937, **35**, 598—601).—Ox and human blood serum-albumin suspended in Locke's solution or plasma and dog bile in plasma prolong the sedimentation time of human red cells. Ox blood-fibrinogen, talc, or kaolin has no effect, and Witte's peptone a slight action. P. G. M.

Pseudo-agglutination of erythrocytes in dilute suspensions. M. Rigoni (Boll. Soc. ital. Biol. sperim., 1936, **11**, 874—877).—When the sedimentation velocity of the corpuscles is relatively high, a 10% suspension of erythrocytes in the corresponding plasma rapidly forms sedimentation layers of three types of agglutination; with corpuscles of low velocity (as in certain diseases), this phenomenon does not occur. F. O. H.

Positive electric charge on erythrocytes. A. Cardin and V. Zambotti (Boll. Soc. ital. Biol. sperim., 1936, **11**, 750—751).—The character of the surface charge of erythrocytes depends on their concn. in the suspension medium; in dil. suspensions in ultrafiltrates of sera they are positively charged. F. O. H.

Micro-incineration of the red corpuscles of the teleost, *Cichlasoma fascetum*, Jen. A. Policard and P. Rojas (Rev. soc. argentina biol., 1935, **11**, 164—165).—Each cell gives a ring of brown ash containing Fe_2O_3 enclosing a white Fe-free ash from the nucleus. Ch. Abs. (*p*)

Cyanide hæmochromogen. Ferriheme hydroxide–cyanide reaction: its mechanism and equilibrium as determined by the spectro-electric method. T. R. Hogness, F. P. Zscheile, jun., A. E. Sidwell, jun., and E. S. G. Barron (J. Biol. Chem., 1937, **118**, 1—14).—Equilibria were studied by mixing various vols. of NaOH or NaOH–KCN and alkaline ferriheme (Hm) (cf. Pauling and Coryell, A., 1936, 867) solutions. Equilibrium was established rapidly. Varying [CN′] at const. p_H gives a typical sigmoid curve for the association of Hm and CN. Varying total [Hm] tends to cause deviations from Beer's law, whereby the equation $Hm_2(OH)_2 + 4CN' = 2Hm(CN)_2' + 2OH'$, is developed, assuming polymerisation of Hm. Cl′ is without effect on this relation, indicating that HmCl is largely hydrolysed. PO_4''' combines with Hm giving a spectrum similar to that of $Hm_2(OH)_2$. R. M. M. O.

Water-soluble hæmin-*C* from blood. G. Barkan and O. Schales (Z. physiol. Chem., 1937, **246**, 181—193).—Erythrocytes (man, ox, horse, rabbit) yield directly, or after peptic or tryptic digestion, H_2O-sol. hæmin-*C* which with C_5H_5N and nicotine gives hæmochromogens having spectra resembling that of cytochrome-*C* (absorption max. at approx. 549 mμ). W. McC.

Polarographic investigations of blood-pigments and their derivatives. I. Activation of hydrogen peroxide by hæmoglobin and hæmatin. R. Brdička and C. Tropp (Biochem. Z., 1937, **289**, 301—312).—Heyrovský's polarographic method (A., 1932, 1101) indicates that the Fe complex in hæmatin (I) and hæmoglobin (II) solutions catalytically activates H_2O_2, the degree of activation depending on the concn. of the complex and p_H. The min. concns. of (I) and (II) producing detectable activation are 8×10^{-5} and 20×10^{-5}%, respectively. KCN inhibits the effect. W. McC.

Variations in respiratory capacity of hæmoglobin and in resistance of blood-corpuscles in different levels of sedimented blood. Multiplicity of hæmoglobin. G. Gallerani (Boll. Soc. ital. Biol. sperim., 1936, **11**, 818—820).—The resistance to hæmolysis and the spectrophotometric quotients confirm previous indications (electric charge

and composition) of the multiplicity of hæmoglobin both in various species and in the same animal. F. O. H.

Amphoteric properties of hæmoglobin.—See A., I., 240.

Demonstration of blood on guns and bullets. A. Brüning (Chem.-Ztg., 1937, **61**, 228—229).—Specks of red varnish from an oil-tight cartridge might be mistaken for blood since they give with alkaline N_2H_4 a spectrum band at about 556 mμ, which is, however, weaker and broader, and extends more towards the *E*-line, than that of hæmochromogen. There is no trace of a band at 520 mμ. R. M. M. O.

Osmotic pressure and mol. wt. of various erythrocruorins. J. Roche and R. Combette (Compt. rend., 1937, **204**, 155—157).—Data for the osmotic pressure at various concns. in *M*/15 PO_4''' buffer at p_H 7·4 give vals. for the mol. wt. of the erythrocruorin (plasmatic) of *Arenicola marina* and those (corpuscular) of *Dasybranchus caducus* and *Glycera gigantea* of 356,500, 25,080, and 54,500, respectively (cf. Svedberg and Eriksson, A., 1933, 965). F. O. H.

Separation of serum-albumin into two fractions. II. Nature of the glycoprotein fraction. L. F. Hewitt (Biochem. J., 1937, **31**, 360—366; cf. this vol., 53).—Purified cryst. serum-albumin (I) ("crystalbumin") is free from polysaccharide but as usually prepared contains a glycoprotein (II) ("seroglycoid"). Horse serum contains globulin 3·6, (I) 2·8, (II) 0·3, and mucoid 0·05% approx. F. O. H.

Viscous protein of syphilitic sera. M. Doladilhe (Compt. rend., 1937, **204**, 301—302; cf. Vernes, this vol., 15; Doladilhe, *ibid.*, 83).—Viscous protein, isolated from a syphilitic serum and mixed with normal serum, confers on the latter the flocculating properties of a syphilitic serum. F. A. A.

Elastic limits of plasma gels. L. F. Shackell (J. Pharm. Exp. Ther., 1937, **59**, 333—349).—A method for determination of the elastic limit of a plasma gel is described. Addition of 0·2% of neoarsphenamine to normal horse plasma lowers the val., which is a function of the fibrinogen content, by about 80%; this effect is reduced by treatment with H_2O_2 or exposure to air or O_2. The effect of dilution with serum, aq. NaCl, or H_2O has been studied. P. G. M.

Importance of the determination of protein-bound sugar in fractionation and identification of blood-proteins. H. Bierry (Compt. rend. Soc. Biol., 1937, **124**, 695—698).—The protein-bound sugar of the globulin fraction of horse plasma is 3—3·6% and that of the albumin fraction 0·4—1%. The presence of multiple globulins and albumins in plasma is indicated. H. G. R.

Effect of removal of lipins on the solubility of serum-proteins in potassium phosphate solution. S. C. Liu and H. Wu (Chinese J. Physiol., 1937, **11**, 323—327).—The solubility of natural serum-proteins is > that of those from lipin-free serum. H. G. R.

Effect of removal of lipins in the precipitability of serum-euglobulin. S. C. Liu and H. Wu (Chinese J. Physiol., 1937, **11**, 315—321).—Euglobulin (I) is more easily pptd. from lipin-free serum. The lipins do not affect the solubility of (I) in the serum and do not exist as free constituents. H. G. R.

Blood-lipins and -protein in Canadian Eastern Arctic Eskimos. A. C. Corcoran and I. M. Rabinowitch (Biochem. J., 1937, **31**, 343—348).—Tabulated data for total lipins, neutral fat, fatty acid, total and free cholesterol, cholesteryl ester, and phospholipins of the blood (in two cases, before and after administration of 200 ml. of soya-bean oil) and for R.Q. vals. indicate an active and unusual mechanism for utilisation of fats. F. O. H.

Body-temperature and plasma-lipins in rabbits. E. M. Boyd, J. H. Orr, and G. B. Reed (Proc. Soc. Exp. Biol. Med., 1936, **35**, 479—482).—In healthy young rabbits there is no relation between variations in body-temp. (37·8—39·4°) and the concns. of phospholipin and free cholesterol in the blood-plasma. W. McC.

Lipin and mineral distribution in the serum and erythrocytes of normal children. B. N. Erickson, H. H. Williams, F. C. Hummel, and I. G. Macy (J. Biol. Chem., 1937, **118**, 15—35).—Data for the contents of $Na^{\cdot}$, $K^{\cdot}$, Cl', phospholipin, neutral fat, cholesterol, and cholesteryl ester in plasma and corpuscles, resistance to aq. NaCl and saponin and dimensions of erythrocytes, and differential corpuscle counts are tabulated and compared with corresponding data for adults. R. M. M. O.

Determination of cholesterol in 0·1 c.c. of blood, serum, or plasma by the acetyl chloride method. S. Görtz (Biochem. Z., 1937, **289**, 313—319; cf. A., 1935, 270).—Serial determinations are made employing a special holder for 20 tubes in which the cholesterol is extracted during 30 min. with $CHCl_3$ and purified, a mechanical shaker being used. The $ZnCl_2$ reagent and (pure) AcCl, suitably preserved, remain fit for use for 1 month. W. McC.

Changes in the composition of the blood of the chick embryo during ontogenesis. C. M. Zorn and A. J. Dalton (Proc. Soc. Exp. Biol. Med., 1936, **35**, 451—453).—Daily blood analyses made from the ninth day of incubation onwards until several days after hatching show that the sugar, uric acid, cholesterol, hæmoglobin, and erythrocyte contents increase greatly and almost regularly during the whole or part of the incubation period. W. McC.

Analysis of blood of five male and five female carabaos. E. G. Posa (Philippine Agric., 1935, **24**, 388—392).—Average vals. obtained were: N 30·04, non-protein-N 28·55, urea 13·51, uric acid 1·57, creatinine 1·68, creatine 4·43, Cl (as NaCl) 477·3, Ca 28·19, sugar 73·65 mg. per 100 ml. Serum-Ca was > twice that recorded for other farm animals. Ch. Abs. (*p*)

Chicken blood. A. C. Gonzaga (Rept. New York State Vet. Coll., 1933—1934, 53—57).—Concns. of sugar and of non-protein-N are high in blood of young chicken and gradually decrease with age.

Simultaneously urea-N, Fe, hæmoglobin (I), and O_2 vol. increase slightly. The uric acid (II) content is highest in 1-day chicks and in those 2—4 months old. Sugar, total non-protein-N, urea-N, and (II) in venous blood are >, and Fe, (I), and O_2 <, in arterial blood. CH. ABS. (*p*)

Micro-bioassay of acetylcholine. G. KATZ (Proc. Soc. Exp. Biol. Med., 1937, **35**, 544—545).—Details are given of a method for the determination of acetylcholine in 0·3 c.c. of blood or serum with an error of ±20%, using the contraction of the leech muscle. P. G. M.

Determination of morphine in blood. J. W. MULL (Proc. Soc. Exp. Biol. Med., 1937, **35**, 551—553).—A colorimetric modification of Sanchez' method is described. 0·0025 mg. of morphine can be determined in 1 c.c. of whole blood. P. G. M.

Indicanæmia during gestation, parturition, and puerperium. R. A. FERRARI (Rev. sudamer. endocrinol., 1935, **18**, 690—701).—Normal blood-indican varied between 0·03 and 0·12%. No increase occurred during gestation etc. CH. ABS. (*p*)

Determination of minute amounts of atebrin in blood. R. N. CHOPRA and A. C. ROY (Indian Med. Gaz., 1935, **70**, 504—505).—Oxalated blood soaked on filter-strips and dried is extracted with Et_2O. The residue is dissolved in 0·1*N*-HCl and the filtered solution used for colorimetric determination using NaOH and C_5H_{11}·OH. 0·005—0·025 mg. of atebrin may be determined with an error of <0·003 mg. CH. ABS. (*p*)

Bisulphite-binding substances in blood in health and disease (vitamin-B_1 deficiency). R. W. WILKINS, F. H. L. TAYLOR, and S. WEISS (Proc. Soc. Exp. Biol. Med., 1937, **35**, 584—585).—HSO_3'-binding substances in blood are increased in disease, particularly vitamin-B_1 deficiency. P. G. M.

Blood-sugar and glucose tolerance at high altitudes. W. H. FORBES (Amer. J. Physiol., 1936, **116**, 309—316).—Glucose tolerance is increased at high altitudes in acclimatised subjects whose tolerance curves at sea-level are normal. The slight increase recorded in blood-sugar cannot with certainty be attributed to the altitude. R. N. C.

Does mental function depend on normal blood-sugar concentrations? E. POWELL (Tri-State Med. J., 1935, **7**, No. 5, 1421—1422, 1431).—Pancreatic involvement leading to hyperinsulinism with fasting blood-sugar level of 48—60 mg. per 100 c.c. depressed mental functions. CH. ABS. (*p*)

Plasma-sugar of decapods. M. FLORKIN (Bull. Acad. roy. Belg., 1936, [v], **22**, 1359—1367).—The plasma-sugar of *Carcinus maenas*, *Homarus vulgaris*, *Palinurus vulgaris*, and *Maia squinado* is approx. 0·010% under normal conditions and, with *C. maenas*, falls practically to zero after a fast of 14 days. E. M. W.

Effect of saccharin and galactose on blood-sugar. T. L. ALTHAUSEN and G. K. WEVER (Proc. Soc. Exp. Biol. Med., 1937, **35**, 517—519).—No reflex hyperglycæmia is produced by ingestion of saccharin or galactose. P. G. M.

Spectrophotometric determination of ascorbic acid in blood. A. CHEVALLIER and Y. CHORON (Compt. rend. Soc. Biol., 1937, **124**, 743—744).—The method previously described (this vol., 155) has been adapted for use with 4 c.c. of blood. H. G. R.

Lactic acid in rest and work at high altitudes. H. T. EDWARDS (Amer. J. Physiol., 1936, **116**, 367—375).—Resting blood-lactic acid (I) shows an initial slight rise above sea-level vals. on arrival at high altitudes, but returns to sea-level vals. after acclimatisation even at 6140 m. where arterial saturation is 55—70%. (I) augmentations after standard work performances also show rises initially, but become normal after acclimatisation. The ability to accumulate (I) falls with increase of altitude, and only slight increases over resting vals. occur at 6140 m. R. N. C.

Disappearance of propylene glycol from the blood stream. H. W. NEWMAN and A. J. LEHMAN (Proc. Soc. Exp. Med., 1937, **35**, 601—603).—50% of propylene glycol (I) injected intravenously can be recovered in the urine; it is rapidly absorbed from the stomach. 1·10% of (I) in blood is required to produce the same narcosis as 0·35% of EtOH. P. G. M.

Variations in the blood-alcohol curve produced at different times after a meal. A. GALAMINI and V. CELLI (Boll. Soc. ital. Biol. sperim., 1936, **11**, 892—894).—The inhibitory action of ingested food on the increase in blood-EtOH due to drinking aq. EtOH persists for approx. 4 hr. after the meal. F. O. H.

Distribution of bases between cells and serum of normal human blood. P. M. HALD and A. J. EISENMAN (J. Biol. Chem., 1937, **118**, 275—288).—Vals. are given for the concns. of H_2O, K, Na, Ca, Mg, and total base in normal human sera and red blood cells. F. A. A.

Calcium content of plasma and serum. H. THELEN (Z. physiol. Chem., 1937, **246**, 194—202; cf. Streef, A., 1936, 1284).—The Ca contents of serum and plasma remain const. after the blood is drawn and hence the findings of Waelsch *et al.* (A., 1935, 1142) are not confirmed. W. McC.

Calcium and protein changes in serum during sleep and rest without sleep. N. COOPERMAN (Amer. J. Physiol., 1936, **116**, 531—534).—Total serum-Ca and -proteins decrease, and $Ca^{\cdot\cdot}$ increases slightly, during periods of 5—7 hr. of sleep or rest. In shorter periods of 1½—2 hr., total Ca shows a more marked decrease whilst $Ca^{\cdot\cdot}$ is unaffected; these changes can be correlated with an increase in circulating plasma vol. The view that Ca passes from the blood-stream into the tissues during sleep is not supported. R. N. C.

Colorimetric determination of serum-magnesium based on hydroxyquinoline precipitation. W. S. HOFFMAN (J. Biol. Chem., 1937, **118**, 37—45).—Mg is pptd. from serum (2 c.c.) by 8-hydroxyquinoline, which is determined in the ppt. colorimetrically (photo-electric method) by its reaction with $Fe^{\cdot\cdot\cdot}$ in dil. HCl. The normal val. in man is 0·00218± 0·00015%. R. M. M. O.

Potassium and the alkaline reserve of coleoptera. A. Drilhon and R. G. Busnel (Compt. rend. Soc. Biol., 1937, **124**, 806—807).—[$K^{\cdot}$] in the hæmolymph is const. in different species but a variation is observed in the alkaline reserve. H. G. R.

Lead in human blood. J. H. McMillen and G. H. Scott (Proc. Soc. Exp. Biol. Med., 1936, **35**, 364—365).—Spectrographic examination showed that the blood of 83 healthy male and 6 healthy female students contained $>0{\cdot}0019$ mg. of Pb per c.c. W. McC.

Micro-determination of sulphur in blood. S. Lorant (Biochem. Z., 1937, **289**, 425—431).—Total non-protein-S is colorimetrically determined in 3 c.c. of deproteinised plasma or serum after destruction of org. matter with $KNO_3 + Na_2B_4O_7$ at 450—500° and pptn. of S as benzidine sulphate; SO_4''-S is determined directly in the deproteinised liquid. Interference by PO_4''' is prevented by adding HNO_3 before pptn. of SO_4'' and interference by Cl' by addition of $AgNO_3$, AgCl being subsequently removed with conc. aq. NH_3. W. McC.

Blood-bromine during sleep. G. Moruzzi (Boll. Soc. ital. Biol. sperim., 1936, **11**, 728—730).—The total blood-Br in man (cf. A., 1936, 1135) shows no significant variation between day and night vals.; the content of Br not pptd. by Folin's H_2WO_4 reagent (*i.e.*, inorg. Br), however, increases during the night. F. O. H.

Osmotic adjustments between cells and serum in the circulating blood of man. A. J. Eisenman, P. M. Hald, and J. P. Peters (J. Biol. Chem., 1937, **118**, 289—299).—Changes in cell vol. and redistribution of H_2O between red blood cells and serum in patients after injection of hypertonic aq. NaCl indicate that the cells act *in vivo* as simple osmometers, impermeable to base; chemical analysis, however, shows that bases traverse the membranes. In similar experiments *in vitro*, no base is transferred. It is suggested that in both cases the cells act as osmometers, H_2O being transferred, but that *in vivo* base is also transferred in response to other (metabolic) processes. F. A. A.

Origin and significance of blood-serum enzymes. L. A. Crandall, jun. (Amer. J. Dig. Dis. Nutr., 1935, **2**, 230—235).—A review. Ch. Abs. (*e*)

Inactivation of pneumococcal hæmolysin by sterols. B. Cohen, H. Schwachman, and M. E. Perkins (Proc. Soc. Exp. Biol. Med., 1937, **35**, 586—591).—The inhibiting effect of cholesterol etc. on pneumolysin is determined by the ·OH and the double linking, peroxide formation being of secondary importance. The free ·SH of the active lysin remains free after cholesterol treatment. Air-oxidised lysin is almost unaffected by cholesterol. P. G. M.

Molecular interaction in monolayers. I, II. See A., I, 235.

Is heparin an antithrombin? A. J. Quick (Proc. Soc. Exp. Biol. Med., 1936, **35**, 391—392).—The rate of coagulation by prothrombin (pptd. from human plasma with CO_2, dissolved in H_2O, and treated with $CaCl_2$) is not affected by addition of heparin, which is not an antithrombin (I) or an antiprothrombin but reacts with a constituent of the plasma to form (I). W. McC.

Coagulation defect in peptone shock: antithrombins. A. J. Quick (Amer. J. Physiol., 1936, **116**, 535—542).—The curve of the clotting time of dog plasma after intravenous injection of peptone against progressive dilutions of thrombin (I) is very similar to the curve of the clotting time after heparin (II) against the same dilutions. Incoagulability in peptone shock is considered to be due to production of a (II)-like anticoagulant, which differs from the normal antithrombin of blood in its rate of neutralisation of (I). R. N. C.

Relationship between alexin and the viscous protein of serum. M. Doladilhe (Compt. rend., 1937, **204**, 382—383).—Prolonged dialysis of serum yields a viscous protein prep., readily flocculated by $H^{\cdot}$ and possessing high alexic activity. F. O. H.

Titration of the alexic power of human sera. F. Meersseman (Compt. rend. Soc. Biol., 1937, **124**, 767—769).—Details are given for determination of the hæmolytic index and alexic power of serum. H. G. R.

Alexic power of normal and pathological sera. F. Meersseman and H. Perrot (Compt. rend. Soc. Biol., 1937, **124**, 770—771).—In normal subjects the val. is 4—6 and is relatively const. In hepatic diseases, anaphylactic states, and malaria a low val. is observed, whilst in tuberculosis and infections of the respiratory tract the val. is variable. H. G. R.

Identity of agglutinins and precipitins. A. P. di Sorrentino (Boll. Soc. ital. Biol. sperim., 1936, **11**, 711—714).—The difference in action of intramuscularly injected quinine on agglutinins and precipitins indicates their non-identity. F. O. H.

Determination, purification, and concentration of antigens and anti-bodies. A Tasman (Chem. Weekblad, 1937, **34**, 230—241).—A review dealing particularly with diphtheria and tetanus toxins, antitoxins, and anatoxins. S. C.

Antigenic nature of melanin. I. L. Kritschevski and P. L. Rubinstein (Z. Immunitäts., 1935, **84**, 397—404; Chem. Zentr., 1936, i, 3160—3161).—Melanin (I) from the retina of cattle is a hapten which, in combination with pig serum, produces in immunised rabbits a sp. antibody giving a precipitation reaction with (I). By immunising birds by means of dead parasites of bird malaria an antibody for melanin is produced. A. G. P.

Anti-complementary action of matured extracts of organs. F. Hahn (Z. Immunitäts., 1935, **84**, 380—397; Chem. Zentr., 1936, i, 3160).—Maturing of ox-heart extracts associated with the development of anti-complementary functions is dependent on oxidation processes and is facilitated by alkaline conditions. Maturation proceeds with the peptisation of colloids in the extract and depends on the initial dispersion. Anti-complementary properties may be associated with the formation of soap-like substances by hydrolysis and oxidation during the maturing process. A. G. P.

Adsorption of diphtheria toxin and toxoid on colloidal gels. F. A. Miller, T. De Vries, and M. A. Miller (Proc. Indiana Acad. Sci., 1934, **44**, 88—92).—$Al(OH)_3$, $Ca_3(PO_4)_2$, and SiO_2 gels adsorb considerable amounts of the toxin and the rate of release when injected into animals was relatively slow. Ch. Abs. (*p*)

Polysaccharide of the typhus bacillus. IV. Action of antipolysaccharide sera on the polysaccharide. V. Action of antipolysaccharide sera on the bacilli and their lysates. A. Spanedda (Boll. Soc. ital. Biol. sperim., 1936, **11**, 931—933, 933—934; cf. A., 1936, 1403).—IV. The blood of immunised rabbits, injected in varying amounts with 1 mg. of polysaccharide (I), exhibits an antitoxic action to (I); this is greatest with sera of which the agglutinin titre has been diminished by continuous injection of (I).

V. Antipolysaccharide serum slightly neutralises the living bacilli and their lysates, whilst the vaccine-serum enhances the toxicity; the serum inactivates the endotoxin of *B. typhosus*. F. O. H.

Isoelectric point of animal tissues. V. Certain cells. G. Yasuzumi (Folia Anat. Japon., 1935, **8**, No. 4, 465—472).—The isoelectric point of old and young rabbit epithelial cells from the œsophagus was 4·2 and 3·2, duodenum 4·1, 3·6, intestine 4·0, 3·4, kidney glomerulus 7·0, 4·6. Similar vals. apply to mice. For human adult erythrocytes the val. was 6·70, and for the fœtus 6·45. Ch. Abs. (*p*)

Electrolyte content of human autopsy tissue. E. Muntwyler, R. F. Hanzal, G. H. Mangun, and C. T. Way (Proc. Soc. Exp. Biol. Med., 1937, **35**, 555—556).—The H_2O content is highest in kidney, lowest in liver; Cl′ highest in kidney, lowest in skeletal muscle; P highest in liver, lowest in right ventricle; Na highest in kidney, lowest in left ventricle; K highest in skeletal muscle, lowest in kidney; Ca and Mg highest in right ventricle, lowest in spleen. P. G. M.

Pharmacognosy of *Spongia fluviatilis*. P. Oficjalski (Pharm. Zentr., 1937, **78**, 173—175).—Data for the ash constituents of two species of siliceous sponges are given. The I content was 0·0005—0·002% of the dry sponge and highest for sponges collected in winter. F. O. H.

State and localisation of inorganic salts in the skin as revealed by extraction and micro-incineration. D. J. Kooyman (Arch. Dermatol. Syph., 1935, **32**, 394—403).—Effects of extraction with org. solvents and with H_2O prior to incineration are recorded and discussed. Ch. Abs. (*p*)

Bromine content of various organs. G. Moruzzi (Boll. Soc. ital. Biol. sperim., 1936, **11**, 725—728).—The Br contents of organs and tissues of the ox show no great differences. F. O. H.

Sulphur content of hair and nails in abnormal states. II. Nails. J. V. Klauder and H. Brown (Arch. Dermatol. Syphilol., 1935, **31**, 26—34).—Only 10% of abnormal nails contain normal amounts of S. Administration of hydrolysed wool increased the S content of nails only in a few cases. Subnormal S vals. occurred in normal nails in certain systemic infections. Nails of patients sensitised to light had normal S contents. Ch. Abs. (*p*)

Detection of phosphates in ashed tissue. C. Barigozzi (Boll. Soc. ital. Biol. sperim., 1936, **11**, 836—837).—Distribution of PO_4''' in spodograms (tissue ashed so as to retain histological characteristics) is determined by treatment with 1 g. of NH_4 molybdate + 12 c.c. of HNO_3 (*d* 1·18) followed by gentle heating, the process being performed in SiO_2 vessels. F. O. H.

[Carbonate content of inorganic bone material and its synthesis.] R. Klement (Ber., 1937, **70**, [*B*], 468—469; cf. A., 1936, 1533).—A reply to Gassmann (this vol., 86). H. W.

Cattle bones. General composition of pig bones. M. Saito (Rep. Inst. Sci. Res. Manchukuo, 1936, **1**, 63—82).—High H_2O content of bones is associated with high protein (I) and low ash, and low H_2O content with low (I) and high ash. Ash contents are relatively low in the vertebral column, high in the extremities, showing a gradient in the limbs, and max. in the skull. The ratio of P : Ca in ash is generally const. (1 : 2·2) although actual P and Ca contents vary. The amount of (I) convertible into gelatin is 25—53% of the total. Distribution of N in the total (I) is very similar to that of gelatin, except that small quantities of cystine, tyrosine, and tryptophan are present. R. M. M. O.

Does pyrophosphate occur in muscle and tissue? B. Umschweif and K. Gibayło (Z. physiol. Chem., 1937, **246**, 163—170; cf. Ferdmann *et al.*, A., 1936, 754).—Free inorg. P_2O_7'''' does not occur in liver, kidneys, lungs, heart, brain, or spinal marrow (rabbit) or in resting or exhausted muscle (rabbit, frog). W. McC.

Creatine, potassium, and phosphorus content of cardiac and voluntary muscle. G. H. Mangun and V. C. Myers (Proc. Soc. Exp. Biol. Med., 1936, **35**, 455—456).—In man, increase in the wt. of the heart is accompanied by progressive decrease in its creatine (I), K, and P contents. Frequently the respective decreases are in the ratio 3 : 2 : 1. Part of (I) probably occurs as diphosphocreatine. W. McC.

Nitrogen content of skeletal muscle of the rat in various nutritional states. A. J. Bartoli, C. I. Reed, and H. C. Struck (Proc. Soc. Exp. Biol. Med., 1937, **35**, 528—532).—Growth-hormone given intraperitoneally increases the total N and H_2O contents of the quadriceps muscle of rats on a normal diet. P. G. M.

Nitrogenous constituents of the liver of the shark, *Acanthias vulgaris*. D. Ackermann and M. Mohr (Z. Biol., 1937, **98**, 37—42).—Thymine, NMe_3O, lysine, ornithine, tyrosine, leucine, taurine, scyllite, and *spinazine*, $C_9H_{14}O_4N_4$, decomp. 263—267°, were isolated. F. O. H.

Extractives of embryos of the shark, *Acanthias vulgaris*. W. Spahr (Z. Biol., 1937, **98**, 43—48).—In addition to betaine, choline, and arginine, EtOH extracts yield NMe_3O, histidine (I), and hypoxanthine; qual. analysis indicates the presence of

guanine, xanthine, and adenine. The (I) fraction contains a substance, other than (I), pptd. as Ag salt. F. O. H.

Creatine content of human voluntary muscle. J. F. Corsaro (Proc. Soc. Exp. Biol. Med., 1937, **35**, 554).—Vals. up to 550 mg. per 100 g. are found for muscle-creatine in uræmia, pneumonia, tuberculosis, early malignancy, etc., whilst low vals. (>250 mg.) may be found in acute inflammatory diseases, late malignancy, etc. P. G. M.

Identification of bases in animal tissues. D. Ackermann (Z. physiol. Chem., 1937, **246**, 113—114).—The detection of choline and betaine in neosine (isolated as aurichloride) affords a further example of the obstinate retention of impurities in the aurichlorides isolated from animal tissues. H. W.

Properties of alligator fat. A. Nembrot and B. Cadrobbi (Annali Chim. Appl., 1936, **26**, 571—572).—The body-fat, m.p. 34—35°, d^{15} 0·924, n^{35} 1·568, sap. val. 194·9, I val. 129—133, contains 0·4% of unsaponifiable matter. F. O. H.

Are neutral fat and lecithin present in gall bladder bile? K. K. Jones and R. O. Sherberg (Proc. Soc. Exp. Biol. Med., 1937, **35**, 535—537).—Neutral fat and lecithin are not constituents of the gall bladder of the ox, dog, or hog. P. C. M.

Determination of mol. wt. of lipins. H. Schmalfuss (Fette u. Seifen, 1937, **44**, 60—61).—Variations in the composition of phosphatides and their effect on mol. wt. are discussed. Rewald's val. for mean mol. wt. (A., 1928, 1154) should be 787, not 880. F. C. B. M.

Reducing substance in brain. M. Mitolo (Boll. Soc. ital. Biol. sperim., 1936, **11**, 697—699).—Bonsignore's work (A., 1936, 1286) is discussed and criticised. Prior publication (Young and Mitolo, A., 1934, 543) is claimed. F. O. H.

Modification of the Bierry–Gruzewska method of determining liver-glycogen. F. Vacirca (Boll. Soc. ital. Biol. sperim., 1936, **11**, 735—737).—The tissue is hydrolysed by 60% KOH followed, after neutralisation, by 5% HCl and the hydrolysate cleared by $Zn(OH)_2$, glucose in the filtrate being determined by Bertrand's method. F. O. H.

Colloidal substance of the thyroid gland indicated by Mallory's stain. A. Businco and G. Nicolosi (Boll. Soc. ital. Biol. sperim., 1936, **11**, 928—930).—The staining reactions of histological elements of the thyroid are described and discussed. F. O. H.

Refractive index of egg-white. Changes with age, season, and development. A. L. Romanoff and R. A. Sullivan (Ind. Eng. Chem., 1937, **29**, 117—120).—The n of each of the four layers of white is an approx. measure of total solids and, in any egg, increases from the outer to the inner (chalaziferous) layer, the vals. for each layer in fresh eggs passing through a max. in the breeding season (Feb.—March). In unfertilised eggs, ageing increases the n of all layers except the inner, where it passes through a min. and then becomes const. at its original value, whilst in fertilised eggs (incubated) the layers rapidly disintegrate and n rises to a max. after 30—40 days, and later decreases. R. C. M.

Structure of proteins. Ox hæmoglobin, ovalbumin, ox fibrin, and gelatin. M. Bergmann and C. Niemann (J. Biol. Chem., 1937, **118**, 301—314).—Vals. are given for the distribution of 8 NH_2-acids in cattle hæmoglobin and ovalbumin. The data for these and other proteins show how these proteins differ in the arrangement of the NH_2-acids, and yield vals. for mol. wts. in good agreement with vals. obtained by physical methods. F. A. A.

State of combination of phosphorus in phosphoproteins. S. Rapoport (Biochem. Z., 1937, **289**, 420—424).—In caseinogen <33% of the P is not united to the serine residue but probably all the P of vitellin is thus combined. W. McC.

Extraction of nucleoproteins from liver and muscle. A. Cardin and O. Pinotti (Boll. Soc. ital. Biol. sperim., 1936, **11**, 752).—Liver and muscle (calf), on incubation at 37° followed by extraction with aq. NaCl, filtration, and pptn. from the filtrate by AcOH, yield nucleoprotein (P 0·45 and 0·37%, respectively). F. O. H.

Denaturation and hydration of proteins. II. Surface denaturation of ovalbumin. H. B. Bull and H. Neurath (J. Biol. Chem., 1937, **118**, 163—175; cf. A., 1936, 1404).—In aq. solutions of purified ovalbumin (I), there is an inverse relation between the degree of surface denaturation produced by shaking and the concn. of (I). During the denaturation the p_H changes by amounts which vary according to the original p_H of the solution. The rate and extent of denaturation are scarcely affected by addition of concns. <0·01N of electrolytes but the rate is greatly affected by change in p_H and is max. at the isoelectric point. Low concns. of n-heptyl alcohol inhibit denaturation. W. McC.

Elastic properties of the elastic and collagen fibres and their molecular significance. K. H. Meyer and C. Ferri (Pflüger's Archiv, 1936, **238**, 78—90).—Comparison of the thermo-elastic properties of tendon before and after treatment with CH_2O with those of rubber before and after vulcanisation suggests that in tendon the mols. are in the form of long chains which are normally arranged parallel to the axis of the fibre. M. A. B.

Extraction and solubility of the substances present in the pigment of the eyes of *Drosophila melanogester*. Y. Khouvine, B. Ephrussi, and M. H. Harnly (Compt. rend., 1936, **203**, 1542—1544).—The pupæ of *Galleria mellonella* and *Calliphora erythrocephala* contain the two diffusible substances postulated by Ephrussi and Harnly (*ibid.*, 1028). Solutions of the two substances can be prepared by extraction with EtOH or EtOH–Et_2O of the semi-liquid mass obtained by pressing the pupæ of *Calliphora* which have been immersed in liquid air. The substances are not of an enzyme or protein character. J. N. A.

Development of eye colours in *Drosophila* pupal transplants and the influence of body-fluid on vermilion. G. W. Beadle, C. W. Clancy,

and B. Ephrussi (Proc. Roy. Soc., 1937, **B**, **122**, 98—105).—Experiments involving the transfer of body-fluid between wild-type (dark red-eyed) *Drosophila* (larvæ and pupæ) and the vermilion-eyed variety show that the substance responsible for this difference is present in the body-fluid of wild-type flies between 3 and 80 hr. after puparium formation. Vermilion eye disks, transplanted, as late as 65 hr. after puparium formation, into wild hosts, develop the eye colour of the latter. F. A. A.

Toad poisons. X.—See A., II, 208.

Ambergris.—See B., 1937, 391.

Hydrolysis of polysaccharide acids of vitreous humour, umbilical cord, and of streptococcus by autolytic enzyme of pneumococcus. K. Meyer, R. Dubos, and E. M. Smyth (J. Biol. Chem., 1937, **118**, 71—78).—The enzyme system specifically hydrolyses (optimum p_H 5·8) the polysaccharide acids of the vitreous humour (hyaluronic acid) and of Wharton's jelly and the serologically inactive acid from mucoid group *A* streptococci (cf. this vol., 183. The kinetics of the hydrolyses indicate the identity of these three acids, which are not hydrolysed by other polysaccharidases. Acetylglucosamine, glucosamine, and glycuronic acid do not influence the reaction. The hydrolysis, like the bacteriolysis, is inhibited by I and subsequently reactivated by reducing agents. Polysaccharide-acid substrates inhibit the lytic action but heat-killed pneumococci do not inhibit the hydrolysis. R. M. M. O.

Analysis of dog milk. G. Deniges (Bull. Trav. Soc. Pharm., 1935, **73**, 247—248; Chem. Zentr., 1936, i, 3162).—Vals. obtained for milk from two bitches were: dry matter 231, 253 fat 100, 111, lactose 27·4, 27·3, total protein 87·4, 99·2, mineral salts 13·8, 13·7, total Cl′ 4·4, 4·2, acidity (phenolphthalein) 2·25, 1·98 (as lactic acid), citric acid approx. 0·3 g. per litre. A. G. P.

Composition of colostrum of dairy goats. A. J. Bergman and C. W. Turner (J. Dairy Sci., 1937, **20**, 37—45).—The composition of the colostrum and the recovery of normal milk composition of 6 goats over a 9-day period have been determined. All constituents except lactose decreased rapidly on the 2nd day. The secretion approaches normal milk composition on the 3rd—4th day. The globulin content of the first colostrum was 1·03—2·97%. W. L. D.

Determination of chloride in milk. A. Massot and H. Lestra (Bull. Sci. pharm., 1935, **42**, 523—526; Chem. Zentr., 1936, i, 3235).—To 60 c.c. of a 3 : 1 EtOH–$COMe_2$ mixture are added dropwise 10 c.c. of milk. The solution is made up to 100 c.c. with EtOH–$COMe_2$, and 75 c.c. of the clear filtrate + 5 c.c. of HNO_3 are titrated by the Volhard method. Alternative methods are described. H. J. E.

Bile secretion. H. Isobe (Nagoya J. Med. Sci., 1935, **9**, 31—56).—Factors influencing the aq. and solid constituents of bile are examined. Ch. Abs. (*p*)

Blood-chlorine and gastric acidity. Paget and Danes (J. Pharm. Chim., 1937, [viii], **25**, 266—270).—The content of free HCl in gastric juice is not related to plasma- or corpuscle-Cl′. F. O. H.

Selective action of histamine and effect of prolonged vagal stimulation on cells of gastric glands in the dog. D. J. Bowie and A. M. Vineberg (Quart. J. Exp. Physiol., 1935, **25**, 247—257).—Repeated subcutaneous injection of histamine did not lower the amount of pepsinogen granules (I) in peptic cells. The gastric juice produced was copious, of high acidity but low peptic power. A few hr. after administration the secretion contained no pepsin (II). Increased (II) in gastric juice following vagal stimulation coincided with discharge of (I) from the peptic cells. Ch. Abs. (*p*)

Antipeptic influence of gastric mucin. E. A. Zaus and L. S. Fosdick (Amer. J. Dig. Dis. Nutr., 1934, **1**, 177—178).—Commercial gastric mucin, incubated for 24 hr. at 37° in a pepsin solution, develops an increased antipeptic effect (35—48%), which may be due to hydrolysis of mucin to form a substance similar to mucoitin or chondroitinsulphuric acid. Ch. Abs. (*e*)

Effect of the pylorus on the secretion of acid by the fundus. C. M. Wilhelmj, F. T. O'Brien, and F. C. Hill (Amer. J. Physiol., 1936, **116**, 685—696).—Removal of the pylorus lowers the acid secretion of the stomach > can be accounted for by the diluting and neutralising effects of the regurgitated duodenal contents. R. N. C.

Chloride and alkali content of the duodenal secretions and their relations to gastric acidity and emptying time. F. L. Apperly and M. K. Cary (Amer. J. Physiol., 1936, **116**, 337—342).—Acidity in the human stomach is reduced, chiefly by dilution, following introduction of HCl *per os*. The rate of reduction ∝ the rate at which the stomach empties, and inversely ∝ the concns. of neutral Cl′ and alkali in the fluids that dilute the gastric contents. The concn. of alkali in the duodenum is 0—0·075*N*. Reduction of acidity is probably due to increased regurgitation of the duodenal contents. R. N. C.

Effects of certain acid treatments for coccidiosis on the hydrogen-ion content of the fowl intestine. W. R. Kerr and R. H. Common (Vet. J., 1935, **91**, 309—311).—Administration of buttermilk or HCl had little effect on the intestinal p_H beyond a slight increase in the small intestine with buttermilk treatment. Ch. Abs. (*p*)

Maximum concentration of urine; its investigation and diagnostic value in renal insufficiency. M. E. Varela (Semana méd., 1935, II, 1360—1365).—With a diet rich in protein and poor in liquids normal urine has *d* 1·030—1·040. Decreased *d* appears in early renal insufficiency, before non-protein in plasma has increased. A parallelism exists between deficit in concn. and elimination of phenolsulphonephthalein. Ch. Abs. (*p*)

Bromine index of urine. B. Drevon and J. Hagopian (J. Pharm. Chim., 1937, [viii], **25**, 244—254).—Standard conditions for determination of the Br index (Bezssonoff *et al.*, A., 1936, 229) are recommended. The index is related to the total solids (or probably more exactly to the concn. of one or more

constituents) in the urine. Data are tabulated for the index, *d*, total solids, etc. of normal and vaccinated men and of guinea-pigs poisoned by C_6H_6 or dinitrophenol. F. O. H.

Determination of total carbon in urine. Modification of Dennstedt's method. N. E. Insua (Rev. sudamer. endocrinol., 1935, **18**, 609—617).—Drying in a vac. over H_2SO_4 causes a loss of C. Drying at 57—60° causes evaporation of $COMe_2$ but no other loss. Determinations of $COMe_2$ in the original sample and of C in the residue yield accurate results. Ch. Abs. (*p*)

Determination of vitamin-*C* in urine. R. Ammon and K. Hinsberg (Klin. Woch., 1936, **15**, 85—88; Chem. Zentr., 1936, i, 3167—3168).—The I-combining capacity of urine is partly due to reducing substances the effect of which on vitamin-*C* determinations may be diminished by pretreatment with KI. The indophenol method also gives high vals. The methylene-blue test gives more correct results. A. G. P.

Ascorbic acid in urine. Methods of determination. F. Widenbauer (Klin. Woch., 1936, **15**, 94—95; Chem. Zentr., 1936, i, 3168).—Results of the I and indophenol methods do not agree. The former gives high vals. The latter may give a positive test in the absence of ascorbic acid. The method of Harris and Ray (A., 1935, 417) is satisfactory if determinations are made before and after heavy dosage with vitamin-*C*. A. G. P.

Colorimetric determination of guanidine-like substances in urine. J. E. Andes and V. C. Myers (J. Biol. Chem., 1937, **118**, 137—145).—In Weber's method (A., 1928, 1048) an almost colourless extract and 85% recovery of added methylguanidine are obtained by extraction of the adsorbed material with hot EtOH–HCl. Allowance is made for the amounts of creatine (I) and creatinine (II) converted into guanidine during the adsorption; these amounts decrease as the concns. of (I) and (II) increase. In man, 3—10 mg. of guanidine-like substances are excreted in the urine in 24 hr. W. McC.

Furan-2 : 5-dicarboxylic acid in urine. B. Flaschenträger and K. Bernhard (Z. physiol. Chem., 1937, **246**, 124—132).—Human urine (but not the urine of dogs fed on rice and meat) contains per day 3—5 mg. of the acid (I), the amount not being altered when the diet is rich in carbohydrate or fat. In mixtures of (I) with hippuric acid, (I) is determined by heating the mixture with 50% H_2SO_4 for 1 hr. at 120—125°, removing BzOH with steam at 180—200°, and concentrating the residue. W. McC.

Chromatographic isolation of indirubin from urine of animals on protein-rich diets. L. Musajo (Boll. Soc. ital. Biol. sperim., 1936, **11**, 814—815).—The PhMe extract of the urine (rat) was fractionated with activated Al_2O_3 and the appropriate zone extracted with C_6H_6. F. O. H.

Donaggio's reaction of dog's urine. A. Lanfranchi and G. Pacchioni (Boll. Soc. ital. Biol. sperim., 1936, **11**, 776—777).—The urine of normal dogs gives a slight or no reaction [inhibitory phenomenon or capacity to prevent pptn. of thionine by NH_4 molybdate (Donaggio, *ibid.*, 1933, **8**, 1456—1459)]; that of diseased dogs gives a reaction partly related to the protein content. F. O. H.

Donaggio's reaction of immunising preparations and bacterial suspensions. A. Lanfranchi and C. Foresti (Boll. Soc. ital. Biol. sperim., 1936, **11**, 777—778; cf. preceding abstract).—Vaccines give a positive reaction but to varying extents, whilst suspensions of bacteria (of dilution corresponding with the vaccines) invariably give negative vals. F. O. H.

Donaggio's reaction in inoculation vaccines. S. Colombati (Boll. Soc. ital. Biol. sperim., 1936, **11**, 780—782).—The urine (normally negative) of infants gives a positive reaction (cf. preceding abstract) 2 hr. after inoculation and persisting for approx. 15 days. F. O. H.

Determination of antimony in excreta. J. Couillaud (Bull. Trav. Soc. Pharm., 1935, **73**, 248—250; Chem. Zentr., 1936, i, 3189).—Urine and fæces are destroyed by $HNO_3 + H_2SO_4$, Cl′ in urine being first pptd. with $AgNO_3$. The solution is neutralised and brought to a definite acidity by adding $Na_2B_4O_7$ + a measured amount of HCl + tartaric acid. H_2S is passed and 1—3 drops of 1% aq. $BaCl_2$ are added. Sb is determined by comparing the colour of the ppt. with that from known amounts of Sb. J. S. A.

Acetone content of urine, fæces, and organs of dogs after administration of *iso*propyl alcohol. H. Kemal (Z. physiol. Chem., 1937, **246**, 59—63; cf. A., 1927, 990).—Methods are given for the determination of $COMe_2$ in presence of $Pr^{\beta}OH$ in urine, fæces, and organs and results of the administration of $Pr^{\beta}OH$ to dogs are recorded. H. W.

Effect of bile on the excretion of sterol in the fæces. A. Shapiro and H. Koster (Amer. J. Physiol., 1936, **116**, 317—321).—Operative exclusion of bile from the intestines of patients causes a fall in fæcal sterol excretion. The higher cholesterol content of human bile may explain the variation from previous observations in dogs. R. N. C.

Absence of pterins from the excrement of insects which produce them. E. Becker (Z. physiol. Chem., 1937, **246**, 177—180; cf. Schöpf and Wieland, A., 1926, 1168; 1936, 1260).—The excrement of the freshly hatched hornet *Vespa crabro* and of the butterfly *Gonepteryx rhamni* contain no xanthopterin (I) or leucopterin although (I) occurs in the folds of the integument of the hornet and on the wings of the butterfly. W. McC.

Physicochemical investigations of human sweat. G. Hope (Arch. Dermatol. Syph., 1935, **171**, 301—312).—The p_H of perspiration induced by heat varied with the diet and the alkali reserve of the individual, but followed these less closely than did urinary p_H. [$Na^{\cdot}$] and [Cl'] in perspiration increased but [$K^{\cdot}$], [$Ca^{\cdot\cdot}$], and [$Mg^{\cdot\cdot}$] decreased as treatment progressed. Ch. Abs. (*p*)

Gastric acidity in acne vulgaris : consideration of normal gastric acidity. S. L. Immerman (Arch. Dermatol. Syphilol., 1935, **31**, 343—347).—In acne vulgaris there was no evidence of hypoacidity

or of any relation between gastric acidity, hæmoglobin content, and red cell count. CH. ABS. (*p*)

Acne and furunculosis. Treatment with physiological sodium chloride, locally or by intravenous injection. H. GOODMAN (Arch. Dermatol. Syphilol., 1935, **31**, 828—830).—Therapeutic action of NaCl may be due to lowering of blood-sugar. Growth of streptococci and staphylococci is inhibited by 2—3% aq. NaCl. CH. ABS. (*p*)

Intake of potassium, an important consideration in Addison's disease. R. M. WILDER, E. C. KENDALL, A. M. SNELL, E. J. KEPLER, E. H. RYNEARSON, and M. ADAMS (Arch. Int. Med., 1937, **59**, 367—393).—Restriction of K from 4 (that of a normal diet) to 1·6 g. per day lowers the requirement of NaCl if no injection of adrenal cortex is given. On such a diet supplements of $Ca_3(PO_4)_2$, Fe, and vitamin-B_1 and -B_2 are required. H. G. R.

Action of the adrenal extract, Cortidyn, in Addison's disease. G. ARNDT (Fortschr. Ther., 1935, **11**, 641—652; Chem. Zentr., 1936, i, 2964).—Cortidyn stimulated the action of adrenaline in increasing blood-sugar. A. G. P.

Ferrous gluconate and its use in treatment of hypochromic anæmia in rats. P. REZNIKOFF and W. F. GOEBEL (J. Pharm. Exp. Ther., 1937, **59**, 182—192).—*Fe*^{II} *gluconate*, $(C_6H_{11}O_7)_2Fe,H_2O$, $[\alpha]_D$ +3·5° in H_2O (from Ba gluconate and $FeSO_4$ in N_2), when fed to or injected intramuscularly into anæmic rats, causes a rapid and marked increase in reticulocytes, red cells, and hæmoglobin. J. N. A.

Blood-urea in cattle with Aujeszky's disease. P. ROSSI (Compt. rend. Soc. Biol., 1937, **124**, 706—707).—Blood-urea rapidly increases, the excretion of urea being normal. Blood-Cl is unchanged. H. G. R.

Experimental investigation of "aniline cancer." I. BERENBLUM and G. M. BONSER (J. Ind. Hyg., 1937, **19**, 86—92).—Intraperitoneal injections in rabbits and oral administration to rats of benzidine, α- and β-$C_{10}H_7{\cdot}NH_2$, NH_2Ph, and 5-chloro-*o*-toluidine failed to produce tumours in the animals. Extracts of urine from employees in the NH_2Ph industry had no carcinogenic action on the skin of mice. A. L.

Variation in the hyperglycæmia during the proliferation of a grafted tumour. J. LOISELEUR and W. NYKA (Compt. rend. Soc. Biol., 1937, **124**, 701—703).—The blood-sugar curve (in rabbits) is similar to that obtained after artificial histolysis and does not depend on the effect of the grafting. H. G. R.

Milk preventing mottled enamel in teeth. J. A. TOBEY (Milk Plant Month., 1937, **26**, No. 1, 30—32).—Mottled enamel is caused by too much F or too little Ca in the diet. When milk replaces F-containing drinking-H_2O to a larger extent the additional Ca prevents excessive absorption of toxic fluorides. W. L. D.

Blood-sugar of dogs during experimental cholæmia. E. CHABROL, J. COTTET, and J. SALLET (Compt. rend. Soc. Biol., 1937, **124**, 719—720).—No variation in the blood-sugar was observed. H. G. R.

Effect of experimental cholæmia [in dogs] on adrenaline hyperglycæmia. E. CHABROL, J. COTTET, and J. SALLET (Compt. rend. Soc. Biol., 1937, **124**, 720—721).—The hyperglycæmia is considerably reduced. H. G. R.

Diet of diabetics prior to the onset of the disease. H. P. HIMSWORTH (Clin. Sci., 1935, **2**, No. 1, 95—116).—The majority of diabetics had preferred a high-fat diet of high calorific val. Habitual ingestion of low-carbohydrate diets may cause progressive impairment of sugar tolerance and insulin-sensitivity resulting in diabetes. CH. ABS. (*p*)

Diet and the incidence of diabetes mellitus. H. P. HIMSWORTH (Clin. Sci., 1935, **2**, No. 1, 117—148).—Incidence of diabetes was high in countries with a high-fat low-carbohydrate diet. Calorific vals. of diets and consumption of excess of sugar and EtOH were not contributory factors. CH. ABS. (*p*)

Influence of pathological skin conditions on experimental hyperketonæmia. A. MIDANA and L. D. GRANDE (Arch. Dermatol. Syph., 1935, **171**, 208—222).—High correlation is shown between the area of skin involved in dermatoses and the degree of hyperketonæmia. β-Hydroxybutyric acid caused the greatest increase in ketones. CH. ABS. (*p*)

Use of maize oil (unsaturated acids) in treatment of eczema. T. CORNBLEET and E. R. PACE (Arch. Dermatol. Syphilol., 1935, **31**, 224—226).—Curative effects are reported. Eczema is possibly related to the unsaturated fatty acid level of the blood. CH. ABS. (*p*)

Dinitrophenol in treatment of ichthyosis. M. MOLITCH and R. F. COUSINS (Arch. Dermatol. Syphilol., 1935, **32**, 466—467).—Oral administration of dinitrophenol failed to produce loss of wt. but increased basal metabolism without affecting temp., blood count, blood-sugar or -urea. CH. ABS. (*p*)

Low-calorie, low-fat, ketogenic diet for treatment of infections of the urinary tract. R. M. NESBIT and C. H. MCDONNELL (J. Amer. Med. Assoc., 1935, **105**, 1183—1184).—The diet, supplying protein 0·66, carbohydrate (no sugar) 0·33 g. per kg. body-wt., induced ketosis without gastric disturbance. Ketosis depends on inadequacy of available glucose and not on the amount of fat ingested. CH. ABS. (*p*)

Calcium : protein ratio in hyperproteinæmia. Total diffusible serum-calcium in lymphogranuloma inguinale and myeloma. A. B. GUTMAN and E. B. GUTMAN (Proc. Soc. Exp. Biol. Med., 1936, **35**, 511—515).—In sera of high protein content the [Ca] usually remains normal even when the [PO_4'''] is not high. High Ca contents such as are encountered in multiple myeloma are probably due to destruction of bone by neoplastic tissue, the ratio diffusible Ca : total Ca remaining approx. const. Increased protein-bound Ca is probably united to albumin and to a small extent to euglobulin. W. McC.

Alimentary cholesterolæmia in animals with hepatic lesions. M. PISA and B. L. DELLA VIDA (Boll. Soc. ital. Biol. sperim., 1936, **11**, 904—907).—Ingestion of cholesterol (I) by rabbits with hepatic

lesions (P poisoning) produces vals. of liver-(I) >, and changes in blood-(I) different from, those of normal rabbits. F. O. H.

Blood reagent for serum-flocculation in malaria. F. X. Henry (Compt. rend. Soc. Biol., 1937, **124**, 795—796).—The prep., by slow oxidation of hæmatin hydrochloride, of a reagent for use in this reaction is described. H. G. R.

Reliability of clearance tests for renal efficiency. C. L. Cope (Clin. Sci., 1935, **2**, No. 1, 35—42).—In tests of nephritis, blood and urine are analysed after oral administration of urea 15, creatinine 3, or xylose 30—50 g. Ch. Abs. (*p*)

Biochemistry of scalding and traumatic shock. VII. Ascorbic acid content of adrenal glands. G. Stolfi (Boll. Soc. ital. Biol. sperim., 1936, **11**, 918).—The content in rabbits is reduced by scalding and, to a smaller extent, by traumatic shock. F. O. H.

Rôle of iodine in the therapy of syphilis: relation to lipins. E. T. Burke (Arch. Dermatol. Syphilol., 1935, **32**, 404—412).—Although I has no spirochæticidal val. it should accompany As or Bi therapy in order to iodinate unsaturated lipins which prevent lymphocytic enzymes from exerting a spirochæticidal action. Ch. Abs. (*p*)

Blood-cholesterol in the preagonic period of tuberculosis. I. R. Steinberg (Semana méd., 1935, II, 1225—1228).—Increased blood-cholesterol in the terminal stage of tuberculosis is exceptional. Ch. Abs. (*p*)

Elimination of ascorbic acid in tubercular animals. G. Scoz (Boll. Soc. ital. Biol. sperim., 1936, **11**, 908—909).—Prolonged administration of vitamin-*C* is necessary in tubercular patients before excretion of -*C* occurs, indicating avitaminosis-*C*. Incidence of fever and general debility is accompanied by increased excretion of -*C*. F. O. H.

Avitaminosis-*C* and experimental tubercular infection. G. Scoz and C. Cattaneo (Boll. Soc. ital. Biol. sperim., 1936, **11**, 909—911).—The diminished rate of growth of guinea-pigs due to avitaminosis-*C* is accompanied by increased susceptibility to tubercular infection. F. O. H.

Gastric ulcer formation by bile acid salt. M. Yoshitomi (Fukwoka-Ik.-Zasshi, 1935, **28**, 406—414).—The ulcer-forming action of bile acid is closely related to the acidity of the gastric juice; its action is inhibited by lecithin. Ch. Abs. (*p*)

Progress of dairy science. A. Physiology of dairy cattle. I. Reproduction and lactation. J. A. B. Smith. **II. Nutrition.** S. Morris (J. Dairy Res., 1937, **8**, 105—118, 119—131).—Biennial reviews. W. L. D.

p_H changes of muscle during and after contraction. M. Dubuisson (Proc. Soc. Exp. Biol. Med., 1937, **35**, 609—611).—Changes of p_H during and after muscular contraction can be rapidly recorded (½ sec.) by a method based on the fact that CO_2 passes freely across the muscle membrane, whilst other buffer substances are more slowly exchanged. P. G. M.

Living cell. Physical properties and microchemical reactions. R. Chambers, M. J. Kopac, and C. G. Grand (Ind. Eng. Chem. [Anal.], 1937, **9**, 143—145).—Technique for studying reactions in living cells is described. E. S. H.

Oxidation-reduction mechanism in the [living] cell. R. H. de Meio (Anal. Asoc. Quím. Argentina, 1936, **24**, 73—89).—A review. F. R. G.

Respiratory quotients of normal and neoplastic tissues. A. H. Roffo and L. M. Correa (Rev. soc. Argentina biol., 1935, **11**, 202—209).—The R.Q. of growing chick heart averaged 0·86; that of rat sarcoma and carcinoma, 1·31. Ch. Abs. (*p*)

Intrinsic and extrinsic respiratory oxidation. L. Plantefol (Compt. rend., 1937, **204**, 370—372).—Respiratory oxidations strictly associated with vital processes are termed intrinsic whilst those of an interfacial type and independent of vital processes are termed extrinsic oxidations. The former type is illustrated by the changes in respiration of *Hypnum triquetrum* on immersion in aq. $NaNO_3$ or glucose. F. O. H.

Consumption of oxygen by central [nervous] preparations. A. Galamini and E. Falvo (Boll. Soc. ital. Biol. sperim., 1936, **11**, 894—896).—The O_2 consumption of preps. of the central nervous system of *Bufo vulgaris* is increased by trauma and either inhibited or, following the accumulation of the products of oxidative catabolism, increased by Et_2O narcosis. F. O. H.

Effect of lead on tissue metabolism. D. Dolowitz, J. F. Fazekas, and H. E. Himwich (J. Ind. Hyg., 1937, **19**, 93—94).—5 mg. of Pb [as $Pb(OAc)_2$] per 100 mg. of tissue decreased O_2 consumption of brain, kidney, liver, and testis tissue *in vitro*. Glycolysis and dehydrogenation were inhibited in brain tissue. A. L.

Effect of dinitrophenol and dinitrocresol on the oxygen consumption of diapause and developing embryos. J. H. Bodine and E. J. Boell (Proc. Soc. Exp. Biol. Med., 1936, **35**, 504—506).—The O_2 uptake of diapause and developing grasshopper embryos (*Melanoplus differentialis*) is increased by addition to the medium of dinitro-phenol (I) or -cresol, the max. effect being attained at concns. of $2·5 \times 10^{-5}$ and $1 \times 10^{-5}M$, respectively. CO inhibits the action of (I) on developing embryos but only slightly diminishes that on diapause embryos. KCN restricts or inhibits the action of (I) according to the concn. used. W. McC.

Inositol and the respiration of brain. L. Young (Proc. Soc. Exp. Biol. Med., 1936, **35**, 507—510).—The respiration of brain (rat, rabbit) is not affected by addition of inositol. (Cf. Das and Guha, A., 1935, 658.) W. McC.

Ratio of the feather- to body-weights [of chicken]. Chemical constitution. R. Salgues (Compt. rend. Soc. Biol., 1937, **124**, 819—821).—The ratio decreases with age and with increasing wt. of the species and is independent of the food. With increasing age, the H_2O and fat contents of the feathers diminish whilst that of protein increases. H. G. R.

Heat rigor of avian muscle. H. Loebenstein (Pflüger's Archiv, 1936, **238**, 113—123).—The rigor develops in two stages of which the second is much more marked than the first. As avian muscle contains much more myogen than myosin the results support the coagulation theory of heat rigor, which is briefly discussed. M. A. B.

Synthesis of protein and amino-acids in mice with the aid of deuterium. J. A. Stekol and W. H. Hamill (Proc. Soc. Exp. Biol. Med., 1937, **35**, 591—593).—Analysis of protein, NH_2-acids, etc. of mice receiving 2% of D_2O in their diet indicates that these contain D in non-labile form. P. G. M.

Selection in the biological synthesis of lecithins and kephalins in brain. K. P. McConnell and R. G. Sinclair (J. Biol. Chem., 1937, **118**, 131—136; cf. A., 1936, 1283).—The elaidic acid content of the fatty acids in the lecithin and kephalin of the brain of rats supplied with large amounts of elaidin is only about 25% of that of their liver and muscle. Hence there appears to be greater selection in the building up of the phospholipins of brain than with those of liver and muscle. W. McC.

Phospholipin metabolism of tumours. F. L. Haven (J. Biol. Chem., 1937, **118**, 111—121).—In young rats on a diet containing 70% of elaidin, the elaidic acid (I) content of implanted tumours reaches approx. 20% of the total phospholipin-fatty acid content. (I) enters and disappears from the tumours more slowly than occurs with liver. The phospholipins (II) of tumour serve chiefly for cell building. In the tumours the ratio of the saturated to the unsaturated fatty acids of (II) equals that (3 : 7) for rat's muscle-(II). W. McC.

Lipin metabolism of the hypophysectomised dog and the lipin and carbohydrate metabolism of the hypophysectomised–depancreatised dog. I. L. Chaikoff, G. E. Gibbs, G. F. Holtom, and F. L. Reichert (Amer. J. Physiol., 1936, **116**, 543—550).—The various lipin (I) constituents of the blood generally remain normal after hypophysectomy, although total (I) is sometimes increased. Liver-(I) constituents remain normal in absence of all pituitary tissue. Complete hypophysectomy does not prevent (I) accumulation in the liver after pancreatectomy. R. N. C.

Fat feeding and cholesterol absorption. R. P. Cook (Biochem. J., 1937, **31**, 410—415).—With rats fed on diets containing 15, 20, and 30% of fat with and without 2% of cholesterol (I), (I) has a deleterious effect on growth, expecially with the lowest intake of fat. The absorption of (I) is not ∝ the intake of fat. (I), which is conc. in the liver, appears to be metabolised to the extent of approx. 30%; this is most marked with diets containing 15% of fat. F. O. H.

Fat and lipin metabolism in dogs with Eck fistulæ. L. Késztyüs and J. Martin (Biochem. Z., 1937, **289**, 341—347).—The hypolipæmia which succeeds the hyperlipæmia produced by giving dogs large doses of olive oil or olive oil + cholesterol (I) does not occur in dogs with Eck fistulæ. The free (I) of the blood is greatly increased by oil in normal dogs but is scarcely affected in dogs with fistulæ. W. McC.

Passage of elaidic acid through the placenta and into the milk of the rat. K. P. McConnell and R. G. Sinclair (J. Biol. Chem., 1937, **118**, 123—129).—The elaidic acid (I) content of new-born rats constitutes 11% of their total phospholipin-fatty acids (II) and the (I) content of their liver constitutes 16% of its (II) content when the mothers receive a diet rich in elaidin. If the young are allowed to suckle, their (I) content reaches 61% of the total (II) after 10 days and after 3 weeks the (I) content of the liver constitutes 27% of its (II) content. Hence (I) passes through the placenta and into the milk. W. McC.

Oxidation of fatty acids by "fatty" liver. L. Califano (Biochem. Z., 1937, **289**, 354—364).—The rate of oxidation of saturated fatty acids by the livers of rats and guinea-pigs is reduced by poisoning the animals with P. With crotonic acid, P poisoning causes only very slight reduction in the rate, whilst $CH_2Ac{\cdot}CO_2H$ production remains almost normal. The livers oxidise dicarboxylic acids at different (but < normal) rates (succinic > sebacic > suberic > azelaic), keto-acid production being reduced. Glutaric acid is not oxidised. W. McC.

Effect of the liver in the formation and destruction of bile salts. J. L. Bollman and F. C. Mann (Amer. J. Physiol., 1936, **116**, 214—224).—Bile salts (I) are present only in traces in the urine, and undetectable in the blood, of the normal dog. Intravenous injection or continuous infusion of (I) results in appearance of only traces in the urine and fæces. After complete removal of the liver, (I) are not found in blood or urine, and when injected are excreted quantitatively in 12 hr. In animals with biliary obstruction only part of the (I) are excreted. The liver is apparently the site of formation and concerned in the destruction of (I). Hepatotoxins such as CCl_4, $CHCl_3$, or $C_2H_2Cl_4$ inhibit formation but scarcely affect destruction of (I); other toxins are without effect. R. N. C.

Mercapturic acid synthesis in animals. III. Relation between time of administration of food and of bromobenzene and extent of *p*-bromophenylmercapturic acid synthesis in dogs. J. A. Stekol [with J. R. Foy] (J. Biol. Chem., 1937, **118**, 155—160; cf. this vol., 91).—Since in well-fed dogs the extent of synthesis of *p*-bromophenylmercapturic acid from dietary PhBr is independent of the time of giving the food or the PhBr, it appears that dietary S is not the immediate source of the S utilised in the detoxication of PhBr. W. McC.

Metabolism of *S*-carboxymethylcysteine. Use in therapy of cystinuria and relation to methionine : cysteine ratio. E. Brand, R. J. Block, B. Kassell, and G. F. Cahill (Proc. Soc. Exp. Biol. Med., 1936, **35**, 501—503).—Following the administration of the compound (I) to a healthy person no cystine (II) or ·SH compound is found in the urine, 40% of the S of (I) being partly oxidised and the remainder being converted into an ·S·S· compound (possibly a derivative of dithodiglycollic acid). In

cystinurics 15% of the S of (I) was excreted as inorg. SO_4'' and the remainder as neutral S [·S·S· compound and unchanged (I)]. The excretion of (II) by the cystinurics decreased greatly after (I) was given. W. McC.

Participation of ornithine, citrulline, and arginine in the normal process of urea formation in the liver, using angiostomy. II. E. S. London and A. K. Alexandry (Z. physiol. Chem., 1937, **246**, 106—112; cf. A., 1934, 1392).—Ornithine has no appreciable effect on the separation of urea from the liver and does not accelerate its formation when used as an addition to NH_4Cl. Citrulline has no marked action whereas arginine causes increase in the separation of urea in a manner differing from that of NH_4Cl. The experiments do not support Krebs' hypothesis of the mode of formation of urea. H. W.

Urea clearance of rats : its technique and normal range. L. E. Farr and J. E. Smadel (Amer. J. Physiol., 1936, **116**, 349—357).—The mean clearance on a milk diet is 10·9 c.c. per sq. m. of body-surface per min., the standard deviation being ±3·1 c.c. A method of determination is described. R. N. C.

Glycogen formation after alanine administration in adrenalectomised animals. L. T. Samuels J. S. Butts, H. F. Schott, and H. A. Ball (Proc. Soc. Exp. Biol. Med., 1937, **35**, 538—539).—Adrenalectomy interferes with the metabolism of alanine (administered *per os*) to glycogen in both male and female rats. P. G. M.

Relationship between gastric administration of glucose and the hyperglycæmia produced. R. Toaff (Arch. Farm. sperim., 1936, **62**, 227—234).—Following administration of 1—12 g. of glucose per kg. body-wt. into the stomachs of fasting (12 hr.) rabbits, the dose of 6 g. per kg. produces the most gradual and regular hyperglycæmia, the max. val. of which, however, is produced by that of 4 g. per kg. F. O. H.

Effect of adrenaline and of increased work on the carbohydrate metabolism of the mammalian heart. J. L. Bogue, C. L. Evans, F. Grande, and F. Y. Hsu (Quart. J. Exp. Physiol., 1935, **25**, 213—228).—Increased energy expenditure of the dog's heart by means of adrenaline or by mechanical work increases the utilisation of sugar and of lactate. Lactate is used more readily by cardiac than by skeletal muscle and is probably consumed to yield energy. Sugar serves to replace glycogen usage. When blood-sugar and -lactate have reached a low level heart-glycogen is drawn on to supply energy. Ch. Abs. (*p*)

Carbohydrate metabolism in the depancreatised dog. S. B. Barker, W. H. Chambers, and M. Dann (J. Biol. Chem., 1937, **118**, 177—195).—Glucose (I) (16—50 g.) administered to depancreatised dogs during the early and intermediate stages of inanition does not increase the R.Q., has no ketolytic or N-sparing effect, and is recovered in the urine to the extent of 95%. Hence no oxidation of (I) occurs during these stages. In the later stages of inanition, ketolytic and N-sparing effects appear, creatinuria increases, and the proportion of (I) recovered in the urine is greatly diminished, indicating oxidation of (I). W. McC.

Production of phosphoric esters in the intestinal mucous membrane during absorption. F. Verzár and H. Süllmann (Biochem. Z., 1937, **289**, 323—340).—The acid-sol. org. PO_4''' content of the membrane in fasting rats is increased by administration of sugars [fructose (I) > galactose (II) > glucose (III) > mannose (IV)] and glycerol. The phosphoric esters produced after giving (I) are more readily hydrolysed by acid than are those produced after (II), (III), or (IV). Following adrenalectomy, the content is increased by (I) and (III) and, after poisoning with $CH_2I·CO_2H$, by (I) (slightly) but not by (III). Administration of (I) after adrenalectomy and $CH_2I·CO_2H$ poisoning causes production of phosphoric esters as easily hydrolysed as are those produced in normal rats after giving (I). W. McC.

Phosphoglyceric acid as carrier of blood-phosphorus and its behaviour in experimental ammonium chloride acidosis. I. II. S. Rapoport (Biochem. Z., 1937, **289**, 411—415, 416—419).—I. The decrease in the diphosphoglyceric acid (I) content of blood following administration of NH_4Cl accounts for the total P decrease. (I), which is probably rapidly produced (with monophosphoglyceric acid as intermediary) after NH_4Cl administration ceases, seems to act as P carrier in blood.

II. The (I) content of erythrocytes, decreased by administration of NH_4Cl, is rapidly restored to the normal level by oral administration of $NaH_2PO_4 + Na_2HPO_4$. W. McC.

Biological degradation of hydrogen esters. II. K. Bernhard (Z. physiol. Chem., 1937, **246**, 133—138; cf. A., 1936, 886).—In dogs subcutaneously injected Et H adipate, suberate (I), *azelate* (II), b.p. 185—195°/11 mm., sebacate (III), and Me H sebacate (IV) are more extensively (20—30%) oxidised than are the corresponding free acids. Succinic acid and Et H succinate are completely oxidised. After injection of (II), the urine contains some pimelic acid, after (IV) suberic acid (V), and after (III) (I), (V), and adipic acid. The degree of oxidation depends only in part on the length of the C chain. W. McC.

Physiological degradation of citric acid. C. Martius and F. Knoop (Z. physiol. Chem., 1937, **246**, I—II).—The hypothesis of the formation of $CO(CH_2·CO_2H)_2$ and CO_2 in the degradation of citric acid (I) is without physiological analogy. The scheme, (I) → $CO_2H·CH{:}C(CO_2H)·CH_2·CO_2H$ → $[CO_2H·CH(OH)·CH(CO_2H)·CH_2·CO_2H]$ → $CO_2H·CO·CH(CO_2H)·CH_2·CO_2H$ is supported by the isolation of α-ketoglutaric acid as dinitrophenylhydrazone from the product of the action of liver dehydrogenase on (I). H. W.

Acetoacetic acid and the kidney. A. Rossi and L. Giuffrè (Boll. Soc. ital. Biol. sperim., 1936, **11**, 938—940).—$CH_2Ac·CO_2H$ is decomposed to the extent of 75% by kidney slices in Ringer's solution and $O_2 + CO_2$ with formation of β-hydroxybutyric acid (28%), $COMe_2$ (6%), and unknown products (41%). F. O. H.

Diffusion of (A) lactic acid, (B) iodide, into and out of voluntary muscles of the frog. A. GHAFFAR (Quart. J. Exp. Physiol., 1935, **25**, 229—239, 241—245).—(A) About 1/3 of the muscle-H_2O was concerned in the diffusion of Na *d*-lactate (I) into resting muscle in Ringer solution; the remainder is probably enclosed in membranes impermeable to (I). Two portions of muscle, "interspaces" and "cells" respectively, are distinguished. In fatigued muscle "interspaces" disappear through swelling of "cells." In heat rigor nearly all H_2O is available for the diffusion process. Excitation of isolated muscle did not increase the permeability of "cell" membranes. Lactic acid content of "cells" is < that of "interspaces," irrespective of the condition of the muscle, and variation in the two concns. are parallel.

(B) Similar results were obtained with NaI.

CH. ABS. (*p*)

Rôle of heavy metals in animal metabolism. J. R. E. RICHARDSON (Guy's Hosp. Gaz., 1935, **49**, 239—241).—Spectroscopic determination of Na, K, Ca, Mg, Fe, Zn, Cu, Mn, Al, Rb, and Sn is considered.

CH. ABS. (*p*)

Availability of iron in wheat. A. H. FREE and F. C. BING (Proc. Soc. Exp. Biol. Med., 1936, **35**, 453—454).—Hard spring and soft winter wheat contain 2·9—4·87 mg. of total Fe (2·46—4·04 mg. of inorg. Fe) per 100 g. Practically all of the Fe is available to rats. W. McC.

Calcium and phosphorus metabolism in osteomalacia. VI. Lactation and beneficial action of vitamin-*D*. S. H. LIU, C. C. SU, C. W. WANG, and K. P. CHANG (Chinese J. Physiol., 1937, **11**, 271—293).—With low Ca intake, the secretion of milk is decreased. Administration of vitamin-*D* assures a positive Ca balance even if the Ca ingestion is low but with abundant milk supply both Ca and -*D* are necessary. H. G. R.

Excretion of radio-sodium following intravenous administration in man. J. G. HAMILTON and R. S. STONE (Proc. Soc. Exp. Biol. Med., 1937, **35**, 595—598).—Radio-Na was administered intravenously to two leucæmic subjects. A large proportion was excreted in one subject in the sweat, and in the other in the urine. It could not be detected in the fæces. P. G. M.

Can injected sulphur be utilised by the animal organism? R. W. VIRTUE and H. H. BEARD (Proc. Soc. Exp. Biol. Med., 1937, **35**, 605—606).—12 mg. of colloidal S in oil was injected intraperitoneally in rats. It was not utilised either for growth or cystine production. P. G. M.

***p*-Bromophenylmercapturic acid and ethereal sulphate synthesis in dogs maintained on diets of varying sulphur content.** J. A. STEKOL (Proc. Soc. Exp. Biol. Med., 1937, **35**, 623—627).—Deprivation of dietary S decreases the output of mercapturic acid and increases that of ethereal sulphates following the feeding of PhBr. P. G. M.

Behaviour of sodium in the working mammalian muscle. G. MALORNY and H. NETTER (Pflüger's Archiv, 1936, **238**, 153—167).—Na in rabbit muscle may be increased by 100% by continued rhythmical stimulation. The Na is taken up from the blood, which even after disappearance of the lactic acid (I) shows low Na and HCO_3' vals. Intravenous injection of (I) caused a similar increase in muscle-Na. This base-fixation lessens the alkalosis occurring during recovery. When (I) is oxidised the CO_2 produced and available for neutralisation of the liberated Na is only about half that originally displaced by (I).

M. A. B.

Effect of suckling on the galactin content of the pituitary of the rat. R. P. REECE and C. W. TURNER (Proc. Soc. Exp. Biol. Med., 1936, **35**, 367—368).—The galactin content is greatly decreased by removing the milk from the mammary gland by suckling or otherwise. W. McC.

Effect of stimulus of suckling on galactin content of the rat pituitary. R. P. REECE and C. W. TURNER (Proc. Soc. Exp. Biol. Med., 1937, **35**, 621—622).—Suckling decreases the galactin content of the rat pituitary, irrespective of removal of milk. P. G. M.

Influence of radioactive waters on the resistance of animals to chloral hydrate narcosis. C. KUČERA (Sborn. czechoslov. Akad. Zemed., 1935, **10**, 553—559; Chem. Zentr., 1936, i, 3170).—Radioactive H_2O increases the resistance to narcosis.

A. G. P.

Effect of Röntgen rays on lipins of the epidermis. U. J. WILE, O. J. CAMERON, and H. C. ECKSTEIN (Arch. Dermatol. Syphilol., 1935, **32**, 69—72).—Irradiation of skin after death caused a loss of cholesterol, phospholipins, and total lipins.

CH. ABS. (*p*)

Effect of *X*-irradiation on the iodine content of thyroid gland. G. BECCHINI and A. CARTENÌ (Boll. Soc. ital. Biol. sperim., 1936, **11**, 945—948).—The thyroid-I in dogs (normally 0·05—0·06%) is increased by *X*-irradiation followed by injection of KI to an extent > the added effects of irradiation and injection alone. This evidence of a modified thyroid activity is supported by the changes in I excretion. F. O. H.

Effect of infra-red irradiation on disintegration of homologous proteins injected into the guinea-pig. P. E. MARTIN and P. PLAN (Compt. rend. Soc. Biol., 1937, **124**, 774—776).—The polypeptidæmia after injection of a homologous protein is considerably decreased by infra-red irradiation. H. G. R.

Mechanism of death in unicellular organisms. I. Delayed death and change in resistance to ultra-violet radiation in *Paramecium bursaria* with age of culture. P. S. TANG and H. Z. GAW (Chinese J. Physiol., 1937, **11**, 305—314).—The lethal action of ultra-violet light is delayed so that some cells do not die for some time after the irradiation. The resistance of the cell decreases with age of the culture.

H. G. R.

Mechanism of the action of ultra-violet light. G. GALLERANI (Boll. Soc. ital. Biol. sperim., 1936, **11**, 817—818).—Irradiation of albumin (in Ringer's solution), serum, aq. colloid preps., aq. electrolytes, or rabbit's muscle *in vivo* produces a flow of electrons or negatively charged ions in the medium. F. O. H.

Effect of solar irradiation of pregnant rats on the calcium, phosphorus, and phosphatase contents of the fœtus. P. Foà (Boll. Soc. ital. Biol. sperim., 1936, **11**, 845—847).—Exposure of rats to sunlight (compared with ordinary daylight) increased the P and Ca contents of the fœtuses by approx. 20%, the phosphatase content remaining unchanged. The effect is attributed to increase in the maternal stores of vitamin-*D*. F. O. H.

Reid's experiment. P. J. Jurišić (Pflüger's Archiv, 1936, **238**, 103—106).—Frog skin sacs filled with, and dipping into, Ringer's solution can show an increase in wt. even after the membrane is dead or has lost most of its vitality. Probably H_2O transport is not due to vital activity. Previously observed H_2O transport against gravity in collodion membranes may be due to swelling of the membrane. M. A. B.

Response of skeletal muscle to changes in hydrogen-ion concentration. I. P. Chao (Chinese J. Physiol., 1936, **11**, 225—236).—With submaximal stimulation, the p_H for the optimum response is 5·8—6·9 when the rheobase, but not the chronaxie, is a min. As the stimulation approaches a max., the optimum p_H shifts towards the alkaline side. H. G. R.

Influence of electrolyte content of muscular contractility, irritability, and neuro-muscular transmission. I. P. Chao (Chinese J. Physiol., 1937, **11**, 237—245).—The contractility of muscle is decreased with a decrease in the NaCl content of the Ringer's solution. The muscle remains irritable for a longer period in a sucrose solution with KCl and $CaCl_2$ than in the absence of electrolytes. H. G. R.

Osmotic properties of isolated amphibian skeletal muscle. I. P. Chao and K. T. Chen (Chinese J. Physiol., 1937, **11**, 253—268).—The wt. of an isolated muscle obeys the Boyle–van't Hoff law in relation to the osmotic pressure of the surrounding medium. The osmotically inactive material of the muscle increases after dissection and the active fraction decreases with time of immersion, whilst both may be affected in an unbalanced medium. H. G. R.

Exchange of salt and water between muscle and blood. II. Effect of respiratory alkalosis and acidosis induced by overbreathing and rebreathing. L. Eichelberger and A. B. Hastings [with N. Tupikova] (J. Biol. Chem., 1937, **118**, 197—204; cf. this vol., 87).—In dogs the alkalosis caused an increase, and the acidosis a decrease, in the intracellular phase. W. McC.

Exchange of salt and water between muscle and blood. III. Effect of dehydration. L. Eichelberger and A. B. Hastings (J. Biol. Chem., 1937, **118**, 205—218; cf. this vol., 87).—Following injection of hypertonic aq. NaCl or sucrose, intravenously or intraperitoneally, the muscles of normal dogs decrease in vol.; the extracellular phase increases and the cells shrink. Isotonic aq. sucrose or glucose, injected intraperitoneally, decreases the vol. of muscle for 2·5 hr., both extra- and intra-cellular phases losing H_2O. F. A. A.

Experimental production of [biological] mutations by the action of chemicals. H. Stubbe (Angew. Chem., 1937, **50**, 241—246).—A review of published work indicates that certain chemicals can increase the frequency with which mutations occur, but as yet there is no proof that sp. substances are capable of producing sp. mutations. F. C. B. M.

Inversion of the effect of one constrictor substance by another. M. Beauvallet (Compt. rend. Soc. Biol., 1937, **124**, 727—729).—The effect of adrenaline on the melanophores of fish scales is reversed if they are previously contracted with KCl or $BaCl_2$. Similarly the contraction observed with KCl is reversed if previous treatment with ergotamine tartrate or $BaCl_2$ is given. H. G. R.

Occurrence of bromine in the thyroid gland of animals treated with large amounts of bromide. I. Simon (Boll. Soc. ital. Biol. sperim., 1936, **11**, 831).—Administration of NaBr or dibromocholesterol to rabbits causes the appearance of Br and the partial or complete displacement of I in the thyroid. F. O. H.

Effects of iodine given to rabbits after cholesterol feeding. K. B. Turner and E. H. Bidwell (Proc. Soc. Exp. Biol. Med., 1937, **35**, 656—660).—The decrease in cholesterol (I) of rabbit liver after cessation of (I) feeding is unaffected by KI, whereas the decline in adrenal wt. and blood (I) is inhibited. P. G. M.

Combined action of sodium fluoride and vitamin-*D* on some bone constituents. P. Mascherpa and G. Lusignani (Boll. Soc. ital. Biol. Sperim., 1936, **11**, 720—723).—The action of subcutaneously injected NaF on the bone constituents (especially Ca) of guinea-pigs is modified by simultaneous administration of vitamin-*D*. F. O. H.

Toxicity of sodium tetrathionate. B. Cacciavillani (Boll. Soc. ital. Biol. sperim., 1936, **11**, 756—758).—The min. lethal dose (intravenously in rabbits) is 0·10—0·30 g. per kg. according to the method of prep. F. O. H.

Factors affecting human potassium tolerance. R. L. Zwemer and R. Truszkowski (Proc. Soc. Exp. Biol. Med., 1936, **35**, 424—426).—Oral administration of 10 mg. of K per lb. of body-wt. does not affect plasma-K (I) in health but increases it rapidly in Addison's disease. When the dose is 20 mg. (I) is increased also in health. In adrenal insufficiency intake of approx. this dose in the diet increases (I) before but not after administration of extract of adrenal cortex. W. McC.

Increase of glutathione in the liver following sulphur medication. A. Gosset and L. Binet (Compt. rend., 1937, **204**, 206—208).—Beneficial results of dosage with S compounds of patients suffering from acute post-operative conditions are recorded. Rabbits, following interperitoneal or intravenous injection of thiosinamine, show marked increases in the glutathione content of the blood, liver, and kidneys. F. A. A.

Excretion of mercury after oral administration of mercury with chalk, yellow mercurous iodide, and corrosive sublimate. T. Soll-

MANN, N. E. SCHREIBER, H. N. COLE, H. DEWOLF, and J. V. AMBLER (Arch. Dermatol. Syphilol., 1935, **31**, 15—25).—Urinary excretion of Hg after oral administrations is essentially the same as after use of Hg ointment. CH. ABS. (*p*)

Excretion of mercury after clinical intramuscular and intravenous injections. T. SOLLMANN, N. E. SCHREIBER, and H. N. COLE (Arch. Dermatol. Syphilol., 1935, **32**, 1—48).—Urinary excretion of Hg is an index of diffusible Hg. Fæcal excretion is negligible except with flumerin. Antisyphilitic efficiency depends on concn. of Hg ions. That fixed in tissues is inoperative. In all effective treatments excretion is progressively cumulative. 31—70% of diffusible Hg in org. preps. and 96—99% of the Hg of colloidal solutions is fixed in tissues. CH. ABS. (*p*)

Influence of bromoacetate, sodium fluoride, and sodium oxalate on glycolysis in muscle. A. HAHN and H. OTTAWA (Z. Biol., 1937, **98**, 81—88).—Disappearance of glycogen and phosphorylation of carbohydrate in ox muscle pulp at 37° and p_H 7 are greatly increased by 0·01—0·02*M*-$CH_2Br{\cdot}CO_2Na$, NaF, or $Na_2C_2O_4$; formation of $AcCO_2H$ (I) from added phosphoglyceric acid is also increased. The anomaly of increased formation of both (I) and lactic acid is due to addition of semicarbazide as interceptor for (I). F. O. H.

Modified composition of iodobismutol. Results on local irritation. P. J. HANZLIK, C. W. BARNETT, and A. P. RICHARDSON (Arch. Dermatol. Syphilol., 1935, **32**, 284—287).—Tolerance for iodobismutol injections was increased by addition of saligenin as a local anæsthetic. Propylene glycol is substituted for $(CH_2{\cdot}OH)_2$ as solvent to avoid the cumulative toxicity of the latter. CH. ABS. (*p*)

Arsphenamine sensitisation of the skin. H. HAXTHAUSEN (Arch. Dermatol. Syph., 1935, **171**, 583—589).—Diazotised arsphenamine alone or coupled with horse serum produced hypersensitivity to As in all persons tested. When coupled with human serum hypersensitivity occurred in only 1 of 8 cases. CH. ABS. (*p*)

Hæmatologic-biochemical changes in blood from neoarsphenamine. I. R. BACHROMEEV and L. N. PAVLOVA (Arch. Dermatol. Syph., 1934, **170**, 543—549).—Changes in blood-Ca and -K and leucocyte count following injection of neoarsphenamine into cows are recorded. CH. ABS. (*p*)

Chemotherapeutic action. I. Absorption of arsenical compounds and tartar emetic by normal and resistant trypanosomes and its relation to drug-resistance. F. HAWKING (J. Pharm. Exp. Ther., 1937, **59**, 123—156).—Using sufficiently dil. solutions of typical As^{III} compounds, normal trypanosomes absorb all the available drug and suffer no appreciable damage. Absorption is very rapid, being complete at 37° in a few min. Living atoxyl-resistant organisms absorb little or none of the compounds unless the concn. be increased. Compounds such as tartar emetic and phenylarsenoxide to which atoxyl-fast trypanosomes show no resistance are absorbed to the same extent by both types, whilst tryparsamide, which is inactive *in vitro*, is not absorbed by either. The nature of the side-chain attached to the arsenoxide nucleus is of importance in determining the degree of resistance, and it appears that the nucleus combines with " receptors " of normal trypanosomes, and that such combination with resistant organisms may be prevented by the presence and nature of side-chain. J. N. A.

Trypanocidal activity and arsenic content of cerebrospinal fluid after administration of arsenic compounds. F. HAWKING, T. J. HENNELLY, and J. H. QUASTEL (J. Pharm. Exp. Ther., 1937, **59**, 157—175).—A method of examining *in vitro* the trypanocidal activity of cerebrospinal fluid (normally inactive) after intravenous injection of arsenicals is described. Injection of tryparsamide (I) produces considerable activity in the fluid, the total As content of which decreases much more rapidly that the activity. The power of orsanine to produce activity is < that of (I), whilst neocryl is almost inactive. As^{III} compounds result in low [As] in the fluid and the activity is slight or absent. Using (I) there was no significant difference in As content or activity of the fluid of patients with and without organic lesions. J. N. A.

[Pharmacology of] gold salts, particularly strontium aurothiopropanolsulphonate. A. LEULIER, G. BÉRUARD, and P. LOISY (J. Pharm. Chim., 1937, [viii], **25**, 193—216).—The distribution and fixation of the salt in the organs of guinea-pigs and the rate of elimination have been examined. The tolerated dose is about 45 mg. per kg. and the urinary secretion and toxicity are < those of the more sol. salts. In guinea-pigs and rabbits, but not in man, it increases urinary albumin and glucose. E. H. S.

Action of chemical reagents on striated muscle-fibres. G. CIACCIO (Boll. Soc. ital. Biol. sperim., 1936, **11**, 798—801).—The behaviour of histological elements on treatment with EtOH, acids, fat solvents, pepsin, etc. is described. F. O. H.

Relationship between variation in body-weight and the content of ascorbic acid in the liver of guinea-pigs. G. SCOZ (Boll. Soc. ital. Biol. sperim., 1936, **11**, 907—908).—Loss of body-wt. in rabbits (due to thyroxine) or in rats (starvation) is accompanied by decrease in liver-ascorbic acid. F. O. H.

Sympatheticomimicity. III. Physiological effects of more non-amino catechol derivatives. R. L. OSBORNE (Proc. Soc. Exp. Biol. Med., 1937, **35**, 567—570; cf. A., 1935, 1412).—Non-NH_2 pyrocatechol derivatives increase blood pressure in the intact cat. This action is not abolished by acetylation of, or introduction of the ethanone group into, the compounds. P. G. M.

Influence of amino-acids and choline on the pigment-excreting function of the liver. T. MATSUURA and A. KASHIMURA (Japan. J. Gastroenterol., 1935, **7**, 115—119).—A series of NH_2-acids and amines failed to stimulate excretion of azo-fuchsin-G from livers of rabbits. CH. ABS. (*p*)

Effects of prolonged administration of moderate doses of creatine in rats. H. C. STRUCK and M. B.

Visscher (Proc. Soc. Exp. Biol. Med., 1937, **35**, 532—535).—Rats receiving, for 4—6 months, a diet containing 2 g. of creatine (I) hydrate per kg. showed no increase in (I) content of muscle, liver, or heart. P. G. M.

Action of carbamylcholine chloride on gastric secretion. P. Destrée (Compt. rend. Soc. Biol., 1937, **124**, 853—855).—An increase in the secretion of gastric juice, HCl, and mucus was observed. This was absent in atropinised animals (dogs). H. G. R.

Xanthurenic acid. Elimination following parenteral administration of tryptophan. F. M. Chiancone (Boll. Soc. ital. Biol. sperim., 1936, **11**, 821—823).—Subcutaneous injection of tryptophan (0·20 g. daily) into rats is followed within 24 hr. by urinary excretion of xanthurenic acid (Musajo, A., 1935, 1268); with oral administration, 0·30 g. daily is required to give a similar excretion. F. O. H.

Anthelmintics. II. Comparison of certain ozonides, chenopodium oil, and diheptanol peroxide. L. W. Butz and W. A. La Lande, jun. (J. Amer. Pharm. Assoc., 1937, **26**, 114—121; cf. A., 1935, 246).—Ozonised oils [Et oleate, oleic acid, cotton-seed (I) and olive oil], diheptanol peroxide (II), and 0·1% H_2O_2 are toxic to *Ascaris lumbricoides*. The min. therapeutic doses of ozonised (I) and (II) are > that of oil of chenopodium. F. O. H.

Theory and pharmacological and chemotherapeutic action of auxochromes. II. B. Breyer (Boll. Soc. ital. Biol. sperim., 1936, **11**, 948—951; cf. A., 1936, 1292).—Vals. for κ of aq. solutions and differences in reaction with H_2S of 9 HgPh· derivatives are discussed as a preliminary to an account of their biological properties. F. O. H.

Influence of pharmaceuticals on experimental ursol sensitisation in animals. F. Marquardt (Arch. Dermatol Syph., 1935, **171**, 430—439).—Hypersensitivity of guinea-pig skin to ursol is prevented by large doses of adrenaline given simultaneously. Atropine, morphine–scopolamine, phenobarbital, and thyreoglandol have no action. Ch. Abs. (*p*)

Effect of piperidinomethylbenzdioxan (933F) and yohimbine on the action of certain drugs and ions on the nictitating membrane. J. F. Ross (Amer. J. Physiol., 1936, **116**, 574—576).—Responses to acetylcholine, $CaCl_2$, KCl, adrenaline, and sympathin are decreased. R. N. C.

Action of veratrine on the Purkinje fibres. M. Goldenburg and C. J. Rothberger (Pflüger's Archiv, 1936, **238**, 137—152). M. A. B.

Lesions in the pancreas and in the anterior pituitary with fatal acidosis following prolonged intravenous administration of glucose (in dogs). H. R. Jacobs and A. R. Colwell (Amer. J. Physiol., 1936, **116**, 194—200).—Prolonged intravenous infusion of glucose (I) at 0·7—4·5 g. per kg. per hr. causes early and sustained increase of (I) tolerance (which fails terminally), high storage of liver-glycogen, and progressive depletion of the alkali reserve, leading to fatal acidosis. The formation of an unidentified acidic intermediate product of (I) metabolism in excessive amounts is surmised. R. N. C.

(A) Liberation from stimulated nerve of a substance sensitising leech-muscle preparations to acetylcholine. G. Bergami, G. Cantoni, and T. Gualtierotti. **(B) Influence of glucose on the action of eserine and acetylcholine on leech muscle.** G. Bergami, T. Gualtierotti, and G. Cantoni (Boll. Soc. ital. Biol. sperim., 1936, **11**, 741—742, 742—743).—(A) See A., 1936, 1413.

(B) Glucose (I) has no effect on the sensitising action of eserine on muscle preps., whilst the subsequent action of acetylcholine (II) is increased rather than diminished. Hence (I) may be used to differentiate (II) from the (II)-like substance liberated from stimulated nerve (*loc. cit.*). F. O. H.

Is a portion of the pancreatic secretory response to a meal due to the absorption of digested food products? J. Gray, M. S. Kim, and A. C. Ivy (Amer. J. Physiol., 1936, **116**, 210—213).—The pancreatic responses to liver extract, peptone, glucose, and emulsified fat are negligible compared with that to secretin, which is probably the only humoral agent concerned in response to meals. R. N. C.

Lecithin and liver-glycogen in normal and thyroidectomised rabbits. F. Vacirca (Boll. Soc. ital. Biol. sperim., 1936, **11**, 813—814).—Intravenous injection of aq. emulsion of lecithin into normal rabbits reduces the liver-glycogen (I) from 2·923 to 0·241%; no concomitant hyperglycæmia occurs. The reduction in (I) does not occur in thyroidectomised rabbits [average (I) 1·6%]. F. O. H.

Action of single intravenous injections of callicrein. K. Cremer (Z. ges. exp. Med., 1936, **97**, 703—707; Chem. Zentr., 1936, i, 3166).—The injection is followed by marked leucopænia and subsequent leucocytosis, a diminution in alkali reserve, and an increase in urinary p_H. A. G. P.

Hyper-tensive and -glycæmic action of hypertensive cerebrospinal fluid injected into dogs after suppression of the pressor-receptor nerves. S. Deleonardi (Boll. Soc. ital. Biol. sperim., 1936, **11**, 704—707).—The fluid of denervated dogs, on intravenous injection into the donor, increases the arterial blood pressure and the blood-sugar. F. O. H.

Local anæsthetics. G. H. Ellingham (Brit. Dental J., 1935, **59**, 198—205).—A general discussion with particular reference to procaine. Ch. Abs. (*p*)

Effect of ether on the gut. G. A. Emerson (Proc. Soc. Exp. Biol. Med., 1936, **35**, 376—381).—In rats on diets of dextrin (I) and caseinogen or (I) and ovalbumin reduction of ingested Fe_2O_3 in the gut is increased by repeated Et_2O anæsthesia. Adrenaline hydrochloride in single doses of 0·5 mg. per kg. has a similar effect. Corresponding changes are not produced in human urine by Et_2O anæsthesia. W. McC.

Ascorbic acid of tissues after ether anæsthesia. D. E. Bowman and E. Muntwyler (Proc. Soc. Exp. Biol. Med., 1937, **35**, 557—558).—The ascorbic acid (I) content of liver and kidneys of rats killed > 4 hr.

after Et_2O-anæsthesia is >, and that of the adrenals is <, that of controls. In guinea-pigs (I) diminishes in all three tissues and spleen after Et_2O-anæsthesia. P. G. M.

Analgesia produced by nitrous oxide, ethylene, and *cyclo*propane in the normal human subject. M. H. Seevers, J. H. Bennett, H. W. Pohle, and E. W. Reinardy (J. Pharm. Exp. Ther., 1937, **59**, 291—300).—The optimum concn. of the three gases which produces the max. degree of analgesia is N_2O 35—40, C_2H_4 25—35, and *cyclo*propane 4—6%. These vals. are unaffected by the substitution of O_2 for air. P. G. M.

Rapidity of absorption of neutral atropine sulphate from the conjunctival sac in relation to the osmotic pressure of the solution. I. Simon (Arch. Farm. sperim., 1936, **62**, 197—203).—Decreasing rapidity of absorption (indicated by mydriasis in man and rabbit) gives the order, hyper-, hypo-, and iso-tonic solutions (aq. atropine sulphate–NaCl); excessive hypertonicity diminishes the rate to vals. approximating to those due to hypotonicity. F. O. H.

Physiology and pharmacology of the autonomous nervous system. Z. M. Bacq and F. Lefèbvre (Arch. int. Pharmacodynam. Thér., 1935, **49**, 363—378; Chem. Zentr., 1936, i, 3169).—Stovaine, like cocaine, sensitises the third eyelid in cats to the action of the adrenaline group and has a desensitising action in respect of tyramine and ephedrine. Other drugs are similarly examined and relations between chemical constitution and sensitising power are discussed. A. G. P.

Effect of cocaine on the protein content of recently produced aqueous humour. P. C. Kronfeld and C. K. Lin (Proc. Soc. Exp. Biol. Med., 1936, **35**, 401—403).—The protein content of the recently produced humour drawn from human eyes after a 45—65 min. interval is ≫ that of the original humour. The extent of the increase with cocaine as the anæsthetic is ≪ when butyn or pantocaine (having no vasoconstrictor effect) is used. W. McC.

Effect of morphine hydrochloride and phenylpropionate on diuresis and the volume of the kidney. A. Clerc, R. Paris, and C. Macrez (Compt. rend. Soc. Biol., 1937, **124**, 714—716).—Renal vaso-constriction and oliguria were observed in the dog after 1—3 mg. per kg. of the hydrochloride, the corresponding dose of phenylpropionate being 2—3 times as great. H. G. R.

Influence of nicotine on blood-iodine and -cholesterol. L. H. Strauss and P. Scheer (Klin. Woch., 1936, **15**, 187—190; Chem. Zentr., 1936, i, 3166).—In occasional smokers and in nicotine-sensitive and hyperthyrotic men nicotine (I) increased blood-I. In habitual smokers and hypothyrotics vals. decreased. Similar changes occurred in animals in acute or chronic (I) poisoning. Blood-cholesterol curves were not characteristic indices of (I) poisoning. A. G. P.

Strychnine. VIII. Relationship of borax and other chemicals to toxicity. J. C. Ward, D. A. Spencer, and F. E. Garlough (J. Amer. Pharm. Assoc., 1937, **26**, 129—134).—The rate of toxic action of strychnine in rats is increased by certain substances (*e.g.*, NaN_3, $NaNO_2$) and decreased by others (*e.g.*, tannic acid, EtOH). F. O. H.

Pharmacology of the alkaloids of *Erythrophlœum guineense* and of the Madagascar species. I. Toxicity and general action in frogs and mice. II. General action in rabbits. R. Santi and B. Zweifel (Boll. Soc. ital. Biol. sperim., 1936, **11**, 758—760, 760—762).—Data are given for cassaine, cassaidine, norcassaidine, omofleine, erythrofleine, and *madagascar*, $C_{26}H_{41}O_6N$ (Dalma, A., 1936, 350). F. O. H.

Affinity of alkaloids from *Erythrophlœum guineense* and of *Digitalis* glucosides. G. Dalma (Boll. Soc. ital. Biol. sperim., 1936, **11**, 791—794).—The similarity of the pharmocological properties and empirical formulæ of the alkaloids (A., 1936, 350) to those of various cardiac aglucones suggests that the structural formulæ are similar, *e.g.*, cassaine and digoxigenin (Tschesche *et al.*, A., 1936, 730). F. O. H.

Taste tests. IV. Relative bitterness. F. M. Scholl and J. C. Munch (J. Amer. Pharm. Assoc., 1937, **26**, 127—129).—Comparative data for the bitterness of brucine (1000—1250), strychnine (320), quinine (100), aloin (33), theobromine (5), etc. are given. F. O. H.

Treatment of arsenical hepatitis with sodium dehydrocholate. Arsphenamine poisoning. B. Appel and I. R. Jankelson (Arch. Dermatol. Syphilol., 1935, **32**, 422—425).—Toxic hepatitis during treatment of syphilis results from As-damage to liver. As appearing in fæces after intravenous administration of arsphenamine (I) results from excretion from the liver *via* the gall bladder. Addition of $Na_2S_2O_3$ (II) increases As excretion. Na dehydrocholate (III) is still more effective. In rabbits (III) was more active than (II) in increasing the ratio, wt. of liver/% of (I) retained. Ch. Abs. (*p*)

Disturbances in liver metabolism in arsenobenzene poisoning. A. Wiedmann (Arch. Dermatol. Syph., 1935, **173**, 173—180).—Arsenobenzene disturbs the carbohydrate and protein economy of the liver. Depletion of glycogen may be avoided by administration of sugar. Ch. Abs. (*p*)

Treatment of acute mercurial poisoning with sodium formaldehydesulphoxylate. J. M. Muñoz (Rev. Soc. argentina biol., 1935, **11**, 224—229).—Hg salts are reduced to Hg. Ch. Abs. (*p*)

Destruction of the dehydrogenases of *Staphylococcus aureus* by heat. Protective action of the substrate. D. Bach (Compt. rend., 1937, **204**, 158—160).—Complete inactivation (in PO_4''' buffer at p_H 7·2) occurs at 60°, the rate being diminished by presence of substrate (lactate, glucose). F. O. H.

Action of *X*-rays on lactate, glucose, citrate, and succinate dehydrogenases. R. E. Harvard (Brit. J. Radiol., 1935, **8**, 787—792).—Irradiation with 20,000 röntgens slightly inactivated the succinic dehydrogenase only. A similar dosage of γ-rays produced the same effect. Ch. Abs. (*p*)

Cataphoresis of alcohol apodehydrogenase. H. von Euler and H. Hellström (Z. physiol. Chem., 1937, **246**, 149—154; cf. Sreenivasaya, this vol., 98).—The isoelectric point of the purified enzyme is p_H 5·2. W. McC.

Crystallisation of the protein of acetaldehyde reductase. E. Negelein and H. J. Wulff (Biochem. Z., 1937, **289**, 436—437).—The cryst. protein (I) has been isolated from extract of bottom yeast. 0·00035 mg. of (I) transfers, per min., 0·75 c.c. of H from EtOH to C_5H_5N. If the mol. wt. of (I) is 70,000, one mol. interacts, per min. at 40°, with 7000 mols. of EtOH. W. McC.

Choline esterase. M. H. Roepke (J. Pharm. Exp. Ther., 1937, **59**, 264—276).—The dissociation consts. of the enzyme–substrate complex have been determined for acetyl-, acetylarseno-, and butyrylcholine. The consts. of the enzyme–inhibitor complex have been determined for choline, arseno- and acetyl-β-methyl-choline, and certain alkaloids and inorg. salts. P. G. M.

Allantoicase. Occurrence in the animal organism. A. Brunel (Compt. rend., 1937, **204**, 380—382).—In addition to the mycelia of *Aspergillus niger* and *Sterigmatocystis phœnicis*, the liver of *Raja clavata*, L., *R. punctata*, Risso, and of various species of *Rana* contain an enzyme, allantoicase, which hydrolyses allantoic acid to urea and $CHO{\cdot}CO_2H$. F. O. H.

Enzymes in snake venom. II. Their action on native proteins, on peptones, and on the activity of trypsin. B. N. Ghosh and S. S. De (J. Indian Chem. Soc., 1936, **13**, 627—633; cf. A., 1936, 1557).—The proteolytic enzyme of Russell's viper venom resembles trypsin, the optimum p_H being 8 for gelatin and ovalbumin and 7 for casein. Since this venom and that of the cobra digest Witte's peptone, best at p_H 8·2—8·4, they contain a peptidase similar to erepsin. Both venoms inhibit the proteolytic activity of Merck's trypsin. The reported activation of inert pancreatic juice by the venom is due to formation of chymotrypsin by the "trypsin" of the venom. R. S. C.

Refractometric determination of trypsin. J. Janicki (Biochem. Z., 1937, **289**, 348—353).—Serum-albumin (I) in aq. medium containing $CaCl_2$ at p_H 8·9 is coagulated by heating at 100° and its degradation at 35° by trypsin, previously activated with enterokinase, is measured with a Pulfrich refractometer. Removal of fat from (I) increases the extent of the degradation. W. McC.

Chemical nature of taka-amylase. I. Enzymic digestion of taka-amylase by proteases. S. Akabori and K. Okahara (Bull. Chem. Soc. Japan, 1937, **12**, 55—58).—Taka-amylase (I) preps. on digestion with trypsin and papain show no loss in amylase activity despite considerable hydrolysis of protein present. (I) can be partly dialysed against 50% MeOH through collodion membranes, and preps. obtained from the dialysate give no ppt. with $CCl_3{\cdot}CO_2H$, give a strong Molisch reaction, and show no loss in activity after digestion with erepsin. (I) is therefore neither protein nor polypeptide. E. A. H. R.

Enzymic hydrolysis of melibiosecarboxylic acid. C. Cattaneo (Boll. Soc. ital. Biol. sperim., 1936, **11**, 902—904).—Melibiosecarboxylic acid [*Ba* salt, prepared from melibiose by treatment with $HCN{-}NH_3$, followed by hydrolysis with $Ba(OH)_2$, isolation of the Pb salt, decomp. by $BaCO_3$, and pptn. by $COMe_2$] is hydrolysed by α-galactosidases. F. O. H.

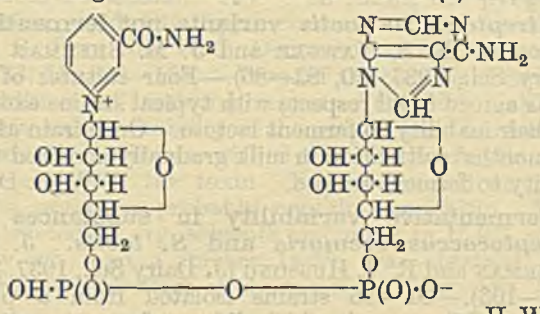
Invertase. I. Isolation and purification. II—VI. Thermal analysis of invertase action. (i) Determination of reaction heat. (ii) Amount of enzyme; (iii) sucrose concentration; (iv) hydrogen-ion concentration; (v) temperature, and reaction velocity. VII. Theoretical consideration. T. Kôzaki (Japan. J. Gastroenterol., 1935, **7**, 125—134, 135—147, 148—153, 154—161, 162—166, 167—172, 173—178).—I. The isolation of a highly active prep. of the "abnormal" type of β-*h*-fructosidase from autolysed brewers' yeast is described.

II—VI. The inversion heat of sucrose (I) was 4·1 cal. per g.-mol. The inversion reaction follows the equation $dx/dt = k_1\sqrt{(a_1 + x)}$ in the earlier stage and $b_1(a - x)/(a_2 - cx)$ subsequently. k_1 and b_1 are directly related to the amount of enzyme but the time of the first reaction is not affected by the concn. of invertase. k_1 and b_1 are little influenced by the concn. of (I) whereas a_1 is inversely related except in concns. of 2·0—7·5%. The time of the first reaction declines with decrease in initial concn. of (I). k_1 and b_1 are const. at p_H 2·9—5·1 and decrease at 6·2—7·0; they have optimum vals. at 37°. Heat-inactivation begins at 35°. Ch. Abs. (*p*)

Phosphate-transferring co-enzymes (cophosphorylases). H. von Euler and E. Adler (Z. physiol. Chem., 1937, **246**, 83—98).—In the system phosphoglyceric acid (I)–undialysed yeast extract, adenylic acid (II) cannot be replaced by pure cozymase (III). With (I)–dialysed yeast extract, (III) induces fermentation above the "zero" action but to a smaller extent than (II) and the reaction is not determined by the concn. of (III). In the formation of a P_2O_7'''' fraction during the fermentation of (I), (II) cannot be replaced by (III). Dialysed yeast extract in presence of glucose and $CH_2I{\cdot}CO_2'$ does not ferment (I); action is induced by (II), the concn. of which has a more marked effect on the induction period than on the rate of fermentation. (III) exerts a similar action differing mainly by a smaller efficiency at higher concn. Similar results are recorded for the use of apozymase. Apparently in these cases (II) can be replaced by (III) but the question whether (III) can function as cophosphorylase is left open. H. W.

Cozymase. H. von Euler and F. Schlenk (Z. physiol. Chem., 1937, **246**, 64—82; cf. A., 1936, 894).—Two methods are described whereby the activity of cozymase (I) ($A_{Co} = 400{,}000$; *loc. cit.*) is increased to A_{Co} 650,000 at which finality appears to be reached. Yeast is more profitable than blood cells of the horse as source of (I). As thus prepared (I) is white and sol. without residue in H_2O. It does not fluoresce in acid or alkaline solution. Its reactions do not suggest the presence of any impurity. The OI′ reaction (Willstätter–Schudel) appears a typical change of

pyridinium bases. Titration, in presence of indicator or electrometrically, establishes its monobasicity, as does the isolation of the *salt*, $(C_{21}H_{26}O_{14}N_7P_2)_2Ba$. Reasons are advanced for considering the carbohydrate components to be two mols. of pentose and the following constitution is advanced for (I).



H. W.

Mechanism of reduction of cozymase with hyposulphite. H. Hellström (Z. physiol. Chem., 1937, **246**, 155—162).—Measurement of light absorption and oxidation–reduction potential shows that cozymase (I) with $Na_2S_2O_4$ rapidly (1 min.) yields first monohydrocozymase (II) (the yellow intermediate product) which is then converted, very slowly at p_H 13, more rapidly at p_H 7·6, into dihydrocozymase (III). The conversion of (I) into (II) [and possibly also that of (II) into (III)] is reversible (cf. Warburg *et al.*, A., 1936, 377). W. McC.

Complementary oxidation in the autofermentation of yeast. L. Plantefol (Ann. Physiol. Physiochim. biol., 1935, **11**, 427—460; Chem. Zentr., 1936, i, 2959).—The complementary oxidation on transference of yeast from an atm. of N_2 into air is shown by increased O_2 consumption and a diminution in R.Q. The effect varies with different yeasts. A. G. P.

Influence of oxygen tension on the gaseous exchange of yeast. Autofermentation. L. Plantefol (Ann. Physiol. Physicochim. biol., 1935, **11**, 243—260; Chem. Zentr., 1936, i, 3157).—The ratio (R) of CO_2 produced in the absence to that in the presence of O_2 is very small (0·1—0·2), sugar-fermenting and -non-fermenting yeasts behaving similarly. If the quotient CO_2/O_2 in air is >1 R is increased. Decrease in O_2 tension diminishes CO_2 production and O_2 consumption. The gaseous exchange of yeasts is compared with that of higher plants. A. G. P.

Hydrogenation of *iso*butyroin under conditions of alcoholic fermentation.—See A., II, 177.

Theory of alcoholic fermentation.—See B., 1937, 177.

Porphyrin formation by pathogenic fungi of the skin. C. Carrié and A. S. von Mallinckrodt-Haupt (Arch. Dermatol, Syph., 1934, **170**, 521—529).—Organisms, *e.g.*, *Sporotrichum* and yeasts, which are elaborated in the deeper skin layers or inside the body develop more porphyrin than those which remain in surface skin layers. Ch. Abs. (*p*)

Fungistatic and fungicidal effects of two wood-preserving chemicals on human dermatophytes. Sodium *o*-2-chlorophenylphenoxide and tetrachlorophenoxide. L. M. Wieder (Arch. Dermatol. Syphilol., 1935, **31**, 644—655).

Ch. Abs. (*p*)

"Membrane method" for determining fungicidal action of chemicals: clinical implications. H. Sharlit (Arch. Dermatol. Syphilol., 1935, **31**, 217—223).—Tests are made with collodion films impregnated with the fungicide. Tetraiodohexamethylenetetramine and BzOH were fungistatic against all organisms examined except *Aspergillus niger*, against which thymol was effective. Thymol volatilised from the membrane and was absorbed by the medium. The fungicidal val. of salicylic acid and the fungistatic action of H_3BO_3 are high since these agents diffuse rapidly through the skin and are eliminated unchanged in urine. Ch. Abs. (*p*)

Mycostatic studies on certain *Moniliæ* and related fungi. P. Gomez-Vega (Arch. Dermatol. Syphilol., 1935, **32**, 49—58).—Fungistatic effects of dyes and disinfectants are examined. Crystal-violet had a therapeutic action in several dermatomycoses. Mecurochrome was fungistatic at concns. of 1 : 10,000 in sunlight but ineffective at 1 : 500 without sunlight. Ch. Abs. (*p*)

Action at a distance of metals on some species of fungi. E. Corneu (Riv. pat. veg., 1934, **24**, 397—406).—Suspensions of spores of *Penicillium glaucum* showed greatly reduced germination when placed 1—3·5 mm. from Pb discs in sealed containers. On removal from the metal growth was resumed and was more rapid than in controls. The effect was more marked on single spores than on spore masses and was insignificant in open containers or with Cu or Ag discs in closed ones. The distance of the metal from the spores was less important than the area of the disc and the vol. of the container; for a given sized disc the effect increased as the vol. of container decreased. Other fungi were less affected. The action of the metal is ascribed to increasing accumulation of secondary radiation or to the more complete ionisation of the atm. Ch. Abs. (*p*)

Action of certain metals at a distance, in contact, and in solution on development of *Thelavia basicola*, Zopf, and on that of other fungi. C. Sempio (Riv. pat. veg., 1934, **24**, 413—491).—Pb, placed 1—2 mm. from a hanging drop culture of *T. basicola*, retards or prevents germination of conidia; mycelium develops abnormally and no conidia are formed. Removal of Pb at or before commencement of germination permits normal growth. Cu and Al show similar but much weaker action; Pt, Au, and Ag do not affect germination but slightly retard growth of germ tubes. Cu, Au, or Ag filings in contact with conidia inhibit growth, much metal passing into colloidal solution; Au and Pt have little effect and Pb is slightly depressive. In solution as nitrates in the presence of sugar and glycine Cu, Al, and Pb had no effect, Au and Pt showed small action, and Ag completely inhibited growth.

Ch. Abs. (*p*)

Fat production by micro-organisms. Fat formation by strains of *Oidium lactis* (*Oospora lactis*). H. Fink, G. Haeseler, and M. Schmidt (Z. Spiritusind., 1937, **60**, 74, 76—77, 81—82).—

Ten of 50 strains of *O. lactis* gave considerable yields of fat. Optimum production of mycelium and fat by two strains, examined in detail, occurred with 4 and 6% sugar in media at 25—30°. Under conditions leading to the greatest mycelial growth, the yield of protein was lowest and that of fat highest. The fat yield exceeded that of *Endomyces vernalis*, Ludwig, and *P. javanicum* under the same conditions of culture. Whey proved a useful nutrient solution and urea and $(NH_4)_2SO_4$ good sources of N.

P. W. C.

Fat of the mould *Citromyces sp.* K. Täufel, H. Thaler, and H. Schreyegg (Fette u. Seifen, 1937, **44**, 34—38).—The fat had acid val. 72·4, sap. val. 170·0, ester val. 97·6, Reichert–Meissl val. 0·8, Polenske val. 0·8, I val. (Hanus) 125·8. It contained glycerol 4·9%, unsaponifiable matter (containing ergosterol) 9·9%, palmitic 5·8%, stearic 10·0%, oleic 34·4%, and linoleic acid 34·4%. The absence of fat acids between C_6 and C_{14} and of Me ketones indicates that the formation of the ketones from acids of medium mol. wt. is a pathological reaction.

F. C. B. M.

Production of oxidoethylene-αβ-dicarboxylic acid by mould. K. Sakaguchi, T. Inoue, and S. Tada (Proc. Imp. Acad. Tokyo, 1937, **13**, 9—11).—The acid is produced, in yields of 10—20% of the sugar utilised, when a mould (? sp.) is grown on synthetic medium containing glucose as sole source of C.

L. D. G.

Structure of galactocarolose produced from glucose by *Penicillium Charlesii* (G. Smith).—See A., II, 178.

Crystalline colouring matters of *Fusarium culmorum*.—See A., II, 159.

Determination of nitrogen and carbon in small amounts of plankton (in sea-water). T. von Brand (Biol. Bull., 1935, **69**, 221—232).—The plankton together with inorg. hydroxides are separated from sea-H_2O by pptn. with KOH, redissolution in H_2SO_4, and repptn. with KOH. N is determined by the method of Krogh and Keys (A., 1935, 185) and C by a modification of that of Krogh and Rehberg (A., 1930, 1485). 10—100 × 10^{-6} g. of C may be determined with an error ≯3 × 10^{-6} g.

Ch. Abs. (*p*)

Nodule bacteria symbiosis of the Leguminosæ. A. Rippel (Chem.-Ztg., 1937, **61**, 229—230).—A review.

R. M. M. O.

Production of dihydroxyacetone by the action of *Acetobacter suboxydans* on glycerol. L. A. Underkofler and E. I. Fulmer (J. Amer. Chem. Soc., 1937, **59**, 301—302).—$CO(CH_2{\cdot}OH)_2$ (I) is formed in max. yield (about 90%) when *A. suboxydans* is grown on a medium containing glycerol (6), yeast extract (≮0·5), and KH_2PO_4 (0·1—0·3%) at p_H 5·5—7. (I) is isolated by a modification of Neuberg and Hofmann's method (A., 1935, 1282).

H. B.

Intermediate metabolism of propionic acid bacteria. H. G. Wood, R. W. Stone, and C. H. Werkman (Biochem. J., 1937, **31**, 349—359).—The intermediate nature of phosphoglyceric acid (isolated), $AcCO_2H$, AcCHO, AcOH, and lactic (I) and succinic acid (II) in the formation of $EtCO_2H$ from glucose by *Propionibacterium* was investigated. $AcCO_2H$ is oxidised to AcOH and CO_2 and reduced to (I) and finally $EtCO_2H$. (II) is formed from AcOH and is converted into $EtCO_2H$ and CO_2. An unknown fermentable compound is formed from CO_2.

F. O. H.

***Streptococcus lactis* variants not fermenting glucose.** E. S. Yawger and J. M. Sherman (J. Dairy Sci., 1937, **20**, 83—86).—Four cultures of *S. lactis* agreed in all respects with typical strains except in their inability to ferment lactose. One strain after 10 months' cultivation in milk gradually acquired the ability to ferment lactose.

W. L. D.

Fermentative variability in substances of *Streptococcus cremoris* and *S. lactis*. J. M. Sherman and R. V. Hussong (J. Dairy Sci., 1937, **20**, 101—103).—Of 458 strains isolated from a pure culture of *S. cremoris* which did not ferment maltose or sucrose, 217 were maltose —, sucrose —, 229 were maltose +, sucrose —, and 11 were maltose —, sucrose +. *S. lactis* (maltose +, sucrose —) was more stable since only 1 out of 757 strains was maltose +, sucrose +.

W. L. D.

Influence of temperature on growth and toxin production by *Clostridium botulinum*. F. W. Tanner and E. W. Oglesby (Food Res., 1936, **1**, 481—494).—Data obtained with 7 strains of *C. botulinum* type *A*, 10 of type *B*, 1 of type *C*, and 3 untyped strains, 5 strains of *C. putrificum*, 7 of *C. sporogenes*, and one of *C. thermosaccharolyticum* are recorded. Spores require a higher temp. for germination than do actively growing cells for growth. Little growth occurs at 10° and none at 5°. Toxin is produced as soon as a heavy turbidity of growth is present.

E. C. S.

Purification of *botulinus* toxin. H. Sommer (Proc. Soc. Exp. Biol. Med., 1937, **35**, 520—521).—The toxin is pptd. by HCl from a peptic digest medium without dialysis and may be further purified by dissolution in NaOAc buffer and re-pptn. with 0·1*N*-HCl. The toxicity of the product may reach 2 × 10^{-7} g. per kg. mouse.

P. G. M.

Reactions of staphylococci of the food-poisoning types in gelatin. B. D. Chinn (Food Res., 1936, **1**, 513—516).—The food-poisoning types cannot be differentiated by gelatin liquefaction (Stone's medium) from those isolated from infections. Culturing on starch agar increases the proportion of gelatin liquefiers of both types. The staphylococcus food-poisoning factor may be produced by some strains isolated from pathological lesions.

E. C. S.

Identification of the pigment produced by diphtheria bacillus. M. Paić (Compt. rend., 1937, **204**, 298—300; cf. Stone and Coulter, A., 1932, 969; Ottensooser *et al.*, A., 1935, 787).—Absorption spectra show that diphtheria toxin broth contains coprohæmochromogen (the base probably being a purine). An Et_2O extract contains the Fe complex of coproporphyrin.

F. A. A.

Effect of sulphur on development of tubercle bacilli and on experimental pulmonary tuberculosis. A. Cestari (Arch. Farm. sperim., 1936, **62**, 204—226).—Aq. suspensions of S affect neither

the development nor virulence of cultures of human or bovine types of tubercle bacilli nor, when injected intratracheally, the course of the disease in guinea-pigs. F. O. H.

Infection by and resistance to the Preisz–Mocard bacillus. IV. The toxin, the pyogenic action, and the lipin content of the bacillus. L. B. Bull and C. G. Dickinson (Austral. Vet. J., 1935, **11**, 126—138).—Prep. of the toxin is described. Addition of reducing agents (notably $NaHSO_3$) increased the stability of the prep. Treatment of the toxic broth filtrate with 0·4% of colloidal Fe completely pptd. the toxin. K alum caused no pptn. The organism probably contains no chitin. Lipin extracted by org. solvents amounted to 15·9% of the dry wt., and a further 15·5% was obtained after alkaline hydrolysis of the residue. Ch. Abs. (*p*)

Biological properties of toxins produced by the Shiga and Flexner bacilli. A. Boivin and L. Mesrobeanu (Compt. rend., 1937, **204**, 302—304; cf. A., 1936, 1423).—Filtrates from broth on which "smooth" Shiga bacilli have been cultivated at p_H 8 give a ppt. with $CCl_3{\cdot}CO_2H$ at p_H 3·5, which redissolves in aq. Na_2CO_3 and contains the neurotropic principle (I), but none of the enterotropic principle (II). (I) is destroyed at 100°, is inactivated by trypsin, and flocculates with antidysenteric serum, but not with "smooth" Shiga antigen. The "rough" form of Shiga bacilli yields (I) but not (II), whilst the "smooth" form of Flexner bacilli yields (II) but not (I). The dysenteric bacilli also contain other thermolabile toxic principles. F. A. A.

Serologically inactive polysaccharide from mucoid strains of group *A* hæmolytic streptococcus. F. E. Kendall, M. Heidelberger, and M. H. Dawson (J. Biol. Chem., 1937, **118**, 61—69).—Group *A* (human pathogenic) hæmolytic streptococci produce in the mucoid phase a serologically inactive polysaccharide (I) similar to that from the so-called "smooth" ("mucoid") phase of pneumococci. Analytical data indicate (I) to consist of *N*-acetylglucosamine and glycuronic acid (1 : 1 mol.). R. M. M. O.

Specific and non-specific cell polysaccharides of a human strain (H-37) of tubercle bacillus. M. Heidelberger and A. E. O. Menzel (J. Biol. Chem., 1937, **118**, 79—100).—Fractionation of the polysaccharides (I) indicates the presence of serologically active and inactive (I) forms, two of which are characterised, one by its high positive [α], low pentose content, and presence of combined Mg palmitate, and the other by its low positive [α] and relatively high pentose content. The fractions consist mainly of *d*-arabinose and *d*-mannose units. R. M. M. O.

Viantigen of *B. typhosus*. G. Buonomini (Boll. Soc. ital. Biol. sperim., 1936, **11**, 699—702).—The existence and characteristics of a viantigen (cf. Felix *et al.*, A., 1935, 1420) in some virulent strains of *B. typhosus* are discussed. F. O. H.

Ultra-violet absorption spectrum of crystalline tobacco mosaic virus protein. G. I. Lavin and W. M. Stanley (J. Biol. Chem., 1937, **118**, 269—274).—The ultra-violet absorption spectrum of this protein consists of a broad band (max. at λ 2650 A.) made up of a no. of narrower bands, as yet incompletely resolved, and agrees with the destruction spectrum of the virus. The band attributed to tyrosine appears shifted towards the shorter λλ. F. A. A.

Purification of suspensions of the virus of vaccinia by carbon dioxide. C. A. Behrens and F. A. Nielsen (Proc. Indiana Acad. Sci., 1934, **44**, 100—117).—The method is based on the isoelectric pptn. of suspended tissue by CO_2. Ch. Abs. (*p*)

Relative *in vitro* activity of certain antiseptics in aqueous solution. R. N. Nye (J. Amer. Med. Assoc., 1937, **108**, 280—287).—A variety of antiseptics containing I, Cl, Hg, hexylresorcinol, listerine, etc. were tested simultaneously for bactericidal activity (both alone and in presence of 50% horse serum), diffusibility, and toxicity. An aq. solution of I is considered to possess more of the desirable properties of an antiseptic for use in wounds than any other solution tested. P. W. C.

Antiseptic power of mixtures of benzyldimethylalkylammonium chlorides. C. G. Dunn (Proc. Soc. Exp. Biol. Med., 1936, **35**, 427—429).—Gram-positive and -negative pathogenic organisms are readily destroyed in 10 min. at 37° by the mixtures (alkyl = radicals of the fatty acids of coconut oil) at dilutions of 1 : 35,000—1 : 90,000. The efficiency of the mixture is not affected by the presence of large concns. of org. matter and its germicidal power is not affected by freezing or heating at >50° for 18 days. W. McC.

Effect of *p*-aminobenzenesulphonamide on organisms *in vitro*. S. M. Rosenthal (U.S. Publ. Health Rep., 1937, **52**, 192—196).—The compound in high dilutions is bacteriostatic and bactericidal to pneumococci but has no effect on the growth of streptococci. W. L. D.

Action of phenolic substances on bacteria. Influence of chemical constitution. Salicylic acid and alcohol, salicylaldehyde, and their mono- and di-halogeno-derivatives. P. Delaunay (J. Pharm. Chim., 1937, [viii], **25**, 254—266).—Methods for the determination of "antigenetic" (bacteriostatic) and "antibiotic" (bactericidal) activities of phenolic substances are discussed. F. O. H.

Bacteriostatic action of dyes with Gram-positive cocci. J. E. Fuller and M. Rugosa (Ann. Rept. Mass. Agric. Exp. Sta. [1934], Bull., 1935, No. 315, 22).—Basic fuchsin showed the greatest bacteriostatic effect on staphylococci, hæmolytic and non-hæmolytic streptococci, sarcinæ, and micrococci followed, in order, by crystal-violet and gentian-violet. Acid fuchsin had little action. High acid production by bacteria is associated with resistance to dyes. Ch. Abs. (*p*)

Subconjunctival iron deposits after adrenaline injections. T. Gunderson (Amer. J. Ophthalmol., 1934, **17**, 807—808).—The black deposits remaining at the site of adrenaline injections consist of complex Fe salts, derived from dissolution of Fe from the

hypodermic needle by the aq. adrenaline hydrochloride (p_H 5·6). Ch. Abs. (*e*)

Chemical determination of adrenaline. J. Devine (Biochem. J., 1937, **31**, 545—550).—The error in excess in the Folin determination of adrenaline (I) in adrenal extracts as compared with the oxidation method and the pressor assay is due to the ascorbic (II) and uric acid contents, chiefly (II). Error in the reverse direction is due probably to low p_H. The validity of the correction is limited by the sensitivity of the reagent to partly oxidised (II). Apart from the unidentified pyrocatechol compound present, no (I)-precursor was detected in the gland. P. W. C.

Adrenaline and adrenochrome.—See A., II, 207.

Active crystalline substance, corticosterone, from adrenal cortex. T. Reichstein, E. Laqueur, I. E. Uyldert, P. de Fremery, and R. W. Spanhoff (Proc. K. Akad. Wetensch. Amsterdam, 1936, **39**, 1218—1220).—A detailed account of work already noted (A., II, 105). F. O. H.

Vitamin-*C* and the adrenal cortical hormone. J. L. Svirbely and E. C. Kendall (Amer. J. Physiol., 1936, **116**, 187—193).—Adrenalectomised dogs given a diet free from vitamin-*C* and a const. amount of cortin (I) develop no scurvy and show no changes of N metabolism unless the dose of (I) is varied. (I) neither prevents nor delays scurvy in guinea-pigs, ascorbic acid being the main factor in this respect. R. N. C.

Carbohydrate metabolism in adrenalectomised animals. M. V. Buell, I. A. Anderson, and M. B. Strauss (Amer. J. Physiol., 1936, **116**, 274—281).—Adrenalectomy in rats reduces the rate of absorption of *d*-lactic acid (I) from the gastro-intestinal tract. Oral administration of salt mixture does not affect the lowered rate of absorption. Blood-sugar and liver-glycogen are low in adrenalectomised rats, whether or not they are protected by salt mixture or C adsorbate. The errors in carbohydrate metabolism resulting from adrenalectomy do not *per se* necessarily cause the rapid death of the animal protected by salt from excessive loss of H_2O and electrolytes. R. N. C.

Intact and adrenalectomised dogs subjected to sodium and chloride depletion by intraperitoneal injections of glucose. W. W. Swingle, W. M. Parkins, and A. R. Taylor (Amer. J. Physiol., 1936, **116**, 430—437). R. N. C.

Relation of serum-sodium and -chloride levels to alterations of body-water in the intact and adrenalectomised dog, and the effect of adrenal cortical hormone on fluid distribution. W. W. Swingle, W. M. Parkins, A. R. Taylor, and H. W. Hays (Amer. J. Physiol., 1936, **116**, 438—445).—Intact and adrenalectomised animals receiving cortical hormone (I) can be maintained in normal health when serum-Na and -Cl have been depleted. (I) prevents symptoms of collapse in adrenalectomised animals by shifting tissue-fluids to the extracellular spaces and blood-stream, despite the low Na and Cl. (I) does not affect Na and Cl in the fasting state or on a salt-free diet. Urinary excretion of H_2O, Na, and Cl is low in adrenal insufficiency. In the intact animal, the glands elaborate sufficient (I) to restore the fluid distribution to normal without affecting Na or Cl; supplementary injections of (I) reduce blood-urea-N to normal. R. N. C.

Effect of cortical extract on glucose tolerance of adrenalectomised and hypophysectomised rats. H. A. Ball, L. T. Samuels, and H. F. Schott (Proc. Soc. Exp. Biol. Med., 1937, **35**, 633—634).—The decreased ability of hypophysectomised rats to remove sugar from the blood is unaffected by cortical extract, whilst that of adrenalectomised rats disappears. P. G. M.

Preparation and assay of adrenocorticotropic hormone. H. D. Moon (Proc. Soc. Exp. Biol. Med., 1937, **35**, 649—652).—The hormone is prepared as described by Lyons (following abstract). A rat unit is defined as the amount necessary to produce a 50% increase in wt. of the adrenals of 21-day old male rats when administered in 3 daily doses, and is usually about 20 mg. The hormone contains no significant amounts of growth hormone. P. G. M.

Preparation and assay of mammotropic hormone. W. R. Lyons (Proc. Soc. Exp. Biol. Med., 1937, **35**, 645—648).—The hormone is extracted from sheep pituitaries with 85% $COMe_2$ containing 2·5 vol.-% of HCl and pptd. from the clear extract with an equal vol. of $COMe_2$. It is purified by fractional pptn. from $COMe_2$–NH_3 and dissolved in H_2O containing sufficient NaOH to give a clear solution. The ppt. produced by adjustment to p_H 6·5 is discarded (adrenocorticotropic fraction), and the mammotropic hormone is frozen out at p_H 5·5 and assayed by the local intradermal "squab test." P. G. M.

Comparison of methods of extraction of the lactogenic hormone. A. J. Bergman and C. W. Turner (J. Biol. Chem., 1937, **118**, 247—251).—For obtaining the lactogenic hormone from sheep anterior pituitary powder, extraction with 60—70% EtOH at p_H 9—10 is the most efficient of the four methods tested. F. A. A.

Production of milk secretion in female and male dogs by anterior pituitary extract. B. A. Houssay (Rev. Soc. argentina biol., 1935, **11**, 240—249).—Injection of the extract produced lactation in adult females which had never been pregnant and in those which had been castrated, hypophysectomised, and/or thyroidectomised or in which the splanchnic nerve had been cut, but not in young females. In male dogs in which the mammæ were hypertrophied by prolonged administration of folliculin the extract induced lactation in whole or castrated animals. Ch. Abs. (*p*)

Pancreas-stimulating hormone of the pituitary anterior lobe. A. W. Elmer, B. Giedosz, and M. Scheps (Compt. rend. Soc. Biol., 1937, **124**, 823—826).—No evidence was obtained for the presence of a pancreas-stimulating hormone of the pituitary anterior lobe which increases the secretion of insulin. H. G. R.

Effect of hypophysectomy on pregnancy and lactation in dogs. B. A. Houssay (Rev. Soc. argentina biol., 1935, **11**, 196—201).—Total hypophysectomy produces abortion without lactic secretion, or, if performed after normal parturition, it

rapidly decreases milk flow. The anterior lobe is necessary for lactic secretion. Extirpation of the posterior lobe does not affect pregnancy, parturition, or lactation. CH. ABS. (*p*)

Effect of pituitrin on the composition of skeletal muscle. S. OSADA (Folia Endocrinol. Japon., 1935, **11**, 23).—Injection of pituitrin increased the lactic acid and decreased the glycogen and lactacidogen contents of the muscle, the N constituents remaining unchanged. CH. ABS. (*p*)

Augmentary factor in animal sera after injections of pituitary extract. K. W. THOMPSON (Proc. Soc. Exp. Biol. Med., 1937, **35**, 640—644).—Injection of a gonadotropic extract of sheep pituitary induced the formation of a factor in the sera of horses and dogs which augmented threefold the activity of the extract in immature rats. The factor was present only in the pseudoglobulin fraction of the sera. P. G. M.

Antigenic function of hormone preparations. I. Gonadotropic hormone of the anterior pituitary (prehormone). F. EICHBAUM and V. KINDERMANN (Z. Immunitäts., 1935, **86**, 284—299; Chem. Zentr., 1936, i, 3163).—By immunising rabbits with the prehormone from pregnancy urine, a sp. antibody is produced which is active not towards the hormone itself but towards the associated substances of the hormone in urine (urine antigen). A. G. P.

Attempts to produce antigonadotropic substance by the use of serum or blood extract. G. CHEN (Chinese J. Physiol., 1937, **11**, 329—333).—It is doubtful whether antigonadotropic effects can be produced by antisera but the gonadotropic effect of pituitary extract is reduced by injection of normal serum. H. G. R.

Gonadotropic hormone in the blood and urine of early pregnancy. Normal occurrence of transient extremely high levels. H. M. EVANS, C. L. KOHLS, and D. H. WONDER (J. Amer. Med. Assoc., 1937, **108**, 287—289).—Charts show the amount of gonadotropic hormone excreted in the urine throughout 6 normal pregnancies. Peak vals. occur 1 month from the beginning of the first expected but missed menstruation. P. W. C.

Female sex hormones. L. FRAENKEL (Chinese Med. J., 1937, **51**, 325—340).—A lecture.

Dependence of œstrone production during pregnancy on the sex of the fœtus and size of the placenta. L. GRAM (Biochem. Z., 1937, **289**, 397—405).—In women during the last two months of pregnancy there is no correlation between the extent of urinary œstrone (I) excretion and the sex of the fœtus. With female fœtuses, the amount of (I) excreted is slightly > that excreted with male fœtuses although the placentas [which contain approx. the same concn. of (I) with both sexes] are smaller with the females than with the males. W. McC.

Optimal dosage of œstrogens. Experimental and clinical evaluation. C. MAZER and S. L. ISRAEL (J. Amer. Med. Assoc., 1937, **108**, 163—169).—The rate of absorption and excretion of œstrogen following hypodermic or oral administration of oily solutions of œstradiol benzoate (I), œstradiol, theelin (II), and theelol to ovariectomised women for 1—10 days is investigated. A single dose of 1000 rat units of (I) or (II) maintain the normal level of œstrogen in the blood for 4 days. With larger doses (5000—10,000 units) the normal premenstrual level is attained on the 4th—5th day. The degree of absorption as reflected in the blood and urine levels varies considerably with the product and the amount administered, hypodermic administration being only twice as effective as the oral route. P. W. C.

Report of the 2nd Conference on the standardisation of the sexual hormone. ANON. (Bull. trimestr. Organisat. Hyg., 1935, **4**, 631—643; Chem. Zentr., 1936, i, 2962).—Physical and biological standards are established for the monobenzoate of œstradiol, androsterone, and progesterone. A. G. P.

Occurrence of folliculin in the male organism. B. FRATTINI (Boll. Soc. ital. Biol. sperim., 1936, **11**, 853—855).—The presence of folliculin in stallion's urine is confirmed by the action of preps. from the urine on the uterus and pituitary gland of ovariectomised rats. F. O. H.

Sexual hormones. XX, XXI.—See A., II, 199.

Biochemical transformation of Δ^4-androstenedione into Δ^4-testosterone.—See A., II, 199.

Effect of Δ^4-androstenedione and Δ^5-androstenediol on castrated and ovariectomised rats. V. KORENCHEVSKY, M. DENNISON, and M. ELDRIDGE (Biochem. J., 1937, **31**, 467—474).—Both Δ^4-androstenedione (I) and Δ^5-androstenediol (II) restore the wt., size, and histological structure of rat organs atrophied after gonadectomy towards but not up to normal and raise the wt. and size of both male and female preputial glands to normal or > normal. In the doses used, (I) shows a co-operative activity with œstrone (III) on the female organs only, whilst (II) shows no co-operative activity with (III) on the male or female organs but opposes the action of (III) on some female sexual organs. There is co-operative activity on the male sexual glands between (I) and testosterone. Both (I) and (II) cause a decrease in wt. of adrenals and an increase in the rate of involution of the thymus in both castrated and ovariectomised rats [except that in males the effect of (II) on the thymus is indefinite]. Addition of (III) seems to depress the action on the adrenals. The effect of (I) and (II) on other organs, fat deposition, and gain in body-wt. is discussed. P. W. C.

Prolonged treatment of castrated and ovariectomised rats with testosterone propionate. V. KORENCHEVSKY, M. DENNISON, and M. ELDRIDGE (Biochem. J., 1937, **31**, 475—485).—Testosterone propionate (I) injected into castrated male rats causes complete recovery to normal wt. of the atrophied sexual organs, a decrease in wt. of the "castration" adrenals and thymus, a slight increase in the wt. of kidneys and liver, an improvement with small doses in gain in body-wt., and a lasting decrease with large doses. The activity of (I) is ≫ that of testosterone (II) and the changes are to some extent (sexual organs) or completely (adrenals) maintained 9 days after the last injection. All the male hormones

used stimulate the development of atrophied female sexual glands but (I) is more active even than œstrone (III) in the doses used. (I) increases the wt. of the uterus nearly to normal when injected alone and to normal in combination with (III), produces abnormally large vagina and female preputial glands, decreases the wt. of the adrenals, greatly increases the rate of involution of the thymus, and decreases fat deposition and gain in body-wt. The histological changes in uterus and vagina are similar to those with androstanediol or with (II). P. W. C.

Capon comb growth-promoting substances ("male hormones") in human urine of males and females of varying ages. E. Dingemanse, H. Borchardt, and E. Laqueur (Biochem. J., 1937, **31**, 500—507).—H_2O-sol. forms (esters) of male hormone exist in all the urines examined; they cause no growth of the capon comb but can be hydrolysed with acid or by heating under pressure, but not with alkali or by keeping at room temp., in which respect they differ from œstrogenic substances. The urine of men up to 40 years usually contains 40—50 units per litre (women 30—60 units per litre). Before puberty boys excrete about 15 units per litre (girls 5 units per litre). An increase of "male hormone" excretion occurs during the post-menstrual period. It is unlikely that the hormone excreted has its origin in the food. P. G. M.

Effect of endocrine glands on composition of skeletal muscle. IV. Effect of the testis. V. Effect of the ovary. G. Osada (Folia Endocrinol. Japon., 1935, **11**, 21—22, 22—23; cf. this vol., 42).—IV. Oral administration of testis powder increased the residual N, NH_3, urea, creatine (I), NH_2- and lactic (II) acids in the muscle, decreased glycogen (III) and lactacidogen (IV), but did not affect the creatinine content. Castration decreased (II) and increased (III) and (IV), the N and creatinine (V) fractions being unchanged.

V. Oral administration of interstitial tissue powder increased the (I) and (II) contents and all N fractions in the muscle and decreased (III) and (IV). Administration of corpus luteum powder decreased (I), (II), urea, and residual N and increased (III) and (IV). Oophorectomy acted similarly except that residual N and urea were unchanged. Neither treatment affected the (V) content.

Ch. Abs. (*p*)

Insulin hypoglycæmia. I. Action of sulphur. II. Hyperinsulinæmia in pigeons. C. Forti (Boll. Soc. ital. Biol. sperim., 1936, **11**, 915—916, 916—917).—I. The fall in blood-sugar due to injection of insulin (I) into rabbits rendered febrile by subcutaneous injection of suspensions of S has a rapidity and intensity < normal.

II. The injection of blood (1·5 c.c.) from a pigeon that had received, 1·5 hr. previously, 24·6 units of (I) per 100 g. body-wt. into a rabbit had no effect on the blood-sugar of the latter. With pigeons receiving 95·2 units of (I) per 100 g., the blood after 7—35 min. produced a slight hypoglycæmia (fall of 0·018—0·020%) in rabbits. F. O. H.

Site and mechanism of the antiketogenic action of insulin. I. A. Mirsky (Amer. J. Physiol., 1936, **116**, 322—326).—Simultaneous administration to rabbits of insulin (I) with neutralised alkaline extract of the anterior pituitary (II) inhibits the ketogenic action of (II); preliminary administration of ergotamine (III) has the same effect. Since (II) is effective only in presence of the liver, it is probable that (I) and (III) exert their antiketogenic effects on the liver. The action of (I) and (III) is possibly due to their antiglycogenolytic function. R. N. C.

Injury to heart muscle by insulin. E. Schönbrunner (Med. Klin., 1935, **31**, 1571—1572; Chem. Zentr., 1936, i, 3165—3166).—In certain cases of hyperglycæmia insulin injured the heart muscle without producing very great diminution of blood-sugar. A. G. P.

Dietetic factor determining glucose tolerance and sensitivity to insulin in healthy men. H. P. Himsworth (Clin. Sci., 1935, **2**, No. 1, 67—94).—The area above the resting blood-sugar level or below the insulin depression curve is const. provided the diet is unchanged. Improvement in glucose (I) tolerance following transition from low-carbohydrate, high-fat to high-carbohydrate, low-fat diets is due solely to the carbohydrate. Changes in (I) tolerance may be explained by changes in pancreatic insulin secretion, sensitivity increasing with the carbohydrate intake. Ch. Abs. (*p*)

Physical and physiological properties of the system insulin–tannic acid. F. Bischoff (Amer. J. Physiol., 1936, **116**, 239—244).—Insulin (I) is pptd. by tannic acid (II) on both sides of the isoelectric point, and the p_H of solution becomes approx. 7·0; in low concns. of electrolytes a colloidal solution forms, which is broken by NaCl. (I) administered parenterally in combination with (II) prolongs resorption, increasing the physiological effect. R. N. C.

Cutaneous absorption of insulin. M. Bruger and J. Flexner (Proc. Soc. Exp. Biol. Med., 1936, **35**, 429—432).—In rabbits insulin is absorbed through recently abraded but not through intact skin. W. McC.

Cystine content of insulin. G. L. Miller and V. du Vigneaud (J. Biol. Chem., 1937, **118**, 101—110).—The S content of dry ash-free cryst. insulin (I) is 3·34±0·03% and the cystine (II) content, determined after hydrolysis with 50% HCO_2H containing 20% of HCl, is 12·5±0·4%. Hence all but a trace of the S is present as (II). Perfectly dry (I) is very hygroscopic and is freed from H_2O only with difficulty. W. McC.

Distribution of sulphur in crystalline insulin. B. Kassell and E. Brand (Proc. Soc. Exp. Biol. Med., 1936, **35**, 444—445).—In insulin yielding 11% of cystine (I) and 0·7% of methionine (II) on hydrolysis, 94% of the S is present in (I) and 5% in (II). W. McC.

Retarded and prolonged action of insulin precipitated by safranine. H. R. Jacobs and H. T. Ricketts (Proc. Soc. Exp. Biol. Med., 1936, **35**, 473—477).—The suspension obtained by pptg. insulin at p_H 7·2 in presence of safranine *O* resembles but is somewhat less effective than protamine–insulin in causing hypoglycæmia of gradual onset and ex-

tended duration. With both materials the redissolution of the suspended material lowers its efficiency. W. McC.

Influence of œstrus, pregnancy, and lactation on the development of tetany and on the blood-calcium in dogs with hypoparathyroidism. F. Mathieu (Compt. rend. Soc. Biol., 1937, **124**, 855—858).—In œstrus, the latent tetany develops and the blood-Ca decreases to a level which becomes const. some months after the operation. Tetany and decreased blood-Ca were present towards the end of pregnancy and in the early stages of lactation, relieved to some extent in the latter case by a diet rich in milk. H. G. R.

Calcium and phosphorus content of the milk of dogs suffering from hypoparathyroidism. F. Mathieu (Compt. rend. Soc. Biol., 1937, **124**, 859—861).—Ca and P in the milk are decreased in latent tetany. If a milk diet is substituted by a flesh diet, the Ca decreases sharply and then rises slightly whilst the P is not affected, these variations not being observed in normal dogs. H. G. R.

Effect of administration of parathyroid extract on serum-calcium level in the nephrectomised rat. W. R. Tweedy and E. W. McNamara (Proc. Soc. Exp. Biol. Med., 1936, **35**, 414—416).—In immature and mature rats nephrectomy causes a slight decrease in serum-Ca, which is only slightly increased by subsequent injection of large doses of parathyroid extract. W. McC.

Effect of thyroxine on the rate of oxidation of alcohol in the dog. J. Benedict and K. Mezey (Biochem. Z., 1937, **289**, 432—435).—In dogs on a diet of 300 g. of meat + 100 g. of bread, the rate of oxidation of EtOH given orally in doses of 0·5 g. per kg. exhibits wide variations. The rate is not affected by daily subcutaneously injecting 1 or 4 mg. of thyroxine. W. McC.

Action of thyroxine and similar substances on the development of sea-urchin larvæ. M. R. Zerling (Bull. inst. oceanograph., 1935, No. 678, 10 pp.).—Thyroxine (1 in 50,000—800,000) retards growth and differentiation in the larvæ after the first mitotic division. Chemically related substances are without effect. Ch. Abs. (*p*)

Relation between the thyroid and the diencephalic gland. E. Scharrer and R. Gaupp (Klin. Woch., 1935, 1651—1652; Chem. Zentr., 1936, i, 2964).—It is premature to associate production of the thyrotropic hormone with the diencephalic gland. In amphibia the gland contains the hormone. A. G. P.

Non-specificity of thyrotropic antihormone. K. W. Thompson (Proc. Soc. Exp. Biol. Med., 1937, **35**, 637—640).—Injections of a sheep pituitary extract into a bitch produced an antihormone which inactivated in guinea-pigs a thyrotropic hormone prep. from sheep and ox pituitaries and human urine of myxœdema. P. G. M.

Active agents in nature. R. Kuhn (Naturwiss., 1937, **25**, 225—231).—A lecture.

Cutaneous absorption of vitamins, particularly from vitamin-containing skin creams. M. Schieblich (Fette u. Seifen, 1937, **44**, 64—67).—A review. F. C. B. M.

Fat-soluble vitamins. I. Nature and importance of vitamins. W. Halden (Fette u. Seifen, 1937, **44**, 62—64).—A review. F. C. B. M.

Formation of gallstone. I. Influence of fat-soluble vitamins, especially vitamin-*A* (cod-liver oil and "biostearin"), on amounts of potassium, sodium, calcium, and magnesium in blood. T. Maruno (Japan. J. Gastroenterol., 1935, **7**, 120—124).—In rabbits fed with cod-liver oil or olive oil and injected with biostearin, serum-Ca and -Na decreased, whereas -Mg and -K increased. Changes are ascribed to excess of vitamin-*A*. Ch. Abs. (*p*)

Lipin-soluble factors necessary for the growth of *Drosophila melanogaster*, Meig. M. Lafon (Compt. rend. Soc. Biol., 1937, **124**, 798—800).—*Drosophila* grows normally on a medium devoid of the fat-sol. vitamins. H. G. R.

Water-soluble factors necessary for the growth of *Drosophila melanogaster*, Meig. M. Lafon (Compt. rend. Soc. Biol., 1937, **124**, 800—803).—*Drosophila* requires a factor (not present in hen's eggs) for normal growth but does not need the vitamins, whilst *Lucilia sericata* requires several of the H_2O-sol. factors. H. G. R.

Biochemistry of vitamin-*A*. State of combination in liver oils. L. Reti (Rev. Soc. Argentina biol., 1935, **11**, 283—290).—In livers of fish, chicken, and mammals -*A* was combined with fatty acids. Ch. Abs. (*p*)

Distribution of vitamin-*A* in the tissues of the eels *Anguilla vulgaris* and *A. aucklandi*, Rich. J. R. Edisbury, J. A. Lovern, and R. A. Morton (Biochem. J., 1937, **31**, 416—423).—Vitamin-*A* occurs in the liver and also in other tissues. The content tends to increase with age. The liver oil, which is scanty, is rich in -*A*. Non-liver oils from the conger eel, sturgeon, halibut, herring, and lamprey contain appreciable amounts of -*A*. F. O. H.

Vitamin-*A* requirements of the rat. D. Greaves and C. L. A. Schmidt (Amer. J. Physiol., 1936, **116**, 456—467).—The vitamin-*A* requirements are unaffected by laparotomy, but are increased by choledocholonostomy, which, however, does not increase liver-*A*. -*A* is not excreted in the bile. Icterus does not affect the -*A* requirements, but reduces the amount absorbed from the intestines. The -*A* requirements are unaffected by age or body-wt., and are not associated with the ovary, but are increased by administration of thyroid or thyroxine, and reduced by thyroidectomy. R. N. C.

Vitamin-*A* deficiency: studies with the visual photometer. I. O. Park (J. Oklahoma State Med. Assoc., 1935, **28**, No. 10, 357—364).—Low vitamin-*A* intake is associated with the production of rhodopsin. -*A* is possibly destroyed by the toxin of measles. Administration of carotene was beneficial in a no. of diseases. Ch. Abs. (*p*)

Melanin pigment of the skin and conjunctiva in avitaminosis-*A* in man. J. W. Mu, C. N. Frazier, and A. Pillat (Chinese J. Physiol., 1937,

11, 247—252).—The skin and conjunctiva in avitaminosis-*A* contain melanin-producing enzymes and melanin pigment, the latter being most marked where the epithelium is thickened and infiltration of leucocytes present. H. G. R.

Vitamin-*B* complex. I. Effect of fats and of individual esters on vitamin-*B* requirement of rats. W. D. Salmon and J. G. Goodman. II. Quantity of glycogen in the vitamin-deficient rat and its ability to deplete this glycogen during starvation. III. Ability of the vitamin-deficient rat to utilise lactic acid. IV. Apparent ability of the vitamin-*B*-deficient rat to transform carbohydrate into fat. G. A. Schrader (45th Ann. Rept. Alabama Agric. Exp. Sta., 1934, 21—22).—I. With diets containing Et or glyceryl esters equiv. to 23% of the fatty acid, the vitamin-*B*-sparing efficiency of the acids was in the descending order octoic (I), decoic (II), heptoic (III), lauric (IV), myristic, nonoic, undecoic, and oleic. $BuCO_2H$, $EtCO_2H$, and AcOH had little, and palmitic and stearic acid no, sparing effect. Glyceryl butyrate was toxic even when the diet contained adequate -*B*. Spastic cases of -*B* deficiency were remedied by administering (I), (II), (III), or (IV) without -*B*. The onset of -*B* deficiency is not hastened by substituting 23% of glyceryl lactate for sucrose in the diet.

II. The accumulation of glycogen and the rate of its depletion were similar in -*B*-deficient and normal rats.

III. Utilisation of lactic acid was $\ll$ that of *d*-glucose. There was no apparent breakdown of lactic acid metabolism in -*B*-deficient rats.

IV. On high-carbohydrate diets all -*B*-deficient rats showed R.Q. 1·26. On high-fat diets the R.Q. was always $<1{\cdot}0$. Rats receiving a high-carbohydrate diet can convert carbohydrate into fat.

Ch. Abs. (*p*)

"Orizotoxin" and experimental beri-beri in pigeons. G. Solarino (Quad. Nutriz., 1935, **1**, 375—412; Chem. Zentr., 1936, i, 2967).—Administration of EtOH-extracts of polished or autoclaved rice to fasting pigeons causes beri-beri and death. The same is produced, though to a smaller extent, by feeding maize. Supplementary feeding with vitamin-*B* corrects this action. The presence of an EtOH-sol. orizotoxin is established. A. G. P.

Vitamin-B_1 in the animal organism. I. Maximum storage of vitamin-B_1 in the rats' tissues. II. Metabolism of vitamin-B_1 in rats. P. C. Leong (Biochem. J., 1937, **31**, 367—372, 373—384).—I. Data for the distribution of vitamin-B_1 in various tissues of rats on diets of varying content of -B_1 are tabulated. The richest stores are the liver and heart whilst the total storage in muscle and liver is 50 and 35%, respectively, of the total reserves. Max. storage occurs with an intake of -B_1 of approx. 30 international units per day.

II. With rats on varying intakes of -B_1, the bacterial synthesis of -B_1 in the intestines is small. Fæcal excretion of -B_1 is not significant for daily intakes of <30 units, but with >30 units the fæcal resembles the general urinary excretion in increasing with increased intake. With -B_1-deficient diets, approx. 2 units are daily withdrawn from the reserves. Injection of large doses of -B_1 is followed by excretion (almost totally urinary) of 75%. High dosage of -B_1 is followed by metabolic destruction of approx. 30 units per day. F. O. H.

Crystalline vitamin-B_1.—See A., II, 212.

Synthesis of aneurin.—See A., II, 216.

Fractionation of the vitamin-B_2 complex from various sources. N. Halliday and H. M. Evans (J. Biol. Chem., 1937, **118**, 255—267).—A method for the assay of vitamin-B_6 potency on rats is described, and results are given for several materials, extracted in various ways. The results confirm that there is a liver "filtrate factor" (I) distinct from -B_6. -B_6 may be adsorbed on fuller's earth at p_H 1—2 and eluted with aq. $Ba(OH)_2$ with little loss. -B_6 survives autoclaving at p_H 9, and ultra-violet irradiation, but its activity disappears on storage. Both -B_6 and (I) dialyse. F. A. A.

Effect of diet and various substances on the vitamin-*C* content of some organs of the rat. J. L. Svirbely (Amer. J. Physiol., 1936, **116**, 446—455).—The composition of the diet does not affect the ability to synthesise ascorbic acid (I). Utilisation of (I) by the tissues is increased by thyroid or 2 : 4-dinitrophenol. NaF given with thyroid reduces the (I) content of the organs. (I) is low in the tissues of rats brought to the point of collapse by excessive thyroid feeding. Cinchophen or etherisation reduces liver-(I). The small intestine is capable of yielding primary precursors for synthesis of (I) and can adjust itself to cope with any dietary condition. Animals exposed to CCl_4 vapour, or with fatty livers, can still synthesise appreciable quantities of (I). R. N. C.

Ascorbic acid oxidase and the state of ascorbic acid in vegetable tissues. W. Stone (Biochem. J., 1937, **31**, 508—512).—Vegetables which lose their indophenol-reducing power on mincing oxidise the ascorbic acid (I) of orange juice, whilst those which retain their (I) content contain no oxidase. The enzyme catalyses the conversion of (I) into dehydroascorbic acid (II), which is quantitatively reduced again to (I) by H_2S. (II) is formed only when the minced vegetable is exposed to air. P. G. M.

Ascorbic acid and the function of the adrenal cortex. R. Tislowitz (Klin. Woch., 1935, **14**, 1641—1646; Chem. Zentr., 1936, i, 2964).—Intravenous injection of ascorbic acid (I) had no influence on the blood-cholesterol level in normal dogs or after unilateral adrenalectomy. (I) diminishes the action of adrenal extracts on blood circulation and increases diuresis in adrenalectomised, but less definitely in normal, animals. A. G. P.

Effect of diphtheria toxin on vitamin-*C* in adrenals of guinea-pigs. C. C. Torrance (Proc. Soc. Exp. Biol. Med., 1937, **35**, 654—655).—The ascorbic acid (I) content of the adrenals of guinea-pigs (230—280 g.) injected with $\frac{1}{3}$ of the lethal dose of diphtheria toxin was 60% $>$ that of controls, when killed 24 hr. after injection. After 4 days necrosis was present at the site of injection and the (I) content of the adrenals was 270% $>$ that of controls. P. G. M.

Vitamin-*C*. II. Vitamin-*C* contents of the liver and muscle of some Indian fresh-water fish. M. N. RUDRA (J. Indian Chem. Soc., 1936, **13**, 740—742).—The vitamin-*C* content of some Indian fresh-water fish is highest in the liver and lowest in the muscle (cf. A., 1936, 766); the tissues of the younger fish are richer in -*C* than those of bigger fish of the same variety. F. R. S.

Vitamin-*C* content of foods available for young infants. C. SUNG and F. T. CHU (Chinese Med. J., 1937, **51**, 315—324).—The vitamin-*C* content (0·004%) of human milk is normally 4 times that of cow's milk but with unsuitable feeding the two vals. approximate. Cabbage has the highest -*C* content of the leafy vegetables examined. Tomato, turnip, kohl-rabi, and orange juice are suitable sources of -*C*, whilst soya-bean milk is a poor source. P. G. M.

Stability of vitamin-*C* and absence of ascorbic acid oxidase in citrus fruits and milk. H. TAUBER (Proc. Soc. Exp. Biol. Med., 1936, **35**, 422—423).—The juice of oranges, tangerines, and lemons contains no ascorbic acid oxidase and cow's milk contains $\not>$ traces. W. McC.

Electric charge on [dry] vitamin-*C*. G. GALLERANI (Boll. Soc. ital. Biol. sperim., 1936, **11**, 815—817).—Evidence of both positive and negative charges was obtained. F. O. H.

Vitamin-*C* as catalyst for synthesis of carbon chains.—See A., II, 176.

Nature and properties of the dienolic group of vitamin-*C*.—See A., II, 176.

Oxidation-reduction potential of ascorbic acid.—See A., I, 246.

Oxidation–reduction. Ascorbic acid.—See A., I, 246

Synthesis of vitamin-*C*.—See A., II, 176.

Scorbamic acid.—See A., II, 180.

Deterioration of vitamin-*D* in aqueous solution. D. H. SHELLING (Proc. Soc. Exp. Biol. Med., 1937, **35**, 660—663).—Solutions of vitamin-*D* which originally assayed 500 International units per g. contained, after 6 months at 0° in tightly stoppered bottles, <40 units per g. Little deterioration occurred when the emulsions were kept under N_2 instead of air. P. G. M.

Absence of vitamin-*E* from the royal jelly of bees. K. E. MASON and R. M. MELAMPY (Proc. Soc. Exp. Biol. Med., 1936, **35**, 459—463).—The jelly, consumed by vitamin-*E*-deficient female rats in amounts of $\not>$ 1 g. daily during pregnancy, does not cause completion of gestation (cf. Hill and Burdett, A., 1932, 1295). W. McC.

Interrelationship between dietary egg-white and the requirement for a protective factor in the cure for the nutritive disorder due to egg-white. H. T. PARSONS, J. G. LEASE, and E. Kelly (Biochem. J., 1937, **31**, 424—432).—The protective factor (I) (Lease, A., 1936, 765) is not identical with any known factor of the vitamin-*B* complex. The nutritive disorder appears not to be due to destruction or metabolic interference of (I) by the egg-white constituents whilst the proportionality between concn. of egg-white in the diet and the necessity for (I) indicates an interrelationship of a metabolic nature. The requirement for (I) in chicks is > that in rats. F. O. H.

Biochemical basis in plant breeding. N. N. IVANOV (Theor. Bases of Plant Breeding, Lenin Acad. Agric. Sci., 1935, **1**, 991—1016).—A discussion. CH. ABS. (*p*)

Breeding for chemical composition. N. A. BAZILEVSKAJA (Theor. Bases of Plant Breeding, Lenin Acad. Agric. Sci., 1935, **1**, 1017—1043).—A general résumé. CH. ABS. (*p*)

Water fixed by marine algæ *in vivo*. L. P. BOUTHILLIER and G. GOSSELIN (Natural Canad., 1937, **64**, 65—80).—*Fucus vesiculosus* and *F. platycarpus* fix approx. 0·57 g. of H_2O per g. of dry matter, the val. being in inverse relation to the salinity of the medium. H. G. R.

Technique of the refractometric determination of bound water in plants. V. P. POPOV (Kolloid. Shurn., 1936, **2**, 855—861).—Negative adsorption of sucrose from H_2O by wheat under various conditions was measured. J. J. B.

Accumulation of citric acid in Makhorka (*Nicotiana rustica*, L.). S. O. GREBINSKI (Compt. rend. Acad. Sci. U.R.S.S., 1937, **14**, 139—142).—Girdling of the plants increases the carbohydrate and decreases the ash, Ca, total N, nicotine, and citric acid contents. "Low topping" increases the last three. A. L.

Contents of protein substances and of phytin in the seeds of cereals during their development. L. MARIMPIETRI (Ann. R. Staz. Chim.-Agrar. Sperim., 1933, II, **14**, No. 302, 19 pp.).—After the first stages of development the total N content diminishes considerably. During the waxy phase vals. are const. or increase slightly. The quotient gliadin-N (I)/glutenin-N (II) remains const., whilst those of (I) + (II)/total N and phytin-P/total P increase considerably. E. P.

Structure of the wall of the green alga *Valonia ventricosa*. R. D. PRESTON and W. T. ASTBURY (Proc. Roy. Soc., 1937, **B**, **122**, 76—97).—Detailed examination of the cell wall of *V. ventricosa* by *X*-rays and by the polarising microscope is described. In alternate layers, the cellulose chains fall along meridians and along spirals terminating at the poles. The chains in successive layers cross at an angle of about 83°, and their directions correspond with the striations of the cell wall. F. A. A.

Effect of toxic salts on regeneration of the nucleus in the lupin. G. DELOFFRE (Compt. rend. Soc. Biol., 1937, **124**, 778—780).—$CdCl_2$ and $HgCl_2$ retard the regeneration of the nucleus and nucleolus of the hypocotls between two limits of concn., above which necrosis sets in. H. G. R.

Tumours of a neoplasmic character formed on plants by the action of β-indolylacetic acid. T. SOLACOLU and D. CONSTANTINESCO (Compt. rend., 1937, **204**, 290—292; cf. A., 1936, 1433).—Various

changes of botanical structure following the injection and application as a paste of β-indolylacetic acid to *Abutilon avicennæ*, Gr., *Ricinus communis*, L., and *Helianthus annuus*, L., are described; these include the formation of tumours resembling those produced by neoplasmic agents, and, in *R. communis*, the production of anthocyanin pigments in the pith. F. A. A.

Alkaline extract of the anterior pituitary and (A) germination, (B) plant growth. E. Pascal (Soc. biol. Rosario, 1934, [Nov. 24]).—(A) The extract accelerated germination of certain seeds.

(B) Extracts accelerated the growth of certain plants but were ineffective with others. Acceleration was most marked during the first few days of growth. Large doses were toxic. Ch. Abs. (*p*)

Inducement of fruit development by growth-promoting chemicals.—See B., 1937, 377.

Solid sugars from Mohuwa flower syrup. D. G. Walawalkar (J. Indian Chem. Soc., 1936, **13**, 657—658).—The aq. extract of Mohuwa (*Bassia latifolia*) flowers gives solid sugars only when mixed with 2 parts of 84° Brix sugar and thus probably contains higher saccharides and not sucrose as hitherto supposed. R. S. C

Constituents of the leaves of *Vitex negundo*. T. P. Ghose and S. Krishna (J. Indian Chem. Soc., 1936, **13**, 634—640).—The leaves of *V. negundo*, Linn., collected in Sept.—Oct., contain 0·03% of an amorphous alkaloid and yield to EtOH *p*-OH·C_6H_4·CO_2H (I) (0·3%), 3 : 4-$(OH)_2C_6H_3$·CO_2H (II), 5-hydroxy*iso*phthalic and tannic acid, a *glucononitol*, m.p. 196—198°, $[\alpha]_D^{20}$ +1·5° in H_2O (*Ac* derivative, m.p. 179—180°), and an amorphous, sol. glucoside (0·74%), m.p. 93—95°, hydrolysed by hot 5% H_2SO_4 or NaOMe to glucose and (I). Leaves collected in Feb.—March yield to EtOH (I), (II), and a *glucoside* (III), ? $C_{20}H_{24}O_{11}$, m.p. 154—155°, $[\alpha]_D^{20}$ −92·6° in abs. EtOH (reddish-violet $FeCl_3$ colour), which with dil. AcOH or hot H_2O gives (I), glucose, and an amorphous substance. With cold H_2SO_4–EtOH (III) gives glucose (42%) and acidic and neutral substances, which with hot 2% H_2SO_4 give (I) and a *substance* (Br_x-derivative, m.p. 92—93°). (III) and hot 5% KOH–EtOH give (I) and a *glucoside*, ? $C_{13}H_{20}O_9$, m.p. 173—174°, $[\alpha]_D^{20}$ −163·6° in H_2O, which with dil. H_2SO_4 gives glucose (58%) and an amorphous substance, but no (I). The vermifugal action of the leaves is due to the (I) content. R. S. C.

Biological determination of glucosides in *Adonis vernalis*. F. Mercier and S. Macary (Compt. rend. Soc. Biol., 1937, **124**, 745—748).—Adonidoside has an ouabain- and adonivernoside a digitalin-like action. H. G. R.

Gaultherioside (ethylprimveroside). Biochemical synthesis. J. Rabaté (Compt. rend., 1937, **204**, 153—155).—Gaultherioside (A., 1931, 1100) does not exist in the tissues of *Gaultheria* but is formed by the interaction of EtOH (used in the extraction) with primverose liberated from monotropitoside by the leaf-enzymes (A., 1935, 1042). F. O. H

Constituents of *Cosmos bipinnatus*, Cav.—See A., II, 179.

Nature and occurrence of the primary substance in the cell walls of vegetable tissue. J. Gundermann, W. Wergin, and K. Hess (Ber., 1937, **70**, [*B*], 517—526).—Comparison of the *X*-ray diagrams of the primary material (I) of young cotton hairs and those of carnauba wax, stearic acid, and paraffin wax, m.p. 56—58°, shows the wax-like nature of (I) in which the components C_{30}, C_{32}, and C_{34} appear more copiously present than in the similar product from the older hairs. Fat wax appears to be present within the cell in small amount or in a distribution which is not detected by *X*-ray analysis so that that observed in this manner is definitely a component of the cell wall. The diagram also establishes the appearance of cellulose at an early stage of growth. The subsequent disappearance of the interferences of (I) is not due to destruction of (I) but to its decrease in proportion to the total cell material until in the ripe hairs it constitutes only 0·2—0·3% of the mass. The wax of the young cell walls is not a product of the ageing cells and is not secreted with the object of protecting the epidermis of the plant organs from external influences. It is not confined to the cells of the epidermis but is present at the beginning of the development of the cell wall and is closely concerned with the first and decisive processes in the formation of the cells. H. W.

Fats of sea algæ. II. E. Takahashi, K. Shirahama, and S. Tase (J. Chem. Soc. Japan, 1935, **56**, 1250—1257).—Palmitic with smaller amounts of stearic and myristic acids were the principal saturated acids. Unsaturated acids included oleic acid, $C_{18}H_{28}O_2$, and $C_{18}H_{30}O_2$. Ch. Abs. (*p*)

Composition of the chinaberry. R. W. Bost and D. Fore, jun. (J. Elisha Mitchell Sci. Soc., 1935, **51**, 134—142).—Fruits of *Melia azedarach* contain a semi-drying oil, glucose, protein, and an unidentified toxic substance. The oil consists largely of glycerides of palmitic, oleic, linoleic, and stearic acids. Ch. Abs. (*p*)

***Solanum xanthocarpum*, Schard and Wendle. I. Constituents of the oil from the seeds.** M. P. Gupta and S. Dutt (J. Indian Chem. Soc., 1936, **13**, 613—618).—The seeds (20·71% of the fruit) of this plant yield successively to C_6H_6 19·28, $CHCl_3$ 3·2, EtOAc 1·65, $COMe_2$ 1·62, and EtOAc 3·39% of oil. The C_6H_6 extract, a semi-drying oil, $[\alpha]_D^{32}$ −1·35° in $CHCl_3$, d^{27} 0·924, f.p. < −11°, acid val. 70·78, Ac val. 40·4, sap. val. 182·5, Hehner val. 94·9, I val. 124·3, contains 1·2% of a mixture of *sterols*, $C_{25}H_{42}O$, m.p. 142—143°, $[\alpha]_D^{32}$ +16·24° in $CHCl_3$, and ? $C_{24}H_{44}O_3$, m.p. 122° after sintering at 92°, $[\alpha]_D^{32}$? −83·45° in $CHCl_3$, and yields, when hydrolysed, oleic (42·9), linoleic (36·2), palmitic (5·4), stearic (9·8), and ? arachidic acid (0·35%). R. S. C.

Essential oil of *Lantana camara*, L.—See A., II, 201.

Odorous principles of lignum aloe. K. Kafuku and N. Ichikawa (J. Chem. Soc. Japan, 1935, **56**, 1155—1163).—Saponification of powdered lignum

aloe from *Aquilaria agallocha*, Roxb., yields benzylacetone and a monoketone, $C_{14}H_{20}O_2$ (semicarbazone, m.p. 160—162°). The residue contains hydrocinnamic acid, a cryst. acid, $C_{10}H_{12}O_3$, m.p. 103°, and a sesquiterpene. CH. ABS. (*p*)

Sciadopitene from oil of *Sciadopitys verticillata*, S. and Z.—See A., II, 158.

Detection of quinic acid in presence of shikimic acid in the carpels of *Illicium verum*, Hook; quinic acid derivatives.—See A., II, 194.

Chemical and pharmacological examination of *Periploca aphylla*. R. N. CHOPRA, A. T. DUTT, N. R. CHATTERJEE, and N. DE (Arch. Pharm., 1937, 275, 192—195).—The leaves and stems of *P. aphylla* contain a *resin alcohol*, $C_{25}H_{41}O_2{\cdot}OH$, $+0{\cdot}5EtOH$, m.p. 272·5°, (anhyd.) 275·5° (*acetate*, m.p. 188·5°), reducing sugars, tannins, and a small amount of glucoside (pharmacological action described), but no strophanthin bases. R. S. C.

[Constituents of] *Pinguicula vulgaris*, L. C. MASINO (Boll. Chim.-Farm., 1937, 76, 92—96).—The plant contains proteolytic (caseinogen) and rennin-like enzymes, Fe 0·29% (calc. on dried material) (1·10% in the roots), Mn nil, and arabinose. F. O. H.

Occurrence and distribution of saponins in herb drugs. I, II. M. ROBERG (Arch. Pharm., 1937, 275, 84—103, 145—166).—I. Saponins are shown by the blood–gelatin and cholesterol methods to occur in *Chenopodium ambrosioides*, *Convallaria*, *Equisetum*, *Galeopsis*, *Grindelia*, *Herniaria*, *Polygala amara*, *Pulsatilla*, *Virgaurea*, *Viola tricoloris*, and *Stipites dulcamara*, but not in the other 37 herb drugs of the D.A.B. VI and Ergänzungsband V and Austrian and Swiss Pharmacopœias. Nine other herbs contain other hæmolytic substances, usually terpenes.

II. Saponins occur in *Anagallis*, *Anthyllis*, *Arenaria arvensis* and *A. rubra*, *Bellis minor*, *Calendula*, *Caltha palustris*, *Eryngium marini* and *E. plani*, *Galega*, *Hedera*, *Polemonia cærulea* (*Valeriana græca*), *Phytolacca*, *Primulæ* (*Paralyseos*), *Ranunculus ficaria* (*Chelidonium minor*), *Sanicula* (*Diapensia*), *Saponaria*, *Scrophularia aquatica* and *S. vulgaris seu fœtida*, *Solanum nigrum*, *Spinacia*, *Succisa* (*Morsus diaboli*), *Verbascum*, and *Viola odorata*. R. S. C.

Methods of extracting soluble nitrogen from leaves with acid sap. M. C. BILLIMORIA (Proc. Leeds Phil. Soc., 1937, 3, 330—333).—Of the methods described, the one most suitable for small amounts of tissue having an acid sap consists of a pre-treatment with Et_2O (to inhibit enzymic hydrolysis), and then extraction with cold 70% EtOH containing 10% of Et_2O. F. A. A.

"Pao de cobra," a drug used in Brazil against the bite of poisonous snakes. K. BODENDORF (Arch. Pharm., 1937, 275, 140—141).—This wood, mixed with K_2CO_3, yields to EtOH mainly allantoin. R. S. C.

Proteins. VI. Solubility of nitrogenous constituents of seeds in sodium chloride solutions. L. P. O'HARA and F. SAUNDERS (J. Amer. Chem. Soc., 1937, 59, 352—354).—The amount of nitrogenous material (*A*) extracted from various fat-free seed meals (orange, peanut, flax) by saturated NaCl is only slightly < that extracted by *N*-NaCl. (*A*) appears to be almost entirely a cryst. or semi-cryst. protein resembling a globulin (I). The ordinary definitions (lit.) of (I) are thus inaccurate. The amount of (*A*) extracted from rye flour [which contains little or no (I)] by aq. NaCl is max. with 0·375 and min. with 6*N* (and saturated). H. B.

Preparation of gliadin and zein. L. S. NOLAN and H. B. VICKERY (Proc. Soc. Exp. Biol. Med., 1936, 35, 449—451).—The prep. of gliadin (N content approx. 15·5%) from wheat flour gluten and of zein (N content approx. 16·2%) from maize gluten is described. The products are suitable for nutrition investigations. W. McC.

Water-soluble derivative of edestin and its significance in the theory of protein denaturation. K. BAILEY (Proc. Leeds Phil. Soc., 1937, 3, 334—339).—Small amounts of acid ppt. edestin (I) from a neutral salt solution; alkali re-converts this ppt. (II) into the salt-sol. form (III). (II), freed from inorg. ions, is H_2O-sol., but rapidly passes into a form which gives the *X*-ray photograph of denatured (I), and cannot be re-converted into (III). These results are discussed in relation to theories of protein denaturation. F. A. A.

Colloid-chemical characterisation of soya proteins. T. V. RINDIN (Kolloid. Shurn., 1936, 2, 811—819).—7—10% aq. NaCl dissolves up to 40% of the protein present in soya-bean flour. Vals. of η and the surface tension of glycinin hydrosols are recorded. J. J. B.

Physical chemistry of plant proteins. T. V. RINDIN, A. A. MOROSOV, and A. P. SALTSCHINKIN (Kolloid. Shurn., 1936, 2, 831—839).—Fractional pptn. by NaCl and $(NH_4)_2SO_4$ affords four fractions of edestin and two fractions of glycinin possessing different η and osmotic pressures. J. J. B.

Chlorophyll content of foliage of dicœcious plants. N. T. DELEANO and J. DICK (Biochem. Z., 1937, 289, 320—322; cf. A., 1935, 1177).—The fully developed leaves of a willow (*Salix fragilis*) with male blossoms contained approx. 33% more chlorophyll (I) than did those of a willow with female blossoms. The corresponding excess of (I) in the leaves of a white poplar (*Populus alba*) with male blossoms was approx. 25%. W. McC.

Colouring matters of Grimes Golden, Jonathan, and Stayman Winesap apples.—See A., II, 206.

Eloxanthin, a carotenoid pigment from *Elodea canadensis*.—See A., II, 204.

Alkaloids from hanfangchi.—See A., II, 219.

Determination of *Chelidonium* alkaloids. I. G. SCHENCK and H. GRAF (Arch. Pharm., 1937, 275, 113—125).—The total alkaloids of *C. majus* are determined by extracting an intimate mixture of the root (2 g.), sand (100 g.), and 30% NaOH (3 g.) with $CHCl_3$ in a Soxhlet apparatus; the extract is conc. and extracted with 10 c.c. of $0{\cdot}1N$-H_2SO_4, and the acid solu-

tion is heated, filtered, and titrated (Me-red) with 0·1*N*-NaOH. A sample of root thus showed 1·6% of alkaloids. Acid extraction gives erratic results. Gallais' K_2HgI_4 method is difficult, but gives good results. R. S. C.

Constituents of bark of *Lunasia costulata* (Miq.).—See A., II, 216.

Developments in the quantitative spectrographic analysis of solutions. O. S. Duffendack and K. B. Thomson (Proc. Amer. Soc. Test Mat., 1936, II, **36**, 301—309).—The various spectrographic methods proposed for determining Na, K, Ca, and Mg in urine, blood, saliva, etc. are reviewed. R. B. C.

Quinhydrone electrode for tissues. J. C. Krantz, jun., C. J. Carr, and R. Musser (Science, 1937, **85**, 127—128). L. S. T.

Capillary, non-penetrating micro-quinhydrone electrode. J. A. Pierce (J. Biol. Chem., 1937, **117**, 651—654).—An apparatus, which can be readily sterilised, has been developed for determination of the p_H of <1·0 cu. mm. of biological fluids. Vals. are given for various cerebrospinal fluids at 38°. P. G. M.

Vital staining of the reticulo-endothelial system. M. Geyer (Boll. Soc. ital. Biol. sperim., 1936, **11**, 788—791).—Factors concerned with vital staining methods are discussed and a suitable general technique is suggested. F. O. H.

Photometric determination of bilirubin. L. Jendrassik and R. A. Cleghorn (Biochem. Z., 1937, **289**, 438; cf. this vol., 108).—In the equation for calculating the bilirubin concn. the correct val. for s is 0·03 when 0·5 c.c. of diazo-solution is used. Interference due to colour developed in the caffeine–NaOBz mixtures is avoided by comparing with such mixtures containing no diazo-solution. W. McC.

Colour reaction for phloridzin. A. Lambrechts (Compt. rend. Soc. Biol., 1937, **124**, 263—264).—The method depends on the formation of a red colour with 1 : 2-NO·$C_{10}H_6$·OH. Vals. thus obtained agree with those by the spectrographic method for the disappearance of phloridzin from plasma. H. G. R.

Determination of alanine in biological materials. E. W. McChesney (J. Elisha Mitchell Sci. Soc., 1935, **51**, 147—150).—Conversion of alanine into MeCHO in Kendall and Friedemann's method (cf. A., 1931, 246) reaches an equilibrium at approx. 91% completion and a correction must be made. Other NH_2-acids (*e.g.* valine, leucine) also interfere with the determination. Ch. Abs. (*p*)

Voisenet's tryptophan reaction. S. Rapoport and W. Eichinger (Biochem. Z., 1937, **289**, 288—289).—Errors of the method are investigated particularly in its application to the determination of tryptophan in caseinogen and milk. P. W. C.

Turbidity in determination of uric acid with the photo-electric colorimeter. I. M. Diller (J. Biol. Chem., 1937, **118**, 161—162; cf. A., 1936, 1223; Benedict and Behre, A., 1931, 973).—The concn. of HCl in the standard (and in the diluted standard if used) must be ± 1 part (*d* 1·19) in 200. When dilution is necessary, it must be carried out before the colour reagents are added. The time required for the uric acid colour to develop must be carefully controlled. W. McC.

Micro-determination of liver- and muscle-glycogen in tissues. A. Loubatières (Compt. rend. Soc. Biol., 1937, **124**, 699—700).—A method is described using 0·5 g. of tissue, the sugar resulting from hydrolysis being determined by the Hagedorn–Jensen method. H. G. R.

Micro-determination of urea in physiological fluids. V. Ranganathan and B. N. Sastri (Proc. Soc. Biol. Chem. India, 1937, **1**, 5).—The change in conductivity accompanying the enzymic hydrolysis of urea is utilised as a basis for the micro-determination of urea in small quantities of physiological fluids. W. O. K.

Method for determining carbon dioxide applicable to blood and tissues. G. V. Anrep, M. S. Ayadi, and M. Talaat (J. Physiol., 1936, **86**, 153—161).—The blood or tissue is hydrolysed with 5% CO_3''-free NaOH under paraffin for 30 min. at 60—65°. The CO_2 is liberated from the cooled hydrolysate with 0·4*N*-H_2SO_4 containing 1% of $CuSO_4$ to remove H_2S, and determined manometrically. The hydrolysed material may be stored for a day in the cold without undergoing any appreciable change in CO_2 content. R. N. C.

Device for indicating continuously the approximate percentage of carbon dioxide in a stream of flowing gases. W. B. Draper and B. B. Longwell (Colorado Med., 1935, **32**, No. 11, 899—900).—Anæsthetic gases are bubbled through aq. bromocresol-purple or Me-red and the CO_2 content is determined by the colour change. Ch. Abs. (*p*)

Micro-determination of water in biological fluids. H. Mitani (Keijo J. Med., 1936, **7**, 301—318).—The procedure applicable to 50—100 mg. is described (cf. Kuroda, A., 1933, 1094). A. L.

Micro-determination of water in biological fluids. K. Kuroda (Keijo J. Med., 1936, **7**, 319—326).—The method is described (cf. preceding abstract). A. L.

Dinitroresorcinol, a specific stain for iron in tissues. A. A. Humphrey (Arch. Path., 1935, **20**, 256—258).—Of customary stains examined only dinitroresorcinol gave a satisfactory (and permanent) result for tissues fixed in CH_2O and mounted in paraffin. Ch. Abs. (*p*)

Determination of iron in soil extracts and other biological media. B. A. S. Iyengar (Proc. Soc. Biol. Chem. India, 1937, **1**, 11).—The Fe is titrated with $Ce(SO_4)_2$, diphenylaminesulphonic acid being used as internal indicator. W. O. K.

Determination of blood-potassium. R. Truszkowski and R. L. Zwemer (Biochem. J., 1937, **31**, 229—233).—The authors' method (A., 1936, 1145) is modified in order to make it applicable over a wider temp. range. 0·01—0·1 mg. of K and the K in 0·1—0·2 ml. of plasma may now be determined. P. W. C.

Micro-determination of strontium and calcium in mixtures containing both.—See A., I, 262.