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BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

A., III.—Physiology and Biochemistry (including Anatomy)

MARCH, 1943.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Structure and function of urogenital region in female opossum. O. E. Nelson and N. Maxwell (*J. Morph.*, 1942, **71**, 463—491).—An account of the anatomy of the urethra, urogenital sinus, and lateral and pseudo-vaginal canals and a comparison of the findings with the urogenital region of other marsupials. J. D. B.

Development of Tetrapod limb musculature—thigh of *Lacerta*. A. S. Romer (*J. Morph.*, 1942, **71**, 251—298).—A detailed account of the development of the limb musculature in *Lacerta muralis* and an application of the findings to the comparative anatomy of the limb muscles. A table is appended which gives the presumed homologies of the dorsal and ventral muscles of the proximal hind limb muscles of *Lacertilia*, *Sphenodon*, *Crocodylia*, and *Aves*. J. D. B.

Anatomy of region of inguinal hernia. Fundamental structure of inguinal and scrotal layers, demonstrated in cases of indirect inguinal hernia. B. J. Anson, E. H. Morgan, and C. B. McVay (*Quart. Bull. Northwest. Univ. Med. School*, 1942, **16**, 128—141).—The parietal and funicular layers are each trilaminar. The external oblique stratum consists of aponeurotic fibres invested by fascia; the internal oblique stratum consists of muscle fibres, as does the transversus layer, but in the latter the musculo-aponeurotic part is deficient in its inferomedial portion and the layer is completed by fused fasciae. The spermatic cord in its course through the parietal wall has on its surface the transversus layer become tubular; the fascial tube lies against the inferomedial part of the transversus layer. The internal oblique stratum does not invest the cord tightly at its proximal end, without reduplication at the "intermediate inguinal ring, which is twice the size of the abdominal inguinal ring. Almost the entire oblique portion of the cord lies behind the internal oblique layer, between it and the reduplicated portion of the transversus layer, ensheathed by the internal spermatic fascia. In severe hernia cases the external and internal rings may be superimposed upon each other. The retroperitoneal connective tissue is usually a definite layer on the inguinal wall. An enlarged hernial sac is in contact medially and caudally with a displaced inferior epigastric artery and veins, on the floor of the abdominal ostium with the iliac artery and vein, an obturator artery, the ductus deferens, the internal spermatic vessels, and iliac lymph glands. A. S.

Anatomy of subperitoneal tissues and ligamentous structures in relation to surgery of female pelvic viscera. A. H. Curtis, B. J. Anson, and L. E. Beaton (*Surg. Gynec. Obst.*, 1940, **70**, 643—656). P. C. W.

Main arteries in neck and thorax of *Casuaris australis*. F. H. Glenny (*Canad. J. Res.*, 1942, **20**, D, 363—367). J. D. B.

Sclerotic plates of white leghorn chicken. N. M. Nelson (*Anat. Rec.*, 1942, **84**, 295—306).—The morphology and types of arrangement of the plates are described. Variation in no. and arrangement within the species is established. Variability of arrangement is possibly due to embryo movement at the time the plate edges begin to overlap. Variation in no. is suggestive of genetic influence. Scleral plates are unaffected in osteopetrosis. W. F. H.

Effects of thyroidectomy on skull of domestic rabbit. M. W. Hunter and P. B. Sawin (*Amer. J. Anat.*, 1942, **71**, 417—449).—Following thyroidectomy differential degrees of retardation of rate of growth occur in both cartilage and membrane bones. Growth of face and jaws is retarded more in females than in males. Anomalies of skull, jaws, and teeth following thyroidectomy are attributed to general lowering of physiological activity including a restriction in the internal resorption of bone which does not include the continuously growing teeth. W. F. H.

Use of age at first appearance of 3 ossification centres in determining skeletal status of children. C. C. Buehl and S. I. Pyle (*J. Pediatr.*, 1942, **21**, 335—342).—The centres studied were the distal epiphysis of the ulna, the first sesamoid of the thumb, and the crest of the ilium. They provide as reliable a measure of maturity as the concomitant mean total skeletal age in the children examined. C. J. C. B.

Long-term growth of diabetic children. A. E. Fischer, H. S. Mackler, and H. H. Marks (*Amer. J. Dis. Child.*, 1942, **64**, 413—425).

—The average rate of growth of both boys and girls was below normal. C. J. C. B.

Calcification, ossification, and decalcification. M. Cole-Rous (*Clin. Proc.*, 1942, **1**, 257—262).—A lecture outlining the theory that bone deposition is dependent on the pH of the medium with hydrolysis or synthesis of phosphoric esters according to whether the reaction of the blood is more acid or alkaline than normal. P. C. W.

Fibrous dysplasia of bone with endocrine disorders and cutaneous pigmentation (Albright's disease). M. A. Falconer and C. L. Cope (*Quart. J. Med.*, 1942, **11**, 121—154).—2 cases are described, and 25 analysed from the literature, in 15 of which a fruitless exploration of the parathyroids had been done. There is no change in Ca metabolism, and no generalised decalcification. There are localised disseminated areas beginning in the marrow space of the diaphysis, and producing a polycystic appearance in the X-ray. Deformities arise from pathological fractures. In the skull there is sclerosis producing leontiasis, and a Pagetoid appearance in the vault. The histology of a tibial biopsy suggested "a primary collagenous osteogenesis of the marrow with attritive osteolysis of the lamellar trabeculae." It is considered identical with polyosteotic fibrous dysplasia (Lichtenstein), and contrasted with hyperparathyroidism, Paget's disease, Ollier's dyschondroplasia, and xanthomatosis. The disease begins in childhood and becomes stationary in adult life. There is no evidence of heredity. Skeletal precocity was found in all cases examined in childhood, and sexual precocity was usual. In the 8 cases examined there was no increased excretion of gonadotrophic and oestrogenic hormones. Goitres were found in 7 cases, but only 2 were toxic. Gynecomastia was found in 2. The cutaneous pigmentation was variable, but often resembled von Recklinghausen's, and neurofibromata were found in 1 case. Icterus gravis neonatorum was reported in 4 cases, and poliomyelitis in 2. The pathogenesis is probably a congenital disorder of the hypothalamus and of bone formation; there was no significant finding in 3 post-mortem examinations. Neither of the 2 cases described had a pituitary tumour. R. K.

Transposition of the great cardiac vessels. P. W. Emersen and H. Green (*J. Pediatr.*, 1942, **21**, 1—22).—Detailed report of 39 cases. C. J. C. B.

Description of two human specimens with congenital absence of spleen, abnormal arrangement of the great vessels, abnormal cardiac cavities, and other congenital defects. B. Durie and N. R. Wyndham (*Med. J. Austral.*, 1942, **II**, 174—178). F. S.

Stenosis of [pulmonary] infundibulum. M. Lev and S. Strauss (*Arch. intern. Med.*, 1942, **70**, 53—60).—A case of infundibular stenosis without transposition is described and theories of pathogenesis are discussed. C. A. K.

Transposition of anus. W. E. Lower (*Cleveland Clin. Quart.*, 1942, **9**, 16—21).—A case is reported. A. S.

Eventration of right diaphragm. O. S. Whitmore and S. C. Kahlstrom (*N.Y. Sta. J. Med.*, 1942, **42**, 1587—1589).—Report of a case in a one-year-old boy, the 21st of the literature. E. M. J.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Final developmental processes in region of foramen ovale of embryonic hearts of higher mammals and man. V. H. Shedenov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 89—93).—An account of the later development of the foramen ovale and of its valve including a phylogenetic and functional interpretation of the various types of valves found in higher mammals. J. D. B.

Partitioning of truncus and conus and formation of membranous portion of interventricular septum in human heart. T. C. Kramer (*Amer. J. Anat.*, 1942, **71**, 343—370).—The formation of the septal systems of truncus and conus arteriosus and their union with the primary interventricular septum was restudied by means of wax plate reconstructions. Terms used in describing the structures involved are redefined. W. F. H.

Development of diencephalon of *Natrix sipedon*. F. J. Warner (*Trans. Roy. Soc. Canada*, 1942, [iii], **36**, V, 53—70).—A description

of the development of the diencephalon of the American water snake based on 26 stages of between 15 mm. and 20 mm. The developmental plan is very similar to that of other reptiles and of birds.
J. D. B.

Primary asymmetry of growing Mullerian ducts in chick embryo. P. Gruenewald (*J. Morph.*, 1942, **71**, 299—305).—On the basis of the study of 48 embryos of between the 4th and 7th days' incubation it is concluded that the characteristic difference in length of the growing Mullerian ducts is one of the primary manifestations of asymmetry in the internal sex organs of the chick embryo. It is co-ordinated with, and not a consequence of, the asymmetrical differentiation of the gonads. The observations support the assumption (by Witschi) that the primary location of asymmetry lies in the genital organs themselves.
J. D. B.

Blastocyst of Martes. W. H. Marshall and R. K. Enders (*Anal. Rec.*, 1942, **84**, 307—310).—17 unimplanted blastocysts were obtained from 8 martens (*M. caurina caurina*) in October, November, December, and January. The preservation of the material did not permit detailed description. The inner cell mass contained 300—400 cells. Comparison is made with the American badger.
W. F. H.

Embryonic development of *Plethodon cinereus*. J. N. Dent (*J. Morph.*, 1942, **71**, 577—601).—A detailed account of the embryology of the red-backed salamander which passes through no aquatic larval stage during its development. The developmental history of the thyroid gland suggests that its early hypertrophy may be responsible in *Plethodon* for the absence of a true larval stage and for the early appearance of characters which can be interpreted as being metamorphic in nature.
J. D. B.

Osmotic pressure and salmon sperm. W. G. Ellis and J. W. Jones (*J. Exp. Biol.*, 1939, **16**, 530—535).—Sperm of *Salmo salar* remained active for much longer in various dilutions of sea water than in river water. Sucrose solutions have a similar effect and egg fluid is the most potent medium for maintaining sperm activity.
D. M. SA.

Biochemistry of embryonic determination in echinoderms. J. Needham and D. M. Needham (*J. Exp. Biol.*, 1940, **17**, 147—152).—Eggs of *Arbacia punctulata* were placed in glyceraldehyde, iodoacetate, and phloridzin just after fertilisation. Though these substances inhibit carbohydrate breakdown, no subsequent embryonic vegetalisation was found.
D. M. SA.

Developmental processes and energetics. A. Tyler (*Quart. Rev. Biol.*, 1942, **17**, 197—212).—A review.
J. D. B.

Physiology of form generation in development of sea urchins. P. E. Lindahl (*Quart. Rev. Biol.*, 1942, **17**, 213—227).—A review.
J. D. B.

Regeneration of forelimbs in axolotls. M. I. Efimov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 451—453).—Experiments involving reciprocal grafts between black and white varieties, and designed to demonstrate the rôle of the proximal part of the limb ("brachial zone") in the processes of regeneration, are described. It is tentatively concluded that limb-girdle skeleton, musculature, and corium can all provoke regeneration when grafted on to limb stumps in which the brachial zone had been removed.
J. D. B.

Relationship between regeneration and tumour growth. A. A. Peredelski (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 448—450).—Experiments on regeneration of limbs in axolotls are described in which carcinogenic substances (dibenzanthracene and Scharlachrot) were introduced into the regenerating blastema. The results are interpreted as illustrating that regenerative and tumour growth are not antagonistic although the direction and nature of the growth of the epidermal epithelium in each case are markedly different.
J. D. B.

Interpretation of radiation experiments in genetics. V. Fano (*Quart. Rev. Biol.*, 1942, **17**, 244—252).—A review.
J. D. B.

Neutron and X-ray effects on regeneration of forelimb or larval *Ambystoma*. E. C. Horn (*J. Morph.*, 1942, **71**, 185—219; cf. A., 1942, III, 933).—Regeneration of amputated forelimbs is prevented by adequate dosages (62 n.) of neutron radiation derived from a Be target bombarded by 6—8.5-Me.v. protons in a cyclotron. Cell densities of blastemas of neutron-irradiated larvae are much lower than those of unirradiated controls. The radiation reduction in density is proportional to the amount of radiation applied. The mitotic activity of the blastema cells is suppressed by the radiation. The results are compared with those resulting from unfiltered X-radiation.
J. D. B.

Spermatocyte chromosome aberrations in grasshoppers subjected to X-radiation during embryonic stages. D. W. Bishop (*J. Morph.*, 1942, **71**, 391—429).—The aberrations (constrictions and breaks) occur in the tetrads of the first spermatocytes of adult animals which have been irradiated (125 r. to 1250 r., target distance 13 cm.) during embryonic stages. The aberrations are similar to those induced in spermatocyte chromosomes treated 2—3 days prior to fixation. Details of aberration frequency for the different chromosomes are given.
J. D. B.

Mechanism of induction by irradiation of chromosome aberrations in *Tradescantia*. D. E. Lea and D. G. Catchside (*J. Genet.*, 1942, **44**, 216—245).—A quant. theory is developed for the production of chromosome aberrations in *Tradescantia microspores* by irradiation in mitotic prophase or the preceding resting phase. Densely ionising particles break a chromosome or chromatid when they pass through it. Isochromatid breaks are caused by the simultaneous breakage of sister chromatids at the same locus by the same ionising particle. 40—100% of isochromatid breaks persist as recognisable aberrations. Only 10—15% of primary chromatid breaks, and approx. 5% of primary chromosome breaks, remain as such. Predictions are made of the variation of efficiency of production of aberrations by X-rays of different λ .
W. F. H.

Inheritance of diabetes insipidus. H. Blotner (*Amer. J. med. Sci.*, 1942, **204**, 261—265).—A review of the literature on familial diabetes insipidus and the case report of a boy, his mother, and maternal grandmother, all of whom had diabetes insipidus. Diabetes insipidus is a disease which may be inherited and transmitted through many generations of a family through the maternal or paternal side to either male or female children.
C. J. C. B.

Anæmia of flexed-tailed mice (*Mus musculus*, L.). II. Siderocytes. H. Grüneberg (*J. Genet.*, 1942, **44**, 246—271).—Siderocytes (erythrocytes containing easily detachable Fe) are more abundant in flexed than in normal embryos. Flexed-tailed embryos produce hæmoglobin-deficient cells with abundant siderotic material throughout the whole of the intermediate generation of red cells. During the first 3 weeks after birth the siderocyte % falls to approx. 3%, which is maintained throughout life. Together with the fall in siderocyte % there is a decrease in cell size and an attainment of a normal mean corpuscular hæmoglobin concn. The decrease in cell size is not due to a decline in reticulocytosis. It is concluded that there exists a separate intermediate generation of red cells and this generation is labelled by the flexed-tail gene. The latter has a mild effect on the definitive and possibly on the primitive generation of red cells. Its main effect is on the intermediate generation.
W. F. H.

Uncomplicated hereditary megalocornea. W. J. B. Riddell (*Ann. Eug.*, 1941, **2**, 102—107).—A pedigree of uncomplicated megalocornea containing an affected female with unaffected parents is described. The horizontal corneal diameter of the unaffected members and normal controls did not differ significantly, but the affected members showed a significant difference both from normal members and from the control group. As the history suggested the presence of sex-linkage, the colour perception was investigated but with negative results.
W. F. H.

Selection of an almost invariable character in *Drosophila*. A. Sismanidis (*J. Genet.*, 1942, **44**, 204—215).—Four scutellar chaetae occur normally in *D. melanogaster*. Five chaetae are rarely present. Selection was practised for increased chaeta no. All lines were maintained by brother-sister matings and the selection curves exhibited short periods of rapid response and long periods of near stability. Tests showed that each response in the various lines could be attributed to changes in a particular chromosome or chromosomes. The results indicate that genetic variability for chaeta no. was present as differences between balanced polygenic combinations in the original material. Phenotypic stability was combined with genotypic variability.
W. F. H.

Transformation of data from entomological field experiments so that analysis of variance becomes applicable. G. Beall (*Biometrika*, 1942, **32**, 243—262).—A study of experimental results from 7 field experiments on the control of insects. The standard deviation of the no. of insects per plot varies with the mean. From the analysis of the transformed data, the results were found to differ markedly from those which would have been obtained from untransformed data.
W. F. H.

III.—PHYSICAL ANTHROPOLOGY.

Rudimentary digits in Primates. W. L. Straus, jun. (*Quart. Rev. Biol.*, 1942, **17**, 228—243).—A review.
J. D. B.

Illness history and physical growth, correlation in junior primary children followed from Fall to Spring. E. J. Martens and H. V. Meredith (*Amer. J. Dis. Child.*, 1942, **64**, 618—630).—Pearson product-moment correlation coeff. revealed no positive or negative relationship useful for predictive purposes between amount of illness and size, form, or rate of growth. Analysis of amount of illness for children "underweight" according to McCloy norms also gave no indication of association.
C. J. C. B.

Fauna of upper paleolithic site near Irkutsk, Siberia. V. Gromova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 94—96).—An account of the mammalian fossils found at the Malta site on the Belaya river with a discussion of the possible age of the site. It is suggested that Gerasimova's definition of this site as Aurignacian has most support and that the site coincides with a period later than that of max. glaciation.
J. D. B.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Characteristics of human Schwann cells in vitro. M. R. Murray and A. P. Stout (*Anat. Rec.*, 1942, **84**, 275—293).—Minor differences and basic similarities in the form and behaviour of Schwann cells from spinal nerves of a 12-week embryo as compared with those from adult sympathetic ganglia and nerves are noted. The morphology and growth potencies of sheath cells are detailed and comparison is made with endoneurial and perineurial cells and fibrocytes. Schwann cells of adult sympathetic fibres form reticulin fibres *in vitro*. Wallerian degeneration may occur without preliminary myelin disintegration and without the intervention of phagocytes. W. F. H.

Free border of intestinal epithelial cells of vertebrates. J. R. Baker (*Quart. J. micr. Sci.*, 1942, **84**, 73—103).—The structure of the free border is described in various adult and larval amphibia and in a reptile, bird, and mammal. The structure is essentially similar in all (except in *Rana* tadpoles in external gill stage) and the details are analysed in the light of possible function. It is suggested that unhydrolysed fats may enter the intestinal epithelium through the pores and canals found in the epithelial cells. J. D. B.

Prepubertal growth of germ cells in ovary of *Didelphys virginiana*. O. E. Nelson and E. Swann (*J. Morph.*, 1942, **71**, 335—355).—Active mitoses and formation of germ cells are found in the germinal epithelium up to the 4th month; after this the germinal layer is quiescent. Mitoses are found in the cortex in all stages. The tunica albuginea commences to develop at 2 months and by 4 months is thick and separates the germinal layer from the cortex. No conclusion was reached on the question of the origin of the definitive ova in adult sexual life. J. D. B.

Staining reactions of normal synovial membrane with special reference to origin of synovial mucin. D. V. Davies (*J. Anat.*, 1943, **77**, 160—169).—The normal synovial membrane has been studied in a no. of species. The staining reaction of the synovial membrane with mucicarmine and metachromatic dyes before and after treatment with enzyme is described. The cytoplasm of the cells lining the synovial membrane is stained a uniform red with mucicarmine and the reaction is unaffected by hyaluronidase or alkalis. W. J. H.

Histology of bovine kidney. R. F. Langham, R. T. Ingle, and E. T. Hallman (*Amer. J. Vet. Res.*, 1942, **3**, 260—267; cf. A., 1940, III, 41).—A description is given (illustrated) of the nephron and vasa, for the no. of glomeruli, diameter of the various parts of the nephron, and relative proportions of cortex and medulla. E. G. W.

Anaphase movements of chromosomes. M. M. Rhoades and H. Vilkomerson (*Proc. Nat. Acad. Sci.*, 1942, **28**, 433—436).—The primary centric region, representing the localised centromere, is responsible, in maize, for the movement of the chromosome in anaphase. J. D. B.

Metrical studies on spermatogonial chromosomes of Acrididae. P. B. A. Powers (*J. Morph.*, 1942, **71**, 523—576).—A method for measuring the amount of vertical deviation of a chromosome from the horizontal plane is described. This was applied to the computation of the lengths of all the chromosomes of spermatogonial anaphases. Details are given for a large no. of species. J. D. B.

Method for isolation of elastic tissue. G. M. Hass (*Arch. Path.*, 1942, **34**, 807—819).—If fresh or dehydrated human aorta is extracted with 89% formic acid for 72 hr. at 45°, 90—95% of the elastic tissue is recovered as a purified residue. It retains normal staining reactions and microscopic continuity of fibrils. During extraction with formic acid at zero load there is spontaneous elongation of networks. On neutralisation of the purified acidic networks they retract to near normal dimensions and display properties of extensibility, retractility, and tensile strength of such high orders that quant. measurements may easily be made. (5 photomicrographs.) C. J. C. B.

Staining procedure for use in *Brucella opsonocytaphagic* test. N. B. McCullough and L. A. Dick (*Stain Tech.*, 1942, **17**, 153—155).—For the enumeration of bacteria ingested by leucocytes it is essential that the bacteria be clearly stained and distinguishable from granules, and that the leucocyte cell membrane be clearly delineated. Spreads are fixed for 5 min. in abs. methyl alcohol, and then stained for 10—30 min. in the following: NaCl 0.5 g., phenol 0.5 g., methylene-blue 0.5 g., Na₂HPO₄·12H₂O 0.02 g., distilled water 50 c.c., methyl alcohol 50 c.c. After washing in water, slides are air-dried. Bacteria and leucocyte nuclei are deep blue, leucocyte cytoplasm pale green, and cell outline clear; granules are unstained. E. E. H.

Cytological methods for *Crepis* species. H. A. Tobgy (*Stain Tech.*, 1942, **17**, 171—175).—After fixing in a Flemming type mixture, material is dehydrated through butyl alcohol and embedded in wax. Before staining in 1% crystal-violet sections are mordanted with chromic acid, and after staining treated with I. Dehydrating

alcohols contain picric acid and aq. NH₃. Differentiation is in clove oil, and clearing in xylol. Chromosomes are dark purple. E. E. H.

Improved cytological methods with crystal-violet. C. S. Semmens (*Stain Tech.*, 1942, **17**, 147—148).—Some details are given of staining methods with crystal-violet (especially for chromosomes), that give stable and well stained preps. without the use of I or of bleaching. E. E. H.

Use of benzidine method on thick specimens. R. A. Pfaff and W. L. Williams (*Stain Tech.*, 1942, **17**, 165—169).—The benzidine-nitroferrocyanide-H₂O₂ method for demonstrating blood vessel distribution can be applied successfully to formalin-fixed specimens of whole organs and embryos. E. E. H.

Staining myelin sheaths of optic nerve fibres with osmium tetroxide vapour. R. Bruesch (*Stain Tech.*, 1942, **17**, 149—152).—The tissue is suspended in an air-tight bottle over 2% OsO₄ solution for 24 hr.; the vapour penetrates much better than the solution. Washing in distilled water for 6 hr. obviates subsequent blackening in alcohol. Final dehydration and clearing is carried out in *n*-butyl alcohol; wax sections should be 3—5 μ . thick. E. E. H.

Mounting media. J. L. Mohr and W. Wehrle (*Stain Tech.*, 1942, **17**, 157—160).—Details are given for making up a mountant in place of the proprietary green euparal of Gilson. It is also suggested that the addition of up to 10% of dibutyl phthalate to clarite solutions avoids the appearance of airbays in clarite deep mounts. E. E. H.

V.—BLOOD AND LYMPH.

Staining aspirated human bone marrow with domestic Wright stain. E. M. Schleicher (*Stain Tech.*, 1942, **17**, 161—164).—Regressive staining with domestic (U.S.A.) Wright's stain gives results as good as those obtained by progressive staining with German dyes. The distilled water should have a pH between 6.0 and 6.4, and the decoloriser used is acetone 0.5 c.c., methyl alcohol 50 c.c., distilled water 100 c.c. Aspirated bone marrow mixed with heparin powder is centrifuged in a wax-lined tube for 5 min. The top layer of fat is removed and some of the next layer of plasma; the remaining plasma (same vol. as next layer) and the next layer of myeloid-erythroid cells are mixed, and films are air-dried for immediate staining. E. E. H.

Bone marrow aplasia after sulphathiazole.—See A., 1943, III, 136.

Effect of adrenal factors on plasma-proteins.—See A., 1943, III, 23.

Diameters of mammalian erythrocytes. C. H. N. Jackson and F. L. Vanderplank (*Proc. Zool. Soc. London*, 1942, **112**, A, 57—60).—Corpuscular measurements in dried blood films are recorded for over 200 individual mammals, mostly wild East African forms, belonging to 40 species. Little variation was found within a species but the measurements for different species varied between 3 and 9 μ . Closely related species have corpuscles of about the same size. J. D. B.

Blood-grouping of aborigines of North-West Australia. R. K. Gray (*Med. J. Austral.*, 1942, II, 435—436).—Of 201 aborigines, 79 (39%) were of group A and 122 (61%) of group O. There was no sex difference. The % of aborigines of the two groups differs greatly in different parts of Australia. F. S.

Detection of linkage.—See A., 1943, III, 79.

Microsedimeter for erythrocyte sedimentation test. H. Vollmer (*N.Y. Sta. J. Med.*, 1939, **39**, 1583—1586).—Description of a method requiring only 0.12 c.c. of blood obtained from a finger or the lobule of the ear. E. M. J.

Erythrocyte sedimentation test. R. O. Gregg and E. G. Allen (*N.Y. Sta. J. Med.*, 1939, **39**, 2192—2198). E. M. J.

Anæmia in women and children on wartime diets. H. M. M. Mackay, R. H. Dobbs, L. Wills, and K. Bingham (*Lancet*, 1942, **243**, 32—33).—Blood-hæmoglobin determinations (Haldane method) were done on children, girls, and women in September 1941 to January 1942, varying degrees of anæmia being noted. The lowest hæmoglobin val. was 13%, in children of 1—2 years, and the highest was 94%, in some women factory workers living at home. The need for an increase in Fe-containing foods is stressed. C. A. K.

Sub-clinical anæmia of school-children in Southern Rhodesia. E. B. Jones (*Trans. R. Soc. trop. Med. Hyg.*, 1942, **36**, 99—116).—The hæmoglobin indices of 2173 European and 304 coloured school-children resident on the plateau region of Southern Rhodesia in 1939 by Newcomer's method showed 320 Europeans (14.7 g.-%) and 70 coloured (23 g.-%) to have sub-clinical anæmia. A provisional normal standard of 13.5 g.-% of hæmoglobin was adopted (range 12—14.9 g.). Age, race, parasitic infection, climate, diet, and residence in a boarding hostel had either a direct or indirect influence on the hæmoglobin index, especially faulty diet and parasitic infection. C. J. C. B.

Evaluation of anti-pernicious anæmia effective liver extracts. E. Jequier-Doge (*Schweiz. med. Wschr.*, 1942, 72, 544—547).—The therapeutic efficacy of liver extracts in the treatment of pernicious anæmia is followed by observing the reticulocyte crises, red cell count and hæmoglobin concn. A. S.

Chemistry of anti-pernicious anæmia substances of liver.—See A., 1943, III, 125.

Clinical experience with radio-phosphorus in treatment of blood dyscrasias. T. Fitz-Hugh, jun., and P. J. Hodes (*Amer. J. med. Sci.*, 1942, 204, 662—665).—With 1—20 mc. orally or 0.3—2 mc. intravenously once a week, the following results were observed. Of 6 patients with polycythæmia vera 4 were markedly improved clinically and hæmatologically; 1 was unimproved. In chronic myelogenous leukaemia 1 of the 5 patients treated with radioactive P obtained remission which lasted several months. 2 of 4 patients with chronic lymphatic leukaemia obtained remissions. None of the four patients with acute leukaemia was benefited by radio-P. 1 of the 5 patients with Hodgkin's disease was improved for a few months. 2 of the 6 patients with lymphosarcoma had good remissions. No benefit was obtained in metastatic carcinoma, reticulum cell sarcoma, reticuloendotheliosis, or multiple myeloma. C. J. C. B.

Successful removal of hæmangioma of lung followed by disappearance of polycythæmia. J. Hepburn and J. A. Dauphinee (*Amer. J. med. Sci.*, 1942, 204, 681—685).—The cavernous hæmangioma allowed the flow of a considerable vol. of unoxygenated blood directly from the venous to the arterial circulation resulting in marked cyanosis with clubbing of the fingers and secondary polycythæmia. C. J. C. B.

Value of splenectomy in Felty's syndrome. C. Le R. Steinberg (*Ann. int. Med.*, 1942, 17, 26—40).—3 cases of atrophic arthritis associated with Felty's syndrome are described. The leucopenia and secondary anæmia were controlled in 2 patients with liver extract and Fe salts. Splenectomy was beneficial in 1 case where all other efforts had failed. Splenectomy does not alter the course of the arthritis. A. S.

Transfusion in the Middle East. I. J. Wood (*Med. J. Austral.*, 1942, II, 97—100).—The organisation and technique of blood transfusion in field conditions are described. F. S.

Effect of androgens on blood count in men.—See A., 1943, III, 34.

Effects of adrenalectomy and replacement therapy on serum-protein levels of cat.—See A., 1943, III, 109.

Electrophoretic study of proteins components in cerebrospinal fluid and relationship to serum-proteins.—See A., 1943, III, 101.

Hydrogen-ion concentration of solutions of sodium citrate used for preservation of fluid blood. E. C. Watts (*J. Amer. Pharm. Assoc.*, 1942, 31, 249—250).—3.5% aq. Na citrate has pH 7.3, which does not change during autoclaving for $\frac{1}{2}$ hr. at 115°; it is suitable for use as an anticoagulant. R. L. E.

Transfusion by direct methods. J. Smith (*Med. J. Austral.*, 1942, II, 92—94).—There were no transfusion reactions in 300 cases in which the donor's corpuscles were directly matched with the recipient's serum. F. S.

Preservation of prothrombin in dried plasma. M. M. Strumia (*J. Amer. Med. Assoc.*, 1942, 119, 710).—Prothrombin is well preserved when dried plasma is reconstituted with 0.1% citric acid instead of distilled water. Plasma redissolved in water gives a pH of 8.2—9.3, the alkalinity destroying prothrombin (which keeps very well in the dried state). C. A. K.

Comparison of prothrombin levels in maternal and cord blood at delivery. R. F. Norris and A. Rush (*Surg. Gynec. Obstet.*, 1940, 70, 1006—1010).—The prothrombin vals. obtained by the Quick method were above normal in 50 mothers and below normal in 51 infants at delivery; the maternal vals. were unchanged 10—14 days later and the infant vals. were only slightly increased. The average vol. of packed red blood cells was greater in 39 babies than in their mothers; the difference in prothrombin vals. must be proportionately greater for whole blood than for plasma. Sources of error in the Quick method are discussed; comparisons of 25% diluted samples of plasma are more accurate than comparisons of undiluted plasma samples. P. C. W.

Prothrombin and vitamin-K. B. Uvnäs (*Schweiz. med. Wschr.*, 1942, 72, 461—465).—A review. A. S.

Disturbances in coagulation of blood. L. J. Witts (*Glasgow Med. J.*, 1942, 137, 57—71).—A lecture giving a review of recent advances in the knowledge of blood coagulation and methods of measuring clotting and prothrombin. A case treated with dicoumarin is described in whom the prothrombin was diminished and altered so that it became abnormally sensitive to species differences and physical changes in thromboplastin. (29 references.) G. H. B.

Hæmorrhagic purpura in Graves' disease. G. Bickel and S. Dicker (*Schweiz. med. Wschr.*, 1942, 72, 411—413).—2 patients suffering from severe Graves' disease (basal metabolic rates +80 and 75%, respectively) developed hæmorrhagic diathesis explained

on inadequate vitamin-K utilisation by the damaged liver and low prothrombin level in blood. The patients improved on blood transfusion and ascorbic acid treatment. A. S.

Thrombopenic purpura due to sulphathiazole.—See A., 1943, III, 136.

Proteinases in acid-globulin plasma fraction and their rôle in thrombin formation. R. Feissly (*Schweiz. med. Wschr.*, 1942, 72, 516—517).—Thermolabile activators in the plasma of *in vitro* blood coagulation of thrombokinase type are distinguished from thermolabile activators contained in the platelets. A. S.

Humoral rheology. I. Viscosity and anomalous flow properties of human blood systems with heparin and other anticoagulants. A. L. Copley, L. C. Krchma, and M. E. Whitney (*J. Gen. Physiol.*, 1942, 26, 49—64).—A modified falling-ball viscometer for blood and other liquids is described. Flow properties at several stresses are easily determined, and at high shearing stresses, apparent sp. η vals. of 2.5+ are observed compared with 2.2 ± 0.2 obtained by use of the biological viscometer. The anomalous flow properties of blood are confirmed, and the systems conform to the Bingham concept of anomalous flow. Data are given for the pseudo- η and yield val.; the latter is probably the most sp. property. Heparin, in increasing amounts, decreases apparent and pseudo- η and yield val. of blood; it similarly reduces η of serum and plasma. The ratio of apparent η of blood to apparent η of its plasma is approx. const. Heparinised blood exhibits thixotropy, dilatancy, and age-hardening phenomena. J. N. A.

Influence of blood transfusion and injections of *Bursa pastoris* (Shepherd's purse) extract on clot-resistance in two hæmophiliacs. A. L. Copley and J. J. Lalich (*Amer. J. med. Sci.*, 1942, 204, 665—670).—Injections of extract of *B. pastoris* following blood transfusion increased the clot-resistance in both hæmophiliacs. The coagulation time was shortened on 1 of 3 occasions with the combined treatment of transfused blood + injected *B. pastoris* extract. The nature of the active substance in the plant is not known. C. J. C. B.

Control of hæmorrhagic tendencies. W. Walters (*Surg. Gynec. Obst.*, 1940, 70, 308—318).—Review and discussion. P. C. W.

Panhæmocytophthisis and leukaemia in children. E. Glanzmann (*Schweiz. med. Wschr.*, 1942, 72, 465—468, 485—490).—The relationship between panhæmocytophthisis and leukaemia in children is discussed, based on several case reports. A. S.

Agranulocytosis and leucopenia in rats [from sulphanilamides]. S. S. Spicer, F. S. Daft, W. H. Sebrell, and L. L. Ashburn (*U.S. Publ. Hlth. Repts.*, 1942, 57, 1559—1566).—Rats given sulpha-guanidine (sulphanilylguanidine) or sulphasuxidine (succinylsulphathiazole) in purified diets develop agranulocytosis, leucopenia, and hypocellularity of bone marrow. This blood dyscrasia can be prevented or successfully treated with whole dried liver or certain liver extracts. C. G. W.

Diapedesis and inflammation. P. B. Grawitz (*Schweiz. med. Wschr.*, 1942, 72, 413—415).—Inflammatory reactions were produced by application of AgNO₃ to the frog's mesentery. Diapedesis of leucocytes is not greater than in intact areas. There was no evidence for chemotactic migration of white cells to the site of inflammation nor for lysis of these cells. The Cohnheim theory of inflammatory reactions is disputed. A. S.

Water and electrolyte balance. F. A. Collier and W. G. Maddock (*Surg. Gynec. Obst.*, 1940, 70, 340—354).—A review and discussion of the most effective methods of maintaining fluid and electrolyte balance in surgical patients. P. C. W.

Glutamine-like substance in blood plasma. P. Hamilton (*J. Biol. Chem.*, 1942, 145, 711).—Picric acid filtrates of human and dog plasma contain substances that react like glutamine on heating to 100° at pH 2 and are present in concns. equiv. to 5—10 mg.-% of glutamine. R. L. E.

Sulphhæmoglobin. R. Lemberg, H. F. Holden, J. W. Legge, and W. H. Lockwood (*Austral. J. Exp. Biol.*, 1942, 20, 161—167).—Sulphhæmoglobin is a protohæmatin compound which can be reconverted into protohæmochromogen. It is not decomposed into bile pigments by acids. Artificially produced sulphhæmoglobin generally contains 20—50% of choleglobin, a bile pigment-hæmatin compound which yields biliverdin and biliviolin when treated with acids, and cannot be reconverted into protohæmochromogen. Choleglobin is the source of the bile pigment and of the easily detachable Fe obtained from sulphhæmoglobin preps. In clinical human sulphhæmoglobinæmia there is little or no choleglobin, but in rats fed with S and acetanilide choleglobin forms approx. 33% of the abnormal pigments. By spontaneous crystallisation of oxyhæmoglobin from hæmolysed rat cells, sulphhæmoglobin and choleglobin are conc. in the mother-liquor. J. N. A.

Effect of hydrogen-ion and starch concentration of substrate on serum-amylase and amylase-accelerator of serum. W. C. Davison (*Amer. J. med. Sci.*, 1942, 204, 723—725).—For serum-amylase and amylase-accelerator results to be comparable they should be obtained

by titrations made at the same reaction, and with the same prep. and concn. of starch. C. J. C. B.

Vitamin-B₁ content of blood during parturition. W. Neuweiler (*Z. Vitaminforsch.*, 1942, 12, 329—332).—During parturition, the free vitamin-B₁ content of the mother's blood decreases but the content of bound -B₁ remains unchanged. The decrease is attributed chiefly to increased acetylcholine degradation, changes in nervous action, and increased passage of -B₁ through the placenta. W. McC.

Vanadium and ascidian blood. D. A. Webb (*J. Exp. Biol.*, 1939, 16, 499—523).—The V chromogen combined with H₂SO₄ is found in a specialised cell, the vanadocyte. V is not used as a respiratory pigment and can probably be absorbed in sufficient amounts from sea-water. D. M. SA.

Effect of picrotoxin on blood-potassium of anæsthetised animals. C. E. Cardini and M. E. Serantes (*J. Amer. Pharm. Assoc.*, 1942, 31, 173—176).—Dogs were anæsthetised by intravenous injection of 10 c.c. per kg. of an 8% solution of chloralose. Subsequent intravenous injection of 0.15—1.0 mg. per kg. of picrotoxin abolished narcosis; convulsions set in and persisted to the end of the experiment. With the onset of convulsions there was an abrupt increase in plasma-K⁺, followed by a gradual fall, probably as a result of a transfer of K⁺ to the cells. P. G. M.

Amount of fat in blood after meal as estimated by counting chylomicrons. R. S. Cooper and H. Lusk (*Amer. J. digest. Dis.*, 1942, 9, 395—396).—Counts are made at $\frac{1}{2}$ -hourly intervals up to 3 hr. The curve was lower than normal in obstructive jaundice (1 case), ulcerative colitis (1), and pancreatitis (1). N. F. M.

Iron content of skin in hæmochromatosis. H. J. Magnuson and B. O. Raulston (*Ann. int. Med.*, 1942, 16, 687—693).—The Fe content of a normal skin obtained at autopsy is 1.05 mg.-% of tissue. In cases of hæmochromatosis vals. up to 10 mg.-% of tissue were observed. A. S.

Case of Gaucher's disease. R. C. Schleussner and C. F. Schnee (*N.Y. Sta. J. Med.*, 1939, 39, 1665—1669). E. M. J.

Blood-protein changes resulting from intravenous method of hyperimmunisation against rinderpest virus. M. H. French (*Vet. Rec.*, 1942, 54, 135—136).—Immunisation produced a lowering of serum-albumin and a rise in -globulin, usually more marked in the case of the euglobulin than pseudoglobulin. E. G. W.

Biological characteristics of blood in schizophrenia. G. J. Malis (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 33, 163—165).—Substances toxic to the isolated frog heart were isolated from the liver and basal ganglia of the brain of schizophrenics but not from patients with other diseases. C. J. C. B.

VI.—VASCULAR SYSTEM.

Conducting system of marsupial heart. D. M. Blair, F. Davis, and E. T. B. Francis (*Trans. Roy. Soc. Edin.*, 1943, 60, 529—637).—Observations were made on three adult and one foetal heart. The system has the same general features as those in other mammals and in birds. Minor differences are attributed to sp. variation and are correlated with different functional requirements. W. F. H.

Storage of trypan-blue in heart valves of the rabbit. W. F. Harper (*J. Anat.*, 1943, 77, 140—148).—Trypan-blue was injected into normal rabbits and others previously treated with aleuronate which produces particulate desquamation of the cusps. The macrophages and undifferentiated connective tissue cells in the subendothelium contain particles of the dye. With moderate doses the macrophages store the dye rapidly while the amount in the undifferentiated connective tissue cells is less; with larger doses the differentiation between the cells becomes impossible. The macrophages may liberate their dye content into the adjacent tissue, whence it may migrate towards the atrial aspect of the cusps where it is eliminated. W. J. H.

Normal heart and conditions simulating cardiac disease. E. H. Stokes (*Med. J. Austral.*, 1942, II, 253—263).—The effects of posture and respiration in modifying the auscultatory, radiological, and e.c.g. findings in the normal heart are described. A record is given of the investigation of 15 normal students and 45 patients with conditions simulating cardiac disease. F. S.

Disturbances in circulation and respiration in obstruction of the blood flow to and from heart. W. E. Adams and L. Escudero (*Surg. Gynec. Obstet.*, 1940, 70, 744—752).—Respiratory and circulatory changes produced in dogs by obstruction of the blood vessels leading to and from the heart were studied. Best tolerated ligations were those of the venæ cavæ and azygos; cardiac activity remained normal for as long as 9 min. following complete cessation of all blood flow to the right heart. Ligature of the pulmonary artery was tolerated least well. The results are discussed in relation to clinical conditions. P. C. W.

Significance of so-called P-pulmonale pattern in electrocardiogram. I. H. Shleser and R. Langendorf (*Amer. J. med. Sci.*, 1942, 204, 725—

733).—The P-pulmonale pattern is not pathognomonic of chronic pulmonary disease, since it occurs in its absence and appears in many other conditions. P-pulmonale in association with low "voltage" in the limb leads or with right ventricular preponderance represents the characteristic e.c.g. of chronic cor pulmonale. C. J. C. B.

Coronary occlusion in 26-year-old male with recovery. A. S. Ferguson and J. R. Lockwood (*N.Y. Sta. J. Med.*, 1939, 39, 1618—1621).—Case report. E. M. J.

Ventricular fibrillation in acute coronary thrombosis during injection of quinidine sulphate.—See A., 1943, III, 137.

Operative treatment in constrictive pericarditis. H. J. Stewart and G. J. Heuer (*N.Y. Sta. J. Med.*, 1939, 39, 2183—2187).—Cure is reported in 3 and improvement in 5 of 10 cases with 1 fatality. E. M. J.

Electrocardiograms in metrazol convulsions. L. L. Orenstein (*N.Y. Sta. J. Med.*, 1939, 39, 1921—1923).—Report of 15 cases. E. M. J.

Cardio-angiography with diodrast as diagnostic aid in cardiology. H. K. Taylor and I. Shulman (*Radiology*, 1942, 39, 323—333).—The right heart appears U-shaped in the postero-anterior and right oblique position and does not extend much beyond the left border of the spine in the former. Appearances in 15 cases of cardiac disease are described. E. M. J.

Retinal blood pressure.—See A., 1943, III, 106.

Blood pressure and pulse rate changes during thyroidectomy. R. Brunner and L. Seed (*Surg. Gynec. Obstet.*, 1940, 70, 731—740).—The blood pressure and pulse rate readings recorded during thyroidectomy in 600 patients are analysed. There is a direct relation between the rise in blood pressure and the degree of thyrotoxicosis at the time of operation. Pulse rate is the best index to prognosis. P. C. W.

Coarctation of aorta. D. W. Ingham (*N.Y. Sta. J. Med.*, 1939, 39, 1865—1870).—Report of 10 cases, 6 of which are of infantile type. There were 7 males and 3 females. Patent ductus arteriosus was present in 6 cases. E. M. J.

"Essential" hypertension: concept of its mechanism. H. A. Schroeder (*Amer. J. med. Sci.*, 1942, 204, 734—743).—A general review. C. J. C. B.

Urological aspects of hypertension. D. W. MacKenzie and M. I. Seng (*Surg. Gynec. Obstet.*, 1940, 70, 578—583). P. C. W.

Peripheral vascular disease. A. Ochsner and M. DeBaakey (*Surg. Gynec. Obstet.*, 1940, 70, 1058—1072).—Critical survey of conservative and radical treatment. P. C. W.

Periarteritis nodosa. E. Appelbaum and M. Kalkstein (*N.Y. Sta. J. Med.*, 1939, 39, 2253—2258).—Report of 3 cases diagnosed during life. E. M. J.

Ætiology and treatment of ulcers of leg [relation to changes in veins]. L. M. Zimmerman and A. Faller (*Surg. Gynec. Obstet.*, 1940, 70, 792—798).—Most ulcers are associated with varicose veins and deep vein thrombophlebitis. The cutaneous lesions seem to be inflammatory in origin rather than due to passive congestion; they are traced from an initial phlebitis through stages of induration and cicatrization. Gentle mechanical pressure is the method of treatment which gives the best results. P. C. W.

Urticaria of emotional origin. D. Blitz (*N.Y. Sta. J. Med.*, 1939, 39, 1309—1310).—A 27-year-old female had her first attack of urticaria following the death of a near relative from cardiac syncope 3 years previously; she again developed a generalised urticaria on seeing a neighbour seized with a severe heart attack. The same day the urticaria disappeared temporarily during a fainting attack when the blood pressure fell from 115/80 to 80/60. E. M. J.

VII.—RESPIRATION AND BLOOD GASES.

Technique for chest X-ray examinations of large groups. I. With standard size films. II. With 4 × 10 in. film. W. Bailey (*Radiology*, 1942, 39, 306—309, 310—313). E. M. J.

Respiratory function of blood of insects. E. M. Kreps and E. J. Tschénikaeva (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 34, 142—145).—The blood of Orthoptera has no effect on the reaction $\text{H}_2\text{CO}_3 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ but the reverse hydration reaction was strongly inhibited. The inhibitory substance is not an enzyme, is thermostable, is not pptd. with protein, and is insensitive to most enzyme poisons. Thus the blood of insects preserves CO₂ as dissolved gas mols. and favours discharge of free CO₂ from the organism. C. J. C. B.

Oximeter: instrument for measuring continuously oxygen saturation of arterial blood in man. G. A. Millikan (*Rev. Sci. Instr.*, 1942, 13, 434—444).—By means of an apparatus which slips over the shell of the ear the O₂ saturation of arterial blood can be measured to ± 3 —8% by bichromatic photo-electric colorimetry. One colour is equally, the other differently, absorbed by oxy- and reduced hæmoglobin. A. A. E.

Problems of resuscitation from asphyxia [and Branower's respirator]. W. Branower (*N.Y. Sta. J. Med.*, 1939, 39, 2094—2099). E. M. J.

Respiratory effects on visual threshold.—See A., 1943, III, 18.

Use of flask as aid to tactile fremitus. N. E. Reich (*N.Y. Sta. J. Med.*, 1939, 39, 1654).—Small areas of increased tactile fremitus were discovered easier by applying the mouth of a 100-c.c. Erlenmeyer flask to the chest and holding the base lightly with the fingers or palm. E. M. J.

Experiments with Forssman antiserum in allergic bronchial asthma. P. Kallós and L. Kallós-Defner (*Schweiz. med. Wschr.*, 1942, 72, 361—362).—Inhalation of a spray of Forssman antiserum for 5 min. produces severe bronchial asthma and, a few min. later, death in guinea-pigs. There is no acute pulmonary emphysema and the lungs can be filled easily with lipiodol. There were numerous peri-arterial hæmorrhages and alveolar œdema. Many lymphocytes, leucocytes (only a few eosinophils), and plasma cells were found in the alveolar wall. The bronchi were only slightly involved. A. S.

Eosinophilia in fatal asthma: studies of bone marrow and myocardium. F. H. Chafee, J. R. Ross, and E. M. Gunn (*Ann. int. Med.*, 1942, 17, 45—59).—Autopsy findings in 6 cases of bronchial asthma are discussed; 3 had died in status asthmaticus. In 1 case with a large preponderance of eosinophilic myelocytes, metamyelocytes, and leucocytes in the bone marrow, an acute diffuse myocarditis with pronounced infiltration of eosinophilic leucocytes was found. A. S.

Lung abscess. R. H. Sweet (*Surg. Gynec. Obstet.*, 1940, 70, 1011—1021).—An analysis of 125 cases. P. C. W.

Foreign bodies in air and food passages. L. H. Clerf (*Surg. Gynec. Obst.*, 1940, 70, 328—339).—A series of 950 cases is analysed and discussed. P. C. W.

Ludwig's angina. A. Williams (*Surg. Gynec. Obst.*, 1940, 70, 140—149).—31 cases are analysed and clinical indications described. Immediate surgical relief is indicated once diagnosis is made; tracheotomy is often life-saving. Streptococcus alone or with other organisms is present in 72% of cases when sulphanilamide is indicated. Anaerobic organisms are often present and ZnO₂ is then indicated. Total mortality was 54%. P. C. W.

VIII.—MUSCLE.

Fasciculation and fibrillation in skeletal muscle; action of novocaine on neuromuscular mechanism. G. Reid (*Austral. J. Exp. Biol.*, 1942, 20, 189—195).—Sensitisation of denervated muscle to acetylcholine develops after 5 days; contractural responses occur on the 3rd day. Eserine does not produce fasciculation after 2 days and spontaneous fibrillation does not occur until 5 days after denervation. Fibrillation is unaffected by doses of curare which in the same muscle reduce the response of denervated muscle to acetylcholine. Novocaine in addition to its curare-like action abolishes fasciculation in doses which have little or no effect on neuro-muscular condition. It also has a direct action on denervated muscle and causes cessation of fibrillation. The results confirm that a functioning motor nerve is essential for eserine fasciculation. J. N. A.

Change in adenylyl content of skeletal muscle after denervation. G. Reid (*Austral. J. Exp. Biol.*, 1942, 20, 197—199).—The active adenylyl compounds of denervated muscle are lost from the muscle at the same rate as is the muscle tissue itself. This is similar to the behaviour of certain other muscle constituents, such as K and creatine. In cases of extreme atrophy there is probably a greater % of adenylyl compounds than in original muscle tissue, which may be due to the relative increase in nuclei in the denervated muscle. J. N. A.

Phosphorylation of glycogen in extracts of pigeon breast muscle.—See A., 1943, III, 142.

IX.—NERVOUS SYSTEM.

Fibrin suture of human nerves. H. J. Seddon and P. B. Medawar (*Lancet*, 1942, 243, 87—88).—Fibrin suture is most effective in immediate repair of nerves and in nerve grafting, but secondary repair is not much helped. Conc. plasma can be kept for 1 week in wax vessels prior to use. C. A. K.

Isolation of dihydrosphingosine from brain and spinal cord. H. E. Carter and W. P. Norris (*J. Biol. Chem.*, 1942, 145, 709).—Dihydrosphingosine was isolated by means of its triacetyl derivative, m.p. 98—100°, $[\alpha]_D^{20} +18.0^\circ$ in CHCl₃. R. L. E.

Structure of connective tissue sheaths of cutaneous nerves. P. Glee (*J. Anat.*, 1943, 77, 153—159).—The work was mainly done on skin taken from the ear or dorsum of the foot of the rabbit. Examination was made of the nerves in normal skin and in specimens taken at various intervals after crushing or sectioning of cutaneous nerves. The perineurium and endoneurium form essential parts of the cutaneous nerve plexus and their arrange-

ments are described. The incisures of Schmidt-Lantermann in the myelin are a mechanism for permitting extension. The perineurium, endoneurium, and Schwann cells together preserve the old pattern of innervation for new ingrowing fibres which, in regeneration, grow down inside the old endoneurial tubes and are thus forced to repeat the former mode of ramification. W. J. H.

Size of brain in relation to body size.—See A., 1943, III, 77.

Proteinase in brain. M. W. Kies and S. Schwimmer (*J. Biol. Chem.*, 1942, 145, 685—691).—Brain contains di- and tri-peptidases and has a content of proteinase of the catheptic type greater than that of muscle, but it autolyses at the same speed and to the same extent as muscle. No lipase was detected in brain. Cathepsin only partly accounts for the rapid breakdown of brain tissue in commercial processes. R. L. E.

Hysterical hyperpyrexia. F. P. Duras (*Lancet*, 1942, 243, 39).—Case report. The temp. rose to 108° F. C. A. K.

Is hypothalamus centre of emotion? J. H. Masserman (*Psychosom. Med.*, 1941, 3, 3—25).—Hypothalamic stimulation through an implanted bipolar needle electrode produced in the unanæsthetised freely moving cat the following reaction: retraction of ears, crouching, growling, tail lashing, hyperpnea, salivation, mydriasis, pilo-erection, biting, striking movements with claws unsheathed, precipitate running. More prolonged and intense activity may be induced by intrahypothalamic injection of 0.05 c.c. of 10% metrazol or 0.01% picrotoxin. Preceding sensory stimuli (combinations of intense light, sound, and air blasts) did not elicit any sympathetic or motor response in the absence of direct hypothalamic stimulation. Sensory stimulation did not produce typical changes of the hypothalamic electroencephalogram. Animals exposed to 60—480 combinations of sensory stimuli over a period of 2—12 days could not be "conditioned" to subsequent direct hypothalamic stimulation. (B.) A. S.

Effect of early hypophysectomy on hypothalamic obesity.—See A., 1943, III, 24.

Destruction of medulla and adaptation to changes in salinity in the carp, a homeo-osmotic fish. A. Drilhon (*Compt. rend.*, 1942, 214, 575—577).—After destruction of the medulla there is a decrease in glycaemia and a marked decrease in the alkaline reserve in the plasma. The rate of globular sedimentation is considerably increased whilst the resistance is diminished; apart from these alterations, the composition of the plasma is scarcely affected. Destruction of the medulla renders the carp unable to adapt itself to changes in salinity, and it is concluded that the efficacy of the branchial regulating mechanism is considerably decreased. J. N. A.

Friedreich's ataxia associated with diabetes mellitus. N. S. Schlezinger and K. Goldstein (*N.Y. Sta. J. Med.*, 1940, 40, 415—423).—The case reports of 2 sisters are added to the 18 cases previously reported in the literature. E. M. J.

Allergic manifestations in central nervous system [and leukopenic index]. T. W. Clarke (*N.Y. Sta. J. Med.*, 1939, 39, 1489—1504). E. M. J.

Ambulatory insulin treatment of mental disorders. P. Polatin, H. Spontitz, and B. Wiesel (*N.Y. Sta. J. Med.*, 1940, 40, 843—847).—Improvement was seen in 13 of 22 patients with functional or organic psychoses given repeated injections of 40 units of insulin over 2—70 weeks producing mild hypoglycæmic shock. E. M. J.

Treatment of acute encephalitis by intravenous injection of hypotonic saline solution. G. M. Retan (*N.Y. Sta. J. Med.*, 1939, 39, 1774—1785).—15 cases were treated successfully by daily intravenous infusion of 22 c.c. of a 0.375% solution of NaCl per kg. hourly for 5 hr. A lumbar puncture needle semipermanently introduced allows the hourly withdrawal of 2—3 c.c. of c.s.f. if it escapes in a stream. E. M. J.

Diagnostic significance of rise of intracranial pressures. R. Bing (*Schweiz. med. Wschr.*, 1942, 72, 407—411).—A lecture. A. S.

Infections of meninges and brain of pharyngeal origin. H. Brunner (*Surg. Gynec. Obstet.*, 1940, 70, 881—896). P. C. W.

Familial central neurofibromatosis. G. Piotrowski (*Schweiz. med. Wschr.*, 1942, 72, 495—496).—4 cases of central neurofibromatosis were observed in 3 generations of a family. A. S.

Soluble phenytoin in epilepsy. G. M. Tullidge and J. T. Fox (*Lancet*, 1942, 243, 6—8).—Sol. phenytoin was given to 63 epileptics during 3 years. Fits and other manifestations were controlled but in $\frac{1}{3}$ of the cases the drug had to be withdrawn owing to toxic signs, of which nystagmus, ataxia, tremors, diplopia, and vomiting were commonest. C. A. K.

Calcium diphenylhydantoinate in epilepsy.—See A., 1943, III, 138.

Treatment of severe periodic headaches with prostigmine.—See A., 1943, III, 137.

Inhibition of choline-esterase by phenothiazine derivatives.—See A., 1943, III, 141.

Localising value of clinical, electroencephalographic, and pneumoencephalographic findings in epilepsy. H. Sjaardema and M. A. Glaser (*Amer. J. med. Sci.*, 1942, 204, 703—715).—The electroencephalogram pointed to focal epilepsy in 33 of 52 cases (63·3%), the clinical findings in 31 (59·6%), and the air studies in 9 (17·2%). The pneumoencephalogram was normal in 8 cases (15·4%) and the electroencephalogram was normal in 2 cases (3·8%). C. J. C. B.

Rami communicantes in rhesus monkey. D. Sheehan and J. Pick (*J. Anat.*, 1943, 77, 125—139).—A description is given of the rami communicantes to the spinal nerves in the rhesus monkey (*Macaca mulatta*). From histological studies four general types of rami can be recognised: myelinated fibres of all sizes (white rami), unmyelinated fibres with differing nos. of myelinated fibres distributed throughout the ramus (grey rami), and mixed grey and white bundles. The white and mixed rami are not found beyond the limit of the thoraco-lumbar outflow. In the upper thoracic, lower lumbar, and sacral regions a ganglion is connected with its corresponding spinal nerve usually by only one ramus, which in the upper thoracic region is of the mixed type. In the lower thoracic and upper lumbar regions the ganglia are large and each is connected with two or more spinal nerves. W. J. H.

Renal sympathectomy in nephralgia. J. S. Ritter and L. A. Shifrin (*N.Y. Sta. J. Med.*, 1939, 39, 1587—1594).—20 cases of renal pain with normal function benefited by renal sympathectomy and fixation of the kidney. E. M. J.

Spinal fluid in tuberculous meningitis. E. F. Traut (*Amer. J. med. Sci.*, 1942, 204, 670—674).—In 113 proved cases, the spinal fluid was cloudy in 10% and neutrophils constituted more than 50% of the cells in 10% of the cases. C. J. C. B.

X.—SENSE ORGANS.

Photomechanics of pineal. F. G. W. Knowles (*J. Exp. Biol.*, 1939, 16, 524—529).—No differences in the distribution of pineal pigment of lampreys can be found in animals kept under various conditions of illumination. The positions of the nuclei within the pineal retinal cells are inconstant in darkness but strikingly regular in intensely illuminated animals. D. M. Sa.

Chromatic behaviour. L. Hogben (*Proc. Roy. Soc.*, 1942, B, 131, 111—136).—Colour changes due to the responses of pigmentary effector organs in the skin are produced by photic stimulation. Temp. and moisture may cause pigmentary responses in terrestrial animals. There tend to be three types of chromatic response to light: (1) a primary or dermal response independent of the eyes, (2) a secondary ocular response to overhead illumination in light-absorbing surroundings (black-background), and (3) a similar, tertiary, response in light-scattering surroundings (white-background). The primary reaction to increased illumination is a sustained dispersion of the chromatophores; the black-background response is similar while the white-background response involves their aggregation. The background responses are dependent on the illumination received by distinct areas of the retina. The black-background response is invoked by stimulation of that part of the retina which receives light rays from overhead (the B area) accompanied by lack of stimulation of the area receiving rays from below (the W area). Stimulation of the W area produces the white-background response and this reaction overrides both the others. In terrestrial animals high temp. and low humidity appear either to abolish the primary response or to inhibit the black-background response. The primary response is partly due to the direct action of light on the melanophores and partly to the presence of photoreceptors in the skin which may affect the chromatophores by a nervous reflex. In vertebrates the secondary (black-background) response depends on the reflex liberation of a hormone (B substance) from the pars intermedia of the pituitary. The control of the tertiary (white-background) response is not the same in all groups; in teleosts and reptiles a nervous control appears to have been established, though to a varying extent, but in teleosts this seems to have been superimposed on a more archaic hormonal mechanism. K. T.

Analytical study of normal eye-movements. J. Röscher (*Compt. rend.*, 1943, 214, 2285—87).—Eye movements in which rotation does and does not occur are considered in the light of the assumption that each muscle acts tangentially to the eyeball, along the line and in the plane containing its insertion and origin, and are treated mathematically. K. J. W. C.

Treatment of concomitant squint. J. R. Wheeler (*Ulster Med. J.*, 1942, 11, 94—97).—A description of the course of treatment necessary to overcome concomitant squint. The importance of early diagnosis so that the patient can begin training while still a baby is emphasised. A high % of amblyopic eyes are due to neglect in starting early enough. A straightening operation is also urged for cosmetic reasons. K. T.

Special lenses for poor-sighted. R. J. Kennedy (*Cleveland Clin. Quart.*, 1942, 9, 60—63).—The use of contact and telescopic lenses and of special lenses in cases of aniseikonia is described. A. S.

Keratoconus associated with atopic dermatitis. E. S. Bereston and R. L. Baer (*Arch. Dermal. Syphilol.*, 1942, 46, 358—361).—Report of 2 cases. C. J. C. B.

Hyaline scleral plaques. P. H. Boshoff (*Arch. Ophthalm. N.Y.*, 1942, 28, 503—506).—The occurrence of scleral hyaline plaques situated anterior to the insertion of the rectus muscle is described. The probable cause is local deficiency in blood supply due to polyarthritic conditions and vasosclerosis. A. GL.

Further chemical studies on blood-aqueous humour dynamics. W. E. Kinsey and W. M. Grant (*J. Gen. Physiol.*, 1942, 26, 119—129).—The rate of accumulation of various substances in the aqueous humour was measured by injecting them intraperitoneally into unanesthetised rabbits, and determining the concn. in plasma and in aqueous chemically at various intervals of time after injection. The relation between the changes in concn. in the aqueous and the concn. of the diffusible form of the substance in plasma is shown in a series of graphs. The proportion remaining freely diffusible when a substance is added to plasma was determined by ultrafiltration, and "differential dialysis" through a Cellophane membrane. The concn. of CNS' in the aqueous rapidly approached the plasma concn. Br' behaved similarly, but rate of accumulation was slower. Urea and $\text{PO}_4^{'''}$ established an equilibrium at which the aqueous-plasma concn. ratio was about the same as that found initially ($63 \pm 10\%$ for $\text{PO}_4^{'''}$ and about 65% for urea). With fructose the final equilibrium ratio was somewhat less than 50%. Both $\text{Fe}^{''}$ and $\text{Fe}^{'''}$ when added to plasma were no longer diffusible. In spite of plasma concns. as high as 700 $\mu\text{g.}$ of Fe per ml., aqueous concns. remained less than 0·5 $\mu\text{g.}$ per ml. The rate of accumulation of Li was not greater than that found for Na^+ , Cl^- , CNS', or Br'; Li^+ may be hydrated. With $\text{Mg}^{''}$, results were too variable to be interpreted. M. C. B.

Mechanism of aqueous humour formation inferred from chemical studies on blood-aqueous humour dynamics. V. E. Kinsey and W. M. Grant (*J. Gen. Physiol.*, 1942, 26, 131—149).—The authors stress the importance of considering the effect of a possible flow out from the anterior chamber (e.g., by Schlemm's canal) before attempting to infer the nature of the mechanism of aqueous humour formation from aqueous-blood concn. ratios at equilibrium. Data previously reported (cf. preceding abstract) are analysed mathematically on the basis of two hypotheses: (a) constituents enter the aqueous by ultrafiltration and escape by flow; (b) entrance is by secretion and exit by flow. For each hypothesis equations are formulated relating the rates of transfer of a substance into and out of the anterior chamber to the aqueous-blood concn. ratios at various times after its introduction into the blood. Different vals. are assumed for the coeff. of transfer out (K'), corresponding vals. for the coeff. of transfer in (K_2) are calc., and K_2 plotted against K' giving a different curve for each of the observed concn. ratios. In this way two sets of curves are obtained for each substance tested, one for ultrafiltration and one for secretion hypothesis. In each set, the point at which all the curves intersect indicates K' and K_2 vals. common to all the observed concn. ratios. Conclusions are: (1) Concn. ratios observed with urea, fructose, and $\text{PO}_4^{'''}$ can be accounted for only on the assumption that there is some flow out, whether they enter by ultrafiltration or secretion (i.e., K' is not zero under either hypothesis). (2) All the experimental data are in substantial agreement with an assumed rate of flow out of approx. 40 cu. mm. per min. (3) If there is a flow out of this order of magnitude, the equilibrium ratios observed in the case of the univalent electrolytes tested (Na^+ , Cl^- , CNS', Br', and Li') could be attained only if these entered by secretion. (4) It was not possible to decide whether urea, fructose, and $\text{PO}_4^{'''}$ entered by secretion or ultrafiltration, but a consideration of evidence from other sources indicates that they enter by ultrafiltration. M. C. B.

Arachnodactyly with dislocated lenses. S. S. Deutch (*Amer. J. Ophthalm.*, 1942, 25, 1102—1104).—Arachnodactyly (Marfan's disease) is a congenital and hereditary condition of skeletal overgrowth associated with incomplete fusion of the epiphyses, marked loss of subcutaneous fat, and (in 50% of cases) ocular defects. In the case here recorded, the right eye was shrunken and soft, and the lens was dislocated into the anterior chamber. The left eye was highly myopic, had a tension of 40 mm. Hg, and a posterior dislocation of the lens. Three iridencleises were required to produce a permanent reduction in pressure; after the last of these the lens prolapsed into the anterior chamber and had to be removed. The fundus was not diseased, and the high myopia was apparently due to the fact that the refractive power of the lens was more than twice normal. J. H. A.

Physiology and pathology of lens. M. Sachs (*Schweiz. med. Wschr.*, 1942, 72, 362—364).—A review. A. S.

Ocular changes and deficiency manifestations in mature cows fed by ration deficient in vitamin-A. L. A. Moore (*J. Dairy Sci.*, 1941, 24, 893—902).—Mature cows on a vitamin-A-deficient ration failed to develop blindness due to constriction of the optic nerve, but developed nyctalopia, incoordination, and oedema of the legs and

sometimes papilloedema. A reduction of the plasma-carotene to 0.5 mg.-% was usually rapidly followed by deficiency symptoms.

J. G. D.

Riboflavin : significance of its photodynamic action and importance of its properties for the visual act. M. Heiman (*Arch. Ophthalm. N.Y.*, 1942, 28, 493—502).—It is known that riboflavin is present in large amounts in the retinal pigment epithelium, and that visual disorders, e.g., lowered visual acuity, dimness of vision, and photophobia, occur if the quantity is diminished, and disappear if it is restored. Experimental evidence suggests that riboflavin plays in light-adaptation a rôle similar to that of rhodopsin in dark-adaptation, though it has not been definitely isolated from the fovea. Furthermore, it apparently has the power of transforming rays of short λ into yellow-green fluorescent light, for which the sensitivity of the eye is max., and its anatomical distribution allows it to protect the cones against the effect of excess light. Riboflavin is not re-synthesised in the absence of O_2 , and the visual symptoms of ariboflavinosis can be explained as manifestations of failure of its various retinal functions.

J. H. A.

Light sense in pigmentary degeneration of retina. L. L. Sloan (*Arch. Ophthalm. N.Y.*, 1942, 28, 613—631).—A study of 15 cases of retinitis pigmentosa indicates that a defect in scotopic vision in the mid-peripheral zone of the retina generally precedes fundus changes, and even perimetric signs, when the latter are elicited under the usual conditions with the eye partially light-adapted. It is suggested that detection in this way of the very earliest stage of the disease may make it possible to assess the results of treatment, such as sympathectomy, which is useless when once visible degenerative changes have set in. The author has designed an instrument to measure the light threshold from centre to periphery in any desired meridian.

J. H. A.

Unusual disciform retinal lesion with heterotopia maculae. B. Friedman (*Arch. Ophthalm. N.Y.*, 1942, 28, 444—448).—Description of a case of unilateral fundus lesion in the macular region probably related to a retinal hæmorrhage during parturition. Macular displacement nasally and downwards was probably caused by subsequent scarring.

A. GL.

Pits or crater-like holes in optic disc. J. N. Greear (*Arch. Ophthalm. N.Y.*, 1942, 28, 467—483).—Three cases of pit or crater-like hole formation in the optic disc were classified as atypical coloboma. Pigment epithelium was present in the pit in all cases. Central field changes were observed in all three cases and peripheral field change in one.

A. GL.

Cortical representation of macula lutea. T. J. Putnam and S. Lieberman (*Arch. Ophthalm. N.Y.*, 1942, 28, 415—443).—Lesions of the anterior portion of the striate area on one side were found to produce a contralateral hemianopia, lesions of the tip of the occipital lobe to produce hemianopia with irregular boundaries. Total or sub-total lesions of one occipital lobe may produce either complete hemianopia or one with varying traces of central vision. Persistence of central vision following extensive lesion of the occipital lobe may be due to (1) extensive representation of macular vision, (2) a physiological shift of fixation, (3) a taking over of lower visual centres after occipital lesions as occurs in monkeys.

A. GL.

Fatigue of patients with circulatory insufficiency, investigated by means of fusion frequency of flicker. N. Enzer, E. Simonson, and S. S. Blankstein (*Ann. int. Med.*, 1942, 16, 701—707).—The mean val. of the fusion frequency of flicker for all age groups was 44.9 flashes per sec. in normal subjects. The lowest normal val. in 47 subjects was 40.2. With the exception of 2 fully compensated cases of initial stenosis all vals., in 22 patients, were below normal. The decrease of fusion frequency is an index of the O_2 supply to the visual pathway.

A. S.

History of the Young-Helmholtz theory of colour vision. E. C. Millington (*Ann. Sci.*, 1942, 5, 167—176).

Effect of visual and taste stimuli on muscular tonus in man. G. I. Margolin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 34, 125—128).—Any colour stimulus given to a normal person standing in a dark room causes a deviation of the patient's body from the vertical, the direction depending on the exact colour. Similarly with a taste stimulus, a sweet taste always causing a backwards bending. As the taste or colour diminished there was a decrease in muscle tone and a return to normal sometimes with a bending in the opposite direction.

C. J. C. B.

Clinical examination of hard of hearing. W. Mueller (*Ann. Otol. etc., St. Louis*, 1942, 51, 757—760).—A detailed description of the methods used for the examination of 500 patients between the ages of 2½ and 50 years.

K. T.

Changing conception of management of chronic progressive deafness. F. T. Hill (*Ann. Otol. etc., St. Louis*, 1942, 51, 653—661).—A historical review of more recent methods of treatment of deafness, both medical and surgical. Fenestration (for cases due to middle ear obstruction), treatment of the underlying cause of the deafness

(if possible), and prescription of suitable hearing aids are advocated. The importance of the early recognition of hearing defects is stressed.

K. T.

Hearing in chronic otitis media. P. E. Meltzer (*Ann. Otol. etc., St. Louis*, 1942, 51, 727—736).—A discussion of the types of operation suitable for clearing up a chronic otitis media which will preserve as much hearing as possible.

K. T.

Evaluation of sulphanilamide therapy in acute otitis media and mastoiditis. J. C. Scal (*N.Y. Sta. J. Med.*, 1939, 39, 1790—1794).—Surgical exploration and X-ray examination showed extension of the inflammation, often unsuspected, in 12 cases of mastoiditis in whom sulphanilamide therapy had caused the temp. to fall to normal within 24 hr., and all toxic symptoms and mastoid tenderness to disappear.

E. M. J.

Binaural phenomenon of bone conduction—a tuning-fork test. A. B. Alexander (*J. Laryngol. Otol.*, 1942, 57, 511—415).—While testing for bone conduction it was found that most normal subjects hear the tuning-fork note as louder by bone than by air conduction so long as the tuning fork is vibrating strongly. This is called a "pseudo-negative Rinne." This phenomenon cannot be elicited in cases of complete unilateral deafness with the other ear normal. This finding suggests that the pseudo-negative Rinne is due to stimulation of both ears if the tuning-fork placed on one mastoid is vibrating strongly enough. Stimulation of both ears gives the sensation of a louder sound than stimulation of one alone.

K. T.

Degeneration and absorption of organ of Corti in animals. M. H. Lurie (*Ann. Otol. etc., St. Louis*, 1942, 51, 712—717).—Observations on the process of degeneration of Corti's organ in guinea-pigs are described. Degeneration was produced by (1) surgical damage to the cochlea, (2) exposure to tones of an intensity high enough to damage or displace the organ of Corti, and (3) inherited deafness. In (1) the degeneration of the organ at the site of lesion is coincident with an ingrowth of fibrous tissue from the scala media, tympani, and vestibuli, which become vascularised. In those parts of the cochlea not directly affected the organ of Corti degenerates and may be absorbed without any accompanying fibrosis. In (2) the organ of Corti may be thrown right off the basilar membrane and will then quickly degenerate and disappear. Progressive degrees of degeneration and adsorption occur with proximity to the site of lesion; there is no fibrosis or vascularisation. The degeneration appears to consist of a disintegration of the hair cells and their supporting structures resulting in a Corti's organ of more or less normal outline but with cells that have become completely disorganised. Such an organ would completely disappear later, leaving a single layer of cells covering the basilar membrane. There was no evidence of endothelial cells in the scala media, scala tympani, scala vestibuli, or stria vascularis. In (3) ("waltzing guinea-pig") the degeneration was of the same type as in (2). It is suggested that the disintegration of the cells in the organ of Corti directly affected liberates toxic substances from the scala media which then affect the neighbouring organs. This would explain the gradual spreading of the degeneration throughout the cochlea which may persist for long periods after the actual injury. (5 photomicrographs.)

K. T.

Audiometry. E. Lüscher (*Schweiz. med. Wschr.*, 1942, 72, 325—329).—The advantages of audiometric acoustic tests are reviewed.

A. S.

Ménière's disease. C. I. Johnson (*Ann. Otol. etc., St. Louis*, 1942, 51, 676—688).—True Ménière's syndrome is hearing loss which is usually, but not always, accompanied by some or all of the following symptoms: vertigo, staggering, uncertain gait, rotations and falling, etc. These are all due to disturbances in the inner ear. Although deafness is a const. symptom, it may not be the first, which is usually vertigo. Nystagmus is a useful diagnostic sign. Treatment with large doses of KCl often gives good results in mild cases. This is thought to be due partly to the diuretic effect which increases the removal of water and NaCl from the body, and possibly partly to improved conduction of impulses in the VIIIth nerve. Section of the VIIIth nerve always relieves the vertigo and associated symptoms but not the tinnitus. Deafness is of the nerve type and cannot be treated.

K. T.

Vasomotor rhinopathy and related neuro-vascular disturbances of nose and nasal cavities. E. Lüscher (*Schweiz. med. Wschr.*, 1942, 72, 432—437).—A lecture.

A. S.

Regeneration of lingual papillæ and taste buds after cautery. L. B. Arey (*Quart. bull. Northwest Univ. Med. School*, 1942, 16, 100—104).—Areas of the dog's tongue, destroyed throughout the whole layer of mucosa by cauterisation, are re-epithelialised within 1 month; the epithelium is less cornified than normal mucosa. The new covering contains regenerated taste buds. Filiform and fungiform papillæ form subsequently, the new filiform papillæ are numerous, of typical form and densely packed. The no. of fungiform papillæ is reduced.

A. S.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Permeability of capillaries as factor determining degree of hormonal activity. P. A. Wunder (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 35, 214—215).—Injection of testicular diffusing factor mixed with thyrotropin in 12-day-old chicks decreases the thyroid response to the thyrotropin. The difference is attributed to more rapid absorption and elimination of the thyrotropin just as the thyroid response may be increased by addition to thyrotropin of Zn, which delays absorption. Hormonal reactions are suggested as a means of assaying diffusing activity. P. C. W.

Anxiety state in relation to hyperthyroidism. G. M. Beck (*N.Y. Sta. J. Med.*, 1939, 39, 1453—1459).—5 of 10 cases of anxiety states and hyperthyroidism subjected to thyroidectomy were made worse and no patient reported permanent improvement. E. M. J.

Intrathoracic goitre. C. P. G. Wakeley and J. H. Mulvaney (*Surg. Gynec. Obst.*, 1940, 70, 702—710).—In a series of 1265 thyroidectomies there were only 3 in which the goitre lay entirely within the thorax and 17 in which the major portion was intrathoracic. There was no difference between the histological appearance of the intrathoracic and cervical goitres. Toxic symptoms were present in 7 of the 20 intrathoracic cases. P. C. W.

Influence of blood extracts from normal, goitrous, and diabetic persons on heart rate of thyroidectomised rat. A. E. Meyer and E. A. Ferguson (*Endocrinol.*, 1942, 30, 158—165).—Dried alcoholic extract of dried blood given by mouth to thyroidectomised rats increases the heart rate when the blood is that of an untreated thyrotoxic patient, but not when the blood is from diabetic or non-toxic goitrous patients, or if I treatment has been given. V. J. W.

Effect of serum of patients with Graves' disease, myxoedema, and acromegaly on oxygen consumption of guinea-pig thyroid. C. Gallinini (*Endocrinol.*, 1942, 30, 166—170; cf. A., 1942, III, 309).—Serum from 4 patients with classic Graves' disease caused a fall in O_2 consumption; that from 5 patients with acromegaly, 4 with Graves' disease with eye symptoms only and no thyrotoxicosis, and 4 with untreated myxoedema caused a rise. In 2 cases of hypopituitarism O_2 consumption was normal. V. J. W.

Primary action of parathyroid hormone. A. H. Neufeld and J. B. Collip (*Endocrinol.*, 1942, 30, 135—141).—Parathyroid injections caused no change in serum-Ca of rats, cats, or dogs after nephrectomy or tying of renal vessels or ureters, or during anuria from posterior pituitary extract, or if serum- $PO_4^{'''}$ was kept const. by repeated injections of NaH_2PO_4 . Re-establishment of urine flow in a cat by section of the tied ureter was followed by the usual rise in serum-Ca. V. J. W.

Osteoporosis in Cushing's syndrome [due to adrenal neoplasms]. M. L. Sussman and B. Copleman (*Radiology*, 1942, 39, 288—292).—Osteoporosis of either or both skull and spine was seen in 6 of 7 cases of Cushing's syndrome with adenoma or carcinoma of the adrenal. In 4 cases there was also marked expansion of the lower ribs proximal to the costo-chondral junction with a callus-like appearance. E. M. J.

Rat ear as site for adrenal cortical grafts and subsequent ear-adrenalectomy. R. L. Croc (*Endocrinol.*, 1942, 30, 150—157).—Subcutaneous transplants into the pinna of the ear were successful in 50% of males and 7% of females. After subsequent removal of pinna and graft survival times exceeded those usually following adrenalectomy, indicating presence of accessory adrenal tissue in the body. V. J. W.

Subjective response of psychoneurotic patients to adrenaline and acetyl- β -methylcholine.—See A., 1943, III, 99.

Capacity of rats liver to inactivate deoxycorticosterone acetate. M. W. Burrill and R. R. Greene (*Endocrinol.*, 1942, 30, 142—145).—23-mg. pellets of deoxycorticosterone acetate caused survival and increase in wt. in 8 out of 12 adrenalectomised rats when implanted subcutaneously, but not when implanted into the mesentery. 81-mg. pellets caused survival and a small gain in wt. in 6 out of 18 such rats when implanted into the mesentery. V. J. W.

Globin-insulin. G. B. Andrews, W. A. Groat, A. V. Wood, and M. L. Jones (*N.Y. Sta. J. Med.*, 1940, 40, 913—917).—Report of 10 cases of diabetes mellitus controlled by a single injection before breakfast of 24—80 units of globin-insulin. The average blood-sugar levels 2 hr. after breakfast and lunch were reduced by 50 and 2 hr. after dinner increased by 8 mg.-% on changing from protamine-Zn- or cryst. Zn- to globin-insulin. E. M. J.

Disposal of glucose at high and normal blood-sugar levels under action of insulin. P. O. Greeley, H. E. Martin, and L. F. Hallman (*J. Clin. Endocrinol.*, 1942, 2, 590—594).—Following the same dose of insulin in 4 diabetic patients, 3 depancreatized dogs, and 3 depancreatized rabbits, the blood-sugar was maintained const. at normal (80—140 mg.-%) or high (300—600 mg.-%) levels by the intravenous administration of glucose solution by continuous drip. More glucose disappeared at the high sugar concn. This was not

fully accounted for by increased liver- or muscle-glycogen or by increased oxidation; the liver-glycogen was diminished.

P. C. W.

Reaction of thyroid gland of chicks to short treatment with thyrotropic hormone. P. A. Wunder (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 34, 207—208).—Young chicks were injected with thyrotropic extracts from beef or human pituitary glands. The injection was given in 2 parts at 15-min. interval and chicks were killed at intervals of 2—48 hr. after the last injection. There was an increase in the height of the follicular epithelium from 2.6 μ . to 10—11 μ .; the max. increase was attained 24 hr. after the injection and was the same as that produced on the 6th day if the total dose was divided into 5 daily doses. There was no increase in thyroid wt. Increasing the dose of thyrotropin injected increased the rate of increase in epithelial height but not the max. height attained. P. C. W.

Effect of B vitamins on liver-glycogen of thyroid-fed rats.—See A., 1943, III, 36.

Ultracentrifugal sedimentation of thyrotropic and gonadotropic principles of crude pituitary extracts. L. Levin, G. K. Smelser, D. H. Moore, and A. E. Sevringhaus (*Endocrinol.*, 1942, 30, 171—172).—The two principles and inert proteins can be conc. at the bottom of centrifuge tubes, all to an equal degree, if sufficient force is applied. The max. used was 156,000 g for 6 hr. V. J. W.

Adrenal and pituitary weights in rats with reduced glucose tolerance. V. V. Cole and B. K. Harned (*Endocrinol.*, 1942, 30, 146—149).—In both Yale (low glucose tolerance) and Wistar strains there are straight-line relations between body wt. and wts. of adrenals and pituitary. Adrenals of Yale males are heavier than those of Wistar males; there is no such difference in females. The ratio pituitary wt.: body wt. is the same for both strains in males, but in females is slightly smaller in the Yale than in the Wistar strain. V. J. W.

Effect of saline extract of anterior pituitary on glucose tolerance of rats. H. C. Harrison and H. E. Harrison (*Endocrinol.*, 1942, 30, 121—128).—In adult rats a diabetic type of glucose tolerance curve is found 24 hr. after an anterior pituitary injection, but after repeated injections the blood-sugar falls more rapidly than in controls. In month-old rats the diabetic type of curve did not occur, but repeated injections caused an increased glucose tolerance which gradually returned to normal after injections ceased. V. J. W.

Bioassay of growth hormone of anterior pituitary. W. Marx, M. E. Simpson, and H. M. Evans (*Endocrinol.*, 1942, 30, 1—10).—In normal female rats of 5—6 months, and in hypophysectomised rats of 28 days, there is a straight-line relation between log daily dose and gain in wt., the slope becoming steeper as the duration of the experiment increases from 5 to 20 days. One rat unit causes a daily gain in wt. of 2 g. in normal or 1 g. in hypophysectomised rats when given daily intraperitoneally. V. J. W.

Gonadotropic hormone in anterior pituitary of male and female rabbits during growth. A. J. Bergman and C. W. Turner (*Endocrinol.*, 1942, 30, 11—15).—Hormone content in chick units increased with body wt. up to max. wts. of 1.5 kg. in females and 2—2.5 kg. in males. Males contained about 70% more than females. V. J. W.

Gonad-stimulating potency of pituitary of hypothyroid young male rats. K. P. Stein and M. Lisle (*Endocrinol.*, 1942, 30, 16—24).—Thyroidectomy increased wt. of pituitary with decrease in no. and size of eosinophil cells. Basophils and chromophobes became vacuolated and increased. Injections of 1—3 glands into immature female mice had less effect than injections of glands from normal rats, both on no. of follicles and on luteinisation. V. J. W.

Renal function in diabetes insipidus.—See A., 1943, III, 126.

Antagonistic effects of posterior pituitary and cortico-adrenal hormones in epileptic subject.—See A., 1943, III, 99.

XII.—REPRODUCTION.

Reproduction of multimammate mouse (*Mastomys erythroleucus*). F. W. Brambell and D. H. S. Davis (*Proc. Zool. Soc. London*, 1941, 111, B, 1—38). J. D. B.

Genitalia and reproduction of some African bats. L. H. Matthews (*Proc. Zool. Soc. London*, 1942, 112, B, 289—346). J. D. B.

Reproduction in *Felis silvestris grampia*. L. H. Matthews (*Proc. Zool. Soc. London*, 1941, 111, B, 59—77).—An account, based on 18 males and 14 females, of the reproductive activity of the Scottish wild cat. J. D. B.

Hormones and sexual maturity of lampreys. F. G. W. Knowles (*J. Exp. Biol.*, 1939, 16 535—547).—Cloacal modifications related to sexual maturity can be produced by mammalian pituitary injections in larvæ and immature adults while gonadal hormones act similarly in immature adults only. Absence of gonad changes in pituitary-injected larvæ indicates a direct action. D. M. Sa.

Oestrous cycle in illuminated ferrets. F. H. A. Marshall (*J. Exp. Biol.*, 1940, 17, 139—146).—Ferrets were placed in mirror-backed cages 1—22 ft. from a 1000-watt lamp or Hg-vapour lamp. Descent of the testes was induced in December. Female ferrets remained on heat much later in the year than normally. Large follicles and many interstitial cells were observed in the ovaries. Vitamin-D therapy did not produce similar results. D. M. SA.

New type of vaginoscope. O. G. Jones (*Vet. Rec.*, 1942, 54, 475, 494).—An illuminated vaginoscope for cattle made from a clear plastic. E. G. W.

Endocrine therapy in obstetrics and gynaecology. J. C. Burch (*Surg. Gynec. Obst.*, 1940, 70, 503—508).—Review and discussion. P. C. W.

Ovarian autografting for endometriosis. V. S. Counseller and D. H. Wrook (*Surg. Gynec. Obst.*, 1940, 70, 220—222).—The operation has been performed on 136 women during the years 1915 to date. Follow-up studies in 68 of the women indicate that the grafts were successful in 44% of cases. Multiple grafts were more successful than single ones. Abrupt menopausal symptoms are held in abeyance and the urinary excretion of oestrogen and gonadotropin may return to normal. P. C. W.

Effect of subcastrative Röntgen therapy on ovarian physiology. J. Rock, M. K. Bartlett, A. G. Gauld, and R. N. Rutherford (*Surg. Gynec. Obst.*, 1940, 70, 903—913).—27 cases of menstrual abnormality were treated by subcastrative doses of X-rays (usually 3 doses of 50—60 r.). Endometrial biopsy showed ovulatory cycles in 12 of 22 cases of anovulatory menstruation, 3 of whom became pregnant. No change followed treatment of 5 patients with normal ovulatory cycles who had sterility, dysmenorrhoea, hyper- or polymenorrhoea. Good effects are attributed to destruction of cystic follicles allowing development and maturation of a new crop of follicles. P. C. W.

Syndrome characterised by primary ovarian insufficiency and decreased stature. F. Albright, P. H. Smith, and R. Fraser (*Amer. J. med. Sci.*, 1942, 204, 625—646).—11 cases of a syndrome associated with life-long ovarian insufficiency are described; it is characterised by infantile sexual organs, no breast development, moderate axillary and pubic hair, absence of other secondary sex characteristics, short stature, frequent congenital anomalies, especially webbing of the neck and coarctation of the aorta, late union of the epiphyses often accompanied by epiphysitis, osteoporosis, precocious senility, excess of follicle-stimulating hormone and decrease of 17-ketosteroids in the urine. The differential diagnosis from pituitary dwarfism is given in detail. C. J. C. B.

Ovarian lesions simulating appendicitis. C. C. Guy and A. J. Rotondi (*Surg. Gynec. Obst.*, 1940, 70, 1100—1104).—Among 2417 pre-operative diagnoses of appendicitis, 52 were shown to be due to rupture of cystic Graafian follicles or corpora lutea. 77% of these cases complained of pain on the 21st—27th of the cycle and 23% on the 14th day; these are attributed to rupture of the cystic corpora and follicles respectively. P. C. W.

Effects of oestrone, diethylstilbæstrol, and testosterone on in-vitro response of spayed rat uterus to pitocin. G. J. Duffner and R. W. Whitehead (*J. Pharm. Exp. Ther.*, 1941, 73, 296—303).—Uterus muscle of animals castrated 15 months ago showed weak spontaneous activity and the response to pitocin was slight. Pretreatment of similar animals with oestrone caused only slight degree of recovery of spontaneous activity and of the ability to respond to pitocin. Uteri of animals castrated 2—3 months showed motility resembling that of uteri of normal animals in diæstrus; the uteri of animals treated previously with oestrone responded well to pitocin. Treatment of the castrated animals with diethylstilbæstrol restored uterine motility to normal and pitocin produced spastic contraction. The uteri of castrated animals given testosterone showed irregular rhythm and slow contraction rate; pitocin did not increase tone but produced increase in amplitude and duration of contractions. H. H. K.

Cyclical vaginal response to daily administration of oestradiol in castrated rats. E. B. del Castillo and G. di Paola (*Endocrinol.*, 1942, 30, 48—53).—Threshold dose of oestradiol causing cyclical vaginal response in spayed rats is lowered by adrenalectomy and raised by deoxycorticosterone or progesterone. It is not affected by hypophysectomy. V. J. W.

Indications for oestrogen therapy [and vaginal smear test]. S. H. Geist and U. J. Salmon (*N.Y. Sta. J. Med.*, 1939, 39, 1759—1767).—A review. E. M. J.

Effect of stilbæstrol on mammary gland of mouse, rat, rabbit, and goat. A. A. Lewis and C. W. Turner (*J. Dairy Sci.*, 1941, 24, 845—860).—Stilbæstrol was an active mammary duct growth factor in rats, mice, and rabbits. In male and spayed virgin female mice low dosages caused extensive proliferation in 2—4 weeks. Oral administration was only $\frac{1}{2}$ as effective as subcutaneous injection. Treated male rabbits responded well to lactogen after 90 days but normal females tended to lactate on stilbæstrol alone. J. G. D.

Physiological basis for use of oestrogens in veterinary practice.

I. Clinical application of stilbæstrol dipropionate. C. Brownlee.
II. Use of stilbæstrol in the field. G. N. Gould. **III. Two cases of mummified foetus treated with stilbæstrol.** K. Stuart (*Vet. Rec.*, 1942, 54, 104—106). E. G. W.

Use of stilbæstrol dipropionate in cattle practice (*Vet. Rec.*, 1942, 54, 103—104).—Report of a meeting to consider the use of stilbæstrol dipropionate in anæstrus in the heifer and cow, retention of a mummified foetus or foetal membranes, and pyometra. E. G. W.

Use of stilbæstrol dipropionate. L. G. Anderson and R. R. Bugg (*Vet. Rec.*, 1942, 54, 249).—Records of cases of anæstrus, mummified foetus, and pyometra in cows treated with stilbæstrol dipropionate, some with success. E. G. W.

Stilbæstrol and lactation. R. S. Cockburn (*Vet. Rec.*, 1942, 54, 467).—Lactation was induced in a 3-year barren goat by 3 injections of stilbæstrol dipropionate (7, 5, and 5 mg.). E. G. W.

Stilbæstrol in pyometra in bitch. M. Watson (*Vet. Rec.*, 1942, 54, 489).—Injection of 0.5 mg. followed by 2 doses of 1 mg. of stilbæstrol dipropionate caused emptying of the uterus in pyometra in a bitch. E. G. W.

Use of stilbæstrol in pyometra in bitch. (A) R. C. G. Hancock. (B) R. J. Smith-Leask (*Vet. Rec.*, 1942, 54, 507).—(A) Doses of 5 mg. and 7 mg. of stilbæstrol dipropionate were useless in the treatment of pyometra in a bitch.

(B) A case is described in which 5 mg. caused discharge of the uterine contents followed by recurrence. E. G. W.

Stilbæstrol and hydrops amnii. S. V. Gollidge (*Vet. Rec.*, 1942, 54, 270).—25 mg. of stilbæstrol dipropionate caused expulsion of the foetal fluids in a cow with hydrops amnii and 7½ months pregnant. E. G. W.

Expulsion of mummified foetus [by stilbæstrol in cows]. J. G. Murray and R. R. Robertson (*Vet. Rec.*, 1942, 54, 484).—Doses of 20, 30, and 40 mg. of stilbæstrol dipropionate failed to cause expulsion of a mummified foetus in a cow; 60 mg. caused dilatation of the os and allowed manual removal of the foetus. The injections produced an average daily milk yield of 2 gallons over a period of 11 weeks. E. G. W.

Diethylstilbæstrol. Council on Pharmacy and Chemistry (*J. Amer. Med. Assoc.*, 1942, 119, 632—636).—A review, and acceptance in N.N.R. C. A. K.

Inhibition of painful breast engorgement in the puerperium with stilbæstrol. M. L. Berlowe (*Yale J. Biol. Med.*, 1942, 14, 631—634).—Painful engorgement was absent in 14 of 16 cases treated with 10 mg. of stilbæstrol by mouth on the day of delivery followed by 3 daily doses of 5 mg. F. S.

Lingual administration of female sex hormone. K. Miescher and P. Gasche (*Schweiz. med. Wschr.*, 1942, 72, 490—492).—Lingual administration of alcoholic solutions of oestradiol in daily doses of 0.25—50 µg. for 10 days in ovariectomised rats is 10—20 times more potent in increasing the wt. of the uterus than administration by stomach tube. Lingual administration was also more effective using the oestrus test (the uterus test is more sensitive). The lingual effects are similar to those obtained by percutaneous or subcutaneous administration. A. S.

Induction of oestrus in the cow with oestradiol benzoate. J. Anderson (*Vet. Rec.*, 1942, 54, 318).—Oestradiol benzoate (5 mg.) and an A.P.L. prep. (pregnyl) produce oestrus and ovulation in anæstrous cows. E. G. W.

Temporary ovarian damage produced in baboons by single administrations of oestradiol benzoate and progesterone in first part of cycle. J. Gillman (*Endocrinol.*, 1942, 30, 61—70).—A single dose of 5 mg. of oestradiol benzoate causes perineal deturgescence by producing atrophy of Graafian follicles. Repeated doses of 1 mg. maintain turgescence though causing follicular atrophy. Single injections of 5—20 mg. of progesterone cause perineal deturgescence and cystic ovaries. Combinations of the two hormones cause both follicular atresia and cystic degeneration with occasionally bleeding. V. J. W.

Development of cutaneous arterial "spiders" and palmar erythema in persons with liver disease and their development following administration of oestrogens.—See A., 1943, III, 36.

Effects on perineal swelling and on menstrual cycle of single injections of combinations of oestradiol benzoate and progesterone given to baboons in first part of cycle. J. Gillman (*Endocrinol.*, 1942, 30, 54—60).—5 mg. of oestradiol benzoate with 10 mg. of progesterone lengthened the cycle by 17 days; smaller doses usually shortened it. Bleeding caused by 20 mg. of progesterone alone is inhibited if 5 mg. of oestradiol benzoate is given at the same time, but 10 mg. of progesterone does not modify the effect of 5 mg. of oestradiol benzoate. Smaller doses of both hormones caused ovarian inhibition greater than after oestradiol alone. V. J. W.

Rôle of progesterone and local trauma in production of cystic-glandular changes in endometrium and hypertrophy of myometrium.

H. Selye, A. Borduas, and G. Masson (*Endocrinol.*, 1942, 30, 71—73).—Spayed rats received 20 μ g. of α -oestradiol daily for 6 days followed by 15 mg. of progesterone daily for 4 days. A silk thread passed through the lumen of one uterine horn caused cystic-glandular changes in the endometrium and hypertrophy of the myometrium of that horn. V. J. W.

Clinical determination of pregnanediol excretion. H. Wooster (*J. Clin. Endocrinol.*, 1942, 2, 588—589).—Brief review and discussion. P. C. W.

Does stimulation of germinal epithelium of immature male rats occur after treatment with gonadotropic hormones, augmentative substance, androgens, and vitamin-E? B. Zondek, A. Brzezinski, and F. Sulman (*Endocrinol.*, 1942, 30, 25—31).—In 20-day-old rats, receiving ample vitamin-E, complete spermatogenesis was not produced in 10 days by gonadotropins from male urine, pregnancy urine, menopause urine, pregnant mare serum, or anterior pituitary, either alone or in combinations with cock serum. Spermatogenesis was slightly accelerated if testosterone was given with cock serum and gonadotropin from anterior pituitary or male urine only. V. J. W.

Pregnanediol excretion in female pseudohermaphroditism. V. E. Genitis and I. P. Bronstein (*J. Amer. Med. Assoc.*, 1942, 119, 704—706).—3 cases were studied. Pregnanediol excretion in urine reached max. vals. of 10—18 mg. daily. It is suggested that an adrenal cortex adenoma (found in one case at operation) or hyperplasia may produce progesterone. C. A. K.

Liver function in menstruation.—See A., 1943, III, 36.

Difference in response of mice of different strains to human pregnancy urine. K. P. Hummel (*Endocrinol.*, 1942, 30, 74—76).—Of various strains examined, A strain was much less sensitive, and C57 brown and C57 black much more so, than others. V. J. W.

Erythema of palms associated with pregnancy. R. C. Lofgren (*Arch. Dermat. Syphilol.*, 1942, 46, 502—511).—3 cases are reported. Large doses of oestrogen were administered daily to a patient for 7 days four months after delivery. By the 7th day the palms had become more erythematous but were not as red as during the pregnancy. C. J. C. B.

Endocrine factors in toxæmia of pregnancy. J. J. Vorzimer, E. M. Rappaport, and E. G. Langrock (*N.Y. Sta. J. Med.*, 1940, 40, 666—672).—148 of 185 patients referred to a special antepartum endocrine clinic because of obesity, abnormal hair distribution, acromegaloïd features, or abnormal stature, had or developed toxæmia of pregnancy. E. M. J.

Toxæmias of pregnancy. H. W. Johnson (*Surg. Gynec. Obstet.*, 1940, 70, 513—516).—A discussion extending Young's hypothesis (A., 1943, III, 118) that eclampsia is due to placental infarction. It is suggested that tyrosine is formed and converted by enzymic or bacterial means into tyramine. Tyramine in the circulation in pregnancy normally only produces hypertension but in allergic or sensitive patients capillary spasm is also produced with full eclampsia. P. C. W.

Treatment of spontaneous, threatened, or habitual abortion. C. G. Collins, J. C. Weed, and J. H. Collins (*Surg. Gynec. Obstet.*, 1940, 70, 783—786).—Determinations of anti-proteolytic activity of the blood in normal non-pregnant women, pregnant women, and in cases of threatened or habitual abortion before, during and after vitamin-E therapy according to the method of Shute (cf. A., 1933, III, 745) gave inconclusive results. 24 cases of threatened abortion and 12 cases of habitual abortion were treated with wheat-germ oil and/or chorionic gonadotropin and/or progesterin and/or thyroid extract. 3 of the cases of threatened abortion had recurrence or symptoms on stopping wheat-germ oil therapy. The results are analysed and the val. of wheat-germ oil is supported. P. C. W.

X-Ray treatment of amenorrhœa and sterility. I. I. Kaplan (*N.Y. Sta. J. Med.*, 1939, 39, 1380—1383).—142 cases of amenorrhœa of 1 month—14 years duration in women aged 19—45 received 3—4 times 75—150 r. skin dose to each ovarian field. 104 cases received in addition X-rays to the pituitary and 6 to the thyroid. Menstruation was restored in 124 cases and 52 later became pregnant, producing eventually 50 normal children in 44 women, 1 ectopic pregnancy, and 1 abnormal child. 10 women had repeated pregnancies. E. M. J.

Sterility in cattle due to bursitis and salpingitis. L. E. A. Rowson (*Vet. Rec.*, 1942, 54, 74—75).—Adhesions were found in the ovarian bursa in 40 of 296 cattle. In 13 cases the adhesions were bilateral and advanced and probably caused permanent sterility. E. G. W.

Sterility in cow. S. Runge (*Vet. Rec.*, 1942, 54, 407—414).—A general account, dealing particularly with bovine sterility in North West Poland. E. G. W.

Infertility in Guernsey cattle. R. H. Smythe (*Vet. Rec.*, 1942, 54, 222—223). E. G. W.

Menstruation frequency and its relation to conception in dairy cattle. G. W. Trimberger (*J. Dairy Sci.*, 1941, 24, 819—823).—The

common belief that cows which menstruate a few days after service do not conceive is erroneous. Heifers menstruate more frequently than older cows. The data given do not suggest any effect of menstruation on breeding and conception. J. G. D.

X-Ray visualisation of soft tissues of normal and abnormal advanced pregnancy. W. Snow (*N.Y. Sta. J. Med.*, 1939, 39, 2050—2053).—200 c.c. of air are introduced into both bladder and rectum. E. M. J.

Clinical diagnosis of pregnancy in bovines. J. W. Burgess (*Vet. Rec.*, 1942, 54, 79—81). E. G. W.

Chemical test for pregnancy in mare. T. M. Olbrycht (*Vet. Rec.*, 1942, 54, 81).—Cuboni's test (*Clin. Vet. Milan.*, 1937, 60, 375) gives 90% of correct results at 100 days, 98% at 120 days, and almost 100% by the 150th day of gestation. Stallion urine gives a positive result. The test cannot be used in the cow. E. G. W.

Technique for pregnancy diagnosis and treatment of bovine infertility. G. N. Gould, S. L. Hignett, and H. W. Steele-Bodger (*Vet. Rec.*, 1942, 54, 69—74).—A simplified account with exact practical directions. E. G. W.

Uterine eosinophils and phases of the oestrous cycle in rat and mouse. R. M. May (*Compt. rend.*, 1942, 214, 573—575).—The no. of eosinophils alternates not only during the four phases of the cycle but also in the two phases proœstrus—œstrus and metaœstrus—diœstrus. In the rat the % of eosinophils varies from 100 during œstrus to 107 during proœstrus, and in the mouse from 90.6 to 109; during diœstrus it falls to 38 in the rat and to 0.6—19.0 in the mouse, whilst during metaœstrus it varies from 85 in the rat to 3.5 and 4.7 in the mouse. The no. of uterine eosinophils varies inversely as the no. of neutrophils in the vaginal mucous membrane. J. N. A.

Mammary gland development with mammogen I in castrate and hypophysectomised rat. A. A. Lewis, E. T. Gomez, and C. W. Turner (*Endocrinol.*, 1942, 30, 37—47).—Extracts of pregnant cow pituitary containing the lipin "mammogen I" (A., 1938, III, 37, 294) caused mammary growth in castrate male rats when given in small doses for 30 days or large doses for 6 days. Mammary growth was also caused in hypophysectomised male and female rats without any change in wts. of thyroids, ovaries, or uteri and with a decrease in wt. of adrenals. V. J. W.

Failure of steroid hormones to induce mammary growth in hypophysectomised rats. S. L. Leonard and R. P. Reece (*Endocrinol.*, 1942, 30, 32—36).—Deoxycorticosterone, testosterone, and oestradiol, either alone or in combination, do not induce new growth in the mammary glands of hypophysectomised rats, although testosterone shows the involution which follows hypophysectomy. Inunction of oestradiol over the mammary glands is also without effect. V. J. W.

Live weight of cow at various stages of lactation in relation to milk-energy yield. W. L. Gaines (*J. Dairy Sci.*, 1941, 24, 795—797).—Under comparable conditions, milk energy yield is proportional to the 1.07 power of the live wt. in the first month of lactation. Milk energy yield can be equated to aW^b (W = live wt.) but b varies from 0.28 to 1.49 according to the month of lactation. J. G. D.

Estimation of initial live weight at each lactation of dairy cows. W. L. Gaines, H. P. Davis, and R. F. Morgan (*J. Dairy Sci.*, 1941, 24, 983—992).—The "initial live wt." (within 31 days of calving) can be estimated by the formula $W = 0.342(G + g)^{1.83}$ where W = initial live wt. in lb., G is actual chest girth in in., and g is a correction for age and breed of cow. J. G. D.

Pubertal increase in responsiveness to androgen in male rat. C. W. Hooker (*Endocrinol.*, 1942, 30, 77—84).—Min. dose of testosterone causing recognisable vesicular growth in rats castrated at birth fell from 30 μ g. at 10 days to 5 μ g. at 40—60 days, rising again to 25 μ g. at 80 days. V. J. W.

Effect of sex hormones, separately and combined, in proliferation and hydration of combs and cloacæ of male chicks. I. L. Kosin and S. S. Munro (*Endocrinol.*, 1942, 30, 102—106).—2 mg. of testosterone propionate given in 3 doses over 10 days caused initial swelling with hyperæmia of the chick's cloaca with enlargement of the sex eminence. The same doses of oestradiol dipropionate caused a more progressive swelling of the cloaca and much greater enlargement of the sex eminence. Testosterone caused great increase in comb growth but oestradiol did not. All the stimulations were accompanied by increased water content. There was no synergism or antagonism between the two hormones. V. J. W.

Clinical reviews in andrologic endocrinology. I. Physiology, functional pathology, and diagnosis. R. L. Pullen, J. A. Wilson, E. C. Hamblen, and W. K. Cuyler (*J. Clin. Endocrinol.*, 1942, 2, 577—587).—Review of the causes and diagnosis of testicular dysfunction. P. C. W.

Use of male sex hormones and chorionic gonadotropin as growth-stimulating factors. R. S. Finkler, N. J. Furst, and G. M. Cohn (*J. Clin. Endocrinol.*, 1942, 2, 603—610).—Growth observations were made on 50 children receiving 100—75 i.u. of chorionic gonado-

tropan parenterally 2—3 times weekly for 2 months—2 years and on 15 children and adolescents receiving injections of 10—25 mg. of testosterone propionate twice weekly for 3—6 months. 62% of the children given chorionic gonadotropin had an increased growth rate, 30% a maintained growth rate, and 8% a decreased growth rate; only 2 of the cases showed an advance in bone age. 13 of the testosterone-treated children showed advanced growth rate, 1 a maintained growth rate, and 1 a lowered growth rate.

P. C. W.

Effect of testosterone on female rats. J. R. Groome (*J. Exp. Biol.*, 1940, 17, 164—167).—Female rats were injected with 500 µg. of testosterone propionate daily for 8 days and then caged with males. Œstrus was delayed by 6—12 days and pregnancy or recurrent pseudopregnancy followed.

D. M. Sa.

Effects of testosterone acetate and propionate and of oestradiol dipropionate on resistance of rats to evipal etc.—See A., 1943, III, 138.

Effects of castration on prawns. H. G. Callan (*J. Exp. Biol.*, 1940, 17, 168—179).

D. M. Sa.

Development of prostatic hyperplasias. C. L. Deming (*Surg. Gynec. Obstet.*, 1940, 70, 588—594).—Prostate sections have been cut from autopsy material routinely during 5 years. The early phases of prostatic overgrowth are found in the muscular walls of the posterior urethra. The benign overgrowth passes through two phases: development of fibro-muscular mass from the intramuscular stroma of the posterior urethra; and the invasion of the fibromuscular nodule by the epithelium of a prostatic duct. This epithelial proliferation develops into prostatic glands; ducts of normal appearance grow over the nodule so that the final lesion appears glandular. The primary fibromuscular nodule resembles a fibromyoma of the uterus and may be derived from a remnant of Muellerian duct musculature. The overgrowth is hyperplastic, not hypertrophic.

P. C. W.

Prostatitis—cause of acute or recurrent abdominal pain. H. Freund (*Ann. int. Med.*, 1942, 17, 41—44).—Abdominal pain was frequently caused by prostatitis and disappeared following prostate treatment.

A. S.

Phosphatase of prostate.—See A., 1943, III, 143.

Preservation of bovine spermatozoa in yolk-citrate diluent and field results from its use. G. W. Salisbury, H. K. Fuller, and E. I. Willett (*J. Dairy Sci.*, 1941, 24, 905—910).—An equal mixture of m./15 Na citrate and egg yolk (at pH 6.75) was as good as a $\text{PO}_4^{'''}$ -egg yolk diluent for preserving the motility of spermatozoa for 2 or 4 days and superior after 6 days or longer. No differences in fertility were found. The citrate mixture dispersed the fat etc. in the yolk better than did the $\text{PO}_4^{'''}$ mixture.

J. G. D.

New diluent for bovine semen. C. E. Knoop (*J. Dairy Sci.*, 1941, 24, 891—892).—Gelatin (1%) improved the effectiveness of the usual $\text{PO}_4^{'''}$ -egg yolk diluent.

J. G. D.

Biology of human spermatozoa. C. A. Joël (*Schweiz. med. Wschr.*, 1942, 72, 440—441).—Human spermatozoa showed good motility in the vagina 25 min. after cohabitation; they were immobile after 60 min. In the cervix, good motility was found after 40 hr.; they were immobile after 48 hr. Spermatozoa obtained from the vagina 5 min. after cohabitation remained mobile for 16 hr. at 18°, those from the cervix after 55 min. remained mobile for 10 hr. Mobile spermatozoa were found in the corpus uteri up to 25 hr. after cohabitation.

A. S.

Clinical significance of pH of bull semen. J. Anderson (*Vet. Rec.*, 1942, 54, 317—318).—The pH of bull semen was determined by the glass electrode. The mean pH of 30 samples from 15 bulls with epididymitis was 7.618 ± 0.070 ($s = 0.390$) with a range of 6.53—8.39. In 6 bulls with small testes it was 7.73 (7.01—8.02); no spermatozoa were present in these ejaculates. Other data for bulls with abnormal testes are given. In general the semen of fertile bulls is acid, that of sterile bulls is alkaline.

E. G. W.

XIII.—DIGESTIVE SYSTEM.

Gastroenterology. C. M. Jones (*Arch. intern. Med.*, 1942, 70, 585—685).—Review of recent literature.

C. A. K.

Simmonds' disease. Differentiation from anorexia nervosa.—See A., 1943, III, 112.

Salivatory motor nuclei in monkey.—See A., 1943, III, 98.

Severe vomiting in small infants. E. Freudenberg (*Schweiz. med. Wschr.*, 1942, 72, 405—407).—A lecture.

A. S.

Gastro-intestinal section—Army general hospital. A. A. Hall (*Amer. J. digest Dis.*, 1942, 9, 389—392).—A description of the organisation of gastro-intestinal section of the Lawson General Hospital (138 beds).

N. F. M.

Treatment of intestinal disorders in the military forces. L. C. Gatewood (*Amer. J. digest Dis.*, 1942, 9, 359—361).—A lecture.

N. F. M.

Stomach and small intestine in infants. J. S. Bouslog (*Radiology*, 1942, 39, 253—260).—Anatomical and roentgenological studies of the stomach and small intestine during foetal life and in the neonatal period were made. The stomach of a 3-month-old foetus already possesses the gross anatomical characteristics of the adult organ; its musculature at birth, except for the pylorus, is less developed than the mucosa; its position was high, the lower limit lying above the 3rd lumbar vertebra. The structure of the mucosal folds changed its character at the jejuno-ileal junction at birth.

E. M. J.

Effect of vitamin-B₁ on secretion and motor activities of stomach. B. Wood, B. Splatt, and I. Maxwell (*Med. J. Austral.*, 1942, II, 263—268).—There was no effect on gastric secretion in 40 patients. The emptying time was shortened in patients whose gastric emptying time was longer than normal. There was no influence on emptying time in patients whose emptying time was normal or less than normal.

F. S.

Influence of glucose on response of human stomach to test meals. H. Shay, J. Gershon-Cohen, S. S. Fels, and H. Siple (*Amer. J. digest Dis.*, 1942, 9, 363—367).—Studies with a double-lumen stomach tube on 11 human subjects are reported. Intra-duodenal glucose solutions lower gastric acidity, but the effect is due more to osmotic changes than to hyperglycaemia.

N. F. M.

Efficacy of drip method in reduction of gastric acidity. A. Cornell, F. Hollander, and A. Winkelstein (*Amer. J. digest Dis.*, 1942, 9, 332—338).—Experiments on 38 patients with peptic ulcer under treatment by the continuous drip method showed that good control of intra-gastric pH was obtained with milk- NaHCO_3 , $\text{Al}(\text{OH})_3$ gel, or AlPO_4 gel. The method was ineffective in cases of pyloric obstruction.

N. F. M.

Relationship between gastric acidity and calcium. F. C. Val Dez and J. Sendroy, jun. (*Amer. J. digest Dis.*, 1942, 9, 367—371).—Experiments on 8 male students after histamine stimulation showed a positive correlation between the pH and Ca content of the gastric juice. This indicates a variable dilution of parietal HCl with non-parietal fluids.

N. F. M.

Effect of oral administration of amino-acid mixture on gastric acidity. J. S. Levy and K. A. Siler (*Amer. J. digest Dis.*, 1942, 9, 354—356).—Administration of "amigen" (a proprietary casein hydrolysate) to normal students in doses of 30 c.c. in water was effective in most cases in raising gastric pH to 3.5 or more. There are no side effects and the prep. is suggested for trial in peptic ulcer, even in the presence of bleeding.

N. F. M.

Preparation and properties of urogastrone. J. S. Gray, E. Wic-zorowski, J. A. Wells, and S. C. Harris (*Endocrinol.*, 1942, 30, 129—134).—Details are given of extraction and purification to yield a product which is active in 0.2-mg. doses. It is insol. in ether, CHCl_3 , benzene, and light petroleum, sol. in methyl alcohol and ethylene glycol, and very sol. in dil. acetone or pyridine. The active agent is neither a protein nor a polypeptide but probably a base. It causes some inhibition of gastric motility provided that the vagi are intact, and inhibits pancreatic and biliary, but not salivary, secretion. (Cf. A., 1940, III, 415.)

V. J. W.

Chemical structure of fats and gastric inhibition. H. C. Tidwell and E. S. Cameron (*Johns Hopkins Hosp. Bull.*, 1942, 70, 362—369).—Feeding experiments on cats, rats, and man showed that the more unsaponified is the fat, the greater is the reduction in gastric acidity, and the longer the fat retention by the stomach. There was no linear relation between I val. and gastric inhibition. A parallelism between absorption of, and inhibition by, a given fat was noted. Absorption from the duodenum is a pre-requisite for gastric inhibition, rather than any physical property of the fat itself. The purpose of gastric inhibition is briefly discussed.

T. F. D.

Follow-up results in sub-total gastric resection for ulcer. R. E. Church and J. W. Hinton (*Amer. J. digest Dis.*, 1942, 9, 317—321).—A statistical analysis of 104 cases. 64 were cured, 24 benefited, 9 unimproved, and 7 lost sight of. The most frequent causes of poor results were failure to remove sufficient gastric mucosa or to remove the ulcer completely.

N. F. M.

Obstructed peptic ulcer. S. A. Wilkinson (*Amer. J. digest Dis.*, 1942, 9, 321—324, 324—327).—A statistical analysis of 100 cases. Ratio of males to females was 3:1. When an obstruction has persisted for 3 months it will probably recur, and most women with obstruction ultimately require operation. Medical treatment should consist in gradual decompression by alternate feeding and drainage. A discussion on peptic ulcer surgery follows.

N. F. M.

Statistical evaluation of 103 patients with duodenal and 34 with gastric ulcer. M. Fuchs (*Schweiz. med. Wschr.*, 1942, 72, 415—421).—63% of the male patients were between 30 and 50 years old (23% of the women). 51% of the duodenal ulcer patients had pain on fasting, 29% immediately, 24% 1—2 hr., 7% 2—3 hr., and 2% later than 3 hr. after taking food. Of the cases with gastric ulcer, 24% had pain on fasting, 24 immediately, 18% 1—2 hr., 3% 2—3, and none later than 3 hr. after taking food. Vomiting was observed

in 44% of the duodenal and 50% of the gastric ulcer cases. 15% of the patients had hæmatemesis (13% of the duodenal, 24% of the gastric series). The benzidine reaction was negative in 49%, positive in 51% of all cases on hospitalisation, positive after 1 week's diet in 60% of the latter. 9 duodenal and 1 gastric ulcer patient had a blood-bilirubin above 1 mg.-%. Hypersecretion was found only in male duodenal ulcer patients. The average hæmoglobin concn. of all patients was 81%. Duodenal ulcer was clinically diagnosed in 96% and roentgenologically confirmed in 84% (the figures for gastric ulcer were 97 and 94% respectively). A. S.

Effect of histaminase on cinchophen ulcers produced in dogs. B. Slutzky, N. Dietz, M. E. Stoner, and B. J. O'Loughlin (*Amer. J. digest. Dis.*, 1942, 9, 352—353).—Treatment with histaminase had no effect on development of cinchophen ulcers in dogs. N. F. M.

Cinchophen gastric ulcers in chicks. G. Cheney (*Arch. intern. Med.*, 1942, 70, 532—557).—Cinchophen produces ulcers in the gizzards of chicks especially when the diet is deficient in the antigizzard erosion factor (which it is suggested should be called vitamin-U). Certain bile acids and salts prevent the development of deficiency and of cinchophen ulcers, probably by increasing the absorption of fat-sol. -U. Cinchophen probably produces its action by damaging the liver and interfering with elaboration and storage of the anti-ulcer factor. Clinical implications are discussed. C. A. K.

Current methods in management of peptic ulcer. V. C. Hunt (*Surg. Gynec. Obstet.*, 1940, 70, 319—327). P. C. W.

Problem for surgery in treatment of massive hæmorrhage of ulcer origin. C. S. Welch and A. M. Yunch (*Surg. Gynec. Obstet.*, 1940, 70, 662—665).—There were 11 deaths among 125 patients with ulcer hæmorrhage treated by conservative methods. P. C. W.

Phlegmonous gastritis. E. C. Cutler and J. H. Harrison (*Surg. Gynec. Obstet.*, 1940, 70, 234—240).—3 cases are described. P. C. W.

Acidity and gastritis associated with gastric carcinoma. R. Schindler and W. M. Smith (*Amer. J. digest. Dis.*, 1942, 9, 340—342).—A gastroscopic and histological study of the un-invaded gastric mucosa in 48 cases. Chronic gastritis was definitely present in 38 cases, and absent in 4. Chronic gastritis is therefore not the invariable cause of an acidity in gastric carcinoma. N. F. M.

Acid factor in duodenal ulcer as evaluated by acidity and neutralising ability in duodenal bulb. J. F. Berk, J. E. Thomas, and M. E. Rehfuß (*Amer. J. digest. Dis.*, 1942, 9, 371—375).—Observations of gastric and duodenal pH were made in 8 dogs and 45 human subjects. The normal duodenum has considerable neutralising capacity which is impaired in patients with duodenal ulcer. Gastric and duodenal pH are not closely correlated. Alkali therapy has a small temporary effect on duodenal pH. N. F. M.

Re-establishment of the gastro-intestinal passage after gastric resection. E. Polya (*Surg. Gynec. Obstet.*, 1940, 70, 270—290).—Description and discussion of technical procedures. P. C. W.

Relationship between gastro-duodenal motility phases and symptoms associated with duodenal ulcer in man. T. L. Patterson and D. J. Sandweiss (*Amer. J. digest. Dis.*, 1942, 9, 375—381).—21 synchronous gastro-duodenal motility studies on 4 cases of duodenal ulcer are presented. Ulcer pain was only experienced during periods of active duodenal motility. N. F. M.

Non-functioning gastro-enteric stoma. Diagnostic study of 62 surgically demonstrated cases. G. B. Ensternan, B. R. Kirklín, and C. G. Morlock (*Amer. J. digest. Dis.*, 1942, 9, 313—317).—The condition usually occurs in males after gastro-jejunostomy for duodenal ulcer. Marginal ulcer or gastro-jejunitis was demonstrated in 48 patients, mechanical obstruction (volvulus on adhesions) in 8, and no abnormality could be found in 6 cases. 48 cases had gastric retention, but in only $\frac{1}{3}$ of these were the symptoms severe. N. F. M.

Surgical treatment of duplications of alimentary tract; enterogenous cysts, enteric cysts, or leum duplex. W. E. Ladd and R. E. Gross (*Surg. Gynec. Obstet.*, 1940, 70, 295—307).—18 cases are described, 5 in detail. P. C. W.

Decompression in treatment of intestinal obstruction. C. G. Johnston (*Surg. Gynec. Obstet.*, 1940, 70, 365—369).—The method is advocated on the basis of the results obtained in 63 cases. P. C. W.

Pancreas; small intestine. C. G. Sutherland (*Amer. J. med. Sci.*, 1942, 204, 769—779).—A radiological review. C. J. C. B.

Pancreatic osteodystrophy.—See A., 1943, III, 78.

Adrenalectomy and fat absorption. L. A. Bavetta and H. J. Deuel, jun. (*Amer. J. Physiol.*, 1942, 136, 712—715).—Adrenalectomy in rats decreased the rate of adsorption of hydrogenated cottonseed and corn oils, did not influence the absorption of tributyrin or Na butyrate, and caused larger amounts of fatty acids to accumulate in the intestines. This suggests that absorption of long-chain, but not water-sol., fatty acids is dependent on adrenal activity. T. F. D.

Effect of adrenalectomy on absorption of hydrogenated cottonseed oil etc.—See A., 1943, III, 109.

Intestinal absorption of amino-acid mixture in patients with chronic idiopathic ulcerative colitis and enterocolitis. L. Zetzel, B. M. Banks, and E. Sagall (*Amer. J. digest. Dis.*, 1942, 9, 350—352).—Absorption of an enzymic hydrolysate from closed upper jejunal loops was impaired in 4 out of 5 cases of ulcerative colitis, which may thus affect the whole intestinal tract. N. F. M.

Testing enteric coatings. K. Lark-Horovitz and H. R. Leng (*J. Amer. Pharm. Assoc.*, 1942, 31, 99—102; cf. A., 1941, III, 512).—The method described is based on the use of capsule fillings containing radioactive NaCl and determination of the location of the capsule by a Geiger-Müller counter; absorption is measured by the radioactivity of the hand. Curves are given for the uptake of radioactive Na from the stomach and small intestine. The results obtained for the efficacy of enteric coatings are in agreement with those of Goorley and Lee (A., 1938, III, 914) by the X-ray method. F. O. H.

Relation of food constituents to intestinal flora [and non-specific ulcerative colitis]. M. L. Bodkin (*N.Y. Sta. J. Med.*, 1940, 40, 368—372). E. M. J.

Röntgenological appearance of colon in newborn. S. G. Henderson and W. W. Briant, jun. (*Radiology*, 1942, 89, 261—272).—A study of 105 infants. E. M. J.

Chronic ulcerative colitis—allergy in its ætiology. A. H. Rowe (*Ann. int. Med.*, 1942, 17, 83—100).—The importance of food allergy in the causation of chronic ulcerative colitis is stressed. Complete relief of symptoms was obtained in 7 out of 14 cases by use of elimination diets. Milk heads the list of allergenic foods. Sulphanilamide administration was beneficial where secondary infection of the intestinal mucous membrane was present. A. S.

Acute appendicitis. I. Busch and A. H. Spivack (*Surg. Gynec. Obstet.*, 1940, 70, 241—245).—635 cases with a mortality of 2.2% are analysed. Chief factors contributing to mortality are: duration of disease before operation, use of cathartics, and diabetes. P. C. W.

Results of treatment in acute appendicitis. H. H. Davis and C. W. McLaughlin (*Surg. Gynec. Obstet.*, 1940, 70, 713—715).—179 cases of peritonitis secondary to acute appendicitis are analysed. P. C. W.

Production of experimental acute appendicitis (with rupture) in higher apes by luminal obstruction. O. H. Wangenstein and C. Dennis (*Surg. Gynec. Obstet.*, 1940, 70, 799—806).—Acute gangrenous appendicitis with perforation was produced in 3 chimpanzees by obstruction of the lumen of the vermiform appendix; the level of the intraluminal pressure rose to 106 cm. H₂O. The vermiform appendix of the gibbon bears less resemblance to that of the human and significant rises of intraluminal pressure did not occur after obstruction of the appendix in 2 gibbons. It is concluded that in man obstruction of the lumen of the appendix will cause gangrenous appendicitis and rupture owing to rise in intraluminal pressure due to the accumulation of secretion. P. C. W.

Relationship of hypothalamus to large bowel. D. Sheenan (*Amer. J. digest. Dis.*, 1942, 9, 361—363).—A review. The usual result of experimental hypothalamic stimulation is inhibition of peristalsis in the whole gastro-intestinal tract, and this mechanism may operate in Hirschsprung's disease. N. F. M.

Effect of hemicellulose hydrogels on character of the stool and bowel movement. R. Bauer (*Amer. J. digest. Dis.*, 1942, 9, 387—389).—The product investigated absorbed and held 10—20 times its wt. of water. The volatile fatty acids in the stool were increased in proportion to the dose of hemicellulose, but the increase was insufficient to explain the laxative action. N. F. M.

Fat excretion in human bowel. C. J. Nuñez and J. A. Barga (*Ann. int. Med.*, 1942, 17, 60—64).—The average total fat content of the faeces of normal subjects kept on a fat-free diet was 1.23%, that of subjects with an ileostomy or ileocolostomy 0.79%, and that of patients suffering from thrombo-ulcerative colitis 0.81%. It is suggested that the large intestine excretes more fat than the small intestine. A. S.

Utilisation of rumen contents as animal fodder. F. E. Moon and N. Varley (*Vet. Rec.*, 1942, 54, 359—360).—Details of the composition and digestibility of rumen contents from an abattoir. It is doubtful whether in view of their low nutritive val. the production of dried rumen contents would be worth while. E. G. W.

XIV.—LIVER AND BILE.

Multiple tests of hepatic function in gastroenteric malignancy; value of bromsulphalein, hippuric acid, and Van den Bergh reaction in detecting hepatic metastasis; evaluation of normality of hippuric acid test. M. Paulson and C. I. Wyler (*Ann. int. Med.*, 1942, 16, 872—878).—Hepatic functional tests were carried out in 25 patients with carcinoma of the stomach or colon, without clinical evidence of metastases. There was a correlation between presence of gross

hepatic metastases (as seen at subsequent operation) and the degree of bromsulphalein retention. No close correlation was found with the hippuric acid excretion although metastases were found in all 6 cases without hippuric acid excretion. The Van den Bergh reaction was of no diagnostic val. 16 out of 25 patients with no evidence of liver damage showed a lowering of hippuric acid synthesis below normal, although in 23 cases bromsulphalein excretion was normal. A. S.

Metabolism of pyruvate by liver from pantothenic acid- and biotin-deficient rats.—See A., 1943, III, 42.

Degradation of tyrosine and transamination in liver.—See A., 1943, III, 45.

Transamination in liver from rats fed butter-yellow.—See A., 1943, III, 39.

Induction of tumours with extracts from human livers and human cancers.—See A., 1943, III, 38.

Iodine numbers of liver-lipins in experimental liver damage. A. H. Ennor (*Austral. J. Exp. Biol.*, 1942, 20, 205—207; cf. A., 1942, III, 818).—The I vals. of total fat and fatty acids of guinea-pig liver are increased after administration of CCl_4 , and the increases are due to increased rate of oxidation of fat. Similar changes do not occur in the rat, and there is a species difference in the behaviour of the rat, dog, and guinea-pig following administration of CCl_4 . J. N. A.

Effect of sulphanilamide on the experimentally damaged liver.—See A., 1943, III, 48.

Oestrogenic content of cirrhotic livers. B. Tenney and F. Parker (*J. Clin. Endocrinol.*, 1942, 2, 293—295).—15 of 23 cirrhotic livers and 9 of 19 non-cirrhotic livers contained oestrogen. Absence or amount of oestrogen was not related to age, sex, or gonadal activity. Oestrogen was present in livers of some post-menopausal women and of some normal young men. P. G. W.

Fatty degeneration of liver in pregnancy. F. E. Whitacre and L. Y. Fang (*J. Amer. Med. Assoc.*, 1942, 118, 1358—1364).—Details are given of a non-fatal case of acute yellow atrophy of the liver in a pregnant woman. Chemical changes in the blood agreed well with the degree of fatty degeneration seen histologically in liver biopsy specimens taken on 2 separate occasions. C. A. K.

Simplified bedside test for latent jaundice. A. Leslie (*J. Lab. clin. Med.*, 1942, 28, 6).—A wheal is produced by pressure; a positive test for jaundice is characterised by yellow coloration of the wheal. C. J. C. B.

Modified Takata reaction in blood and cerebrospinal fluid [and liver disease]. H. Ucko (*J. Lab. clin. Med.*, 1942, 28, 17—27).—90% of patients with liver diseases had positive reactions; 86% of negative reactions were encountered in patients suffering from other illnesses. The reaction in the c.s.f. is more sensitive than the routine tests for protein. C. J. C. B.

Non-operative results in 90 patients with abnormal cholecystograms. S. D. Blackford, R. M. Bird, jun., and S. W. Casscells (*Ann. int. Med.*, 1942, 16, 1118—1122).—Conservative treatment over an average period of 6½ years was satisfactory in 48%. Satisfactory results were obtained in 52% of patients with poorly functioning cholecystograms, in 45% in those with non-functioning cholecystograms, and in 43% of those with cholelithiasis. A. S.

Pancreodochocystostomy and experimental production of gallstones. H. G. Aronson (*Arch. Path.*, 1942, 34, 843—848).—In these operated dogs, the alkaline pancreatic juice, aided by some stasis, caused gallstones rich in Ca. C. J. C. B.

[Excretion of urea in bile in] azotæmia. S. Cytronberg (*N.Y. Sta. J. Med.*, 1939, 39, 1316—1321).—The concn. of urea and non-protein-N in bile obtained by duodenal aspiration in man was lower than their concn. in normal plasma, 2—3 times as high in moderate azotæmia, and somewhat higher where blood-urea is over 200 mg.-%. The abs. amount of urea and non-protein-N excreted in the bile per day was 0.5 and 0.7 g. in normal cases and up to 6 g. in azotæmia. Similar findings were obtained in bile fistulæ in normal and azotæmic dogs. The concn. of urea and non-protein-N in saliva and gastric juice of man in normal and azotæmic cases, as well as in the juice from isolated intestinal loops of normal and azotæmic dogs, was lower than in the corresponding plasmas. E. M. J.

XV.—KIDNEY AND URINE.

Urea-clearance test. G. Sant (*Pharm. Tijds. Nederl.-Indië*, 1940, 17, 18—24).—The test is discussed and nomograms are given for the max. and standard blood-urea clearance vals. (Van Slyke) and for the body-surface correction for children of various heights and wts. S. C.

Glucose excretion by rabbit kidney. T. W. T. Dillon (*Nature*, 1942, 150, 492; cf. A., 1935, 1268; 1942, III, 394). E. R. S.

Renal changes in albino rat on low-choline and choline-deficient diets. K. Christensen (*Arch. Path.*, 1942, 34, 633—646).—In young

rats fed on choline-deficient diets acute renal changes develop with congestion, hæmorrhage, changes in peripheral cortical tubules, and hyaline casts. Recovery after the acute stage is usually complete. In the oldest recovered kidneys there is a reduction in the size of the glomeruli, slight local congestion, chronic granular degeneration, retention of casts, and abnormal dilatation of thin-walled tubules. (5 photomicrographs.) C. J. C. B.

Degradation of tyrosine and transamination in kidney.—See A., 1943, III, 45.

Effect of enzyme from kidney on solubility of calcium phosphate.—See A., 1943, III, 56.

Site of renin formation in kidney.—See A., 1943, III, 11.

Mechanism of arterial hypertension in experimental nephrosis. Effect of pregnancy on experimental renal hypertension in rats.—See A., 1943, III, 11.

Bilateral cortical necrosis of kidney. W. H. Sheldon and A. T. Hertig (*Arch. Path.*, 1942, 34, 866—874).—2 cases of bilateral cortical necrosis of the kidney following toxic separation of the placenta are described. The renal lesions consisted of degeneration in the wall of the afferent arteriole of the glomerulus associated with thrombosis. Retrograde extension of the process in the intralobular and interlobular arteries followed and led to ischæmic necrosis of the kidney. Similar vascular lesions and necrosis were found in the anterior pituitary, pituitary stalk, tuber cinereum, cæcum, and adrenal. (7 photomicrographs.) C. J. C. B.

Function of kidney in dehydration. D. A. K. Black, R. A. McCance, and N. F. Young (*Nature*, 1942, 150, 461).—4 men abstained from liquids for 4 days. Their body wt. fell by 4—7.2%, urinary vol. was reduced more than 50%, their inulin and urea clearances were reduced by 1—25% and 50%, and their diodone clearance was unchanged. The kidneys of a dehydrated adult are normal in the amounts of blood supplied and glomerular filtrate formed, comparing the reduction of inulin clearance due to dehydration with that seen in diabetic coma, alkalosis, hæmatemesis, and dehydration of infants with gastroenteritis. E. R. S.

Experimental modification of water and salt output in patients with diabetes insipidus. T. H. McGavack, L. J. Boyd, and P. Gelvin (*J. Clin. Endocrinol.*, 1942, 2, 551—559).—3 cases of diabetes insipidus are described. Decreasing the NaCl intake (1.5—3.9 g. daily) caused a decrease in vol. and concn. of the urine; high NaCl intakes (12—30 g. daily) produced the opposite effects. In 2 patients reduction in the water intake had little effect on urinary output, which, however, was reduced in the third patient. Daily injections of 10 mg. of α -estradiol dipropionate reduced the urinary output and caused retention of Na and Cl, but urinary sp. gr. was unchanged. These effects are due to changes in tubular resorption; glomerular filtration is unaffected. Deoxycorticosterone acetate (10 mg. daily) produced positive Na and Cl balance but did not affect urinary vol.; the salt retention was accompanied by rapid gain in wt. There was a marked negative balance of Na and Cl on stopping treatment. Amido-pyrine (2 g. daily) raised sp. gr. and Cl concn. of the urine, but had no effect on total Cl excretion. The antidiuretic effect of pitressin was most marked at a low salt intake. All effects are attributed to changes in tubular resorption of water or salt. P. C. W.

Mechanism of pentothal sodium antidiuresis. H. Silvette (*Arch. intern. Med.*, 1942, 70, 569—584).—Diuresis was induced in rats by intraperitoneal injection of 0.2% NaCl solution. Pentothal Na (6 mg. per 100 g. body wt.) inhibited this diuresis and its action was not affected by administration of water, NaCl, urea, theophylline, or deoxycorticosterone acetate although mercupurin partly counteracted the pentothal oliguria. Adrenaline antagonised completely the pentothal antidiuresis. Hypophysectomised rats past the polyuric stages showed oliguria after pentothal; in animals anaesthetised with pentothal injection of posterior pituitary solution caused a slight diuresis, but when posterior pituitary solution was given first, its antidiuretic effect was enhanced by pentothal. It is concluded that the antidiuretic action of pentothal Na is due to renal hypotension and not to hypothalamic stimulation or direct action on the kidney. C. A. K.

Urine dilution and concentration tests in adrenalectomised dogs.—See A., 1943, III, 23.

Benign albuminurias. G. M. Bull (*Clin. Proc.*, 1942, 1, 178—182).—A classification and pathogenesis are suggested and an illustrative case is described. P. C. W.

Factors affecting bicarbonate content, free carbon dioxide, and $[\text{H}^+]$ of urine. J. A. Barclay (*J. Physiol.*, 1942, 101, 257—264).—The urine from the two kidneys of the same animal (dog, cat) differs in pH and HCO_3^- content. Most of the experimental animals had, as a result of anaesthetisation and operation, an alkaline urine. Cutting down the blood supply to the kidney results in a further rise in HCO_3^- ; pH, free CO_2 , or both may also rise. Acid has not a very marked effect on HCO_3^- , pH, or free CO_2 . Na_2SO_4 leads to a marked fall in all three; urea to a smaller fall. The kidney excretes excess HCO_3^- by three methods: (1) maintenance of a high CO_2

tension; (2) rise in pH; (3) diuresis. The cat relies mainly on the last two and this may explain its inability to adapt to high altitudes.

J. A. C.

Urinary calcium, magnesium, and phosphorus. R. A. McCance and E. M. Widdowson (*J. Physiol.*, 1942, 101, 350—354).—Urinary excretion of Ca, Mg, and P by normal persons rises and falls with the intestinal absorptions, but to a smaller extent than absorption. A change in a normal person's urinary excretion is an indirect but valuable confirmation of a change in intestinal absorption. In the present case the function of the kidney is to regulate the stability of the internal environment.

J. A. C.

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

Use of measurable cause of death (hæmorrhage) for evaluation of ageing. H. S. Simms (*J. Gen. Physiol.*, 1942, 26, 169—178).—The need for a reliable experimental standard for the process of ageing is discussed. Chronological age is unsuitable owing to irrelevant changes and individual variability. Longevity does not indicate the rate of ageing because it depends not only on ageing but also on intrinsic death rate, individual variability, and the selective effect of experimental treatment on resistance to sp. diseases. The use of a known measurable cause of death, hæmorrhage, on rats of various ages reproduces the known mortality curve for rats and differentiates this measure of the ageing process from individual variation. A restricted diet has no effect on the ageing of rats. The application of this method in determining the nature of the ageing process is discussed.

J. N. A.

Familial occurrence of acrodermatitis atrophicans chronica. W. Director and S. M. Bluefarb (*Arch. Dermat. Syphilol.*, 1942, 46, 480—482).—Report of 2 cases with family tree.

C. J. C. B.

Inorganic composition of body fluids of invertebrates. J. D. Robertson (*J. Exp. Biol.*, 1939, 16, 387—297).—The perivisceral fluid of *Echinus esculentus* was in complete physicochemical equilibrium with sea-water. Body fluids of *Homarus vulgaris* and *Cancer pagurus* were in dynamic equilibrium.

D. M. Sa.

Marine products. XI. Occurrence of octadecyl alcohol, batyl alcohol, and cetyl palmitate in gorgonias. C. A. Kind and W. Bergmann (*J. Org. Chem.*, 1942, 7, 424—427).—Octadecyl alcohol, m.p. 56—57° (phenylurethane, m.p. 76°; 3,5-dinitrobenzoate, m.p. 77—5°), and batyl alcohol, m.p. 68—69° [α]_D²⁵ +1.4° in CHCl₃, have been isolated from the unsaponifiable matter of the gorgonia, *Plexaura flexuosa*. Cetyl palmitate, m.p. 50—51°, has been isolated from the acetone extract of the gorgonia, *Xiphogorgia* sp. M.p. are corr.

H. W.

Hæmolymph in sea-water mosquito larvae. L. C. Beadle (*J. Exp. Biol.*, 1939, 16, 346—362).—Larvæ of *Aedes detritus* from native saline waters could live in distilled water or in saline equiv. to 10% NaCl. A rise of 6% in NaCl concn. causes only 0.6% rise in hæmolymph NaCl. Salt diffuses in through the gut and may be excreted by the Malpighian tubes.

D. M. Sa.

Water and electrolyte exchange in polychætes. W. G. Ellis (*J. Exp. Biol.*, 1939, 16, 483—486).

D. M. Sa.

Analysis and minimum mol. wt. of β -lactoglobulin.—See A., 1943, II, 50.

XVII.—TUMOURS.

Factors affecting carcinogenesis. I. Effect of lipid solvents on tumour production by 3:4-benzpyrene. F. Dickens and H. Weil-Malherbe (*Cancer Res.*, 1942, 2, 560—566).—Subcutaneous injection into mice of solutions of benzpyrene in sesame oil or in arachis oil gave tumours in a large % of the animals. The same dose of benzpyrene dissolved in the liquid or solid fraction of mouse fat free from phospholipins induced only a few tumours. A mixture of fats and lipins from ox brain was equally effective in suppressing carcinogenic activity.

F. L. W.

Effect of climatic environment on genesis of subcutaneous tumours induced by methylcholanthrene and on growth of a transplantable sarcoma in C3H mice. E. W. Wallace, H. M. Wallace, and C. A. Mills (*J. Nat. Cancer Inst.*, 1942, 3, 99—110).—Tumours following methylcholanthrene injection appeared earlier in the mice kept at 92° F. than in mice kept at 65° F. A sarcoma transplanted into subcutaneous tissue grew rapidly in mice kept at the higher temp. but grew slowly or regressed in the animals kept in the cold room. When transplanted into muscle the growth was independent of external temp.

E. B.

Induction of cirrhosis of liver and of hepatomas in mice with carbon tetrachloride. J. E. Edwards and A. J. Dalton (*J. Nat. Cancer Inst.*, 1942, 3, 19—41).—An oral dose of 0.04 c.c. of CCl₄ in olive oil causes hepatic necrosis without having renal or lethal effects. Repeated dosing (23—58 doses) caused a great increase in the incidence of hepatomas. The tumours resembled those induced with aminoazo-toluene. Repeated administration of olive oil did not raise the incidence of tumours. The livers of CCl₄-treated mice contain a yellow pigment, possibly a conjugated lipin. (15 figures.)

E. B.

Effect of supplementary methionine or choline plus cystine on incidence of p-dimethylaminoazobenzene-induced hepatic tumours in rat. J. White and J. E. Edwards (*J. Nat. Cancer Inst.*, 1942, 3, 43—59).—The addition of 0.5% of cystine to the basal low-protein diet of rats increased the incidence of cirrhosis from 4 out of 30 to 21 out of 30. The addition of cystine to the diet containing dimethylaminoazobenzene increased the incidence of hepatomas from 60% to 96.5%. Methionine had a similar effect to cystine and the effect was not reduced by the addition of choline to the diet. The livers contained an Fe-containing granular pigment and a yellow lipin-like pigment. (11 figures.)

E. B.

Biological rôle of carcinogenic agents. B. Tokin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 35, 216—219).—Application of 4000 r. to a rat skin pedicle 5 days before an injury delays the appearance of epithelialisation and granulation until 23—31 days after the injury (control time 5—6 days). The rate of healing is normal 3 months after the X-irradiation. Doses of 600 r. do not produce the effect. Application of carcinogenic tar or 9:10-dimethyl-1:2-benzanthracene to the stump of the removed hind limb of the Siberian tetractyl newt (*Salamandrella keyserlingii*, Dyb.) prevents the regeneration of the limb; limb regeneration (which may be abnormal) slowly starts when treatment is stopped. Immersion of the hind limbs of 3 normal young newts into carcinogenic tar for 3 min. 9 times during 30 days caused reduction of the limbs, the extremities having disappeared almost to the girdle. On stopping treatment regeneration set in.

P. C. W.

Effect of carcinogens on small organisms. IV. Exposure of bacteria to high temperatures. R. R. Spencer and M. B. Melroy (*J. Nat. Cancer Inst.*, 1942, 3, 1—5).—Organisms have been repeatedly subcultured at higher temp. A strain of *Streptococcus hæmolyticus* can now withstand incubation at 45° for 24 hr. A strain of *Eberthella typhosa* which has been adapted to high temp. can be grown at 49° for 24 hr. The organisms cannot grow at the higher temp. continuously.

E. B.

Specific action of carcinogenic hydrocarbons in tissue cultures of mammals. M. A. Magat and E. G. Lebenzon (*J. Méd. Ukraine*, 1941, 11, 49—52).

M. K.

Relationship between dosage and rate of tumour induction by ultra-violet radiation. H. F. Blum, H. G. Grady, and J. S. Kirby-Smith (*J. Nat. Cancer Inst.*, 1942, 3, 91—97).—The time required to induce tumours in 50% of experimental mice decreases with increase (1) in the dose of radiation given and (2) in the no. of exposures given per week. The same total weekly dose is more effective if given in small frequent doses. Old mice seem to be more resistant than young mice. The induction time appears to be independent of the intensity of the radiation.

E. B.

Limits of accuracy in experimental carcinogenesis as exemplified by tumour induction with ultra-violet radiation. H. F. Blum, H. G. Grady, and J. S. Kirby-Smith (*J. Nat. Cancer Inst.*, 1942, 3, 83—89).—The variation in response even in pure line (strain A) mice is wide so that large nos. of animals are required to obtain reasonable accuracy. The induction times fall on a normal frequency curve when large groups are taken.

E. B.

Morphological aspects of experimental actinic and arsenic carcinomas in skin of rats. W. C. Hueper (*Cancer Res.*, 1942, 2, 551—559; cf. A., 1941, III, 1024).—The carcinomas obtained in the skin of the rat following an exposure to ultra-violet rays are even more complex than those occurring in man, being associated with hyperplastic or sarcomatous proliferations of the mesenchymatous elements of the cutis.

F. L. W.

Spontaneous recovery from sarcoma in castrated adult and in sexually immature mice. L. Gross (*Cancer Res.*, 1942, 2, 571—575; cf. A., 1942, III, 401).—The resistance of castrated and of sexually immature sucklings and weaned mice of the Albino ES strain to sarcoma 37 was determined by the incidence of spontaneous regression of tumours produced by intradermal inoculation of a standard dose of tumour cell suspension. Castration before or shortly after sexual maturity increases the resistance of males and decreases that of females. Immature suckling males and females inoculated at the age of 5—18 days have a high resistance, if inoculated at 16—26 days they have a low resistance.

F. L. W.

Esterase (butyric) activity. I. Esterase content of serum of mice from certain cancer-resistant and cancer-susceptible strains. V. R. Khanolkar and R. G. Chitre (*Cancer Res.*, 1942, 2, 567—570).—The esterase activity in the serum of 2 strains of cancer-susceptible mice (A and C3H), and 1 strain of cancer-resistant (C57 black), was determined. The activity in the cancer-susceptible strains (36.2±0.59 and 35.9±0.94) was significantly higher than that in the cancer-resistant strain (16.6±0.39). Age or sex was without influence.

F. L. W.

Comparative enzymic activity of transplanted hepatomas and of normal, regenerating, and foetal liver. J. P. Greenstein, J. E. Edwards, H. B. Andervont, and J. White (*J. Nat. Cancer Inst.*, 1942, 3, 7—17).—The catalase activity of various hepatomas was much less than that of any normal liver tissue. Xanthine dehydrogenase

activity was slightly less in hepatomas and regenerating liver than in normal liver. Rat hepatoma 31 is very active in alkaline phosphatase but both this and other hepatomas have about the same acid phosphatase activity as normal rat liver. Hepatomas are deficient in arginase, but have about the same thymonucleodopolymerase, and amylase as liver tissue. As yet no generalisation can be made on the enzyme activity of tumours. E. B.

Sulphydryl groups in normal and tumorous hepatic tissue extracts before and after addition of salts. J. P. Greenstein (*J. Nat. Cancer Inst.*, 1942, 3, 61—67).—The addition of guanidine or alkali metal salts to extracts of normal and hepatomatous liver increased the titratable SH groups. The titratable SH in untreated extracts corresponds to the glutathione present and the increase is probably due to the denaturation caused by the salt. Phosphates and NH_4 salts did not increase the SH content of the extracts. E. B.

Photometric histochemical determination of thymonucleic acid in experimental epidermal carcinogenesis. R. E. Stowell (*J. Nat. Cancer Inst.*, 1942, 3, 111—121).—Sections of normal mouse skin, skin painted with methylcholanthrene, papillomata, and carcinomata were stained by the Feulgen technique in N-HCl . The absorbing power of the sections for green light was measured and gives a measure of the nucleic acid present. Normal skin contained more nucleic acid than skin painted with methylcholanthrene. Tumours contain varying amounts of nucleic acid. E. B.

Host influence in characterisation of response to the papilloma protein and to vaccinia virus. W. R. Bryan and J. W. Beard (*J. infect. Dis.*, 1940, 67, 5—24).—The dose-response curves for the papilloma protein and vaccinia virus cannot be explained as due wholly to the chance presence or absence of virus particles in the inocula. The prediction of the character of results of animal inoculation with these viruses must take into account variations in host susceptibility and resistance to infection with them. F. S.

Correlation of frequency of positive inoculations with incubation period and concentration of purified papilloma protein. W. R. Bryan and J. W. Beard (*J. infect. Dis.*, 1940, 66, 245—253).—By a statistical study of the frequency distribution of positive and negative inoculations in rabbits of graded amounts of purified Shope rabbit papilloma virus it was found that $10^{-8.355}$ g. of virus protein gave an equal no. of positive and negative results, or one 50% end-point unit. If the diameter of the papilloma protein mol. is approx. 40 μ , and its sp. gr. 1.4, the no. of mols. corresponding with one 50% end-point unit, pI 8.355, is about 94 million. F. S.

Complement-fixing antibodies (Brown-Pearce carcinoma) in blood serum and in aqueous fluid of anterior chamber of eye. M. Appel, O. Saphir, M. Janota, and A. A. Strauss (*Cancer Res.*, 1942, 2, 576—578).—Immunisation of rabbits against the Brown-Pearce carcinoma does not protect against the growth of this tumour in the anterior chamber of the eye. Complement-fixing antibodies are present in the blood of tumour-bearing and tumour-immune rabbits but do not gain access to the aq. fluid. F. L. W.

Mammary tumour incidence of mice born from transferred ova. E. Fekete and C. C. Little (*Cancer Res.*, 1942, 2, 525—530).—Fertilised ova of the C57 black strain of mice were transferred, 52 hr. after observation of a vaginal plug, to the uterus of *dba* mice and vice versa. Mice born from transferred ova were nursed by the mothers which gave birth to them. In the transferred-ova C57 black mice carcinomas of the mammary gland occurred in 50% of the breeding females, while none of the transferred-ova *dba* animals had any mammary neoplasms. In the descendants of the original transferred-ova C57 black mice mammary tumour incidence was 73%. Descendants of the original transferred-ova *dba* mice did not remain free from mammary growths. F. L. W.

Origin of some inbred mice. L. Strong (*Cancer Res.*, 1942, 2, 531—539).—The origin of 11 inbred strains of mice is discussed. Strains A, C3H, CBA, CHI, C12I, and C are somewhat genetically related although they have been separated from each other by 20 years of inbreeding. Strains JK, F, L, N, and I are not related to any of these or to each other. F. L. W.

Genetics of susceptibility for development of mammary cancer in mice. J. J. Bittner (*Cancer Res.*, 1942, 2, 540—545).—The incidence of mammary tumours in hybrid mice shows that inherited susceptibility is transmitted as a dominant, and that it is inherited as a single factor. Mice developing tumours at an early age have progeny with a higher incidence of mammary tumours than mice born to mothers which develop their tumours at later ages. Incidence of mammary cancer in the progeny of cancerous females is higher than that for the progeny of non-cancerous females of the 2nd hybrid generation. The milk influence may be more conc. in older mice. F. L. W.

Irradiation of transplanted Bagg-Jackson and Yale carcinomas in mice, as affected by diet and foster nursing. J. A. Plaut, R. Tennant, and A. W. Oughterson (*Cancer Res.*, 1942, 2, 546—550).—Differences in diet of the hosts or foster nursing had no influence on the radio-sensitivity of transplanted Bagg or Yale mammary tumours. F. L. W.

Genetic analysis of susceptibility to induced pulmonary tumours in mice. W. E. Heston (*J. Nat. Cancer Inst.*, 1942, 3, 69—78).—Susceptibility can be measured by (1) the time required for tumours to develop and (2) the no. of nodules which develop. Mice of strains A and L hybrids and back crosses of these strains were injected intravenously with 0.5 mg. of 1:2:5:6-dibenzanthracene. The susceptibility to pulmonary tumours was analysed and it is estimated that there are at least four pairs of factors in which the susceptibility of strains A and L differs. E. B.

Inheritance of susceptibility to spontaneous pulmonary tumours in mice. W. E. Heston (*J. Nat. Cancer Inst.*, 1942, 3, 79—82).—Examination of the incidence of spontaneous pulmonary tumours in mice of strains A and L, their hybrids, and back crosses indicate that susceptibility is inherited on a multiple factor basis. E. B.

Genetics of the susceptibility of mice to a transplantable melanoma. J. M. Spangler, J. M. Murray, and C. C. Little (*J. Nat. Cancer Inst.*, 1942, 3, 123—130).—The melanoma S91, which arose in a *dba* mouse, grows well in mice of the same strain, but fails to grow in strain A albinos. The growth of the tumour in hybrids suggests that at least 3 genes are involved: *M* necessary for melanin formation in albinos, *C* the colour gene, and *T* the main gene for tumour growth. E. B.

Development of cancer in acrodermatitis chronica atrophicans. G. T. Pack and W. O. Wuester (*J. Amer. Med. Assoc.*, 1942, 118, 879—884).—4 cases are reported. C. A. K.

Cancer in childhood. M. Ritvo, J. D. Houghton, and E. J. McDonald (*Radiology*, 1942, 39, 278—282).—Report of 72 cases. E. M. J.

Effect of orchidectomy on skeletal metastases from cancer of male breast. J. H. Farrow and F. E. Adair (*Science*, 1942, 95, 654).—3 female patients received 400—500 mg. of testosterone propionate during 7—10 days and the skeletal metastases extended, as they did in a male who received 925 mg. during 17 days. Castration of a male aged 72 resulted in decrease in size of the mammary lesion and relief from bone pain. E. R. S.

Survival statistics of breast cancer, 1925—1935. W. H. Kraemer (*Surg. Gynec. Obstet.*, 1940, 70, 570—577).—A series of 417 cases are analysed. Survival was less in unoperated than in operated cases. X-Irradiation when added to operative treatment decreased the chances of survival though this decrease was diminishing during the last 5-year period. P. C. W.

Malignant changes in fibro-adenoma of mammary gland. S. W. Harrington and J. M. Miller (*Surg. Gynec. Obstet.*, 1940, 70, 615—619).—39 patients were studied, 15 with carcinoma and 24 with sarcoma. P. C. W.

Relation of chronic cystic mastitis to malignancy. I. V. Procter, C. C. Carpenter, and R. P. Morehead (*Surg. Gynec. Obstet.*, 1940, 70, 671—678).—Review with illustrative cases. P. C. W.

Rhabdomyosarcoma of corpus uteri. R. E. L. Gunning and C. A. Ross (*Surg. Gynec. Obstet.*, 1940, 70, 230—233).—A case is described in a patient 10 years after the menopause. The previously reported 10 cases are described and compared. All the tumours contain embryonic forms of striated muscle cells, occur in post-menopausal women, and tend to metastasise. P. C. W.

Sarcoma of endometrial stroma. J. R. McDonald, A. C. Broders, and V. S. Counseller (*Surg. Gynec. Obstet.*, 1940, 70, 223—229).—20 cases are analysed and discussed. The stage of the growth, cystoscopic and sigmoidoscopic appearances, and Benden reaction were of val. in prognosis; histology of the growth, age, or no. of children of the patient or duration of symptoms before treatment were not of val. P. C. W.

Prophylaxis and treatment of carcinoma of cervix and body of uterus. W. R. Cooke (*Surg. Gynec. Obstet.*, 1940, 70, 500—502).—Discussion. P. C. W.

Factors in prognosis in carcinoma of cervix. A. A. Gemmell (*J. Obstet. Gynaec.*, 1942, 49, 453—481).—The results of treatment of 151 cases are described. The stage of the growth, cystoscopic and sigmoidoscopic appearances, and Benden reaction were of val. in prognosis; histology of the growth, age, or no. of children of the patient or duration of symptoms before treatment were not of val. P. C. W.

Ureteral and renal complication of carcinoma of cervix: classification and management. H. L. Jaffe, J. V. Meigs, R. C. Graves, and C. J. E. Kickham (*Surg. Gynec. Obstet.*, 1940, 70, 178—185). P. C. W.

"Granulosa" and "theca" cell tumours of ovary. H. F. Traut and A. A. Marchetti (*Surg. Gynec. Obstet.*, 1940, 70, 632—642).—54 ovarian tumours of the theca-granulosa cell group are described. Foot's Ag stain differentiates theca and granulosa cells in most cases. Only 1 pure granulosa cell tumour and 4 pure theca cell tumours were encountered; the remaining tumours contained differing proportions of the two cell types. The life cycle of the tumours is suggested. P. C. W.

End-results of carcinoma of bladder treated by radium. B. S. Barringer (*Surg. Gynec. Obstet.*, 1940, 70, 598—600).—Review and analysis of 228 cases. P. C. W.

Operability and factors that increase curability of carcinoma of rectum. T. E. Jones (*Surg. Gynec. Obstet.*, 1940, 70, 291—294).—Discussion with illustrative cases and brief analysis of 100 cases. P. C. W.

Endometriosis of sigmoid, rectosigmoid, and rectum. C. W. Mayo and J. M. Miller (*Surg. Gynec. Obstet.*, 1940, 70, 136—139).—An analysis of 38 cases. P. C. W.

Radiotherapy of epithelioma of tonsil. W. L. Mattick (*N.Y. Sta. J. Med.*, 1939, 39, 1412—1418).—Improvement of technique in the application of deep X-rays (λ 0.16 Å.) in combination with the insertion of Rn seeds led to a rise from 4 to 11 to 25% in the 3-year cures of cases treated in 1915—1929, 1929—1932, and 1932—1935. E. M. J.

Malignant disease of face, mouth, pharynx, and larynx in first three decades of life. G. B. New and C. S. Hertz (*Surg. Gynec. Obstet.*, 1940, 70, 163—169).—Analysis of 233 cases. P. C. W.

Surgical treatment of cancer of tongue. L. R. Cowan (*Surg. Gynec. Obstet.*, 1940, 70, 543—551). P. C. W.

Surgical treatment of carcinoma of thoracic oesophagus. J. R. Garlock (*Surg. Gynec. Obstet.*, 1940, 70, 556—569). P. C. W.

Curability of primary carcinoma of lung. R. H. Overholt (*Surg. Gynec. Obstet.*, 1940, 70, 479—490).—21% of 104 cases were treated surgically and cure rate is calc. as 14%. The case histories are analysed and discussed. P. C. W.

Malignant tumours of thyroid gland; report of 200 consecutive cases. U. V. Portmann (*Surg. Gynec. Obstet.*, 1940, 70, 185—192).—Classification and analysis. P. C. W.

Conservative surgery in treatment of bone tumours. D. B. Phemister (*Surg. Gynec. Obstet.*, 1940, 70, 355—364).—Resection of bone sarcoma and bone grafting may save the limb in certain selected cases. In cases where amputation or resection is impossible, local excision combined with X-irradiation offers better prognosis than X-irradiation alone. P. C. W.

Malignant tumours of nervous system. E. Sachs (*Surg. Gynec. Obstet.*, 1940, 70, 551—555). P. C. W.

Blood pattern as clue to diagnosis of malignant disease. H. L. Bolen (*J. Lab. clin. Med.*, 1942, 27, 1522—1536).—Using Goldberger's blood sedimentation rate method (*N.Y. Sta. J. Med.*, 1939, 39, 867), special film patterns were considered diagnostic of cancer in 91% of 128 cases of known malignant disease, whereas false positives were found in only 21 of 180 cases of miscellaneous diseases. C. J. C. B.

Pyruvic acid content of blood of cancerous animals during growth and retrogression of experimental tumours.—See A., 1943, III, 87.

Mucoid-like substance from normal and cancer serum.—See A., 1943, III, 89.

Papilloma of choroid plexus.—See A., 1943, III, 101.

Adrenal tumour in female infant with hypertrichosis, hypertension, etc.—See A., 1943, III, 110.

Simmonds' disease.—See A., 1943, III, 112.

Proliferation-promoting effect of damaged-cell products due to adenine nucleotides and growth factors.—See A., 1943, III, 113.

Pubertas præcox in six-year-old boy with testicular tumour.—See A., 1943, III, 122.

Benign submucosal tumours of stomach.—See A., 1943, III, 123.

Redundant gastric mucosa simulating carcinoma of stomach. Carcinoma of stomach developing in pernicious anæmia.—See A., 1943, III, 124.

XVIII.—NUTRITION AND VITAMINS.

Malnutrition in U.S.A. N. Jolliffe, J. S. McLester, and H. C. Sherman (*J. Amer. Med. Assoc.*, 1942, 118, 944—950).—A review. C. A. K.

Recent nutritional problems. I. Abelin (*Schweiz. med. Wschr.*, 1942, 72, 330—334).—A lecture. A. S.

Diet of medical admissions. J. R. Scott and M. M. Janeway (*N.Y. Sta. J. Med.*, 1940, 40, 440—443).—The diet of 100 consecutive admissions to a medical ward was deficient in 76% as to calories, in 46% as to vitamin-A (biophotometric reading of 0.84 Mv. (or over), in 33% as to -C (fasting blood-ascorbic acid of 0.7 mg.-% or less), and in 23% as to Fe (hæmoglobin of 10.2 g.-% or less). E. M. J.

Soft curd homogenised milk in infant feeding. I. J. Wolman, S. Borowsky, R. Nicholas, and B. Spur (*J. Pediat.*, 1942, 21, 45—71).—Pasteurised milk homogenised by means of the sonic homogeniser, low-pressure homogeniser, and high-pressure homogeniser is compared with boiled pasteurised milk as a base for infant formulas.

All the babies grew and thrived normally. In digestibility and safety the homogenised milks proved as satisfactory as the control boiled milk. C. J. C. B.

Nutrient value of fish and prawn muscle. T. C. Appanna and S. C. Devadatta (*Current Sci.*, 1942, 11, 333—335).—The biological value and digestibility coeff. of fish and prawns from Bombay coastal waters are high and they are cheap sources of Ca, P, and Fe. H. G. R.

Nutritional assay of casein modified by the action of hydrogen peroxide and formic acid. M. A. Bennett and G. Toennies (*J. Biol. Chem.*, 1942, 145, 671—677; cf. A., 1943, II, 75).—In casein oxidised by H₂O₂ in formic acid, only methionine and tryptophan, of the essential amino-acids, lose their growth-supporting val. R. L. E.

Utilisation of urea by ruminants as influenced by level of protein in ration. M. I. Wegner, A. N. Booth, G. Bohstedt, and E. B. Hart (*J. Dairy Sci.*, 1941, 24, 835—844).—Added urea was always hydrolysed to NH₃ within 1 hr. of feeding. The rate of conversion of urea into protein in the rumen fell as the protein level of the ingesta rose above 12%. Both rate and extent decreased as the protein of the fed concentrate was increased beyond 18%. J. G. D.

Relation of food consumption to growth in fishes. F. T. K. Pentelow (*J. Exp. Biol.*, 1939, 16, 446—473).—Brown trout fed on *Gammarus pulex* consume about 5 g. for each 1 g. increase in wt. 2 g. of this is needed to keep body wt. const. Temp. affects growth rate, which also increases with increasing size of the fish. D. M. Sa.

Influence of dietary fat on lactation performances in rats. L. A. Maynard and E. Rasmussen (*J. Nutrition*, 1942, 23, 385—398).—The young of mothers receiving a diet containing 9% of fat grew better and contained more dry matter, fat, protein, and calories than did those of mothers receiving a diet containing 45% of fat. Similar results were obtained in a comparison of diets containing 0.3 and 18.0% of fat. The higher lactation performance associated with high-fat diets occurs partly at the expense of maternal reserves. A. G. P.

Liberal citrus intakes. I. C. S. Lanford (*J. Nutrition*, 1942, 23, 409—416).—Young adult subjects utilised 98% of the citric acid and citrates provided by 1800 c.c. of grapefruit juice daily. Consumption of grapefruit lowered the acidity of 24-hr. urine samples. Large single doses (920—1675 c.c.) of grapefruit juice increased urinary pH at all periods up to 22 hr. after ingestion. A. G. P.

Effects of substitution of bicarbonate for chloride in rat diets on growth, energy, and protein metabolism. LeR. Voris and E. J. Thacker (*J. Nutrition*, 1942, 23, 365—374).—Replacement of NaCl by NaHCO₃ in a normal rat diet was associated with diminished appetite, increased water consumption and heat production, decreased body gain in N and energy and in gain in water per unit fat-free tissue, and with lower ratios of water/protein gained. Cl⁻ deficiency did not affect digestion and absorption of nutrient energy but modified its disposal within the body. A. G. P.

Effect on growth and calcium assimilation of citric acid-potassium citrate mixtures. C. S. Lanford (*J. Nutrition*, 1942, 23, 293—300).—Addition of citric acid-K citrate (in proportions equiv. to those in orange juice) to a wheat-milk diet for rats increased the rate of growth and total Ca retention but the % of dietary Ca retained was unaffected (cf. A., 1939, III, 992). The action of orange juice in improving Ca assimilation depends on properties other than citric acid and citrate contents and the preponderance of base-forming elements. A. G. P.

Iron metabolism and requirement of young women. R. M. Leverton and A. G. Marsh (*J. Nutrition*, 1942, 23, 229—238).—The average daily intake (10.4 mg.) and storage (1.37 mg.) of Fe by women of 16—27 years on self-chosen diets were adequate for replacement of menstrual losses. The average storage of Fe increased progressively with increase in daily intake in the range 8—16 mg. The actual amount of Fe retained was influenced by the level of other essential nutrients in the diet. A. G. P.

Mineral metabolism on dephytinised bread. R. A. McCance and E. M. Widdowson (*J. Physiol.*, 1942, 101, 304—313).—The Ca, Mg, and P absorptions of three men and three women are studied on diets in which 40—50% of the total calories are supplied in the form of: (a) "brown" flour reconstituted from white flour and bran; (b) flour mixture similar to (a) in which the phytates have been hydrolysed enzymically to inorg. PO₄ and inositol; (c) mixture of white flour and bran from which nearly all phytates and most of the products of hydrolysis have been removed; (d) white flour. The laxative properties of (a), (b), and (c) are approx. the same. Ca absorption is worse in (a) than (b) and in (b) than (c), but almost the same in (c) and (d). Mg absorption improves progressively in passing from (a) to (d). P absorption is worse in (a) than in (b) or (c) and a little worse in (b) or (c) than in (d). Phytic acid is the agent in whole wheat primarily responsible for the poor absorptions of Ca and Mg. J. A. C.

[Biological] value of synthetic vitamins and hormones. Alter (*Z Vitamin orsch.*, 1942, 12, 297—299).—The biological inferiority of

synthetic vitamins and hormones to the corresponding natural substances is alleged. W. McC.

Deficiency diseases. General pathogenesis and symptoms. F. Koller (*Schweiz. med. Wschr.*, 1942, 72, 304—309).—A review. A. S.

Vitamin supplementation of U.S. army rations in relation to fatigue and ability to do muscular work. A. Keys and A. F. Henschel (*J. Nutrition*, 1942, 23, 259—269).—Supplementary feeding of thiamin, riboflavin, pyridoxine, and nicotinic, pantothenic, and ascorbic acids had no apparent effect on muscular ability, endurance, resistance to fatigue, or recovery from exertion. Healthy men expending 3700—4200 cal. per day gained no benefit from daily supplies exceeding 1.7 mg. of thiamin chloride, 2.4 mg. of riboflavin, or 70 mg. of ascorbic acid. A. G. P.

Mathematics of vitamin tests. L. Matti (*Z. Vitaminforsch.*, 1942, 12, 351—362).—Equations applicable to the interpretation of results of biological testing of vitamins are given and discussed with reference to choice of experimental conditions. W. McC.

Effect of vitamin-C, -A, and -B₂ on reticulocytosis in children. H. von Gunten (*Z. Vitaminforsch.*, 1942, 12, 321—328).—A dose of not less than 50 mg. of l-ascorbic acid more than doubles the reticulocyte content of the blood of infants within 1 hr., the max. val. being attained in 3 hr. Return to normal vals. is rapid. No increase is produced in older children (2—4 years) even by much larger doses or by vitamin-A, -B₂, or ultra-violet irradiation. W. McC.

Vitamin-A requirements in the rat. Relation of vitamin-A intake to growth and to concentration of vitamin-A in blood plasma, liver, and retina. J. M. Lewis, O. Bodansky, K. G. Falk, and G. McGuire (*J. Nutrition*, 1942, 23, 351—362).—The rate of growth of young rats (3—4 weeks) increased with vitamin-A intake, reaching optimum with 25 i.u. of -A daily. Plasma-A vals. also increased with intake to reach optimum with 50 i.u. of -A daily. Storage of -A in livers was nil with an intake of 10 and slight with 25 i.u. daily but increased progressively with rise in intake above this level. Retinal concns. of -A were nil on -A-free diet and max. with a daily intake of 2 i.u. Omission of -A from rat diets caused a rapid decline in plasma-A in animals having low reserves (liver) but had little effect on those having high reserves. Retinal concns. of -A remained high despite low plasma vals. and absence of reserves of -A. The min. -A requirement of the rat is 20 i.u. per kg. body-wt. daily. A. G. P.

State of vitamin-A in liver of rat. II. Effect of feeding the vitamin over extended periods. E. LeB. Gray and J. D. Cawley (*J. Nutrition*, 1942, 23, 301—307; cf. A., 1940, III, 511).—During prolonged feeding of vitamin-A to rats the stored liver-A is slowly transformed from mixed combination with several fatty acids into that with one acid only. Cyclised -A is produced by refluxing -A esters with alcohols. A. G. P.

Effect of vitamin-A and members of B-complex on calf scours. P. H. Phillips, N. S. Lundquist, and P. D. Boyer (*J. Dairy Sci.*, 1941, 24, 977—982).—Calf diarrhoea is largely due to diet deficiencies. Addition of vitamin-A and -B complex, especially nicotinic and pantothenic acids, stopped the diarrhoea and the pneumonia mortality. Newborn calves had adequate -C but were deficient in -A; feeding on colostrum rapidly increased plasma-A to normal. Low -C vals. in plasma were rectified by feeding shark-liver oil rich in -A. J. G. D.

Effect of level of fat in the diet on utilisation of vitamin-A. K. D. Mueller and E. Kelly (*J. Nutrition*, 1942, 23, 335—344).—In a series of isocaloric diets utilisation of vitamin-A by rats was greater when 5% than when no fat was included in the diet. 10% of fat produced no further improvement. In producing live-wt. increases the level of intake of -A was of greater importance than that of fat. Body length was increased by dietary -A but not by dietary fat. Development of abscesses was unrelated to the fat intake. Animals receiving -A (1, 3, or 6 i.u. daily) showed fewer abscesses than did those on -A-free diet. A. G. P.

Scurvy as secondary symptom of avitaminosis-A. G. Jonsson, A. L. Obel, and K. Sjöberg (*Z. Vitaminforsch.*, 1942, 12, 300—320).—During vitamin-A deficiency, rats lose their power to synthesise -C and to utilise dietary -C. Hence the -C content of their blood begins to decrease early in the deficiency and continues to decrease to nil as the deficiency becomes progressively more severe. Scorbatic changes in teeth and other organs occur at the same time. W. McC.

Absorption of vitamin-A through human skin. J. Mandelbaum and I. Schlessinger (*Arch. Dermat. Syphilol.*, 1942, 46, 431—442).—Experiments on 17 subjects showed that vitamin-A can be absorbed through the skin in significant quantities. C. J. C. B.

Richness of diet in provitamin-A and production of experimental rickets in guinea-pigs. R. Lecoq (*Compt. rend.*, 1942, 214, 324—327).—The Steenbock-Black diet 2965 (which readily produces rickets in rats) has no marked effect on guinea-pigs kept in the dark. Addition of fresh spinach to the diet produces rickets, whilst that of cooked, dried (in a vac.) starch-sugar-spinach prep. has a

smaller effect; addition of dried spinach or dried carrot does not produce rickets. Hence the incidence of rickets does not depend merely on the presence of excessive amounts of vitamin- or provitamin-A. F. O. H.

Determination of carotene in fresh and frozen vegetables. II. Carotene content of asparagus and green lima beans. W. I. Zimmerman and D. K. Tressler (*Food Res.*, 1941, 6, 57—68).—The use of "diacetone" [? diacetone alcohol] in place of acetone in the authors' method (A., 1940, III, 368) eliminates enzymic destruction of carotene in extracts of unblanched samples. No loss of carotene is observed in commercial processing of asparagus, green lima beans, spinach, or broccoli for freezing and storage or during 5 months' storage of lima beans at 0° or -40° F. Bioassay accounts for approx. 60% of the carotene content of asparagus determined chemically after storing at 0° or -40° F. for 7 months. The "diacetone" method used in conjunction with a MgO-Super Cel column allows separation of the provitamins-A. The vitamin-A activity of asparagus is due to β -carotene and that of green lima beans to the presence of $\frac{1}{3}$ α - and $\frac{2}{3}$ β -carotene. H. G. R.

Carotene analysis of vegetables and fruits as a basis for prediction of their vitamin-A value. M. C. Smith and L. Otis (*Food Res.*, 1941, 6, 143—150).—Using the Sherman bioassay method, deeply pigmented carrots containing 140 μ g. of carotene per g. have little more than twice the vitamin-A val. of pale orange carrots containing less than 12 μ g. per g. The carotene content of carrots determined by the method of Peterson *et al.* (B., 1937, 616) varies between 7 and 140 μ g. per g. with such factors as colour, length, age, and time of storage. The discrepancy between the -A content predicted from the carotene val. and as determined by bioassay is probably due to variations and errors in sampling. A wide variation in the efficiency of utilisation of carotene from plant sources for storage in the liver is reported, yellow foods being particularly inefficient in promoting -A reserves in proportion to their carotene content. H. G. R.

Visual system and vitamins-A of sea lamprey. Dark adaptation of children in relation to dietary levels of vitamin-A.—See A., 1943, III, 18.

Influence of solvent on the ultra-violet absorption maximum of vitamin-A. K. Morgareidge (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 700—702).—The ultra-violet absorption max. of vitamin-A is measured with a Beckmann quartz photo-electric spectrophotometer in isopropyl alcohol and cyclohexane, both the ester and alcohol forms of the vitamin being used. A polar solvent gives high vals. and a shift of peak to shorter λ as compared with data obtained in a non-polar solvent, the effect being most pronounced for samples of unsaponifiable fractions of oils or -A alcohol. J. D. R.

Clinical aspects of vitamin-B deficiency in South Africa. M. M. Suzman (*Clin. Proc.*, 1942, 1, 205—231).—A lecture with illustrations. P. C. W.

Effect of vitamin-B complex deficiency on inactivation of œstrone in liver.—See A., 1943, III, 31.

Effect of B vitamins on liver-glycogen of thyroid-fed rats.—See A., 1943, III, 36.

Accumulation of pyruvic acid in rice moth larvae (*Corcyra cephalonica*, Staint) fed on a vitamin-B₁-deficient diet. P. S. Sarma and K. Bhagvat (*Current Sci.*, 1942, 11, 331—332).—The pyruvic acid content of whole larvae is increased from 18.5—20.5 to 164.3 mg. per 100 g. dry wt. in 35 days on a vitamin-B₁-deficient diet. The val. is decreased by 50% in 66 hr. on adding -B₁ to the diet. H. G. R.

Insect nutrition. Biological assay of thiamin with *Corcyra cephalonica*, Staint, as the experimental animal. P. S. Sarma, G. B. L. Swami, and M. Sreenivasaya (*Current Sci.*, 1942, 11, 332—333).—The growth of larvae fed on a vitamin-B₁-deficient diet supplemented with graded doses of -B₁ is proportional to the amount of -B₁ added. Yeast contains another thermo-labile factor necessary for growth of the larvae. H. G. R.

Thiamin content of dried pork muscle. E. H. Hughes (*Food Res.*, 1941, 6, 169—173).—The pig is unable to synthesise thiamin. The quantity found in the muscle (1.9—20.5 μ g. per g. of dry muscle) depends on the amount ingested. H. G. R.

Thiamin content of milk in relation to vitamin-B₁ requirement of infants. E. M. Knott (*Amer. J. Publ. Health*, 1942, 32, 1013—1017).—The thiamin contents in μ g. per 100 c.c. were: pasteurised 26, boiled milk infant formulae 24, evaporated milk 19, and breast milk (17 samples) 3—18 (average 9). Blood-coccarboxylase in infants fed on these milks showed a parallel trend and was lowest (below 3 μ g. per 100 c.c.) for expressed breast milk. C. J. C. B.

Localisation of enzymes in nerves. I. Succinic dehydrogenase and vitamin-B₁.—See A., 1943, III, 13.

Determination of thiamin in vegetables. J. C. Moyer and D. K. Tressler (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 788—790).—The thiamin content of eight frozen vegetables has been determined by the bio-assay, thiochrome, and fermentation procedures. When the sulphite-cleavage modification of the fermentation method was used,

results were in good agreement with those given by the thiochrome procedure. In the case of three samples, the potency agreed in all three methods, but the other vegetables gave lower vals. by the fermentation method. J. D. R.

Effect of cooking on the vitamin-B₁ content of beans grown in Michigan. E. Kelly and T. Porter (*Food Res.*, 1941, 6, 85—93).—The cooking process renders the vitamin-B₁ content of the beans more available to rats. No variation in the -B₁ content is observed in cooked beans after soaking in water for 16 hr. or after softening with Na₂CO₃, though the latter reduces the boiling time by 5—15 min. Baked beans contain slightly less -B₁ than boiled beans, the val. ranging from 1.9 to 3.0 i.u. per g. of dry beans. H. G. R.

Modified micro-fermentation method for the determination of thiamin. E. S. Josephson and R. S. Harris (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 755—756).—A revised procedure for the micro-determination of thiamin in tissues and tissue fluids using the Warburg technique is presented. Interference by non-thiamin substances is corr. by treatment with Na₂SO₄, the residue of which is eliminated with H₂O₂. The procedure is especially applicable to the assay of tissues and fluids low in thiamin (10⁻⁶ g. per ml.), to the measurement of thiamin degradation products in tissue metabolism, and to the treatment of foods. J. D. R.

Case of beri-beri [in New York State]. H. Berger (*N.Y. Sta. J. Med.*, 1939, 39, 2285—2288).—An 11-year-old girl who for over 2 months had eaten little besides onion sandwiches on white bread developed a carditis and peripheral neuritis. She improved over a period of 6 months on a high-caloric diet rich in vitamin-B with -B added also in the form of brewers' yeast and Bemax. 2 years later the child was in good health except for paralysis of the right anterior tibial muscles. E. M. J.

Vitamin interrelationships. II. Aneurin and riboflavin interrelationships in metabolism. B. Sure and Z. W. Ford, jun. (*J. Biol. Chem.*, 1942, 146, 241—250; cf. A., 1939, III, 352).—Riboflavin absorption is low and its metabolism disturbed in aneurin deficiency in rats. Riboflavin deficiency has no such effect on aneurin metabolism. R. L. E.

Water-soluble riboflavin-boron complex. D. V. Frost (*J. Biol. Chem.*, 1942, 145, 693—700).—Riboflavin-boron complexes, stable in the presence of excess of H₂BO₃, are self-sterilising and suitable for injection. The H₂BO₃ is probably attached to the ribityl group. With increasing pH (1 to approx. 12), [α]_D²⁰ of d-riboflavin in water changes from +2 to -89°, and in 1.4% aq. H₂BO₃ from -33° to +340°; the corresponding changes for d-araboflavin are from 0° to +30° and from +10° to -410°. The prep. of riboflavin monoborate, m.p. 290—292° (uncorr.), and tetrabenzoylriboflavin, m.p. 131—136°, is described. R. L. E.

Preparation of samples for microbiological determination of riboflavin. F. M. Strong and L. E. Carpenter (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 909—913).—Interference in the microbiological assay of riboflavin is probably due to the presence of small quantities of free fatty acids. A suspension of the sample in 0.1N-HCl is autoclaved at 1 kg. per sq. cm. for 15 min., cooled, adjusted to pH 4.5 with sodium acetate, and filtered, and the filtrate extracted with ether. The assay is carried out in the normal way on the extracted filtrate. J. D. R.

Riboflavin determination by the microbiological method. A. Arnold, S. T. Lipsius, and D. J. Green (*Food Res.*, 1941, 6, 39—43).—The method of Snell and Strong (A., 1939, III, 766) is sp. and rapid and is not complicated by variation in the amounts of other factors of the vitamin-B complex required by the rat and present in the riboflavin-low diet. H. G. R.

pH change as measure of growth of *Lactobacillus casei* in vitamin assays. R. H. Silber and C. W. Mushett (*J. Biol. Chem.*, 1942, 146, 271—272).—Growth and production of acid by *L. casei* in assays of pantothenic acid and riboflavin are determined by means of the change in pH of the medium. R. L. E.

Pellagra. G. Frontali (*Schweiz. med. Wschr.*, 1942, 72, 208—217).—A pellagrogenic diet was given to 12 children between 2½ and 12 years (2150 cal.; total protein content 13.4% of total cal.). Typical changes of skin and mucous membranes appeared after 2 months. There was marked dilatation and tortuosity of the skin capillaries. These changes disappeared within 48—72 hr. after administration of nicotinic acid. 8 children showed gastric hypochlorhydria. There was negative N balance with loss of body-wt. in 8 cases; blood-porphyrin was increased (up to 10.5 μg.-%). Nicotinic acid excretion in urine per day was 0.5—0.7 mg. (normal 3.5 mg., using the method of Baserga and Fornaroli). A. S.

Pellagra in Ohio hospitals. W. B. Bean, T. D. Spies, and M. A. Blankenhorn (*J. Amer. Med. Assoc.*, 1942, 118, 1176—1179).—Pellagra was found in 1—2% of medical admissions to 2 Ohio hospitals. C. A. K.

Pellagra in Nyasaland. E. L. Morel (*Clin. Proc.*, 1942, 1, 232—233). P. C. W.

Nicotinic acid metabolism.—See A., 1943, III, 45.

Distribution of nicotinic acid in foods. L. J. Teply, F. M. Strong, and C. A. Elvehjem (*J. Nutrition*, 1942, 23, 417—423).—The microbiological method of Snell and Wright (A., 1941, III, 685) is applied to the assay of foods for nicotinic acid. Results obtained with a large no. of foodstuffs are recorded. A. G. P.

Determination of nicotinic acid in blood cells and plasma.—See A., 1943, III, 76.

Applicability of microbiological and chemical methods to determination of nicotinic acid in cereal products.—See B., 1943, III, 37.

Convulsive syndrome in young rats associated with pyridoxine deficiency. E. P. Daniel, O. L. Kline, and C. D. Tolle (*J. Nutrition*, 1942, 23, 205—216).—Suckling rats nursed by mothers receiving a diet considered to be satisfactory for growth and reproduction showed a convulsive syndrome due to pyridoxine deficiency. With a diet deficient in pyridoxine no injury was observed in females during pregnancy and lactation but the pyridoxine content of the milk diminished sufficiently to cause development of the syndrome in the young. A. G. P.

Effect of enzymic digestion on pantothenic acid content of meats determined by the microbiological method. H. A. Waisman, L. M. Henderson, J. M. McIntyre, and C. A. Elvehjem (*J. Nutrition*, 1942, 23, 239—248).—Animal tissues (beef, pork, lamb, chicken) contain considerable amounts of pantothenic acid; proportions were highest in liver and kidney and appreciable in striated muscle, heart, lung, brain, and spleen. Part, at least, of the pantothenic acid in these tissues exists in combined forms; it is liberated fairly completely by pancreatin and to a smaller extent by other enzymes having less proteolytic activity. Cooking and commercial processing destroy 30—40% of the pantothenic acid in meat products. A. G. P.

Mylase P in the preparation of natural materials for microbiological assay of pantothenic acid. H. H. Buskirk and R. A. Delor (*J. Biol. Chem.*, 1942, 145, 707—708).—The use of commercial enzyme preps. in the assay of pantothenic acid in yeast, yeast extract, and liver extract is described (cf. Strong *et al.*, A., 1941, III, 1087). R. L. E.

Growth-promoting effect of folic acid and biotin in rats fed succinylsulphathiazole. E. Nielsen and C. A. Elvehjem (*J. Biol. Chem.*, 1942, 145, 713—714).—Feeding folic acid and biotin to rats receiving succinylsulphathiazole cured the eye symptoms and retardation of growth caused by the drug. R. L. E.

Vitamin and protein factors in pre-operative and postoperative care of surgical patient. E. Holman (*Surg. Gynec. Obst.*, 1940, 70, 261—269).—Blood-ascorbic acid was determined in 70 patients of low economic grades. 44% showed vals. of 0.15—0.30 mg.-% and 9 less than 0.15 mg.-%. Of 38 patients studied by the Hecht adaption-meter 26% had marked vitamin-A deficiency and 9 mild deficiency. The importance of optimal vitamin intake before operation is stressed and the literature reviewed on the relation between vitamins and wound healing. P. C. W.

Graded doses of vitamin-C and regeneration of bone in guinea-pigs on scorbutic diet. G. Bourne (*J. Physiol.*, 1942, 101, 327—336).—The effect of vitamin-C is investigated by measuring the amount of trabeculae formed in a hole bored in the femur at the end of one week. Guinea-pigs require 2 mg. of -C a day by subcutaneous injection to secure adequate regeneration of bone and less than 1 mg. seriously retards regeneration. Corresponding doses to produce the same results in human beings may be 40 mg. and 20 mg. of -C. Pure synthetic -C is alone able to promote regeneration of bone in scorbutic guinea-pigs. J. A. C.

Plasma-vitamin-C levels in children before and after dietetic treatment. D. F. Milam and W. Wilkins (*Amer. J. trop. Med.*, 1941, 21, 487—491).—In 34 children the average change in plasma-vitamin-C level after 6 weeks' dietetic treatment was from 0.28 to 1.0 mg.-%. F. S.

Serum-phosphatase in experimental scurvy. H. Schwachman and B. S. Gould (*J. Nutrition*, 1942, 23, 271—281).—A scorbutogenic diet caused rapid and sustained diminution in "alkaline" serum-phosphatase in guinea-pigs but did not affect that in animals (rabbit) able to synthesise ascorbic acid. Supplements of ascorbic acid to the diet produced a rapid increase in serum-phosphatase which again diminished rapidly on withdrawal of the supplement. Low serum-phosphatase of scorbutic guinea-pigs was not activated by ascorbic acid *in vitro*; the action *in vivo* is due to increased production of enzyme during recovery from scurvy. Serum "acid" phosphatase and -inorg. P in guinea-pigs were unchanged in scurvy. A. G. P.

Rate of increase of blood plasma-ascorbic acid after ingestion of ascorbic acid. E. N. Todhunter, R. C. Robbins, and J. A. McIntosh (*J. Nutrition*, 1942, 23, 309—319).—The rate of increase of plasma-ascorbic acid following ingestion of 50 mg. of the acid was similar in each of 5 subjects (college women) and in the same subject at different times. The initial increase occurred 30—60 min. after ingestion and in 3—4 hr. vals. returned to fasting levels. The period required to reach max. vals. varied with the vitamin source (cryst. ascorbic acid 1.5 and broccoli 2.5 hr.). The rate of increase of plas-

ma-ascorbic acid was unaffected by the fat, Fe^{++} , or Fe^{+++} content of the diet. When the fasting level of plasma-ascorbic acid did not exceed 0.5 mg. per 100 ml. no increase resulted from ingestion of 50 mg. of the acid. Larger dosages (400 mg.) of ascorbic acid produced greater increases in plasma level and delayed the return to fasting vals. A. G. P.

Ascorbic acid excretion at known levels of intake as related to capillary resistance, dietary estimates, and human requirements. T. Levkowich and E. L. Batchelder (*J. Nutrition*, 1942, 23, 399—408).—The calc. ascorbic acid contents of freely chosen diets tends to be over-estimated. Capillary resistance was not appreciably affected by the level of intake of cryst. ascorbic acid. More negative pressure was necessary to produce petechiae on the back than on the front of the arm. Over a long period with a low-C diet supplemented with cryst. ascorbic acid the petechiae increased in size but not in no. A -C-deficient diet caused a rapid decline in urinary ascorbic acid on the first day and a further decline to a const. low level on the second. For moderately active young women the min. requirement of ascorbic acid was approx. 50 mg. daily and a standard dietary allowance of 75 mg. is recommended. A. G. P.

Oxidation of ascorbic acid and ultra-violet irradiation of water.—See A., 1943, I, 66.

Reaction of ninhydrin with ascorbic acid.—See A., 1943, II, 54.

Distribution of ascorbic acid in developing chick.—See A., 1943, III, 3.

Variations in ascorbic acid contents of cut leaves of *Bryophyllum calycinum* at different temperatures. Vitamin-C and chromosome number in *Rosa*.—See A., 1943, III, 74.

Vitamin-C content of tomatoes. A. P. Brown and F. Moser (*Food Res.*, 1941, 6, 45—55).—The average vitamin-C content over 3 seasons is 26.2 ± 0.39 mg. per 100 g. Indications of an increase in the -C content with advance of the season and an inverse relationship between the -C content and the size of the fruit are obtained. The -C content of fruit from plants supported by poles is higher than that from unsupported plants and that of greenhouse plants is 50% of that from plants grown out of doors. No loss in -C is observed on storage for 18 days either at room temp. or at 6-7°. H. G. R.

Photometric method for [determining] ascorbic acid. C. Carruthers (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 826—828).—The transmission of buffered 2:6-dichlorophenol-indophenol before and after reduction by ascorbic acid is measured spectrophotometrically. The reduction is carried out at pH 2.5—2.7 and transmission is measured at pH 6.5—6.6. Interference due to other reducing substance such as glutathione and cysteine is greatly inhibited by addition of HgCl_2 . J. D. R.

Magnesia as adsorbent for ascorbic acid. B. N. Sastri and P. R. Sivaramakrishnan (*Current Sci.*, 1942, 11, 336—337).—Ascorbic acid is adsorbed from alcoholic solution by magnesia at 0° and may be eluted by bubbling H_2S or CO_2 through an aq. suspension. The magnesia should be calcined at 1000° to suppress the basic character and enhance the adsorption capacity and should be cooled out of contact with air to prevent occlusion of O_2 . H. G. R.

Congenital malformations induced in rats by maternal nutritional deficiency. J. Warkany and R. C. Nelson (*J. Nutrition*, 1942, 23, 321—333; cf. A., 1941, III, 211, 317).—Female rats receiving Steenbock and Black's rachitogenic diet No. 2965 supplemented with viosterol produced young showing skeletal abnormalities. These abnormalities did not appear when the diet was further supplemented with 2% of pig liver. When the CaCO_3 content of the original diet was lowered from 3 to 1%, only 10% of the young showed defects. Normal and abnormal litters were produced in succession by feeding the appropriate diets. Normal intra-uterine development requires a factor present in liver but absent from the original diet. A. G. P.

Antirachitic properties of A.T. 10 for the rat and chicken. J. T. Correl and E. C. Wise (*J. Nutrition*, 1942, 23, 217—228).—As determined by the U.S.P. XI (rat) technique the antirachitic potency of A.T. 10 is approx. $\frac{1}{2}$ that of vitamin- D_2 (wt. basis) for chicks. On a rat unit basis the potency of A.T. 10 for chicks is 4 times that of -D from cod-liver oil. The action of A.T. 10 resembles that of -D rather than that of parathyroid hormone. A. G. P.

Vitamin-D content of preparations of South African interest. H. A. Shapiro (*Clin. Proc.*, 1942, 1, 253—255).—No vitamin-D activity could be detected in gluten flour, olive or arachis oil, or in 0.02 ml. of liver oil from *Trachurus trachurus*. Other fish-liver oils tested gave the following results: *Galeorhinus canis*, trace; *Merluccius capensis*, 230 i.u.; *Thyrstites atun*, 1300 i.u.; *Johnius hololepidotus*, 2666 i.u., and *Sarda sarda*, 40,000 i.u., all per g. Raw bird liver contained 2 i.u. per g. and S. African butter 1 i.u. per g. P. C. W.

Preparation and assay of crude citrin solutions (vitamin-P) from lemons. A. J. Lorenz and L. J. Arnold (*Food Res.*, 1941, 6, 151—156).—An aq. extract of whole lemon yields a crude citrin solution suitable for oral administration containing 1.75 mg. per g. of whole lemon. The red colour obtained on heating citrin with alkali is

comparable with that of 0.05N-I, which may be used as a standard for colorimetric assay of citrin. H. G. R.

Effect of analogues of choline on perosis. T. H. Jukes and A. D. Welch (*J. Biol. Chem.*, 1943, 146, 19—24).—The growth-promoting activity of arsenocholine and monoethylcholine for chicks on a choline-deficient diet is marked but slightly less than that of choline, whereas betaine and betainealdehyde have only slight activity and the following compounds are inactive: diethyl-, triethyl-, β -methyl-, and $\alpha\alpha$ -dimethyl-choline. The antiperotic activity of arseno-, monoethyl-, and diethyl-choline is marked, that of β -methylcholine slight, whereas the other compounds are inactive. H. G. R.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Body temperature in poikilothermal animals. D. L. Gunn (*Biol. Rev.*, 1942, 17, 293—314). J. D. B.

Basal metabolism in the same person after 50-year interval. A. Magnus-Levy (*J. Amer. Med. Assoc.*, 1942, 118, 1369).—The author's basal metabolic rate was 38.1 cal. per sq. m. body surface per hr. at 26 years and 31.5 cal. at 76 years. Similar changes with increasing age were seen in four others. C. A. K.

Respiratory quotient of protein of Dalmatian dog. T. M. Carpenter and H. C. Trimble (*J. Nutrition*, 1942, 23, 345—349).—The non-protein R.Q. in a Dalmatian dog was generally below 0.71. The protein R.Q. was below 0.81, i.e., less than the generally accepted val. A. G. P.

Tryptophan metabolism. Effect of feeding $l(-)$ -, dl -, and $d(+)$ -tryptophan, $d(-)$ - and dl - β -3-indolyl-lactic acid, β -3-indolyl-pyruvic acid, and $l(-)$ -kynurenine on storage of liver-glycogen and urinary output of kynurenine acid, kynurenine, and total acetone bodies. R. Borchers, C. P. Berg, and N. E. Whitman (*J. Biol. Chem.*, 1942, 145, 657—666).—Fasting rats fed $l(-)$ -, dl -, or $d(+)$ -tryptophan do not excrete significantly more acetone bodies than do controls, but when Na butyrate is also fed, the tryptophan doses reduced excretion of acetone bodies. $l(-)$ -Kynurenine and indolyl-pyruvic acid produce similar decreases, but $d(-)$ - and dl -indolyl-lactic acid are less effective. Feeding NH_4Cl lowers ketone excretion, suggesting that NH_3 and urea formation may be partly responsible, but other factors are involved. There was no storage of liver-glycogen after feeding $l(-)$ -, dl -, or $d(+)$ -tryptophan, $l(-)$ -kynurenine, or dl -indolyl-lactic or -pyruvic acid. Kynurenine and kynurenine acid excreted account for more than 25% of the ingested $l(-)$ -tryptophan or $l(-)$ -kynurenine. $l(-)$ -Kynurenine may be an intermediate in tryptophan metabolism. Indolylpyruvic acid is largely converted into kynurenine acid; much of the $d(-)$ -indolyl-lactic acid fed is excreted, and the rest is metabolised. R. L. E.

Metabolism of valine in phloridizin glycosuria. W. C. Rose, J. E. Johnson, and W. J. Haines (*J. Biol. Chem.*, 1942, 145, 679—684).—When fed to phloridizinised dogs, $l(+)$ -, $d(-)$ -, and dl -valine, and Na α -ketosovalerate contribute 3 C atoms to glucose formation. The catabolism of valine is discussed. R. L. E.

Urocanic acid and intermediary metabolism of histidine in rabbits. W. J. Darby and H. B. Lewis (*J. Biol. Chem.*, 1942, 146, 225—235; cf. Cox and Rose, A., 1926, 973).—A method for the isolation of urocanic acid, and its formation from l -histidine by *B. paratyphosus*, are described. 5 out of 8 rabbits fed large doses of l -histidine excreted urocanic acid, with toxic symptoms in every case. No urocanic acid was detected after injection of l -histidine. There were no toxic symptoms when urocanic acid was not formed. Histidine was excreted when given orally or intravenously. Urocanic acid was excreted without toxic symptoms when injected subcutaneously, and in one case when fed; it is probably unimportant in normal histidine metabolism. R. L. E.

Radioactive sulphur. I. Synthesis of methionine*. II. Conversion of methionine sulphur to taurine sulphur in dogs and rats. III. Distribution of sulphur* in the proteins of animals fed sulphur* or methionine*. IV. Experiments in vitro with sulphur* and hydrogen sulphide*. H. Tarver and C. L. A. Schmidt (*J. Biol. Chem.*, 1943, 146, 69—84).—Methionine* (an asterisk indicates that the substance contains traces of ^{35}S) has been synthesised by the method of Hill and Robson (A., 1936, 320), replacing methylmercaptan with benzylmercaptan*. Taurine* may be isolated from the bile of dogs fed methionine*. Less than 0.035% of S^* fed to rats is recovered in the proteins of their internal organs though a large portion is found in the proteins of bile-fistula dogs and rats fed methionine*; the replacement of S in proteins with S^* varies in different tissues but the different protein fractions of liver and plasma show the same replacement. When cysteine is oxidised with S^* , the cystine formed does not contain S^* and when cystine or cysteine is partly decomposed in alkaline solution in presence of H_2S^* , no S^* is present in the residual cystine or cysteine. H. G. R.

Fat metabolism in the lungs. P. L. MacLachlan (*J. Biol. Chem.*, 1943, 146, 45—48).—No changes are observed in the lipin content of the lungs of male 3-month-old albino mice either during active absorption of fat from the intestine accompanied by marked lipæmia

or during fasting for 1- and 2-day periods when rapid mobilisation and utilisation of fat takes place. H. G. R.

Obesity in childhood. Family frame of obese children. H. Bruch and G. Touraine (*Psychosom. Med.*, 1940, 2, 141—206).—The environmental conditions of 40 obese children were investigated. 70% of the children were only children or the youngest. The obesity was rarely a matter of concern to the parents, in contrast to the exaggerated concern over acute physical disorders. Fear of sexual maldevelopment was marked in the parents of obese boys. Co-operation and interest in treatment were frequently poor. Food had gained an exaggerated importance, muscular activity was usually depreciated. The psychological background for these maladjustments is discussed. A. S.

Interrelation of calcium and fat utilisation in the growing albino rat. C. E. French (*J. Nutrition*, 1942, 23, 375—384).—Diets containing 5—28% of fat produced good growth; with 45% of fat growth diminished and faecal excretion increased. With increasing proportions (5—28%) of dietary fat the % utilisation of Ca decreased progressively but declined sharply when the fat supply was increased to 45%. Low-fat diets are associated with high intestinal acidity. Utilisation of Ca was optimum when the ratio fat : Ca in the diet was 1 : 0.06 and decreased with increase in this ratio. The physiological relation between dietary fat and Ca involves at least two factors: (a) acidity of intestinal tract, (b) formation of readily-absorbed bile-fatty acid—Ca complexes. A. G. P.

Cause and treatment of coeliac disease. C. D. May, J. F. McCreary, and K. D. Blackfan (*J. Pediat.*, 1942, 21, 289—305).—Absorption of fat in coeliac disease, as well as intestinal motility, absorption of glucose, and clinical course, are favourably influenced by crude extracts of liver and the B vitamins given parenterally. C. J. C. B.

Congo-red test for amyloid disease. P. H. Harmon and G. Kernwein (*Arch. intern. Med.*, 1942, 70, 416—420).—A quant. technique for the Congo-red test is described. Amyloidosis is associated with disappearance of the dye from plasma in a few min. The dye is excreted in the urine in large amounts when there is albuminuria in the absence of amyloidosis. C. A. K.

Blood-sugar levels and carbohydrate combustion in normal men [action of adrenaline]. J. W. Conn, E. S. Conn, and M. W. Johnston (*Endocrinol.*, 1942, 30, 113—120).—Adrenaline hyperglycemia is not accompanied by increased carbohydrate combustion, but ingestion of glucose is so accompanied, whether or not adrenaline is given at the same time. Twice as much carbohydrate is oxidised after ingesting glucose as when the same hyperglycemia is produced by adrenaline. V. J. W.

Comparative study of glucose and dextrin tolerance in patients with chronic ulcerative colitis. R. C. Page, Z. Bercovitz, and E. J. de Beer (*J. Lab. clin. Med.*, 1942, 28, 66—70).—In 23 patients with chronic ulcerative colitis the rise of blood-glucose after ingesting dextrin (1 g. per kg.) was greater and more prolonged than after ingesting equal amounts of glucose. C. J. C. B.

Glycosuria in pregnancy. K. C. Batliwalla (*Current Sci.*, 1942, 11, 357—358).—Glycosuria was present in 30% of 300 women in the 7—9th months of pregnancy in Bombay. 99% were cases of renal glycosuria, with low blood-Ca and -vitamin-C but normal -non-protein-N. Administration of -C and Ca caused disappearance of the glycosuria. C. J. C. B.

Prevention of diabetes mellitus. B. A. Watson (*J. Clin. Endocrinol.*, 1942, 2, 414—418).—The onset of diabetes in young adults is divided into 4 stages: diminished glucose tolerance, diminished tolerance and assimilation, chemical diabetes, and clinical diabetes. Glucose tolerance may revert to normal under dietary treatment (restricted fat, low-caloric diet) provided clinical symptoms have not developed. Continuance of this diet and maintenance of normal or sub-normal wt. leads to continued normal carbohydrate metabolism. 12 cases are described and discussed. P. C. W.

Course of diabetes mellitus. A. R. Colwell (*Arch. intern. Med.*, 1942, 70, 523—531).—Studies of insulin needs of diabetics of various ages suggest that diabetes is inherent and begins at birth. The earlier it becomes manifest the more rapidly it progresses. C. A. K.

Diabetes mellitus and pyogenic skin infections. J. R. Williams (*J. Amer. Med. Assoc.*, 1942, 118, 1357).—Boils and carbuncles occur no more frequently in diabetic than in non-diabetic subjects. Statistics are given. C. A. K.

Mortality in diabetic coma. M. F. Collen (*Arch. intern. Med.*, 1942, 70, 347—378).—From studies of 315 cases of diabetic coma it is shown that the most important factors influencing mortality are age, diastolic blood pressure, degree of unconsciousness, and complicating diseases. Blood-sugar and non-protein-N are of less importance and there is no relation between CO₂-combining power of blood and mortality. A formula for assessing the severity of a case is suggested and the inter-relations of the above factors are discussed. C. A. K.

Carbohydrate utilisation in adult blowfly. G. Fraenkel (*J. Exp. Biol.*, 1940, 17, 18—29).—Various sugars and sugar alcohols were fed to *Calliphora erythrocephala* and nutritional val. was estimated from longevity. Nutritive saccharides and glycosides are split by gut enzymes demonstrable *in vitro*. Non-nutritive substances are not split up. D. M. Sa.

Metabolism of brain suspensions. II. Carbohydrate utilisation. K. A. C. Elliott, D. B. M. Scott, and B. Libet (*J. Biol. Chem.*, 1942, 146, 251—269; cf. A., 1942, III, 518).—Addition of glucose or pyruvate to brain suspensions suppresses the oxidation of non-carbohydrate materials, which in the absence of added substrate accounts for most of the respiration. 14% of added pyruvate is converted into acetate, and an equiv. amount of lactate is formed. More pyruvate than glucose is oxidised when both are added. Lactate added to normal brain does not suppress non-carbohydrate oxidation, but with brain tissue from insulinised rats it accounts for all the respiration. Only glucose is oxidised in a mixture of glucose and lactate. Acetic acid is not oxidised, and does not affect the respiration of brain suspensions. R. L. E.

Glycogen formation from pyruvate *in vitro* in presence of radioactive carbon dioxide. J. M. Buchanan, A. B. Hastings, and F. B. Nesbitt (*J. Biol. Chem.*, 1942, 145, 715—716; cf. A., 1942, III, 408).—Glycogen formed from pyruvate by liver slices in the presence of radioactive CO₂ contains radioactive C, the proportion varying from 7.5 to 16.7% of the new glycogen-C. R. L. E.

Metabolism of pyruvate by liver from pantothenic acid- and biotin-deficient rats.—See A., 1943, III, 42.

Effect of pectin on retention of dietary lead (radium-D). H. K. Murer and L. A. Crandall, jun. (*J. Nutrition*, 1942, 23, 249—258).—On a diet containing ²¹⁰Pb (not exceeding 0.04 p.p.m.) rats retained 15.8% and excreted in urine 10.9 and in faeces 71.7% of ingested ²¹⁰Pb. Inclusion of pectin (5%) in the ration to replace an equal amount of starch resulted in retention of 11.8% and excretion in urine of 7.9 and in faeces of 79.8% of the ²¹⁰Pb. A. G. P.

Metabolism of bovine epididymal spermatozoa.—See A., 1943, III, 33.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Mode of action of sulphonamides on *E. coli*. H. I. Kohn and J. S. Harris (*J. Pharm. Exp. Ther.*, 1941, 73, 343—361).—No measurable effect of the sulphonamides on the rate of growth occurs before 60—90 min. Following this, the inhibition develops gradually during the next 3 or more hr., depending on the concn. of the drug and the medium. The relationship between rate of growth and drug concn. is plotted. It is simple in a salt-glucose medium, but complex in one containing proteose-peptone, and the evaluation of drug potency is difficult. At the bacteriostatically active concns. studied, the sulphonamides do not primarily inhibit the respiration (per cell) of the resting or growing organism. Incubation of non-growing cells with sulphonamide does not affect the subsequent development of inhibition when growth is initiated. Growth was prevented by low temp., or by withholding NH₃ or glucose. H. H. K.

Intraperitoneal administration of sulphanilamidothiazole. A. Jentzer and A. Calame (*Schweiz. med. Wschr.*, 1942, 72, 229—232).—Intraperitoneal injection of neutral sulphathiazole in rabbits produces a max. drug concn. in the blood after 2 hr.; the blood concn. is very low after 24 hr. In mice, intraperitoneal administration is very effective, though less so than subcutaneous injection, against experimental pneumococcal infection. Intraperitoneal injection of neutralised sulphathiazole is recommended in human peritoneal infections. A. S.

Effect of sulphonamides on artificial fever produced by peptone in animals. E. M. Boyd and J. S. Pratten (*Amer. J. med. Sci.*, 1942, 204, 715—718).—Sulphanilamide, sulphapyridine, sulphathiazole, sulphadiazine, sulphaguanidine, *p*-benzylsulphanilamide, *p*-succinylsulphanilamide, promin, sulphacetamide, sulphanilyldimethylsulphanilamide, azosulphamide, and sulphonamide EOS were given by mouth in doses of 0.1 g. per kg. body wt. to rabbits, rats, and cats, with artificial fever induced by the intramuscular injection of peptone. Body temp. was recorded rectally at intervals of 30 min. The only sulphonamide which, at this dose, had any antipyretic effect on peptone fever was sulphapyridine, and only in some rabbits and not at all in rats. Sulphanilamide, *p*-succinylsulphanilamide, promin, sulphacetamide, and azosulphamide produced pyrexia in normal animals. C. J. C. B.

Sulphonamide content of aqueous humour following conjunctival application of drug powders.—See A., 1943, III, 103.

Influence of drug and serum therapy on histological and bacteriological findings in gas gangrene infection in experimental animals. W. Schröder (*Zentr. Bakt.*, 1942, I, 149, 1—14).—The subcutaneous injection of 1 c.c. of a 10% solution of mesudin (sulphonamide derivative) had no influence on the histological appearances in *Cl. welchii* infection in guinea-pigs. Monovalent antitoxic serum

had a beneficial effect on *Cl. novyi* infection in guinea-pigs. There was an early localisation of the gangrenous process and a lower death rate than in controls. (7 photomicrographs.) F. S.

Treatment of type III pneumococcus pneumonia with sulphanilamide. R. H. Bennett, S. H. Spitz, and E. H. Loughlin (*N.Y. Sta. J. Med.*, 1939, 39, 1722—1724).—5 of 17 cases of type III pneumococcus pneumonia treated by sulphanilamide (a serum level of 11 mg.-% was aimed at) died. In 4 of these treatment was started more than 72 hr. after the onset of the disease. E. M. J.

Sulphapyridine in treatment of pneumonia. R. L. Cecil, E. A. Lawrence, and E. Tolstoi (*N.Y. Sta. J. Med.*, 1940, 40, 488—494).—Report of 100 cases with 6 fatalities. An average of 20.5 g. of sulphapyridine were given in each case. E. M. J.

Sulphapyridine in treatment of pneumonia. B. R. Allison (*N.Y. Sta. J. Med.*, 1939, 39, 1558—1561).—A death rate of 4% is reported in 100 cases. E. M. J.

Sulphathiazole in pneumonia. A. E. Price and G. B. Myers (*Arch. intern. Med.*, 1942, 70, 558—566).—Sulphathiazole was given to 557 patients with pneumonia with a total fatality rate of 11.3%. Bacteræmic cases had a mortality rate of 28.2%. Suppurative complications and serious toxic reactions were few, although 2 deaths were attributed to toxic effects of acetylsulphathiazole on the kidneys. Sulphathiazole is preferable to sulphapyridine in pneumonia. C. A. K.

Single combined treatment for gonorrhœa. C. Ferguson and S. Gersten (*Amer. J. med. Sci.*, 1942, 204, 685—687).—Out of 25 cases of uncomplicated previously untreated gonorrhœal urethritis treated with sulphathiazole 5 g. for 18 hr., prior to fever therapy of 106° F. for 7 hr., 22 were cured. Of 20 cases treated after 1 course of sulphonamide, 18 were cured. Of 26 cases treated after more than 1 course, 22 were cured. C. J. C. B.

Gonococcal bacteræmia with joint and skin manifestations [treatment with sulphanilamide]. R. C. Foster (*Ann. int. Med.*, 1942, 16, 1018—1022).—A case immediately responded to sulphanilamide treatment. A. S.

[Treatment of] *Hæmophilus influenzae* bacteræmia. C. S. Keefer and C. H. Rammelkamp (*Ann. int. Med.*, 1942, 16, 1221—1227).—2 patients suffering from *H. influenzae* bacteræmia recovered under sulphapyridine and sulphathiazole treatment. A. S.

Sulphanilylguanidine in treatment of cholera. L. B. Carruthers (*Trans. R. Soc. trop. Med. Hyg.*, 1942, 36, 89—93).—In an epidemic of cholera 50 cases were treated with sulphanilylguanidine, and 88 cases served as controls without significant difference. C. J. C. B.

Toxic manifestations of sulphapyridine. S. Katz (*N.Y. Sta. J. Med.*, 1940, 40, 746—751).—In 100 cases, including 90 of pneumonia, and treated with sulphapyridine, 25 complained of nausea and vomiting; psychic disturbances were seen in 7, hæmaturia in 4, dermatitis in 2, and jaundice and cyanosis each in 1 case. E. M. J.

Distinctive odour in patients receiving sulphanilamide. S. Leibowitz (*N.Y. Sta. J. Med.*, 1940, 40, 363).—A distinctive odour detected most easily in the breath was noticed in patients who received as little as 2 g. of sulphanilamide after several hr.—2 days. It is described as sharp, fruity, and akin to but distinct from that of acetone, and usually stronger. E. M. J.

Agranulocytosis due to sulphanilamide. J. Taub and L. Lefkowitz (*N.Y. Sta. J. Med.*, 1939, 39, 1659—1661).—Fatal agranulocytosis supervened in a 66-year-old woman after taking 44 g. of protylin in 21 days. E. M. J.

Antimalarial effect of acranil in birds. W. D. Gingrich and R. S. Fillmore (*Amer. J. Hyg.*, 1942, 36, 276—282).—30 canaries were inoculated with *P. cathemerium*. 5 served as controls while 5 groups of 5 birds were treated with acranil ("3-chloro-9-diethylamino- β -hydroxypropylamino-7-methoxyacridine dihydrochloride") or atabrine. Acranil given prophylactically in 5 daily doses of 2 mg. (2% solution in 5% gelatin by oesophageal tube) prolonged the incubation period to 12.4 days compared with 4.0 days in controls. 10 daily doses of 2 mg. during the incubation period delayed the appearance of parasites in the blood for 21 days with acranil and 27 days with atabrine. The blood of birds given 5 daily doses of 2 mg. of acranil during acute infection showed no parasites after 3.4 days compared with 4.0 days for atabrine. 10 mg. of acranil given in 2 doses at 4-hr. intervals limited asexual reproduction by reducing the % of schizonts and no. of merozoites per schizont. 5 daily doses of 40 mg. of acranil failed to reduce the no. of gametocytes of *Hæmoproteus columbæ* in 3 pigeons. B. C. H.

Treatment of malaria. S. R. Christophers (*Trans. R. Soc. trop. Med. Hyg.*, 1942, 36, 49—59).—A review of nomenclature of drugs chiefly. C. J. C. B.

Treatment of malaria in hyperendemic zone. W. Hughes (*Trans. R. Soc. trop. Med. Hyg.*, 1942, 36, 60—75).—The technique and dosage used in Nigeria are detailed. C. J. C. B.

Subtertian malaria in war. T. R. Hill and J. W. Howie (*Trans. R. Soc. trop. Med. Hyg.*, 1942, 36, 75—88).—A general discussion. C. J. C. B.

Cutaneous sensitivity to merthiolate and other mercurial compounds. F. A. Ellis and H. M. Robinson (*Arch. Dermat. Syphilol.*, 1942, 46, 425—430).—4 patients who were sensitive to merthiolate gave negative reactions to the simpler inorg. mercurial compounds and to metaphen (4-nitro-anhydro-5-hydroxymercuri-*o*-cresol), mer-cresin (amyltricrosols and *o*-hydroxyphenylmercuric chloride), and mercurochrome (Na_2 salt of dibromohydroxymercurifluorescein; 26.7% Hg). C. J. C. B.

Subjective response of psychoneurotic patients to adrenaline and acetyl- β -methylcholine.—See A., 1943, III, 99.

Physiologically active phenylethylamines containing a tert. hydroxyl.—See A., 1943, II, 61.

Acetylcholine in ophthalmology.—See A., 1943, III, 101.

Recognition and treatment of cardiac emergencies. E. C. Reifstein (*N.Y. Sta. J. Med.*, 1939, 39, 1339—1346). E. M. J.

Constituents of cascara sagrada. IV. Aloe-emodin, chrysophanic acid, and emodin. R. W. Liddell, C. G. King, and G. D. Beal (*J. Amer. Pharm. Assoc.*, 1942, 31, 161—166).—The presence of syringic acid and emodin was confirmed. 4—8% of aloe-emodin and 0.5—1.5% of chrysophanic acid on the dry wt. of extracts were also obtained. A mixture of 5 mg. of emodin, 5 mg. of aloe-emodin, and 2.5 mg. of chrysophanic acid possesses a greater cathartic activity in guinea-pigs than 25 mg. of any individual substance. The effective dose per unit body wt. in the guinea-pig is 250 times the human dose. Chrysophanic acid anthrone, aloin, and chrys-arobin are individually practically inactive in 25-mg. doses. P. G. M.

Effects of phenothiazine on horses. I. Hæmatology and pharmacology. W. E. Swales, H. B. Collier, and D. Allen (*Canad. J. Res.*, 1942, 20, D, 349—361).—Single doses of 60 and 70 g. of phenothiazine (approx. 0.05 g. per lb. live wt.) administered to 2 horses removed all strongyles and their eggs within 2 days. Anæmia and a cythæmolytic icterus were produced. Hæmolysis was more severe when the blood contained a large proportion of microcytes. The liver was undamaged, but in one horse there were severe pathological changes in the urinary system. A dose of 30 g. was completely effective as an anthelmintic. Less than half the dose (and oxidation products) was recovered from the excreta in each case. The effects of the drug on horses were similar to those of sulphanilamide and sulphapyridine on susceptible human subjects. P. G. M.

Anæsthesia in thyroidectomy for thyrotoxicosis. W. H. Cole and R. Brunner (*Surg. Gynec. Obst.*, 1940, 70, 211—219).—Discussion and illustrative cases of the use of various anæsthetics. P. C. W.

Anæsthesia in Cæsarean section. K. M. Heard (*Surg. Gynec. Obst.*, 1940, 70, 657—661).—An analysis of maternal and infant abnormalities in 279 cases with comparison of the effects of spinal, ether, N_2O , or cyclopropane, or local anæsthesia. In general the use of ether is contraindicated; spinal anæsthesia is recommended. P. C. W.

Intravenous anæsthesia. R. M. Tovell and M. Garofalo (*N.Y. Sta. J. Med.*, 1939, 39, 2026—2032).—Review and report of 1545 cases. E. M. J.

Influence of pontocaine and chlorobutanol on respiration and glycolysis of cornea.—See A., 1943, III, 102.

α -Alkoxyvinyl- and α -alkoxyethyl-barbituric acids.—See A., 1943, II, 46.

Toxicity of phenytoin sodium in epilepsy.—See A., 1943, III, 98.

Brain potentials and morphine addiction.—See A., 1943, III, 99.

Bulgarian belladonna treatment of chronic encephalitis. J. B. Neal (*N.Y. Sta. J. Med.*, 1939, 39, 1875—1876).—Oral administration caused great improvement in 29 and a moderate one in 48% of 75 cases. E. M. J.

Effect of substitutions on carbon-14 of morphine derivatives on respiration in rabbits. M. Sumwalt and H. R. Oswald (*J. Pharm. Exp. Ther.*, 1941, 73, 229—245).—The radical substituted at C_{14} has some part in determining power to depress the respiration. The OH group was not consistent in its influence. Its replacement by H augmented strength in some instances, reduced it in others. Its replacement by Br produced a drug without depressant effect. Muzzling it with acetyl produced a drug with increased power for depressing respiration. 3 drugs containing acetoxyl at C_{14} were stronger depressants than any corresponding compounds with a different radical in that position. H. H. K.

Effect of muzzling the phenolic OH group of morphine derivatives on respiration in rabbits. M. Sumwalt, C. I. Wright, and A. T. Miller (*J. Pharm. Exp. Ther.*, 1941, 73, 246—257).—The depressant effects on respiration are given for 7 derivatives of morphine in which the phenolic OH group, at C_3 , has been muzzled. Small doses of dinitrophenylmorphine have a greater depressant effect

than morphine but weaker in doses larger than 0.3 mg. Codeine-like compounds were all weaker than their morphine-like analogies and there was little difference whether the substituent was methyl, ethyl, methoxymethyl, or benzyl, except in one instance, when methyl (in dihydrodeoxycodine-D) was much more depressant than benzyl (in benzyldihydrodeoxymorphine-D). H. H. K.

Effect of substituting an additional group in ring-three of morphine derivatives on respiration of rabbits. M. Sumwalt and H. R. Oswald (*J. Pharm. Exp. Ther.*, 1941, **73**, 258—273).—Additional substitution in ring III alters depressant potency sometimes in one direction, sometimes in another, and by variable amounts. The most potent drug was amyldihydromorphinone. H. H. K.

Influence of the acetoxyl group of morphine derivatives on respiration of rabbits. M. Sumwalt, H. R. Oswald, and H. A. Lusk (*J. Pharm. Exp. Ther.*, 1941, **73**, 274—288).—Among 32 derivatives of morphine and codeine, the influence of the acetoxyl group on the "threshold" dose for depressing the min. vol. of rabbits was compared with that of ethoxy, methoxy, OH, or H. In 12 out of 14 pairs the acetoxyl-compound showed a stronger depressant effect than the one containing OH. Acetoxyl is more potent than methoxy in 6 out of 10 times. It is less potent than ethoxy or H in any of the comparable substances available. H. H. K.

A series of new triazole derivatives. R. W. Cunningham, E. J. Fellows, and A. E. Livingston (*J. Pharm. Exp. Ther.*, 1941, **73**, 312—318).—1-Phenyl-5-methyl-1:2:3-triazole-4-carboxydiethylamide and the corresponding dimethyl derivative were active antipyretics in rats. Na 1-phenyl-5-methyl-1:2:3-triazole-1-carboxylate and ethyl 5-amino-1-phenyl-1:2:3-triazole-4-carboxylate were less efficient antipyretics than the dimethyl- and diethylamide, while the diisobutylamide had no antipyretic action. The diethyl compound in a non-toxic dose doubled the pain threshold stimulus in cats and was more effective than aminopyrine. The other triazole derivatives in non-toxic doses were less effective than aminopyrine. The dimethyl- and diethyl-triazoles were twice as toxic in rats as aminopyrine whereas the other compounds of the present series were less toxic than aminopyrine. H. H. K.

Pharmacology and toxicology of the ethyl ester of 4-phenyl-1-methylpiperidine-4-carboxylic acid (demerol). C. M. Gruber, E. R. Hart, and C. M. Gruber, jun. (*J. Pharm. Exp. Ther.*, 1941, **73**, 319—334).—L.D.₅₀ per kg. of demerol is: mice 147 mg. intraperitoneally and 221 orally; rats 93 intraperitoneally and large rabbits 20 mg. intravenously. The drug does not alter the blood picture of dogs. Small doses (0.25 mg. per kg.) intravenously produce a fall of blood pressure, due to peripheral vasodilatation. Respirations decrease in depth and frequency. Repeated injections of small doses produce death due to respiratory failure. Spleen and extremities increase in vol.; the intestine decreases owing to contractions of smooth muscle. Kidney decreases in size due to decrease of blood pressure. The irritability of the cardiac vagus is depressed. The drug produces usually contraction in isolated relaxed smooth muscle (intestine, bronchus, uterus, blood vessel) and often relaxation in the contracted muscle. The action of adrenaline is usually antagonised; that of BaCl₂, histamine, and pituitrin only partly. Spasmodic potency on isolated tissues is less than that of papaverine hydrochloride. Contractions of intact smooth muscle (stomach, pyloric sphincter, small intestine, uterus, and urinary bladder) occur. The drug has no val. as a uterine sedative. The relief of intestinal colic must be attributed to its analgesic potency. H. H. K.

Effect of calcium and strontium salts on the action of sodium pentobarbital in rats. V. V. Cole (*J. Pharm. Exp. Ther.*, 1941, **73**, 335—342).—Ca and Sr acetates increased the duration of Na pentobarbital anaesthesia when the salts were given intraperitoneally in equimol. quantities. Ca acetate increased the duration of Na pentobarbital anaesthesia if given intravenously; Sr acetate had no effect. The intraperitoneal injection of Ca acetate was more toxic than of Sr acetate and this was associated with an increased haemoglobin concn. of the blood. Na pentobarbital decreased the toxicity of Sr acetate but Sr acetate did not decrease the toxicity of Na pentobarbital. H. H. K.

(A) Analogues of synthetic tetrahydrocannabinol. (B) Optically active tetrahydrocannabinols.—See A., 1943, II, 69.

Course of depression treated by psychotherapy and metrazol.—See A., 1943, III, 99.

Changes in susceptibility to the convulsant action of metrazol. J. Sacks and N. M. Glaser (*J. Pharm. Exp. Ther.*, 1941, **73**, 289—295).—Rats became more tolerant to the convulsant action of metrazol by giving injections of adequate doses on alternate days. Animals in which such a tolerance has been produced have a latent increased susceptibility produced by the convulsions. This latent susceptibility becomes manifest if the tolerance is lost by withdrawal of the drug. H. H. K.

Elimination of ergotamine, ergotamine, and ergonovine [ergometrine]. J. C. Kopet and J. M. Dille (*J. Amer. Pharm. Assoc.*, 1942, **31**, 109—113).—A method is described for the determination

of ergot alkaloids in blood and muscle by means of the colour reaction with *p*-dimethylaminobenzaldehyde. Following administration to guinea-pigs, the three alkaloids disappear rapidly from muscle and blood. They appear to be detoxicated (probably in the liver) rather than excreted. F. O. H.

Thiocyanates [for hypertension]. V. S. Caviness, T. L. Umphlet, and C. L. Royster (*Amer. J. med. Sci.*, 1942, **204**, 688—697).—5 grains of KCNS daily, to give a blood concn. of 2.5—8 mg.-%, gave good results (sustained reduction of at least 15% in both systolic and diastolic pressures) in 92 of 136 hypertensives. C. J. C. B.

Cerebral lesions following administration of neoarsphenamine. C. B. Courville and C. Marsh (*Arch. Dermat. Syphilol.*, 1942, **46**, 512—533).—In 7 of 12 cases multiple symmetric foci of hæmorrhagic necrosis were found in the brain. In 4 other cases, typical petechiæ scattered throughout the white matter were found, while in 1 case gross hæmorrhage into the brain had taken place. C. J. C. B.

Serological protection against arsenic compounds. E. Singer (*Austral. J. Exp. Biol.*, 1942, **20**, 209—212).—Mol. size has no influence on serological protection, for no protection is obtained against *p*-aminophenylarsonic acid or phenol-, α - and β -naphthol-*p*-azobenzene-*o*-arsonic acid. Introduction of several determinant groups in the mol. appears to have a definite effect, for strongly marked serological protection is obtained against resorcinoltrisazo-phenyl-*p*-arsonic acid and against arsenoglobulins. True serological protection is obtained against compounds which may not give *in-vitro* reactions with antiserum. J. N. A.

[Significance and] treatment of asymptomatic syphilis. P. A. O'Leary (*N.Y. Sta. J. Med.*, 1939, **39**, 1303—1308).—565 cases diagnosed on c.s.f. examination were treated by several courses of arsphenamines and a heavy metal (Bi or Hg), either alone or, if resistant, assisted by intraspinal treatment, trypanamide, or malarial therapy. 57.2% showed a negative c.s.f. after 5 and 64.4% after 10 years. E. M. J.

Arsenic [and sulphanilamide] in treatment of bacterial endocarditis. K. Lippmann (*N.Y. Sta. J. Med.*, 1940, **40**, 524—528).—A case of subacute bacterial endocarditis made a sudden recovery after beginning a course of daily intramuscular injections of 1% NH₄ heptenchloroarsenate, to a total of 30 c.c. He had previously received 32 g. of sulphanilamides. E. M. J.

Use of calcium chloride in treatment of rigors. P. B. Beeson and C. L. Hoagland (*N.Y. Sta. J. Med.*, 1940, **40**, 803—804).—Rigors following administration of antipneumococcus serum, typhoid vaccine, or occurring during blood transfusions or malaria were aborted in half the cases by intravenous injection of 10—20 c.c. of 10% CaCl₂. The course of any accompanying fever was not affected. E. M. J.

Bromide intoxication. A. G. Odell (*N.Y. Sta. J. Med.*, 1939, **39**, 1398—1403).—Symptoms of drowsiness and sluggishness were seen with less than 150—200 mg.-% of Br in serum. E. M. J.

Strychnine. X. Comparative accuracies of stomach-tube and intraperitoneal-injection methods of bioassay. J. C. Ward and D. G. Crabtree (*J. Amer. Pharm. Assoc.*, 1942, **31**, 113—115).—Strychnine given by stomach tube is less toxic than that injected intraperitoneally. Strychnine and its sulphate are equally toxic when given by the stomach tube. Female rats are more than twice as susceptible to the alkaloid as are male rats, the difference not being quite so pronounced with intraperitoneal injection. In order to test the field efficiency of samples, administration to standardised male rats by stomach tube is recommended. F. O. H.

Poison antidotes. J. C. Munch (*Soap*, 1942, **18**, No. 11, 100—101).—Suitable antidotes for poisoning by As, Ba, F, P, strychnine, and Tl are reviewed. T. F. W.

Action of curarising preparations in man. A. M. Harvey and R. L. Masland (*J. Pharm. Exp. Ther.*, 1941, **73**, 304—311).—Curare extract, erythroidine, and quinine methochloride produced a characteristic clinical picture accompanied by typical changes in the electromyogram. Relief of spasticity has been slight, of brief duration, and has not appeared until there was considerable weakness of the extraocular, facial, and pharyngeal muscles. The severity of metrazol convulsions has been decreased. Minor circulatory changes have been observed and appeared more severe with quinine methochloride and erythroidine than with curare. H. H. K.

Rationale and results of maggot therapy in chronic osteomyelitis. J. Buchman (*N.Y. Sta. J. Med.*, 1939, **39**, 1540—1552).—Maggots introduced into the wounds after surgical removal of all diseased tissues led to better and more rapid healing and reshaping of bone than maggot extracts and allantoin. E. M. J.

Carbon disulphide in control of sylvatic plague vectors. M. A. Stewart (*Amer. J. Hyg.*, 1942, **36**, 243—246).—Fumigation of ground squirrel burrows in California with 2, 3, or 4 oz. of CS₂ killed the rodents but the lethal effect on adult fleas on the hosts and in the nests was variable. CS₂ is efficient and economical in creating and

maintaining belts free from ground squirrels around areas where plague does not exist among rodents. Methyl bromide should be used when the rodents are infected. B. C. H.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Fatigue. A. von Muralt (*Schweiz. med. Wschr.*, 1942, 72, 301—303).—A lecture. A. S.

Grid for evaluating physical fitness (Wetzel). H. Bruch (*J. Amer. Med. Assoc.*, 1942, 118, 1289—1293).—The grid for evaluating physical fitness (Wetzel, *ibid.*, 1941, 116, 1187) was applied to 52 children with abnormal bodily dimensions. It is useful in recognising abnormal changes in height/weight relationship and in assessing therapeutic results, but some limitations of its val. are noted. C. A. K.

Silicosis: occurrence and control. W. M. Pierce (*Chem. Met. Eng.*, 1942, 49, No. 11, 110—112).—A brief review.

Eye in industry. Eyes of the worker.—See A., 1943, III, 16, 17.

Methyl chloride poisoning.—See A., 1943, III, 52.

XXII.—RADIATIONS.

Theory of biological effect of radiation. II. N. Koyenuma (*Physikal. Z.*, 1941, 42, 213—217).—Assuming that chromosomes and genes are crystal, it is possible to calculate the variation with temp. of the no. of excited atoms in them. The effect of temp. on the free path of an electron in a lattice is calc. Assuming that a mutation or injury to a cell corresponds to a transition process in a crystal, it is possible to calculate the effect of temp. on cells. A. J. M.

Radium therapy of carcinoma of cervix. B. Sandler (*J. Obstet. Gynaec.*, 1942, 49, 101—148).—A description and discussion of technical problems. It is found impossible to deliver a cancericidal dose of Ra further than 3—4 cm. from the midline or to the regional lymph-nodes in the lateral pelvic wall. Nearly half of all stage I and II cases have invasion of such nodes and Ra alone will not cure these metastases. P. C. W.

Röntgen-ray therapy of skin cancer overlying cartilage and bone. A. H. Dowdy (*N.Y. Sta. J. Med.*, 1940, 40, 621—626).—No damage to cartilage and bone was seen during at least the first year following treatment with 3600—6000 r. at 200 kv. and a heavy filter giving a half-val. layer of 1.6 mm. Cu in 13 cases. E. M. J.

Irradiation treatment of cancer of lip. B. F. Schreiner and C. J. Christy (*Radiology*, 1942, 39, 293—297).—Report of 636 cases, 90% of which were treated by unfiltered X-radiation at 140 kv., 5 ma., half-val. layer 1.9 mm. Al, 20 cm. distance, 1600—2400 r. being given in one treatment; the remainder by interstitial Rn seeds or superficial Ra. The abs. 5-year cure rate was 59%, the net rate 74.4%. E. M. J.

Radium applicator for treatment of corporeal carcinoma. H. Strauss (*N.Y. Sta. J. Med.*, 1940, 40, 529—533).—A triangular apparatus carrying 3 Ra tubes and which can be introduced folded up and then opened out is described and isodose curves are given. E. M. J.

Disadvantages of beam collimation by limiting diaphragm in deep X-ray therapy. S. M. Silverstone and B. S. Wolf (*Radiology*, 1942, 39, 314—319).—There was an eccentric umbra and a definite penumbra when a limiting diaphragm was used 28.5 cm. from the target with focus-skin distances of 50—80 cm. The depth doses in the periphery of the beam were correspondingly smaller than those obtained with a Pb-lined cone giving a similar field size. E. M. J.

Results of X-ray therapy in thyrotoxicosis.—See A., 1943, III, 22.

Abnormal adrenal discharges in angina pectoris and their control by X-ray therapy.—See A., 1943, III, 23.

Effects of radiation on gastro-intestinal tract, including salivary glands, liver, and pancreas. N. B. Friedman (*Arch. Path.*, 1942, 34, 749—783).—A general review. C. J. C. B.

Prurigo aestivalis, eczema solare, and rutilaria photogenica. S. Epstein (*J. invest. Dermat.*, 1942, 5, 187—196).—Report of 17 cases and review of the literature. C. J. C. B.

Effect of Röntgen rays on growing long bones of albino rats.—See A., 1943, III, 1.

Effect of X-ray stimulation on bio-electric potentials of avian egg.—See A., 1943, III, 26.

Stimulation of yeast respiration by ultra-violet radiations.—See A., 1943, III, 58.

Effect of ultra-violet irradiation on *Trichinella spiralis*. D. Stowens (*Amer. J. Hyg.*, 1942, 36, 264—268).—Mice were infected with a broth-gelatin suspension of 500 *T. spiralis* larvae previously irradiated by exposure to ultra-violet light for varying times.

Control animals received a portion of the same suspension before irradiation. Examination of the washings from the gastro-intestinal tracts of mice killed after 3—5 days showed that the no. of adult worms had been reduced by from 14.8% (5 min. exposure) to 99.5% (2 hr. exposure) compared with the controls. No morphological change occurred in the surviving adults. The no. of larvae present in the muscles was calc. from a digest of mice killed after 4 weeks. 58% (5 min. exposure) and 100% (1—2 hr. exposure) reductions occurred compared with controls. Although the broth-gelatin suspending medium offered some protection to the larvae, ultra-violet irradiation hindered the invasive power of *T. spiralis*. B. C. H.

Toxicity of ultra-violet radiation. A. L. McAulay and M. C. Taylor (*J. Exp. Biol.*, 1939, 16, 474—482).—Bacteria, fungi, pollens, protozoa, and arthropods were exposed to monochromatic irradiation of λ 254—365 m μ . For all forms there was a sudden increase of toxicity between 297 and 313 m μ . Abs. lethal doses, however, varied widely. D. M. SA.

Generation and use of focussed ultrasound in experimental biology. J. G. Lynn, R. L. Zwemer, A. J. Chick, and A. E. Miller (*J. Gen. Physiol.*, 1942, 26, 179—193).—The construction and method of working of an efficient generator of focussed ultrasound are described. The generation of focal heating in the centre of paraffin blocks and production of focal areas of destruction deep in fresh liver tissue with min. effects at the surface and no effects on intervening tissue are described. Focussed ultrasound of high intensity produces in animals local cerebral changes, as inferred from behaviour disabilities, and as demonstrated at autopsy. Thus there is transient injury to the upper portions of the precentral gyri of the dog, and a cat treated over the occipital visual area shows blindness which lasts for several hr., but is followed by recovery. This local brain effect is achieved through the intervening scalp, skull, and meninges. At present, these brain changes are not produced without incidental injury to the skin and subcutaneous tissue lying at the base of the cone of radiation. Developments which will reduce skin effects and increase focal changes are discussed. J. N. A.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Diffusion of electrolytes in cells. A. S. Householder and R. R. Williamson (*Bull. Math. Biophysics*, 1942, 4, 73—76).—Mathematical. Williamson's treatment (A., 1940, III, 259; 1941, III, 1043) is simplified. F. O. H.

Theory of electrical polarity in cells. R. R. Williamson and I. Bloch (*Bull. Math. Biophysics*, 1942, 4, 83—88).—Equations are derived permitting the calculation of the electrical potential for any point on the axis of a spherical cell containing an asymmetric diffusion field and assumed to contain metabolite ions and charged colloidal particles. F. O. H.

Electron micrographs of protein molecules. W. M. Stanley and T. F. Anderson (*J. Biol. Chem.*, 1943, 146, 25—30).—Mols. of bushy stunt virus and *Limulus polyphemus* haemocyanin are spherical with diameters of 26 and 20 m μ ., respectively. Those of *Busycon canaliculatum* and *Viviparus malleatus* are plate-shaped with diameters 22 and 29 m μ ., respectively. Edestin has many particles up to 11 m μ . in diameter and almost none of larger diameter. H. G. R.

XXIV.—ENZYMES.

Localisation of enzymes in nerves. I. Succinic dehydrogenase and vitamin-B₁.—See A., 1943, III, 13.

Cytochrome oxidase content of centrifugally separated fractions of unfertilised *Arbacia* eggs.—See A., 1943, III, 26.

Lipin oxidase. II. Specificity of lipoxidase. III. Relation between carotene oxidation and enzymic peroxidation of unsaturated fats. R. J. Sumner (*J. Biol. Chem.*, 1942, 146, 211—213, 215—218; cf. A., 1940, III, 764).—II. The max. peroxidation of the 9:10 (*cis*) double linking in oleic acid is 16% of the theoretical. The corresponding *trans*-acid, elaidic acid, is not peroxidised. The presence of additional isolated double linkings, e.g., linolenic acid with double linkings at the 9, 12, and 15 positions, increases the degree of peroxidation, in this case to 95% of the theoretical for one double linking. No increase takes place when the double linkings are conjugated, as in α -elaeostearic acid from China wood oil. III. Carotene is not directly oxidised either by this enzyme or by the fat peroxides, although fat peroxidation must be actively in progress. The agent responsible is probably a reactive intermediate oxide, since fat peroxidation is at the same time reduced. P. G. M.

Factors influencing the cresolase activity of tyrosinase. Effect of gelatin and *p*-cresol concentration. W. H. Miller and C. R. Dawson (*J. Amer. Chem. Soc.*, 1942, 64, 2344—2348).—Oxidation of *p*-cresol in presence of a high-catecholase tyrosinase is characterised by an induction period independent of the cresol concn. in absence of gelatin and only slightly influenced thereby in presence of gelatin;

the max. rate of oxidation, reached in 20–30 min., remains const. until about 75% of the cresol is oxidised. For a high-cresolase prep. in absence of gelatin the induction period is shortened by increased cresol concn. but is unaffected thereby in presence of gelatin; the max. rate is reached more rapidly than for a high-cresolase prep. but decreases sooner; gelatin increases the duration of the max. rate. For both preps. gelatin lessens the inhibiting effect of an excess of cresol and in all cases increases the rate. Gelatin thus obscures or changes the nature of the reactions; the cause of its effects, more complex than mere prevention of inhibition, is discussed. R. S. C.

pH stability of protyrosinase and tyrosinase. T. H. Allen, A. B. Otis, and J. H. Bodine (*J. Gen. Physiol.*, 1942, 26, 151–155).—Protyrosinase is unstable at pH vals. above 7.30. Between pH 7.30 and 9.30 it is partly destroyed and above 9.30 it is irreversibly converted into tyrosinase, which in turn is destroyed above pH 10.12. At low pH vals. protyrosinase is less stable than is tyrosinase. The former is destroyed below pH 4.80, whilst the latter is unaffected until the pH falls below 4.10. The tyrosinase which is formed from protyrosinase at high pH vals. is identical with that produced by other methods. J. N. A.

Activity of *l*(–)-dopa decarboxylase. H. Blaschko (*J. Physiol.*, 1942, 101, 337–349).—In liver and kidney extracts the activity of the enzyme is determined manometrically by measuring the formation of CO_2 under anaerobic conditions. In mammals, the enzyme is present in the extracts of all species examined [guinea-pig, pig, cat, dog, rhesus, man (kidney)]. It is present in the liver but not kidney of frogs. It is inhibited reversibly by cyanide; this inhibition is not progressive. It is inhibited also by suramine and hydroxytyramine but not by CO and NaN_3 . It does not decarboxylate various amino-acids at a comparable rate. The results suggest a new pathway of tyrosine breakdown via *l*(–)-dopa and hydroxytyramine; they give no support to the suggestion that *l*-amino-acids are generally metabolised by decarboxylation and subsequent oxidative deamination. Extracts from human kidney contain amine-oxidase. J. A. C.

Carbonic anhydrase in crustaceans. E. Kreps and E. Tschienkaeva (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 34, 101–104).—The gills of the crab *Pachygrapsus marmoratus* contain a higher concn. of carbonic anhydrase than do those of *Eryphia spinifrons* and a much higher concn. than do those of *Xanta hydrophylus*, there being close correlation between the motor activity of these crabs and the concn. of the enzyme in their gills. W. McC.

Choline-esterase in amphibian sphincter pupillæ.—See A., 1943, III, 17.

Anaerobic decomposition of homocysteine by various biological systems. Existence of homocysteine desulphurase. C. Fromageot and P. Desnuelle (*Compt. rend.*, 1942, 214, 647–648).—Cystinease of *B. coli* and non-proliferating cells of *Propionibacterium pentosaceum* and *B. subtilis* liberate practically no H_2S from homocysteine, whilst animal organs cause liberation of H_2S , liver being considerably more effective than are kidney and pancreas. The intensities of formation of H_2S from homocysteine and cysteine under the influence of various enzyme systems are not in a const. ratio; the ratio is 0.55 for liver and 1.92 for kidney and it also varies with the method of prep. of the enzyme from the same organ. Hence, this desulphurase that decomposes homocysteine is different from cysteine desulphurase, and the rôle of the enzyme in metabolism of S in the organism is discussed. J. N. A.

Phosphomonoesterases and pyrophosphatases in Basidiomycetes. N. van Thoi (*Compt. rend.*, 1942, 214, 643–644).—Two monoesterases and two pyrophosphatases are present in *Agaricus*, *Armillaria mellea*, *Clytocybe*, *Laccaria laccata*, *Lactarius deliciosus* and *subdulcis*, *Pholiota*, *Scleroderma*, and *Tricholoma*. The first phosphoesterase is extracted in 2–3 hr. by maceration with water, and has optimum pH 3.2–4.0. It is sp. for Na α - and β -glycerophosphate, and is inactive towards mono- and di-ethyl (and phenyl) phosphates, hexose mono- and di-phosphates, phosphopyruvic acid, and mono- and di-phosphoglyceric acids. It is inactivated by Mg^{++} and is often accompanied by a natural inhibitor, which is removed by adsorption of the enzyme on kaolin and subsequent elution. The second enzyme of the same type is extracellular, dephosphorylates the above esters at the optimum pH 5–5.6, is less sensitive towards Mg^{++} , and is unaccompanied by an inhibitor. The two pyrophosphatases have optimum pH 3.8–4 and 5.8–6.4, respectively. The second enzyme is accompanied by a natural inhibitor, which is removed by adsorption on $\text{Al}(\text{OH})_3$. Both enzymes are unaffected by Mg^{++} . J. N. A.

Serum acid phosphatase activity in carcinoma of prostate.—See A., 1943, III, 39.

Recent advances in significance and interpretation of phosphatase measurements in disease. F. W. Sunderman (*Amer. J. clin. Path.*, 1942, 12, 404–411).—A short review. C. J. C. B.

Breakdown of commercial starches by muscle extract. P. Fantl and M. N. Rome (*Austral. J. Exp. Biol.*, 1942, 20, 187–188).—Certain samples of commercial starches contain small amounts of Zn, which is sufficient, to a large extent, to inhibit formation of hexose 6-phosphate by rabbit muscle extract. Addition of Mn^{++} abolishes this inhibition. $2 \times 10^{-4}\text{M-Zn}^{++}$ is advantageous in the prep. of hexose 1-phosphate. J. N. A.

Molecular constitution of enzymically synthesised starch.—See A., 1943, II, 25.

Enzymic titration of duodenal contents.—See A., 1943, III, 35.

Malonylpepsin.—See A., 1943, II, 75.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Potassium, fermentation, and cell membrane. E. J. Conway (*Nature*, 1942, 150, 461–462).—Discussion. E. R. S.

Yeasts, genetics, cytology, variation, classification, and identification. A. T. Henrici (*Bact. Rev.*, 1941, 5, 97–179). F. S.

Photomicrographic study of the rate of growth of some yeasts and bacteria. G. Knaysi (*J. Bact.*, 1940, 40, 247–253).—The rate of growth of *Schizosaccharomyces pombe* but not that of *Bacillus cereus* cells is nil during division. A. A. M.

Yeasts occurring on dates. E. M. Mrak, H. J. Phaff, and R. H. Vaughn (*J. Bact.*, 1942, 43, 689–700).—76 cultures of yeast were isolated from Californian and Egyptian dates undergoing microbial degeneration. The yeasts included 30 *Zygosaccharomyces*, 18 *Hanseniaspora*, 8 *Candida*, 3 *Torulopsis*, and 2 *Saccharomyces*. The *Zygosaccharomyces* were more sugar-tolerant than the others. F. S.

Nutrilite requirements of osmophilic yeasts. A. G. Lochhead and G. B. Landerkin (*J. Bact.*, 1942, 44, 343–351).—Biotin was an essential nutrilit (growth factor) for all of 23 strains studied of *Zygosaccharomyces*, representing 18 species. Pantothenic acid was essential for 7 strains, stimulated the growth of 9 strains, and was unimportant for 7 strains. β -Alanine could replace pantothenic acid in providing the combined growth-factor effect. In 3 species inositol was necessary for optimum growth. With yeasts not requiring inositol the combined growth-factor effect was obtained with biotin and pantothenic acid. In some yeasts thiamin had slightly stimulating or depressing effects. Pyridoxine was even less important. F. S.

Chemical equations of phytochemical reductions by fermenting yeast cells and their relationship to the Pasteur effect. A. Gottschalk (*Austral. J. Exp. Biol.*, 1942, 20, 173–185).—When acetaldehyde is added to compressed yeast respiring and fermenting in glucose- PO_4^{---} solution it is reduced to ethyl alcohol and displaces completely that part of the O_2 used up which in normal respiration, with glucose as sole substrate, re-oxidises dihydrocozymase, a slow reaction which is mainly responsible for the Pasteur effect. By displacing O_2 as H acceptor for dihydrocozymase, the aldehyde is phytochemically reduced. The amount of this reduction is explained only if for each mol. of triose phosphate completely oxidised 2 mols. of dihydrocozymase are intermediately produced, which confirms that oxidation of triose phosphate to CO_2 and water by baker's yeast involves co-enzyme-I linked reactions. The Pasteur effect is not abolished when acetaldehyde is added to yeast respiring in glucose solution. 0.0125M-Acetaldehyde in presence of fermenting baker's yeast in N_2 reversibly inhibits the rate of fermentation and of total carbohydrate consumption. This can be regarded as the counterpart to the Pasteur effect in yeast cells. The reversible inhibition of the rate of fermentation occurs mainly because part of the cozymase is diverted from the triose phosphate enzyme to the aldehyde mutase. Examination of the two stages involved in the phytochemical reduction of diacetyl by fermenting yeast under anaerobic conditions (diacetyl \rightarrow acetylmethylcarbinol \rightarrow β -butylene glycol) shows that the fermentation acetaldehyde, deprived of its dihydrocozymase by these reactions, is dismutated to ethyl alcohol and acetic acid. The rate of reduction of acetylmethylcarbinol to β -butylene glycol is twice that of diacetyl to acetylmethylcarbinol. The Pasteur effect and the phytochemical reduction under aerobic conditions are related because the slow reduction of O_2 by dihydrocozymase effected through the flavoprotein carrier system offers any other reducible substance the opportunity to compete with O_2 for the H of dihydrocozymase. The result depends on the affinity of the reducing enzyme of fermentation for the reducible substance added, but is independent of the concn. of the latter if sufficient is present to saturate the enzyme. The rate of phytochemical reduction is not directly proportional to rate of fermentation, and even at the very low rate of fermentation in presence of O_2 some of the phytochemical reduction is probably effected by the anaerobic mechanism. The physiological significance of the mechanism by which phytochemical reductions are effected during respiration is discussed. J. N. A.

Synthesis of polysaccharides by yeast cells fermenting anaerobically glucose, fructose, or mannose. A. Gottschalk (*Austral. J. Exp. Biol.*, 1942, 20, 201—203).—Under anaerobic conditions in PO_4^{+++} solution at pH 4.3 compressed yeast converts glucose, fructose, or mannose into alcohol and CO_2 , but only 76.5% of the sugar consumed is fermented. Approx. 50% of the remainder is converted into polysaccharides. The ratio of polysaccharide formed to hexose consumed but not fermented varies somewhat with different strains of yeast, but there are no marked differences in this ratio with different hexoses. J. N. A.

Constant-pressure respirometer; use with medium volumes of yeast suspension. A. Gottschalk and W. A. Rawlinson (*Austral. J. Exp. Biol.*, 1942, 20, 169—172).—The apparatus is described. The method allows the accurate determination of fermentation and respiration with vols. of yeast suspensions large enough to perform chemical determinations necessary for a complete balance of added substrates. The accuracy is $\pm 2\%$. J. N. A.

Factors in the culture medium that affect the phosphate content of yeast. E. V. Eastcott and J. J. Rae (*Canad. J. Res.*, 1942, 20, B, 202—206).—Yeast grown in a weakly buffered medium has a low phosphate content, particularly if growth continues until the pH falls below 3. Low-phosphatase yeast inoculated into a well buffered medium produces phosphatase up to the normal level. Phosphatase is high in yeast grown on a low- PO_4^{+++} medium, but variations in Mg^{++} have no effect. R. L. E.

Synthesis of vitamin- B_1 by yeast.—See A., 1943, III, 42.

Biochemistry of *Fusarium*. Influence of diphosphopyridine nucleotide on alcoholic fermentation (in vivo). B. S. Gould, A. A. Tytell, and H. Jaffe (*J. Biol. Chem.*, 1942, 146, 219—224).—Diphosphopyridine nucleotide is a limiting factor in alcohol production by *F. tricothecoides*. The course of this fermentation is probably similar to that in cell-free preps. Fermentation, but not growth, is stimulated by diphosphopyridine nucleotide. R. L. E.

Specific effect of zinc and other heavy metals on growth and fumaric acid production by *Rhizopus*. J. W. Foster and S. A. Waksman (*J. Bact.*, 1939, 37, 599—617).—Zn was essential for growth of *R. nigricans* and even 1.2 p.p.m. Zn altered its physiology. Probably Zn acts as catalyst for destruction of the glucose mol., thereby liberating energy for the fungus. In absence of Zn *R. nigricans* did not completely oxidise glucose (much of which was converted into fumaric acid) and the fungus made slow and poor growth. The effect of Fe was opposite to that of Zn. Glucose concn. was an important factor in the influence of Zn and Fe. 10% glucose in media gave optimum results for growth etc. of *Rhizopus*. Zn is probably closely associated with carbohydrate dissimilation. A. A. M.

Facultatively anaerobic mould of unusual heat-resistance. C. C. Williams, E. J. Cameron, and O. B. Williams (*Food Res.*, 1941, 6, 69—73).—A species of *Penicillium* capable of growth in high vac. has been isolated from blueberries and the soil of blueberry fields. The ascospores and sclerotia are destroyed in 9.7 and 1000 min., respectively, at 180° F. H. G. R.

Purification of fungus cultures by ionic selection. R. Bojanovsky (*Zentr. Bakt.*, 1938, II, 99, 55—60).—A culture of a cellulose-splitting fungus contaminated by bacteria was purified by sowing in an inorg. salt medium containing 0.5M-KCNS. A contaminated culture of *Aspergillus niger* was similarly purified with 0.3M- $\text{Al}_2(\text{SO}_4)_3$. F. S.

Effect of a carbon disulphide preparation on common microscopical soil fungi. A. Niethammer (*Zentr. Bakt.*, 1940, II, 102, 20—24).—*Trichoderma koningi*, *Penicillium expansum*, *P. bicolor*, *Fusarium expansum*, and *Cladosporium herbarum* were killed by the addition of 0.8 g. of a CS_2 prep. (Chem. Fabr. Fahlberg-List) to 30 g. of earth moistened with 15 c.c. of water (= 160 g. per sq. m.). Half that amount of CS_2 had no effect or stimulated their growth. The effect of the CS_2 was absent after 48 hr. The addition of org. matter prevented the lethal action of CS_2 . F. S.

Iron requirement of a cellulose-splitting fungus and its relation to the adsorption behaviour of ferrous ions. R. Bojanovsky (*Zentr. Bakt.*, 1938, II, 99, 48—55).—The growth of a cellulose-splitting *Monosporium* was greatly stimulated by 0.05% $\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$. The organism was also more resistant to higher concns. than cellulose-splitting bacteria. On the assumption that Fe^{++} inhibited or stimulated the absorption of amino-acids the effect of Fe^{++} on the absorption of asparagine on charcoal was compared with its effect on the growth of the organism. The max. effect on asparagine was at 0.2% $\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$ and on the organism at 0.05%, showing that besides promoting absorption Fe^{++} plays a part in nutrition. F. S.

Intercellular hormones. V. Proliferation-promoting effect of damaged-cell products due to adenine nucleotides and growth factors.—See A., 1943, III, 113.

Aspergillosis in wild herring gulls. W. A. Davis and L. S. McClung (*J. Bact.*, 1940, 40, 321—323).—Decaying vegetation was probably

the cause of this disease in a flock of gulls in Boston Harbour. *Aspergillus fumigatus* was isolated on autopsy. A. A. M.

Spontaneous coccidioid granuloma in lungs of wild rodents. L. L. Ashburn and C. W. Emmons (*Arch. Path.*, 1942, 34, 791—800). C. J. C. B.

Metabolism of tissues infected with *Leishmania donovani*, *L. infantum*, and *L. tropica*. S. Adler and R. Ashbel (*Ann. trop. Med. Parasit.*, 1940, 34, 207—210).—Slices of liver and spleen from Syrian hamsters and spermophils infected with *L. donovani* and *L. infantum* and of spleens of Syrian hamsters infected with *L. tropica* differed from normal tissues in showing increased O_2 consumption and aerobic glycolysis. Leishman-Donovan bodies produced no aerobic glycolyses and thus differ from the flagellate stage. F. S.

Mechanism of death in acute *Plasmodium falciparum* infection. [Resemblance to shock.] R. H. Rigdon (*Amer. J. Hyg.*, 1942, 36, 269—275).—In a case of acute *P. falciparum* infection in a child aged 7, examination within 3 hr. of death showed lesions similar to those observed in cases of shock. That the blood had failed to coagulate at the time of autopsy is regarded as significant. Pathological lesions in monkeys dying with *P. knowlesi* infection suggest anoxæmia as cause of death. B. C. H.

Skin tests in schistosomiasis with antigen from *Pneumoneces medioplexus*. J. T. Culbertson and H. M. Rose (*Amer. J. Hyg.*, 1942, 36, 311—315).—Three patients infected with *S. mansoni* showed a strong immediate reaction to an intradermal inoculation of 0.1 ml. of an extract in 0.5% carbol-saline of the frog lung fluke *Pneumoneces medioplexus*. 12 normal persons and 3 persons treated for schistosomiasis 3—6 years earlier gave no skin reaction. One person treated 2 years before gave a slight reaction. The antigen was thermo-stable, sol. in water, insol. in alcohol and ether, and was effective at a dilution of 1/20,000. B. C. H.

Cellulose decomposition by the saprophytic chytrids. A. J. Whiffen (*J. Elisha Mitchell Sci. Soc.*, 1941, 57, 321—330).—7 species of chytrids do, and 2 do not, decompose cellulose. The former prefer inorg. and the latter org. sources of N. A technique for isolation of pure cultures is described. R. L. E.

Inhibiting effect of acetic acid on micro-organisms in presence of sodium chloride and sucrose. A. S. Levine and C. R. Fellers (*J. Bact.*, 1940, 40, 255—269).—Addition of NaCl and sugar did not affect the toxicity of acetic acid to bacteria and yeast. At the same pH toxicity was proportional to acid content. Max. mould growth was obtained in a 20% nutrient sucrose solution containing 0.16% of acetic acid at pH 4.4. A. A. M.

Sodium azide as an inhibiting substance for Gram-negative bacteria. M. L. Snyder and H. C. Lichstein (*J. infect. Dis.*, 1940, 67, 113—115).— NaN_3 in 0.01% concn. in blood agar prevents the swarming of *Bact. proteus* and inhibits other Gram-negative organisms, thus allowing the isolation of streptococci and other Gram-positive organisms from faecal specimens. F. S.

Selective antibiotic action of various substances of microbial origin. S. A. Waksman and H. B. Woodruff (*J. Bact.*, 1942, 44, 373—384).—The bacteriostatic and bactericidal properties of various known substances of microbial origin were tested against *Bact. aerogenes*, *Bact. coli*, *Bacillus mycoides*, *Bacillus subtilis*, *Micrococcus lysodeiktitus*, *Sarcina lutea*, and *Actinomyces*. Gramicidin acted only on the cocci and to a slight extent on *Actinomyces*. Actinomycin, tyrothricin, tyrocidine, purified penicillin, gliotoxin, and the chemical detergent (lauryl sulphate) acted in low concns. on Gram-positive bacteria and only slightly on Gram-negative organisms. Pyocyanase, pyocyanine, and crude penicillin were more general in their action. Streptothricin was highly active against Gram-negative organisms and inactive against Gram-positive organisms. F. S.

Reversal by phosphatides of the antimicrobial action of crystalline protein from wheat. D. W. Woolley and L. O. Krampitz (*J. Biol. Chem.*, 1942, 146, 273—274).—Inhibition of growth of yeast and *Lactobacillus casei* by a wheat protein (cf. Balls *et al.*, B., 1942, III, 199) is abolished by lipositol, lecithin, phosphatidylserine, and peptone. The inhibition is reduced or absent in rich media. R. L. E.

Thermal sensitivity of marine bacteria. C. E. Zobell and J. E. Conn (*J. Bact.*, 1940, 40, 223—238).—The optimum temp. for incubation of marine bacteria on nutrient agar was 18—22°. Few colonies developed on plates incubated at 30—37°. Heating samples of sea-water and mud at 30° for 10 min. killed 25% of the bacteria, and at 40° for 10 min. 80%. The respiratory enzymes of some forms were inactivated by temp. as low as 30°. A. A. M.

Essential principles in clean wound healing. A. O. Whipple (*Surg. Gynec. Obstet.*, 1940, 70, 257—260).—A decline from 12% to 2% of infection in wound healing is recorded between 1925 and 1938. The % infection was higher with gut sutures than with silk ones throughout. P. C. W.

Chemotherapeutic agents of microbial origin. N. Sapeika (*Clin. Proc.*, 1942, 1, 263—265).—Brief review. P. C. W.

Evaluation of a group of germicides by the tissue culture technique. A. J. Salle, W. A. McOmie, I. L. Shechmeister, and D. C. Foord (*J. Bact.*, 1939, 37, 639—646).—An improved method for testing the efficiency of germicides for clinical administration is proposed, and compounds are tested for their toxicity to embryonic tissue as well as to bacteria. Halogens, phenols, Hg and Ag compounds were tested; the two first-named were superior and free from bacteriostatic action. Azochloroamide, hexylresorcinol, and metaphen have the highest efficiency of the newer org. compounds. A. A. M.

Lethal action of short ultra-violet rays on several common pathogenic bacteria. D. G. Sharp (*J. Bact.*, 1939, 37, 447—460).—10 species of bacteria were tested for resistance to short ultra-violet rays and the energy necessary to reduce each to a 10% survival ratio is recorded. The extreme vals. of energy necessary to kill 90% of non-spore-forming organisms were 168 and 337 ergs per sq. mm., but 452 ergs per sq. mm. were necessary with a mixture of spores and vegetative forms of *B. anthracis*. A. A. M.

Bactericidal action of ultra-violet radiation on air-borne organisms.—See A., 1943, III, 55.

Prevention and control of poultry diseases and parasites. W. J. Pistor and C. F. Rowe (*Arizona Agric. Exp. Sta. Ext. Circ.*, 1941, No. 112, 33 pp.).—A summary is given of diseases and means of control. A. A. M.

p-Aminobenzoic acid, growth factor for *Acetobacter suboxydans*. J. O. Lampen, L. A. Underkofler, and W. H. Peterson (*J. Biol. Chem.*, 1942, 146, 277—278).—*A. suboxydans* requires p-aminobenzoic acid for growth, 0.005 μ g. per ml. giving max. results. R. L. E.

Factors influencing bacterial growth in butter. B. W. Hammer and H. F. Long (*Bact. Rev.*, 1941, 5, 337—374). F. S.

Effect of kefir powder and "Kefermon" on growth of lactic acid bacteria. M. Schulz (*Zentr. Bakt.*, 1939, II, 99, 375—380).—The growth of the thermophilic organisms is poor on whey as judged by acid production. The addition of kefir extract increases acid production by 40% and greater increases can be obtained with 3% casein, 3% kefir powder (dried kefir grains), or 3% Kefermon (a mixture of kefir grains and casein). *Thermobact. yoghurt* was equally stimulated by casein and Kefermon, but very little by kefir powder. *Thermobact. helveticum* was greatly stimulated by all three. *Lactobacillus bulgaricus*, *L. acidophilus*, and enterococci were greatly stimulated by the kefir preps. but not by casein. For all the organisms Kefermon afforded the best nutritive addition to whey. F. S.

Cultural requirements for production of black pigments by bacilli. F. E. Clark and N. R. Smith (*J. Bact.*, 1939, 37, 277—284).—*Bacillus niger* requires tyrosine to produce the black pigment. Addition of a fermentable sugar inhibits pigmentation. *B. atterrimus* blackens media containing fermentable carbohydrates in presence or absence of tyrosine, but unlike *B. niger* does not blacken sugar-free peptone media. *B. betanigrificans* produces a black coloration in presence of metallic Fe but not on media readily blackened by *B. niger* and *B. atterrimus*. A. A. M.

Growth factors for bacteria. VII. Nutrient requirements of certain butyl alcohol-producing bacteria. L. E. McDaniel, D. W. Woolley, and W. H. Peterson (*J. Bact.*, 1939, 37, 259—268).—Accessory growth-promoting substances for *Clostridium butylicum* and *C. acetobutylicum* were found in liver, yeast, malt sprouts, yellow corn, wheat bran, and a commercial vitamin prep. The stimulatory substance for *C. butylicum* was purified by chemical means. The factor cannot be replaced by riboflavin or other similar org. compounds. The factor is stable to autoclaving, to steaming in n-alkali, and to bromination. A. A. M.

Simplification of Lindner's drop method [of isolation from a single cell]. V. Vučković (*Zentr. Bakt.*, 1938, II, 99, 32—34).—A single colony of a yeast or mould is suspended in 10 c.c. of water or saline and a small drop is examined in a hanging-drop prep. A count is made of the organisms present in the whole drop (preferably about 3). The drop is then washed off with a larger drop on a Pt loop and the whole is inoculated on a solid medium. When the no. of colonies corresponds with the no. of cells seen a single cell isolation has been achieved. F. S.

Importance of carbon dioxide in diagnostic bacteriology with observations on a carbon dioxide (capneic) incubator. S. B. Rose (*Amer. J. clin. Path.*, 1942, 12, 424—433).—Many strains of bacteria (capnophiles) require added CO₂ for isolation and it is recommended that a non-ventilated CO₂-enriched incubator (capneic) described in the text be employed, routinely. C. J. C. B.

Method for producing increased carbon dioxide tension in individual culture tubes and flasks. H. J. Shaughnessy (*J. Bact.*, 1939, 37, 153—159).—A gelatin capsule containing a measured amount of bicarbonate solution which slowly dissolves in acid is described. A. A. M.

Technique for even distribution of gases through bacterial cultures. G. Schwartzman and W. Bierman (*J. Lab. clin. Med.*, 1942, 28, 102—104).—A technique is described for the cultivation of micro-organisms under the following conditions: const. slow agitation of the cultures during the entire period of growth; controlled temp.; even distribution of mixture of gases favourable for the micro-organisms in the media; easy removal of samples without danger of contamination. C. J. C. B.

Introduction of agar-agar into bacteriology. A. P. Hitchens and M. C. Leikind (*J. Bact.*, 1939, 37, 485—493).—An historical review. A. A. M.

Use of agar to detect contaminants in biological products. C. R. Falk, H. B. Bucca, and M. P. Simmons (*J. Bact.*, 1939, 37, 121—131).—0.1% agar in a semi-fluid medium for comparative tests with 0.03% glucose—biological products broth in routine testing of bacterial growth is recommended. A. A. M.

Successive dilution method for estimating bacterial populations. R. D. Gordon and C. E. ZoBell (*Zentr. Bakt.*, 1938, II, 99, 318—320).—Experimental data are arranged graphically to corroborate the theory that modal estimates of bacterial densities, based on the successive dilution technique, are not satisfactory. The geometric mean is proposed as the correct estimate, for which formulæ have been developed by Gordon (A., 1938, III, 625). F. S.

Determination of bacterial count on restaurant glassware. M. Novak and A. M. Lacey (*Amer. J. Hyg.*, 1942, 36, 316—320).—A method is described whereby the inner surface and outer edge of glasses are covered with a film of double-strength nutrient agar and incubated in sterile beakers or battery jars covered with Petri dish lids for 48 hr. at 37°. Direct counts are made of the entire surface or a portion of the surface should the colonies be very numerous. B. C. H.

Oxygen demand and oxygen supply [for bacteria]. O. Rahn and G. L. Richardson (*J. Bact.*, 1942, 44, 321—332).—The rate of multiplication of most bacteria remains const. only for a few hr. because the O₂ is soon exhausted and from then on O₂ from the air is available only to a depth of 2 mm. at the surface. Below this surface stratum facultative anaerobes grow more slowly while strict aerobes usually decrease in no. Aeration may not increase the rate of multiplication but maintains it const. for a long time so that aerated cultures may have 10 times as many bacteria as quietly standing cultures. Aerated cultures show a delay in starting probably because O₂ is harmful to resting cells in which the enzyme mechanism is not working at the normal rate of multiplying cells. Convection currents may also prevent cells from establishing a suitable environment at the expense of reserve compounds. F. S.

Relative inhibition of micro-organisms by glucose and sucrose syrups. L. Tarkow, C. R. Fellers, and A. S. Levine (*J. Bact.*, 1942, 44, 367—372).—40 and 50% glucose was more inhibitory than equal concns. of sucrose to *Saccharomyces cerevisiae* and *Aspergillus niger*. Mixtures of equal parts of the sugars inhibited growth intermediately to that of either sugar alone at the same concn. The inhibitory action of glucose on yeast was increased by heating the sugar solution at 100° for 15 min. The inhibitory effect of glucose on the mould was little affected by heating. F. S.

Isolation and absorption spectrum maxima of bacterial carotenoid pigments. B. Sobin and G. L. Stahly (*J. Bact.*, 1942, 44, 265—276).—The pigments were extracted from bacterial cells with hot methyl alcohol, separated into groups by partition between immiscible solvents, and then isolated by chromatographic adsorption and subjected to spectrometric analysis. 12 carotenoid pigments were isolated from 5 species of *Flavobacterium*, 2 of *Sarcina*, 2 of *Micrococcus*, 2 of *Erwinia*, 1 *Bacterium*, and 1 *Cellulomonas*. 7 of the pigments were alcohols and 5 were hydrocarbons. Pigments with absorption max. identical with those of δ -carotene and rubixanthin were found in all 12 strains of *Staphylococcus aureus* studied. Bacteria offer possibilities for discovering the function of the carotenoid pigments. F. S.

Development of colours from sulphonamides (p-nitrobenzenesulphonamide) under bacterial action.—See A., 1943, III, 48.

Precursors to the formation of creatinine by bacteria. C. H. Fish and T. D. Beckwith (*J. Bact.*, 1939, 37, 111—120).—Creatinine can be formed through bacterial action from peptone or from various amino-acids when glucose is present. Glycine, urea, and glucose mixtures in presence of *Proteus vulgaris* produced creatinine, but urea could not be replaced by an NH₄ salt. A. A. M.

Production of histamine in bacterial cultures. A. H. Eggerth (*J. Bact.*, 1939, 37, 205—222).—Histamine production was determined in cultures of 49 strains of bacteria from the intestinal tract. All except *Clostridium welchii* require free histidine for histamine formation. Optimum conditions are: pH 5.0—5.5, temp. 26—37° (varying within these limits with different organisms), and the addition of amino-acids to the culture medium. Under favourable conditions, histamine production begins within 24 hr. and continues rapidly for 4—5 days, after which the rate of production decreases. A. A. M.

Determination of histamine in bacterial cultures. A. H. Eggerth, R. J. Littwin, and J. V. Deutsch (*J. Bact.*, 1939, **37**, 187—203).—A method for the quant. extraction of histamine from small quantities of bacterial cultures is described. Histamine is determined by the colorimetric method of Koessler and Hanke. Histamine dipicrate is also prepared from this extract. Various org. substances may interfere with the determination, and methods of eliminating them are described. A. A. M.

Chemistry of proteins of acid-fast bacilli. F. B. Seibert (*Bact. Rev.*, 1941, **5**, 69—95). F. S.

***Azotomas insolita*, a new aerobic nitrogen-fixing micro-organism.** C. Stapp (*Zentr. Bakt.*, 1940, **II**, 102, 1—19).—This bacterium was isolated from Egyptian cotton and Burma rice and is therefore probably an inhabitant of tropical soils. It is Gram-negative, flagellated, and non-sporing. In broth-agar it grows as short bacilli or cocci measuring 0.6—6.8 by 0.6—6.2 μ . It does not liquefy gelatin nor alter milk. N fixation is excellent when α -alanine, glycine, and asparagine are supplied and good with NH_4 salts. The optimum temp. is 25—30°. Growth is good between pH 4.0 and 8.5. Optimal N fixation is obtained in N-free media with the addition of 1 mg.-% of $\text{Na}_2\text{MoO}_4 \cdot 2\text{H}_2\text{O}$ and 150 mg.-% of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$. Small amounts of Mn and Si but not Cu also have a favourable action. The max. amount of N fixed is 11.9 mg. per 100 c.c. of medium. (4 photomicrographs.) F. S.

Nitrogen fixation by *Azotobacter* in association with other bacteria. C. J. Lind and P. W. Wilson (*Soil Sci.*, 1942, **54**, 105—111).—N fixation by *A. vinelandii* was increased in mixed culture with an aerobic sporing contaminant. The two species of organisms grew in continuous culture without domination by the contaminant. *Clostridium pasteurianum* grown with *Azotobacter* stimulated N fixation under conditions adverse to the activity of *Azotobacter* alone. Such stimulative effects occurred in media having sub-optimal but not in those of optimal supplies of Fe. A. G. P.

Physiology of root nodule bacterium. J. Pietz (*Zentr. Bakt.*, 1938, **II**, 99, 1—32).—The infected tissue of root nodules in *Vicia faba* had pH 6.0. The root and the cortex of the nodules had pH 3.5. The optimal pH for growth of the organism in pure culture was 6.0. The bacteria produced mostly org. acids. This process was inhibited by NH_4 salts and urea. Butyric acid was not formed. The nodules in N_2 had rH 9—11 at pH 7 and rH 4—6 at pH 6. Bacterial cultures in N_2 had a similar potential but in air the rH was 22—24. Growth was normally strictly aerobic and was favoured by O_2 . Good anaerobic growth was obtained in the presence of "red" (slightly oxidised) dihydroxyphenylalanine, with which the rH does not fall below 13. "Red" dihydroxyphenylalanine, which is present as such in the leguminous plants, provides the appropriate oxidation system for the growth of these organisms. F. S.

Bacterial plant groups. IV. Variations in fermentation characters of different strains of nodule bacteria of the cow-pea, *Cicer*, and *Dhaincha* groups. M. S. Raju (*Zentr. Bakt.*, 1938, **II**, 99, 133—141).—Rapidly growing strains of the cow-pea differed from slowly growing strains in their ability to grow well and produce a strong alkaline reaction on raffinose. Moderately growing strains had ill-defined fermentation characters. Ethyl and propyl alcohols were less readily available sources of energy than the higher alcohols. Of the 8 acids tested succinic acid was the best and malic and tartaric acids the next best sources of energy. The *Cicer* and *Dhaincha* groups grew well on malic acid, erythritol, and dulcitol, whereas the cow-pea group did not. With succinic acid the *Cicer* group produced an alkaline reaction while the *Dhaincha* group produced little or no change. In general, with sugars *Cicer* and *Dhaincha* cultures become acid and cow-pea cultures become alkaline. F. S.

Growth factor of the root nodule bacteria, *Rhizobium trifolii*. P. M. West and P. W. Wilson (*J. Bact.*, 1939, **37**, 161—185).—*R. trifolii* synthesises all necessary org. substances from the simple ingredients of a properly reduced carbohydrate-mineral salts medium. A stimulative material synthesised by growing cultures of *R. trifolii* is essential for continuous transfer of *R. trifolii* in a synthetic medium. This factor is easily destroyed by heat. It can be partly replaced by sp. amounts of thiamin and/or flavin. *R. trifolii* synthesises both vitamin- B_1 and riboflavin. A. A. M.

Production and oxidation of ethyl alcohol by legume nodules.—See A., 1943, III, 72.

Fermentation of meat products by the genus *Bacillus*. L. B. Jensen and W. R. Hess (*Food Res.*, 1941, **6**, 75—83).—A NO_3^- -sugar-pork medium for detection of organisms which produce gas in presence of NO_3^- , sugar, and cured meat is described (cf. Jensen *et al.*, B., 1934, 1034). No gas production occurs in standard sugar broths but it can be induced in sugar- NO_3^- broths by the addition of vitamin- B_1 with a few strains. NO_3^- is essential for production of gas. Spices and food-wrapping paper are frequently contaminated with spores of this genus. H. G. R.

Preparation of perseulose by oxidation of perseitol with *Acetobacter suboxydans*. E. B. Tilden (*J. Bact.*, 1939, **37**, 629—637).—Cultural conditions favourable to oxidation of perseitol to perseulose by *A. suboxydans* are described. 0.05% of glucose in the medium promotes complete oxidation. 3—4% of perseitol is changed quantitatively into perseulose in 36—48 hr. if cultures are aerated and agitated. A. A. M.

***Propionibacterium rubrum* from dairy cheese.** L. A. Margolena and P. A. Hansen (*Zentr. Bakt.*, 1938, **II**, 99, 107—115).—The morphology, cultural characters, sugar fermentations, volatile acid production, and pigment production in a strain of this organism are described. The mol. ratio of propionic to acetic acid produced with various sugars varied from 25:1 to 5:1. When cultures were centrifuged pigmented and non-pigmented organisms were separated in two layers. The O_2 uptake per hr. at 37° was 41 cu. mm. for the white layer and 42 cu. mm. for the red layer so that the pigment had no part in respiration. The pigment was insol. in fat solvents and is therefore not a carotenoid. F. S.

Metabolism of autotrophic bacteria. III. Energy storage material active in chemosynthetic process. K. G. Vogler and W. W. Umbreit (*J. Gen. Physiol.*, 1942, **26**, 157—167; cf. A., 1943, III, 144).—Oxidation of S by *Thiobacillus thio-oxidans* in absence of CO_2 is coupled with transfer of PO_4''' from the medium to the cells, whilst fixation of CO_2 is coupled with transfer of inorg. PO_4''' from cells to medium, and depends, in absence of simultaneous oxidation of S, on the amount of PO_4''' previously taken up during oxidation of S. The energy which is formed by oxidation of S in absence of CO_2 , and is released for fixation of CO_2 under conditions which do not permit oxidation of S, is bound up with a phosphorylated compound, and the energy is probably stored in the cell as PO_4''' bond energy. S is oxidised at a const. rate for many hr. in absence of CO_2 and the PO_4''' energy formed during the oxidation is probably released by cell phosphatases. The latter, and hence oxidation of S in absence of CO_2 , are inhibited by inorg. PO_4''' , but in presence of CO_2 alternative uses for the energy are available, and there is no inhibition of oxidation. Oxidation of S (energy output) is coupled, not with fixation of CO_2 , but with esterification of PO_4''' , whilst fixation of CO_2 (energy utilisation) is coupled with release of PO_4''' . J. N. A.

Study of *Thiobacillus thiooxidans* with electron microscope. W. W. Umbreit and T. F. Anderson (*J. Bact.*, 1942, **44**, 317—320).—Electron micrographs showed a thin cell-wall differentiated from the internal protoplasm. There were oval opaque cells, having presumably a high reserve of storage products, elongated cells showing a variety of structures, granules, vacuoles and spirals, and clear oval cells, presumably dead cells. (6 electron micrographs.) F. S.

Removal of bacteria from tracheal tree and lungs. L. J. Cralley (*Amer. J. Hyg.*, 1942, **36**, 303—310).—85 rabbits were exposed to droplet infection by *Chromobacterium prodigiosum* in a glass inoculating chamber. The influence of temp. and humidity before and after infection, and the retention and removal of bacteria from the lungs, trachea, and main bronchi were studied. An apparatus for determining the bacterial dosage in the inoculating chamber by means of suction of the air through funnels on to Petri dishes is described. Immediately after each experiment the rabbits were killed and counts made on the trachea and minced up lungs within 1 hr. Even with massive doses, 100,000—1,500,000 organisms in 15 min., only 4% of inhaled bacteria reached the lungs. At 26° with 45% R.H. 80% of organisms were removed in the first hr. and 90% within 3 hr.; no organisms were found after 12 hr. When the animals were held at extremes of temp. and humidity, 38° with 30% R.H. and 4° with 80% R.H., the rate of removal of organisms from the lungs was delayed during the first hr. to 55 and 60%, respectively, but after 8 hr. counts were similar to controls. Sudden extreme changes exert a greater effect and only 30% of organisms may be removed during the first hr. Environmental changes had no effect on the ciliary action of the trachea and main bronchi or on the bacterial filtering mechanism of the upper respiratory tract. B. C. H.

Bacteriology of bull semen. I. C. Gunsalus, G. W. Salisbury, and E. L. Willett (*J. Dairy Sci.*, 1941, **24**, 911—919).—The count per ml. was 1000—22,000,000, the predominating organisms being diphtheroids, *Pseudomonas*, *Bact. coli*, and staphylococci. Bacterial nos. were markedly reduced by cleaning the sheath and bull. The bacteria grew least in the undiluted semen, and the PO_4''' -egg yolk diluent considerably enhanced the rate of growth. Holding at 5° reduced bacterial growth to negligible proportions. J. G. D.

Oxidation of ascorbic acid as influenced by intestinal bacteria. W. B. Esselen, jun., and J. E. Fuller (*J. Bact.*, 1939, **37**, 501—521).—Certain bacteria, especially the coliform group, inhibit the oxidation of ascorbic acid, which is also retarded by CO_2 , 8-hydroxyquinoline, and the absence of O_2 . Three factors for this inhibition from bacterial causes are suggested; (a) formation of non-ionised Cu compounds, so that catalytic action of Cu^{++} is destroyed, (b) production of CO_2 which saturates the medium, (c) lowering of O_2 .

tension of medium. A combination of all three factors was most satisfactory for inhibition. Two strains of *E. coli* reduced dehydroascorbic acid to ascorbic acid. Killed bacterial cultures or cell-free filtrates from living cultures did not inhibit oxidation of ascorbic acid. A. A. M.

Decomposition of pectin and galacturonic acid by intestinal bacteria. S. C. Werch, R. W. Jung, A. A. Day, T. E. Friedemann, and A. C. Ivy (*J. infect. Dis.*, 1942, 70, 231—242; cf. A., 1942, III, 852).—Organisms capable of decomp. pectin were isolated from the faeces and intestinal tract of dogs fed on pectin. The more active organisms belonged to the *Aerobacillus*, *Lactobacillus*, *Micrococcus*, and *Enterococcus* groups. Berkefeld filtrates contained a heat-labile, enzyme-like substance. Some organisms produced a pectinase-like or liquefying enzyme and others a pectase-like or coagulating enzyme, in addition to a pectinase. *Bact. coli* produced only a pectinase. One *Aerobacillus* and a mixture of a *Micrococcus* and an *Enterococcus* decomposed galacturonic acid yielding formic and acetic acid. Pectin was also decomposed to formic and acetic acid with a small quantity of galacturonic acid. F. S.

Microbiology of the caecum of the horse. F. Baker and R. Martin (*Zentr. Bakt.*, 1939, II, 99, 400—424).—Vegetable cell-wall substances are disintegrated by iodophil micro-organisms, which lie in lacunae formed by their action. Disintegration of cellulose and hemicellulose is first accompanied by an intensification of the staining reactions with ZnCl_2 -I and Congo-red and then by disorganisation of the micellar substratum when double refraction and the staining reactions disappear. Cutin entirely resists and heavily lignified structures are partially immune to the cytolastic process. The cytolastic organisms, which include vibronic and coccoid forms, are stages in the life-cycle of a single polyphasic species. The indigenous protozoa are not primary agents in cell-wall disintegration but digest starch granules and bacteria. The characters of a no. of iodophil and aniodophil organisms present are described. The results are discussed with particular reference to the organisation of carbohydrate metabolism in the caecum. (34 photomicrographs.) F. S.

Lipins of certain enteric bacilli. C. H. Williams, W. R. Bloor, and L. A. Sandholzer (*J. Bact.*, 1939, 37, 301—313).—Analyses of the lipins of 9 strains of enteric bacilli are given. The total lipin content was 4.3—4.7% of dry wt. No cholesterol or other sterols were found. The fatty acid content was 2.5—4.6% and I val. 42—82. Phospholipins constituted approx. 60% of total lipins. The P and N contents of the phospholipin mol. were normal. A. A. M.

Action of intestinal micro-organisms on ascorbic acid.—See A., 1943, III, 43.

Concept of [bacterial] stability and some of its implications. L. W. Parr and M. L. Robbins (*J. Bact.*, 1942, 43, 661—684).—Strains derived from coliform citrate mutants and from *Bact. coli-mutabile* may be completely stable, almost completely stable, or may lack reasonable stabilisation. The study of multiple subculture strains of any organism offering difficulty in classification is suggested as an aid to a better understanding of the real nature of the organism in question. No isolation should be given status which has not been repeatedly subcultured and shown to be stable with respect to the test media. F. S.

Relation between assimilation and respiration in suspensions and cultures of *Escherichia coli*. C. E. Clifton and W. A. Logan (*J. Bact.*, 1939, 37, 523—540).—Oxidation of acetate, propionate, lactate, fumarate, succinate, glucose, and glycerol by washed suspensions of *E. coli* in buffers was not carried to completion. A portion of the substrate is probably assimilated as carbohydrate, the amount depending on the nature of the substrate and not its concn. Respiratory and assimilatory processes are closely connected. A. A. M.

Nitrogen metabolism of certain coliform bacteria. P. L. Carpenter (*J. Bact.*, 1939, 37, 11—20).—Strains of *Escherichia*, *Aerobacter*, and an *Escherichia-Aerobacter* intermediate utilise peptone-N in preference to NH_3 , although NH_3 is used if it is the only available source of N present. Analyses indicate that amino- and simple peptide-N might be built directly into protoplasm without intermediate deamination. A. A. M.

Electrophoretic relationships of colon bacilli. G. H. Chapman and C. W. Lieb (*J. Bact.*, 1939, 37, 21—25).—Electrophoretic migration velocities of *Aerogenes* type of colony on Levine's eosin-methylene-blue medium were similar but different from those of *Escherichia coli* and non-lactose fermenters. Differences in electrophoretic migration velocities of *E. coli* are apparently associated with differences in the power of the cultures to stimulate the production of complement-fixing antibodies to *E. coli*. A. A. M.

Productivity of media containing milk for recently isolated strains of the coliform group. M. T. Bartram and L. A. Black (*J. Bact.*, 1939, 37, 371—375).—Two strains each of *Escherichia*, *Aerobacter*, and intermediates isolated from raw milk were inoculated into 5 liquid and 7 solid media and the productivity was compared with

standard lactose broth controls for the former and standard agar for the latter. A. A. M.

Factors limiting bacterial growth. IV. Age of the parent culture and rate of growth of transplants of *Escherichia coli*. A. D. Hershey (*J. Bact.*, 1939, 37, 285—299).—Initial growth rates deduced from measurements of turbidity, bacterial N, and O_2 uptake of broth transplants of *E. coli* from young and old cultures gave identical vals. The physiological state of cells does not influence their rate of growth. A. A. M.

Chromogenic strains of *Escherichia*. R. P. Tittsler (*J. Bact.*, 1939, 37, 91—96).—Cultural characteristics of 5 strains of chromogenic coliform bacilli isolated from water and human faeces are discussed and classified into 3 types. Their relationship with *E. paragrauenthalii* and *E. acidilactici* are shown. A. A. M.

Lactase activity of *Escherichia coli-mutabile*. C. J. Deere, A. D. Dulaney, and I. D. Michelson (*J. Bact.*, 1939, 37, 355—363).—Lactase is present in both white and red forms of *E. coli-mutabile* grown in absence of lactose. Both organisms when grown on lactose media produce more lactase-active prep. than those grown on lactose-free media. The production of lactase from preps. of both white and red organisms was studied under different conditions. Lactase was classed as a constitutive enzyme. A. A. M.

"Activation" of the lactase of *Escherichia coli-mutabile*. C. J. Deere (*J. Bact.*, 1939, 37, 473—483).—The O_2 consumption of preps. of both red and white strains of dried and undried cells of *E. coli-mutabile* are studied and an hypothesis of altered membrane permeability is suggested to explain the observed facts. A. A. M.

Effect of hibernation on content of coliform bacteria in oysters. J. Gibbard, A. G. Campbell, A. W. H. Needler, and J. C. Medcof (*Amer. J. Publ. Health*, 1942, 32, 979—986).—When the temp. of the water falls below 4°, *B. coli* disappeared from the oysters in a few days even when the water still showed *B. coli* pollution. C. J. C. B.

Nicotinic acid and thiamin hydrochloride as growth-promoting factors for *Brucella*. G. P. Kerby (*J. Bact.*, 1939, 37, 495—499).—Growth of *Br. abortus* is increased by addition of nicotinic acid and thiamin hydrochloride to Bacto Tryptose Agar in concns. of 30 and 25 mg., respectively, per l. of medium. *Br. melitensis* strain is inhibited by either factor. A. A. M.

Effects of sulphanilamide on *Brucella melitensis*, var. *melitensis*, *abortus*, and *suis*. E. E. Menefee, jun., and M. A. Poston (*J. Bact.*, 1939, 37, 269—276).—Experiments with guinea-pigs confirm that in cases of brucellosis patients responding to sulphanilamide therapy have a high agglutinin titre before chemo-therapy. This supports the view that the bacteriostatic action allows normal defence mechanisms of the body to cope adequately with the invading bacteria. A. A. M.

Clinical manifestations and diagnosis of chronic brucellosis. R. C. Manchester (*Ann. int. Med.*, 1942, 16, 950—965).—Skin tests were positive in 38 of 100 cases suffering from chronic complaints. Coronary artery disease was found in 26% of the skin test positive group, and in 3.5% of the negative group. Only 1 patient with a negative skin test presented a clinical picture compatible with brucellosis. A. S.

Eosinophilia and pneumonitis in chronic brucellosis. K. A. Elsom and I. J. Ingelfinger (*Ann. int. Med.*, 1942, 16, 995—1002).—2 patients suffered from fever, pneumonitis, and eosinophilia, and showed immune responses to *Brucella abortus*. Both recovered. A. S.

Non-sporulating anaerobic bacteria of the intestinal tract. I. Occurrence and taxonomic relationships. K. H. Lewis and L. F. Rettger. **II. Growth-facilitating factors.** K. H. Lewis, M. Bedell, and L. F. Rettger (*J. Bact.*, 1940, 40, 287—307, 309—320).—I. Large nos. of these organisms occur in human faeces and in the intestines of white rats. In the latter, the no. of bacteria is greatly increased by the addition of lactose to a basal meat diet. 76 strains selected from approx. 400 cultures of human and rat origin were divided into two groups and their morphology and biochemical activities are discussed for classification purposes.

II. Growth is favoured by incubation temp. of 35—40°, the presence of 10% CO_2 , pH 6.3—7.0, and the glucose-cysteine agar medium described. A. A. M.

Nutritional requirements of *Clostridium parabolinum*, type A. S. S. Elberg and K. F. Meyer (*J. Bact.*, 1939, 37, 429—445).—The essential nature of certain acidic fractions from yeast and pregnancy urines in the growth of *Cl. parabolinum* is confirmed. Growth was obtained in media composed of amino-acids. Nutritional requirements of *Cl. parabolinum* resemble those of *Cl. sporogenes* but there are qual. differences. A. A. M.

Extracellular proteolytic system of *Clostridium parabolinum*. S. S. Elberg and K. F. Meyer (*J. Bact.*, 1939, 37, 541—565).—A "proteinaise" acting on gelatin and casein was secreted into the medium. Two polypeptidases and a dipeptidase were also found

and the times of appearance of these enzymes were studied. Toxin was still produced if proteinase was inactivated by NaCN. Various types of *Cl. botulinum* showed no correlation between the extracellular proteolytic enzymes and toxin production. A. A. M.

Wilson-Blair medium in rapid diagnosis of the clostridia of gas gangrene. C. Lyons and C. R. Owen (*J. Bact.*, 1942, **43**, 685—687). Cultures of exudates from patients with gas gangrene and clinical toxæmia gave prompt diffuse blackening of the plates when the causative organism was a clostridium. *Cl. welchii*, *Cl. septicum*, *Cl. oedematis*, *Cl. sporogenes*, *Cl. multifementans*, *Cl. tertium*, *Cl. sphenoides*, *Cl. bifermentans*, and *Cl. sordelli* all produced blackening. *Cl. fallax*, *Cl. novyi*, *Cl. histolyticum*, *Cl. botulinum*, *Cl. tetani*, *Cl. tetanomorphum*, and *Cl. putrificum* produced no blackening. The test does not distinguish between toxigenic and non-toxicogenic clostridia. F. S.

Experiments on metabolism with *C. diphtheria* III. A. Tasman and A. C. Brandwijk (*J. infect. Dis.*, 1940, **67**, 282—291).—In *C. diphtheria* III cultures in glucose peptone medium, glucose was primarily fermented forming, in addition to CO₂, formic, acetic, propionic, lactic, and succinic acid, and ethyl alcohol, and then these products were oxidised quantitatively to CO₂ and water. When glucose + acetate or acetate only was added to the peptone medium, the quantities of CO₂ found were consistent with the quantities expected theoretically. When 0.2% of glucose only was added more CO₂ than the expected quantity was produced because this amount of glucose was an insufficient source of energy and the culture dissimilated oxidatively the peptones to produce energy. The peptones were oxidised to CO₂ and NH₃. F. S.

Changing factors in diphtheria immunity. E. L. Stebbins, H. S. Ingraham, and H. L. Chant (*N.Y. Sta. J. Med.*, 1940, **40**, 658—663).—A statistical analysis of data referring to the State of New York from 1898 to 1937. E. M. J.

Bacterial morphology as shown by electron microscope. III. Cell-wall and protoplasm in strain of *Fusobacterium*. S. Mudd, K. Polevitzky, T. F. Anderson, and C. C. Kast (*J. Bact.*, 1942, **44**, 361—366).—Electron micrographs of young cells showed differences in density in various parts of the protoplasm. Older cells showed black granules against a background of relatively "transparent" protoplasm retracted from the cell wall. (7 electron micrographs.) F. S.

Pattern of dissociation in *Hæmophilus influenzae*. C. A. Chandler, L. D. Fothergill, and J. H. Dingle (*J. Bact.*, 1939, **37**, 415—427).—The mucoid, smooth, and rough phases of *H. influenzae* are described and the inter-convertibility of the three dissociative phases is discussed. The pattern of variation in *H. influenzae* corresponds to that of other micro-organisms. A. A. M.

Growth factors for *Hæmophilus influenzae* and *Hæmophilus parainfluenzae*. A. Bass, S. Berkman, F. Saunders, and S. A. Koser (*J. infect. Dis.*, 1941, **68**, 175—183).—Cysteine did not replace hæmin as a growth factor for 4 strains of *H. influenzae*. Preps. of cryst. ox liver catalase and highly purified horse liver catalase replaced hæmin as the "X" factor. The catalase preps. were also capable of replacing the co-enzymes for growth of *Hæmophilus*, thus supplying a substance functioning as "V" factor. In addition to co-enzyme I (or II) and hæmin, the influenza bacilli require one or more other factors, which cannot be replaced by pantothenic acid, cocarboxylase, riboflavin, ascorbic acid, vitamin-B₆, or inositol. F. S.

Relative *in vitro* effects of sulphonamides on *Hæmophilus influenzae*. M. Novak and A. M. Lacy (*J. Pediat.*, 1942, **21**, 321—324).—5 recently isolated strains of *H. influenzae* showed a similar susceptibility to sulphapyridine, sulphathiazole, and sulphadiazine; sulphamidamide was relatively ineffective. C. J. C. B.

Implantation of oral and intestinal strains of *Lactobacillus acidophilus* in the albino rat. M. J. Pelczar, jun., and L. A. Black (*J. Bact.*, 1939, **37**, 51—67).—Of 7 oral or dental strains of lactobacilli, none was implantable in the intestinal tract of white rats, but 4 of 5 rough intestinal strains and all of 5 smooth intestinal strains were implantable. Biochemical differences between intestinal and oral strains are noted. A. A. M.

Comparison of some German strains of *Bact. larvæ*, the cause of foul brood in the honey-bee. E. R. Stoilowa (*Zentr. Bakt.*, 1938, **11**, 99, 124—133).—17 strains were all Gram-positive, strictly aerobic, and motile. They grew on ordinary media provided yeast, peptone, and aq. extract of carrot were added. Growth and the formation of acid were greater on glucose agar than in fluid sugar media and with 1.5% glucose than with 3% glucose. The spores are characteristic in form in size and their recognition in smears of infected larvæ is sufficient for diagnosis. F. S.

Comparison of pathologic observations in Weil's disease and in yellow fever. W. H. Harris, jun. (*Arch. Path.*, 1942, **34**, 663—673).—The tissue injury in both the liver and the kidneys is in general more extensive in yellow fever (2 cases) than in Weil's disease (1 case). A definite differentiation is dependent on the presence or the absence of *Leptospira icterohæmorrhagica* in Levaditi-stained sections. C. J. C. B.

Meningitis caused by atypical Gram-negative cocci. H. A. Reimann and R. W. Koucky (*J. Bact.*, 1939, **37**, 401—410).—Two cases of meningitis associated with atypical bacteria were studied. From the first a diplococcus and from the second a meningococcus and a staphylococcus were isolated. The bacteriology of all 3 organisms is described. Results suggest that the phenomenon of bacterial variation and type transformation, if recognised, would reduce the no. of varieties of bacteria now believed to exist. A. A. M.

Meningococcal antitoxin in treatment of meningitis. A. M. Tunick and A. A. Goldbloom (*N.Y. Sta. J. Med.*, 1939, **39**, 1608—1610).—A case of meningococcal meningitis in a 22-year-old girl which had not responded to meningococcal serum improved rapidly after 2 intrathecal applications of 30 c.c. of antitoxin equiv. to 10,000 units at an interval of 2 hr. and finally recovered after another injection of 30 c.c. 24 hr. later. E. M. J.

Hæmorrhagic septicæmia pasteurellæ. C. T. Rosenbusch and I. A. Merchant (*J. Bact.*, 1939, **37**, 69—89).—Two types of organisms were studied: typical strains usually associated with hæmorrhagic septicæmia and atypical forms as *Pasteurella hæmolytica*. The former were divided into 3 strains on biochemical evidence. Two types of variability were encountered. A. A. M.

(A) Filterable micro-organisms of pleuropneumonia group. (B) [Appendix on classification and nomenclature]. A. B. Sabin (*Bact. Rev.*, 1941, **5**, 1—66, 331—335). F. S.

Quantitative determination of bacteriostatic effect of sulphonamide drugs on pneumococci. C. M. MacLeod and G. S. Mirick (*J. Bact.*, 1942, **44**, 277—287).—The prep. and use of a liver infusion medium is described. This medium is free from sulphonamide inhibitor and supports the luxuriant growth of various organisms without the addition of peptone. Most of the sulphonamide inhibitor in peptone broth can be removed from peptone broth by boiling it at pH 5—5.5. This process also removes growth-inhibiting substances. F. S.

Treatment of types V, VI, and VII pneumococcal pneumonia with rabbit antipneumococcus serum. E. H. Loughlin, R. H. Bennett, and S. H. Spitz (*N.Y. Sta. J. Med.*, 1939, **39**, 1713—1721).—125 cases of types V, VI, and VII pneumococcal pneumonia were treated by the intravenous drip infusion of a predetermined dose of 160,000—260,000 (Felton) units of homologous unconc. refined rabbit antipneumococcus serum. 82 cases recovered with a single dose and there were 3 deaths all in cases treated more than 96 hr. after the onset of the disease. None of the cases showed serum sensitivity in previous intravenous and conjunctival test and the therapeutic dose was preceded by the administration of 2—3 g. of aspirin. E. M. J.

New bacterial species isolated from the chuckawalla (*Sauromalus varius*). L. F. Conti and J. H. Crowley (*J. Bact.*, 1939, **37**, 647—653).—A new bacterium associated with a chronic disease characterised by tumour-like lesions in *S. varius* is described. The organism is a chromogenic, Gram-negative, non-spore-forming, motile rod and is temporarily classified as *Bacterium sauromali*. A. A. M.

Specificity of the agglutinin reaction for *Shigella dysenteriae*. II. Agglutinin absorption relationships between *S. dysenteriae* and *Escherichia coli*. T. T. Mackie (*J. Bact.*, 1939, **37**, 27—50).—Close agglutinogenic relationship exist between certain strains of *E. coli* and *S. dysenteriae*, Sonne and Flexner, and produce high-titre heterologous agglutinins in the experimental animal. The agglutination reaction alone does not constitute proof of infection by *S. dysenteriae*. Diagnosis of bacillary dysentery can be proved only by recovery of the organism. A. A. M.

Cultural and antigenic properties of *Shigella sonnei*. J. H. Glynn and D. H. Starkey (*J. Bact.*, 1939, **37**, 315—331).—*S. sonnei* is closely related to three other members of the mannitol-fermenting species of dysentery organisms. Its outstanding property is the late fermentation of lactose due to the appearance in ageing cultures of variants with new fermenting powers. Bacterial properties of these variants are discussed. Two major antigens and several minor antigens are present in *S. sonnei*. The Sonne group is regarded as a separate species of the genus *Shigella* rather than a variant of *S. paradysenteriae*. A. A. M.

Fresh-water bacteria. V. Distribution of *Siderocapsa treubii* in some lakes and streams. Y. Hardman and A. T. Henrici (*J. Bact.*, 1939, **37**, 97—105).—*S. treubii*, Molisch, *S. major*, Molisch, and many morphologically intermediate forms were found. *S. treubii* was present in alkaline water and absent in neutral or acid water lakes; it was abundant in two swift-flowing streams. *S. treubii* is apparently a heterotrophic organism utilising the org. radical of org. Fe compounds and depositing the Fe as a waste product on the capsules of colonies. A. A. M.

The genus *Spirillum* Ehbg. with special reference to cell inclusions and the chromidial theory. I. M. Lewis (*J. Bact.*, 1940, **40**, 271—285).—Various species of the genus *Spirillum*, except *S. volutans*, Ehbg., were isolated from plant infusions by simple plating methods.

All species investigated deposit fat bodies and volutin. Alveolar structure is conditioned by non-stainable fat bodies. Chromidia and spiral nuclear filaments are regarded as volutin and stained cytoplasm. The theory that the bacterial nucleus consists of a naked or chromatin-encrusted gene string is preferable to the theory of a diffuse chromatin nucleus. A. A. M.

Relation of aërobiosis to the fermentation of mannitol by staphylococci. E. V. Colwell (*J. Bact.*, 1939, **37**, 245—250).—28 cultures of *Staphylococcus* (*S. aureus* and *S. albus*) which fermented mannitol aerobically showed marked inhibition or lack of fermentation of mannitol anaerobically. 8 cultures of mannitol-fermenting staphylococci fermented glycerol aërobically but not anaerobically. Six *Streptococcus* cultures fermented mannitol both aërobically and anaerobically. A. A. M.

Relation of time and temperature to growth and enterotoxin production of staphylococci. M. Segalove and G. M. Dack (*Food Res.*, 1941, **6**, 127—133).—A strain *S. aureus* associated with an outbreak of food poisoning produces enterotoxin in 3 days at 18° and in 12 hr. at 37°, whereas no production is observed in 3 days at 15°, 7 days at 9°, or 4 weeks at 4—6.7°. Production of enterotoxin is associated with growth of the organism. H. G. R.

Chemotactic response to staphylococcus strains of varying pathogenicity. J. W. Stevenson and G. B. Reed (*J. Bact.*, 1940, **40**, 239—245).—Staphylococci of low pathogenicity exhibit relatively more chemotactic action for leucocytes than do strains of high pathogenicity. A negative chemotactic action of hæmotoxin may account for this difference. A. A. M.

Reduction of pulmonary resistance to infection by circulating toxins. D. H. Sprunt and W. Camalier, jun. (*Arch. Path.*, 1942, **34**, 801—806).—In rabbits the intravenous injection of staphylococcus toxin damages the parenchyma of the lungs, bronchi, and bronchioles so that secondary bacterial infection may occur. (6 photomicrographs.) C. J. C. B.

Physiological youth as an important factor in adaptive enzyme formation. C. P. Hegarty (*J. Bact.*, 1939, **37**, 145—152).—*Streptococcus lactis* cells in a stage of physiological youth attack sugars with far greater ease and show more rapid adaptation to new sugars than do cells from a mature culture. A. A. M.

Double-zone β -hæmolytic streptococci. J. H. Brown (*J. Bact.*, 1939, **37**, 133—144).—The cultural characteristics, serological grouping, occurrence in man and cows, and pathogenic significance of 188 strains are discussed and classified. A. A. M.

Hæmolytic streptococci. VI. Epidemicus group. A. C. Evans (*J. Bact.*, 1940, **40**, 215—222; cf. A., 1940, III, 936).—Among 35 strains isolated from epidemics of septic sore throat, 60% were resistant to nascent C/594 phage. 14% were sensitive to the filtrate. A. A. M.

Study of hæmolytic streptococci from horse treated with sulphanilamide after streptococcal bacteræmia developed during immunisation. J. L. Hendry (*J. infect. Dis.*, 1942, **70**, 112—118).—Hæmolytic streptococci isolated from the blood taken the day before death from a horse under treatment for 10 days with sulphanilamide for streptococcal bacteræmia were considerably more resistant to sulphanilamide than the standard culture. Resistance to sulphanilamide had increased progressively during therapy. An anti-sulphanilamide factor was produced in cultures in greater amount by resistant streptococcus than by the standard strain. F. S.

Acquired drug resistance in the hæmolytic streptococcus. M. Cutts and A. W. Troppoli (*J. Lab. clin. Med.*, 1942, **23**, 14—16).—A high degree of resistance to sulphanilamide was produced *in vitro* in a group A hæmolytic streptococcus and was maintained at a high level for 1 month and subsequently spontaneously disappeared in the course of about 3 more months. C. J. C. B.

Metabolic studies of a non-hæmolytic streptococcus. J. W. King, J. C. Garey, and M. A. Farrell (*J. Bact.*, 1939, **37**, 567—580).—The growth-promoting ability of various fractions of a casein acid hydrolysate was studied. The proline fraction inhibits growth of *S. rheumaticus*, the fraction insol. in butyl alcohol and the unfractionated hydrolysate stimulate growth. The action of a few amino-acids was studied; alanine, valine, cysteine, and methionine stimulated growth. A. A. M.

Wassermann antigen and related "alcohol-soluble" antigens. A. J. Weil (*Bact. Rev.*, 1941, **5**, 293—330). F. S.

Comparison of Rytz, Kahn, and complement-fixation tests for syphilis in large series of adult males. L. E. Nolan (*J. Lab. clin. Med.*, 1942, **23**, 99—100).—In 149 syphilitic patients the Rytz test was positive in 94.4%; Kahn test, positive in 91.9% and doubtful in 5.3%; and complement-fixation test, positive in 89.2%. So-called false-positive reactions in a group of 5644 patients were 0.4% for Rytz, 0.4% for Kahn, and 0.5% for complement-fixation test. C. J. C. B.

Chemical factors influencing the growth of tubercle bacilli. I. Metal catalysts. B. C. Sher and H. C. Sweany (*J. Bact.*, 1939, **37**,

377—387).—The addition of Fe salts to Fe-free Long's synthetic medium promoted slight growth, but in conjunction with Cu, Mn, or pyroantimonate ions an increased growth of the human tubercle bacillus was noted. K pyroantimonate and MnSO₄ increased growth while CuSO₄ and diphenylamine retarded or inhibited growth. pH of the substrates of the cultures and early appearance of growth appear to be controlled by growth history of the inoculating culture as well as the nature of the media used. A. A. M.

Precipitins for the tuberculin proteins of acid-fast bacteria. J. McCarter, E. M. Kanne, and E. G. Hastings (*J. Bact.*, 1939, **37**, 461—469).—The tuberculin proteins of the human, bovine, and avian tubercle bacillus, but not those of avian tubercle bacillus from chicken, cow, and hog and that of Johne's bacillus, are distinguishable by the precipitin test. The precipitin test with tuberculin proteins as antigens is useful in identifying unknown acid-fast bacteria if used in conjunction with cultural and pathogenic properties. A. A. M.

Serial inoculation of guinea-pigs for demonstration of *Mycobacterium tuberculosis*. J. E. Pottenger (*Amer. J. clin. Path.*, 1942, **12**, 412—415).—2 positive results occurred in 342 consecutive positive animal tests, which were not confirmed by repeated tests. No clinical evidence of tuberculosis was found in these 2 patients. C. J. C. B.

Gastric lavage in control of treatment of pulmonary tuberculosis. J. J. Furlong and M. K. Warren (*Amer. J. med. Sci.*, 1942, **204**, 674—680).—Of 491 adult patients with tuberculosis, 180 were positive on at least 1 examination by gastric lavage. In 90% of 75 cases, the lavage cultures and guinea-pig inoculations were negative in less than 2 years after the sputum had become negative. Of 50 patients treated by collapse therapy, 86% were negative to gastric lavage culture and guinea-pig inoculation in less than 2 years. C. J. C. B.

Value of tuberculin skin tests [in school programme]. W. E. Ayling (*N.Y. Sta. J. Med.*, 1939, **39**, 1463—1468). E. M. J.

Value of tuberculin skin tests [in pædiatrics]. P. W. Beaven (*N.Y. Sta. J. Med.*, 1940, **40**, 467—472).—A review. E. M. J.

Virulence of *Salmonella typhimurium*. I. Experimental infection in mice with strains of high and low virulence. R. M. Pike and G. M. Mackenzie. **II. Polysaccharide antigens of virulent and avirulent strains.** G. M. Mackenzie, R. M. Pike, and R. E. Swinney (*J. Bact.*, 1940, **40**, 171—195, 197—214).—I. Infection depends on the dosage factor and degree of resistance of mice. Ability to multiply in tissues of the host differentiates the virulent from avirulent strain.

II. Polysaccharide antigens prepared by different methods although serologically indistinguishable show differences in toxicity and immunising capacity. Qualitatively and quantitatively identical polysaccharide antigens were obtained from two smooth strains of *S. typhimurium* although these strains showed a persistent and large difference in virulence for mice. The smooth polysaccharide antigen of *S. typhimurium* is not the major determinant of virulence. Important determinants of virulence are serologically inactive. A complete antigen polysaccharide was obtained from a rough culture of *S. typhimurium*; it was serologically different from the polysaccharide of smooth strains. A. A. M.

Monophasic non-specific *Salmonella* types. D. W. Bruner and P. R. Edwards (*J. Bact.*, 1939, **37**, 365—370).—The Wassen technique is a suitable means of isolating phases of *Salmonella* which are suppressed under ordinary conditions of culture. A. A. M.

Resistance of *Eberthella typhosa* to chloroamine. P. Kabler, G. O. Pierce, and G. S. Michaelsen (*J. Bact.*, 1939, **37**, 1—9).—Resistance is reduced by prolonged growth on the usual artificial media. Strains isolated at approx. the same time may show considerable difference in resistance to NH₂Cl. A. A. M.

Immunological relationships of polysaccharides of mucoid organisms of the typhoid-salmonella group. H. R. Morgan and T. D. Beckwith (*J. Bact.*, 1939, **37**, 389—399).—An extract of polysaccharide prepared from mucoid cultures of 8 organisms of the typhoid-salmonella group gave cross-pptn. tests which parallel the cross-agglutination reactions obtained by use of antibacterial sera for these organisms. These polysaccharide extracts free from intact protein give rise to the formation of precipitins for the polysaccharides and agglutinins for the organisms when used to immunise rabbits. Antisera prepared against the polysaccharide extracts show all of the cross reactions of the antibacterial sera in tests by agglutination and pptn. The intracutaneous injection of the polysaccharide in normal or immune rabbits leads to formation of sterile abscesses. A. A. M.

Percutaneous typhoid prophylaxis. A. Gelperin and D. Kessler (*J. Lab. clin. Med.*, 1942, **23**, 11—13).—24 patients who had no history of typhoid fever or prophylaxis were divided into 3 groups. Initially each patient received an intracutaneous primary antigenic stimulation of 0.1 c.c. of vaccine. The control group, A, was reinoculated 14 days later with 0.1 c.c. intracutaneously. Group B

at the same time vigorously massaged an emulsion of 20 billion disintegrated bacilli into the skin of the forearm and group C an equal dose of the whole bacilli. The emulsions were applied to alternate forearms for 3 consecutive days. The base was Jergens' lotion, and each 0.2 c.c. contained the required dose. 9 days after the secondary antigenic stimulations, blood sera titrations revealed negative results in groups B and C, and increases in 5 of 7 persons in group A. C. J. C. B.

Absorption of bacteriophage by sensitised enterococci. E. J. Tiffany and M. L. Rakieten (*J. Bact.*, 1939, **37**, 333—350).—The surface of bacteria to which phage is attached preliminary to lysis can be coated by anti-bacterial immune serum and thus rendered inaccessible to phage. The heat-stable agglutinin of the organisms is the surface antigen by which bacteriophage is absorbed. Distilled water or saline, under certain conditions, appears to be toxic for this bacteriophage. A. A. M.

In vitro resistance of poliomyelitis virus to chemical agents. E. W. Schultz and F. Robinson (*J. infect. Dis.*, 1942, **70**, 195—200).—Of 112 agents tested by incubation at 37° for 2 hr. 33 rendered virus suspensions non-infectious for monkeys by intracerebral inoculation. Chrysoidin Y, Congo-red 4B, CuSO₄, hexylresorcinol, HgCl₂, mercurochrome, methylene-blue, hydroxyquinoline sulphate, KOH, and KMnO₄ inactivated the virus in a concn. of 0.1% or less. F. S.

Epidemiology of Q fever. X. Transmission of Q fever by the tick *Ixodes holocyclus*. Tick-paralysis in bandicoots. D. J. W. Smith (*Austral. J. Exp. Biol.*, 1942, **20**, 213—217; cf. A., 1941, III, 1076).—*I. holocyclus*, Neumann, is a potential vector of Q fever. Larvæ, nymphs, and adult ticks are experimentally infected with Q fever by feeding on infected animals. The virus is passed from larvæ to nymphs, and from nymphs to adults, but not to their progeny. Rickettsiæ are present only in the lumen of the gut and cytoplasm of its epithelial cells in infected ticks. Although none of a small series of ticks collected from bandicoots was naturally infected, yet the tick may possibly spread infection amongst native animals, transfer it to domestic animals from which humans may be infected, and directly infect man whom it readily attacks. Bandicoots from tick-free areas are susceptible to tick paralysis. J. N. A.

Anti-typhus vaccination of guinea-pigs with vaccine prepared from infected gerbils. J. Gear. L. C. Harris, and R. G. Saner (*Trans. R. Soc. trop. Med. Hyg.*, 1942, **36**, 95—98).—The guinea-pigs were efficiently protected by the vaccine. C. J. C. B.

Generalised visceral disease of guinea-pigs, associated with intracutaneous inclusions. A. M. Pappenheimer and C. A. Slanetz (*J. Exp. Med.*, 1942, **76**, 299—305). A. S.

Transformation of rabbit fibroma virus (Shope) into infectious myxomatosis (Sanarelli).—See A., 1943, III, 39.

Action of bacterial toxins on tumours. I. Relationship of tumour-hæmorrhagic agent to endotoxin antigens of Gram-negative bacteria.—See A., 1943, III, 39.

Concurrent immunisation against tetanus, diphtheria, and pertussis. J. J. Miller, jun., and T. M. Saito (*J. Pediat.*, 1942, **21**, 31—43).—Concurrent immunisation of 100 children with combined alum-ppd. diphtheria and tetanus toxoids and *H. pertussis* vaccine yielded satisfactory results as determined respectively by Schick tests, tetanus antitoxin titrations, *H. pertussis* agglutination tests, and exposures to whooping cough. Concurrent injections of fluid diphtheria and tetanus toxoids, together with *H. pertussis* vaccine, yielded poor responses in tetanus antitoxin but satisfactory immune responses with respect to diphtheria and pertussis. C. J. C. B.

Sudden death following injection of foreign protein. B. M. Vance and G. Strassmann (*Arch. Path.*, 1942, **34**, 849—865).—Report of 7 cases and a review. 5 of the 7 cases were non-asthmatic. All showed marked inflation of the lungs and signs of asphyxia due to bronchial spasm. In 2 cases the brain was oedematous and under pressure and in 2 cases there was œdema of the larynx. C. J. C. B.

Histaminase in treatment of allergy [and potency test]. M. Vaisberg (*N.Y. Sta. J. Med.*, 1939, **39**, 2199—2201).—Histaminase was prepared from defatted hog kidney and its potency tested by intracutaneous injection together with histamine before and after joint incubation at 38° for 24 hr. while O₂ is passed through the solution. 2 cases of heat allergy were improved by 2 intramuscular injections of 5 units of histaminase. Similar treatment had only a transient effect in 3 cases of non-physical allergy. E. M. J.

Allergic treatment of chronic sinus conditions. M. Vaisberg (*N.Y. Sta. J. Med.*, 1940, **40**, 631—636).—82% of 50 cases were helped considerably by the elimination of foods to which skin tests had shown them to be sensitive or untested foods or in a few cases avoidance of inhalants, and injections of dust, feather, or pollen extracts. E. M. J.

Insulin allergy. Report of eight cases with generalised symptoms. M. G. Goldner and H. T. Rickerts (*J. Clin. Endocrinol.*, 1942, **2**, 595—602). P. C. W.

Sensitisation to [lipstick] dyes. R. Hecht, L. Schwarzschild, and M. B. Sulzberger (*N.Y. Sta. J. Med.*, 1939, **39**, 2170—2172).—8 women with lipstick cheilitis and hypersensitivity reacted more to 2 shades of commercial lipstick dye than to purified tetrabromofluorescein in patch tests. E. M. J.

Skin tests and passive transfer studies in neurological conditions.—A., 1943, III, 16.

Worms in sheep. C. R. Toop (*J. Dept. Agric. West. Australia*, 1941, **18**, 252—267).—A review of the symptoms, treatment, prevention, and control is given. A. A. M.

XXVI.—PLANT PHYSIOLOGY.

Energy changes associated with plant respiration. K. Wohl and W. O. James (*New Phytol.*, 1942, **41**, 230—256).—Plant respiration is accompanied by a decrease of free energy. In mature organs most of the energy is liberated and escapes as heat. During growth some is utilised in synthesis, cell division, protoplasmic streaming, and salt accumulation. L. G. G. W.

Imbibition capacity of mature seeds and grains. Nihous (*Compt. rend.*, 1942, **214**, 565—567).—The "imbibition val." (amount of water absorbed by 100 g. of mature dry seeds at 20°) is only an apparent val., because seeds and grains contain not only the embryo, but also inert substances. The real imbibition val. is that of the embryo alone. Sometimes, the real and apparent vals. for a species are identical, particularly when tegumenta etc. form only a small part of the seed, as in *Phaseolus* and *Pisum*. In other cases the two vals. are different due to pronounced porosity of the seed as in *Bidens tripartita*, or to important lacunæ between embryo and membranes as in *Cucurbita maxima*, or to the seed cover imbibition val. differing from that of the embryo, as in *Sinapis arvensis*, where the tegumenta are impregnated with mucilaginous material. The real imbibition val. is determined by immersion of the entire mature seed with the tegumenta incised when they are thin and contribute only slightly to the total wt., or by removing the covers by decortication, or by previous soaking, or by treatment with dil. H₂SO₄. In general imbibition by the embryo increases rapidly during the first few hr. of immersion and then gradually decreases, until it ceases. The real vals. of some embryos are *Phaseolus* 105, *Pisum* 95, *Pisum malus* 58, *Lepidium campestre* 53, *Reseda lutea* 36, *Cucurbita maxima* 45, and *Cucumis melo* 42. The vals. are practically const. for a given species, and in a given family vary only slightly. J. N. A.

Mechanism of elongation in palisade cells. R. W. Watson (*New Phytol.*, 1942, **41**, 206—221).—Exposure to light and desiccation modify the starch : sugar ratio in the cells of young leaves, bringing about a high osmotic val. in the cells which later vacuolate so that typical palisade cells develop. Intense exposure or desiccation leads to the production of more than one layer of palisade in the leaves of *Hedera helix*. L. G. G. W.

Flax plant. I. Physiology of growth, stem anatomy, and fibre development in fibre flax. N. S. Tiver (*Austral. J. Exp. Biol.*, 1942, **20**, 149—160).—Growth of *Linum usitatissimum*, L., is depressed by low moisture treatment, and this is due to decrease of the net assimilation rate (protein basis). The plant has a very high ratio stem : wt. The outer layer of cells in each bundle is the first to develop the characteristic thickening of the fibre cells. Under normal conditions this process progresses towards the inner boundary of the fibre bundle, but with low moisture treatment the inner cells do not thicken. Lignification of the fibre cells occurs soon after flowering and increases with time, but it is less pronounced with low moisture treatment. At maturity, low moisture treatment causes 40% decrease in the yield and more than 20% in the wt. of fibre. The practical implications of the results are discussed. J. N. A.

Effect of nutrients, media, and growth substances on growth of Cabot variety of *Vaccinium corymbosum*. A. Kramer and A. L. Schrader (*J. Agric. Res.*, 1942, **65**, 313—328).—The Cabot blueberry was grown in peat-on-sand and in sand, and supplied with nutrient solutions each of which lacked one element. Characteristic deficiency symptoms appeared in the order : N (earliest), K, S, Ca, B, Mg, P, Fe, and Mn. Better growth in the peat-on-sand medium was attributed to the presence in peat of available Ca, S, and B, and to undetermined factors. The shoot-root ratio was increased by deficiency of Mn, Fe, Ca, B, or Mg in peat-on-sand, and decreased by omission of S, B, P, or N from the sand medium. The % of terminals aborted through lack of N was significantly correlated with top wt. Thiourea, vitamin-B₁, and 8 growth substances were without effect on growth or deficiency symptoms of the plants. R. H. H.

Media which permit unlimited growth of prothallus of *Asplenium*. G. Hurel-Py (*Compt. rend.*, 1942, **214**, 571—573).—The prothallus of an unidentified species of *Asplenium* has been grown for 18 months under aseptic conditions in an inorg. medium containing glucose. The latter is not essential as growth occurs on agar media containing

only dil. Knop solution (1:1). Under these conditions there is only poor growth of the prothallus, but the sporophytes are more numerous and well developed. With more dil. Knop solution (1:10 to 1:100) the prothallus becomes less green owing to lack of chlorophyll and the sporophytes fade and wither rapidly. Soil appears to contain an inhibitor for growth of the prothallus.
J. N. A.

Bacterial plant groups. VI. Variation in effectiveness of different strains of nodule bacteria of the cowpea group. II. Influence of light. M. S. Raju (*Zentr. Bakt.*, 1939, II, 99, 449—460).—Plants of red gram and horse gram were treated with various bacterial cultures. Measurements of duration and intensity of sunlight, no. of nodules formed, and dry wt. and total no. of roots, stems, and leaves were made at various stages in the growth of the plant. The time between planting and formation of root nodules varied with the culture, but was in no case less than 17 days. A further period of at least 17 days elapsed before N fixation commenced. These periods were longer with decrease in light intensity. Bacterial activity and inactivity alternated during plant growth.
R. H. H.

Products of reaction of flavonols with boric acid.—See A., 1943, II, 69.

Sugar transformations in the plant. C. E. Hartt (*Repts. 61st Meet., Hawaiian Sugar Planters' Assoc.*, 1942—219; *Int. Sugar J.*, 1943, 45, 20; cf. A., 1942, III, 73).—Pure glucose in solution is absorbed by the blades and roots of the sugar-cane plant and transformed into sucrose. This reaction is affected by several factors, notably by aeration, which is also essential for the conversion of glucose into fructose. PO_4''' is vitally concerned in this transformation of sucrose, it being necessary for the simple sugars to combine with it before the disaccharide is formed. Thus fructose diphosphate appears to be an intermediate stage in the production of sucrose by the sugar-cane plant.
J. P. O.

Increase of vitamin-B constituents in germinating seeds. P. R. Burkholder and I. McVeigh (*Proc. Nat. Acad. Sci.*, 1942, 28, 440—446).—10 kinds of edible seeds (cereals, beans, and peas) were examined. The vitamin contents (μ g. per g.) in the dry state and after germinating for 5 days in sand cultures were, respectively: riboflavin, 0.6—2.0 and 2.0—12.4; nicotinic acid, 11—72 and 29—129; thiamin, 4.5—11.0 and 5.0—12.0; biotin, 0.1—1.2 and 0.1—3.5. The results for pyridoxine were complicated by the presence of interfering substances, but indicated large increases during early germination.
R. H. H.

Effect of specific poisons on photoreduction with hydrogen in green algae. H. Gaffron (*J. Gen. Physiol.*, 1942, 26, 195—217).—The effects of CN' , NH_2OH , CO , and 2:4-dinitrophenol on photoreduction with H_2 in *Scenedesmus*, *Rhaphidium*, and *Ankistrodesmus* are determined. In general there is a distinction between the action of poisons on photo-reduction in the stationary state, once this type of metabolism is well established in the cells, and their effects on transition phenomena, on the "adaptation," and its reversal, the "turnback," from photo-reduction to photosynthesis. CN' inhibits photo-reduction more strongly than it inhibits photosynthesis, and under anaerobic conditions its effect is very complex and is not due merely to inhibition of reduction of CO_2 . Presence of NH_2OH in addition to CN' increases the rate of reduction of CO_2 compared with the low rate observed in presence of CN' alone. It is concluded that the mechanism of liberation of O_2 , which is inoperative in photoreduction, is not very sensitive to CN' . Low concn. of NH_2OH strongly inhibits photosynthesis but has practically no effect on rate of photoreduction, and it is assumed that it acts in photosynthesis mainly as an inhibitor of evolution of O_2 . Greater concn. of NH_2OH inhibits photoreduction, but decreases the rate only approx. 50%. A greater degree of inhibition is obtained only by prolonged incubation. 2:4-Dinitrophenol strongly inhibits reduction of CO_2 under aerobic and anaerobic conditions, and a stimulating effect is observed only with respiration or fermentation, and not with photosynthesis. CO interferes with all phases of H_2 metabolism in algae and hence is a sp. inhibitor for the hydrogenase system. "Adaptation" to H_2 metabolism which occurs if algae are incubated anaerobically in H_2 for several hr., is completely inhibited by very small amounts of CN' , and the adaptation reaction is more sensitive to CN' than are most other metabolic processes in the same cell. CN' also enhances the return to aerobic conditions, the "turnback," which occurs under the influence of light of high intensity. NH_2OH aerobically inhibits the adaptation reaction to approx. the same extent as it inhibits photosynthesis, and photoreduction occurs after adaptation in presence of NH_2OH at only a fraction of the rate that it would have if the poison had been added later. 0.001M- NH_2OH protects anaerobic metabolism against the return to aerobic photosynthesis which normally occurs under the influence of light of too high intensity. This protection is only relative and the higher is the light intensity the greater is the amount of NH_2OH needed for photoreduction. Once a "turnback" occurs in presence of large amounts of NH_2OH all photochemical gas exchange ceases. 2:4-Dinitrophenol behaves similarly to NH_2OH but simultaneously there is marked inhibition of rate of photoreduction. In presence of CO , algae readily return to photosynthesis, since it is an inhibitor for all reactions involving H_2

transfer by the hydrogenase system. CO has no effect on rate of O_2 evolution or any other phase of normal photosynthesis.

J. N. A.

Fermentative and photochemical production of hydrogen in algae. H. Gaffron and J. Rubin (*J. Gen. Physiol.*, 1942, 26, 219—240).—After fermentation for 2 hr. in N_2 the metabolism of *Scenedesmus* and similar algae which effect photoreduction with H_2 changes so that H_2 is evolved from the cell in addition to CO_2 . The amount of H_2 formed anaerobically in the dark depends on the amount of some unknown reserve substance in the cell. More H_2 is formed in presence of added glucose but there is no correlation between the amounts of substrate added and H_2 formed. Only glucose increases immediately all phases of the anaerobic metabolism; other monosaccharides are effective only after a definite time lag. Illumination of algae which have fermented in the dark for several hr. causes liberation of H_2 at several times the rate observed in the dark, provided CO_2 is absent. Contrary to the behaviour of respiration and photosynthesis, the rate of fermentation in the algae depends on pH and the optimum pH varies with presence or absence of added glucose and the time from the beginning of the anaerobic period. $4 \times 10^{-4}M$ -2:4-Dinitrophenol at pH 6.2 strongly inhibits evolution of H_2 in the dark, and fermentation then affords mainly lactic acid. In such poisoned algae photochemical liberation of H_2 still occurs even in presence of CO_2 . The amount of H_2 released in this new photochemical reaction depends on the presence of an unknown H donor in the cell. It is increased by addition of glucose but not in proportion to the amount added. The origin of the H_2 released under the influence of light is discussed.
J. N. A.

Reduction of carbon dioxide coupled with oxy-hydrogen reaction in algae. H. Gaffron (*J. Gen. Physiol.*, 1942, 26, 241—267).—Unicellular algae which possess a hydrogenase system, such as *Scenedesmus*, and which have been adapted by anaerobic incubation to H_2 metabolism, reduce O_2 to water according to the equation $O_2 + 2H_2 \rightarrow 2H_2O$. This O_2 - H_2 reaction proceeds undisturbed and to completion only in presence of CO_2 , which is reduced to water, and formaldehyde is converted into carbohydrate. The max. yield is 0.5 mol. of CO_2 reduced for each O_2 absorbed. Partial reactions occur during the formation of water and the reduction of CO_2 appears to be coupled with the absorption of the second equiv. of H_2 . The rate of reaction increases with partial pressure of O_2 , but only up to a certain point when any excess of O_2 inactivates the hydrogenase system, and the reaction ends prematurely. Practically no O_2 is used for normal respiratory processes during the O_2 - H_2 reaction. Low $[CN']$ which has no effect on photosynthesis or photoreduction in the same cell first inhibits induced reduction of CO_2 and then completely inhibits the hydrogenase system. NH_2OH added after adaptation has no inhibiting effect or only prevents the induced reduction of CO_2 without affecting the hydrogenase system. 2:4-Dinitrophenol prevents the dark reduction of CO_2 but has no effect on reduction of O_2 to water. Glucose decreases absorption of H_2 , because it functions as a competing H_2 donor. Induced reduction of CO_2 is regarded as an oxidation-reduction similar to that produced photochemically in the same cells.
J. N. A.

Effects of colchicine on cell division.—See A., 1943, III, 3.

Environmental relationships in a seed-borne disease of barley caused by *Helminthosporium sativum*, Pammel, King, and Bakke. H. W. Mead (*Canad. J. Res.*, 1942, 20, C, 525—538).—The growth of barley infected with *H. sativum* was favoured by a temp. of 15—18° and moist, well-aerated soil. Injury to the plants was greatest when temp. and moisture were both high or both low. Fertilisers increased the vigour of the seedlings but aided development of the disease. The microflora of the soil had little influence on the seed-borne parasite.
R. H. H.

XXVII.—PLANT CONSTITUENTS.

Distribution of phosphorus and calcium in certain fruits and vegetables. H. C. Sherman and M. S. Ragan (*J. Nutrition*, 1942, 23, 283—292).—Data for blackberries, raspberries, currants, grapes, tomatoes, beans, broccoli, and oranges are recorded and discussed.
A. G. P.

Growth in vitro of needles of calcium oxalate which form the raphides in the gum of *Zebbrina pendula*, Schnizl. T. Pobeguinn (*Compt. rend.*, 1942, 214, 567—569).—The rows of extended cells on stems and leaves of *Z. pendula* contain needle-shaped crystals of Ca oxalate and a thick gum. The crystals differ from the plate-like form of Ca oxalate formed by pptn. *in vitro*. When the gum and crystals are placed in 1—2% aq. oxalic acid the crystals increase in length and thickness due to formation of fresh Ca oxalate because the gum contains excess of Ca. By immersing these larger crystals in 1—2% aq. Ca acetate further growth occurs. Many of the crystals so formed are smaller than those originally present in the gum and it is concluded that neoformation of needle-shaped Ca oxalate occurs under these favourable conditions, and that the protoplasm and nucleus of the living cell are not indispensable for formation and growth of the raphides.
J. N. A.

Variations in organic acid contents of saps of birch and maple.—See A., 1943, III, 73.

Yield of furfuraldehyde from lignified tissues. G. Bertrand and G. Brooks (*Compt. rend.*, 1942, 214, 295—297).—The following yields of furfuraldehyde on distillation with dil. acid are recorded: straw from oat 2.46, wheat 6.73, barley 3.20, and rye 3.03, esparto grass 2.28, fibre from hemp 0.96, coconut 3.22, jute 1.56, flax 0.30, and ramie 1.16, raffia 3.22, shell of apricot 4.10, walnut 3.68, coconut 4.45, and peanut 1.84, rice husk 6.94, elder pith 1.25, crude cotton fibre 0.54, and purified cotton 0.26%. F. O. H.

Chemical constituents of lichens found in Ireland. *Cladonia impecta*, Harm. T. W. Bredan, J. Keane, and T. J. Nolan (*Sci. Proc. Roy. Dublin Soc.*, 1942, 23, 6—9).—The ethereal extract of the lichen contains predominantly *l*-usnic acid, with some perlatolic acid and a sterol, $C_{32}H_{50}O_4$ or $C_{33}H_{52}O_4$, m.p. 245—250°, giving a violet-red Liebermann reaction changing to blue and then green. The possibility of a mixture of sterols is not excluded. The sugar-alcohol present is *d*-arabitol. H. W.

Fruits of species of *Amelanchier* and *Nuttallia cerasiformis*, Torr. and Gray. V. Plouvier (*Compt. rend.*, 1942, 214, 322—324).—Vals. for reducing sugar (before and after inversion) and HCN contents of the green and ripe fruits of *A. vulgaris*, *A. alnifolia*, *A. florida*, and *N. cerasiformis* are given and discussed with reference to other constituents and enzymes in the plants. F. O. H.

Amylases and sugars of *Ipomœa batatas* and *Solanum tuberosum*. E. Bois and J. Savary (*Canad. J. Res.*, 1942, 20, B, 195—201).—The dialysed juice of ordinary and sweet potatoes contains amylases producing maltose and sucrose from starch. Invertase is also present, and invert sugar is produced from starch. Sucrose and invert sugar but not maltose are present in the tubers. The constitution of starch is discussed. R. L. E.

Chemical composition and properties of an active carbohydrate-free protein from cotton seed.—See A., 1943, III, 70.

Occurrence of two physiological forms of *Leptospermum citratum*. (Challinor, Cheel, and Penfold) as determined by chemical analysis of the essential oils. A. R. Penfold, F. R. Morrison, and S. Smith-White (*J. Proc. Roy. Soc. New South Wales*, 1942, 76, 93—95).—Two botanically identical forms of *L. citratum* were distinguished by the difference in composition of the oils they yielded. The constituents of the oil from variety A were: γ -terpinene, b.p. 179—181°, *d*- α -pinene (pinonic acid, m.p. 69—70°), cymene, cineole, unidentified terpenes, linalool (?), with small quantities of sesquiterpenes and eugenol. Variety B contained 16—20% of citral, geraniol (free and combined as formate and acetate), with citronellol and similar esters. Physical characters of the oils are recorded. R. H. H.

Sterols of alfalfa [lucerne] seed oil. II. Isolation of β - and δ -spinasterol.—See A., 1943, II, 67.

Formation of pro-carotenoids in "monkey flowers" under some conditions. W. A. Schroeder (*J. Amer. Chem. Soc.*, 1942, 64, 2510—2511).—Flowers of *Mimulus longiflorus*, Grant, grown indoors, contain more pro-carotenoids (prolycopene and pro- γ -carotene) than when grown out of doors. R. S. C.

Spectrophotometric determination of the carotenoids of yellow corn grain. J. W. White, jun., A. M. Brunson, and F. P. Zscheile (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 798—801).—A method is described for determining the carotenoids of maize which involves separation of the pigments into three fractions by partition between hexane, diacetone alcohol, and β -methylpentane- $\beta\beta$ -diol and spectrophotometric determination of the pigment. Separation of the pigments into normal and neotypes is not successful, but analyses for total pigment content are reliable at 4325 Å. for carotene and at 4375 Å. for cryptoxanthol. The carotenol fraction for luteol, zeaxanthol, and total neocarotenols was analysed spectrophotometrically, analyses for total pigment being made at 4275 Å. J. D. R.

Activation of dicalcium phosphate for the chromatographic determination of carotene. L. A. Moore (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 707—708).—Inactive $CaHPO_4$ for the chromatographic determination of carotene in plant material can be activated by treatment with alkalis (Na_3PO_4 , Na_2HPO_4 , KOH) and a procedure using KOH is described. Glucose is suggested as a filter aid. J. D. R.

Spectrophotometric analysis of plant extracts for chlorophyll-*a* and -*b*. C. L. Comar (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 877—879).—The plant tissue is disintegrated with acetone- $CaCO_3$, and the filtered solution pptd. with water. The pigments are dissolved in ether, the solution is washed with water and dried, and the absorption coeffs. are measured at 6600 Å. and 6425 Å. with a spectrophotometer. J. D. R.

Isomerisation of chlorophylls *a* and *b*.—See A., 1943, II, 73.

[Pharmacognosy of] *Strychnos [spinosa]*. F. V. Lofgren and D. L. Kinsley (*J. Amer. Pharm. Assoc.*, 1942, 31, 295—298).—The seeds, fruit shells, stems, and leaves of *S. spinosa* (grown in Florida) contain no alkaloid and are not toxic to mice and guinea-pigs. F. O. H.

Alkaloids in certain species and interspecific hybrids of *Nicotiana*. H. H. Smith and C. R. Smith (*J. Agric. Res.*, 1942, 65, 347—359).—29 wild species of *Nicotiana* contained one or more of the alkaloids nicotine, nornicotine, and anabasine. The alkaloidal content was below 2% and in most cases below 0.5%. In crosses between species, one of which contained mainly nicotine and the other mainly nornicotine, the hybrids contained mostly nornicotine with a small amount of nicotine. No wild species contained as much nicotine as did cultivated ones. R. H. H.

Alkaloids of the fruit of *Solanum xanthocarpum*.—See A., 1943, II, 18.

Chromatographic analyses of erysodine, erysovine, and "erysoccine." Technique for preparative isolation.—See A., 1943, II, 49.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

New skin thermometer. S. S. Samuels (*N.Y. Sta. J. Med.*, 1940, 40, 884).—A skin thermometer (Dermalor) is described working on the principle of Wheatstone's bridge with a small battery and giving direct readings. It is accurate to 2% over the whole range (20—42°). E. M. J.

Determination of oxygen content of small quantities of body fluids by polarographic analysis. H. K. Beecher, R. Follansbee, A. J. Murphy, and F. N. Craig (*J. Biol. Chem.*, 1942, 146, 197—206).—The adaptation of polarographic analysis to the determination of O_2 in body fluids yields vals. which are more accurate at low concns. than those given by classical methods. The method is readily applicable to small samples. Good agreement is secured between % of O_2 obtained by the direct Haldane determination and the indirect dropping Hg electrode method for gas mixtures containing approx. 3.5—30% of O_2 . P. G. M.

Determination of creatinine and creatine in blood and urine with photo-electric colorimeter. J. H. Peters (*J. Biol. Chem.*, 1942, 146, 179—186).—The adaptation of the Jaffe reaction to the determination of serum-creatinine in the Evelyn-Malloy photo-electric colorimeter has resulted in increased accuracy. Recovery of creatinine added to serum is quant. Normal human serum contains 0.9—1.7 mg. of creatinine and approx. 0.3 mg. of creatine per 100 c.c., which is converted into creatinine by autoclaving at 115—120° for 20 min. without acidification of the protein-free tungstic acid filtrates with HCl. The method is also applicable to urine. P. G. M.

Determination of α -keto-acids.—See A., 1943, III, 47.

Microbiological determination of *p*-aminobenzoic acid.—See A., 1943, II, 76.

Determination of tocopherols and tocopherylquinones.—See A., 1943, II, 76.

Determination of calcium as oxalate.—See B., 1943, III, 40.

Micro-determination of gold in biological tissues. W. D. Block and O. H. Buchanan (*J. Lab. clin. Med.*, 1942, 28, 118—120).—The method of Block and Buchanan (A., 1941, III, 236) for the micro-determination of Au in urine and blood is modified to apply to tissues and faeces. Recoveries of added Au were 90—100%. C. J. C. B.

Spectrographic analysis of rat tissues for ingested vanadium. E. P. Daniel, E. M. Hewston, and M. W. Kies (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 921—922).—The tissues are digested with HNO_3 - $HClO_4$ and then ignited, and V is determined spectrographically in the ash. Cr is employed as an internal standard in the arc spectrum and use is made of standard reference curves established by plotting ratios of line blackness produced by standard solutions of V and Cr against the concns. of V. The spectrum lines V 3185.406 Å. and Cr 3188.0 Å. are measured on a non-recording densitometer. J. D. R.

Determination of zinc in plant materials. A. Walkley (*Austral. J. Exp. Biol.*, 1942, 20, 139—147).—Zn is determined polarographically by the following method. 1 g. of ground material is digested with HNO_3 - $HClO_4$ (or $NaClO_4$)- H_2SO_4 , the digest is diluted and then made alkaline with NH_4 citrate buffer containing dithizone. Zn and other heavy metals are extracted, without removal of suspended SiO_2 , by $CHCl_3$. Excess of dithizone in the evaporated extract is destroyed by another wet digestion and the digest is evaporated. The residue is dissolved in 1 c.c. of a mixture of NH_4Cl and KCNS, and polarised between 0.8 and 1.2 v. at the dropping Hg electrode. Pyrex glass should be used throughout. When temp. control is impossible the internal standard method should be used, with Cd as the reference standard. The following advantages are claimed: the error is $\pm 3\%$, the ashing process is simple, there are no significant disturbances due to insol. ash, the blank is easily reduced to a negligible amount, the polarographic procedure is sp. for Zn, but it gives information about other metals if they are present, and there is no need to know previously the approx. Zn content because the method is applicable to 3—300 $\mu g.$ of Zn. J. N. A.

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LIST OF ABBREVIATIONS ETC. USED IN ABSTRACTS.

absolute	abs.	electrocardiogram	e.c.g.	parts per million	p.p.m.
alternating current	a.c.	electromotive force	e.m.f.	per cent.	%
ampere	amp.	electron-volt(s)	e.v.	potential difference	p.d.
Ångström unit	Å.	equivalent	equiv.	precipitate	ppt.
anhydrous	anhyd.	feet, foot	ft.	precipitated	pptd.
approximat-e, -ly	approx.	for example	e.g.	precipitating	pptg.
aqueous	aq.	freezing point	f.p.	precipitation	pptn.
Assignor in patent titles	Assr.	gallon(s)	gal.	preparation	prep.
Assignee only	Assee.	gram(s)	g.	qualitative	qual.
atmosphere, -es, -ic	atm.	horse power	h.p.	quantitative	quant.
atomic	at.	hour(s)	hr.	recrystallised	recryst.
atomic weight	at. wt.	hydrogen-ion concentration [H ⁺]	[H ⁺]	refractive index	n
boiling point	b.p.	inch(es)	in.	relative humidity	R.H.
British thermal unit	B.Th.U.	inorganic	inorg.	respiratory quotient	R.Q.
calculated	calc.	insoluble	insol.	revolutions per minute	r.p.m.
Calorie (large)	kg.-cal.	kilogram(s)	kg.	Roentgen unit	r.
calorie (small)	g.-cal.	kilovolt(s)	kv.	saponification value	sap. val.
candle power	c.p.	kilowatt(s)	kw.	second(s) (time only)	sec.
centimetre	cm.	litre(s)	l.	†secondary	sec.
cerebrospinal fluid	c.s.f.	maximum	max.	soluble	sol.
coefficient	coeff.	melting point	m.p.	specific	sp.
concentrated	conc.	metre(s)	m.	specific gravity	sp. gr.
concentration	concn.	micron(s)	μ.	square centimetre(s)	sq. cm.
constant	const.	milliampere(s)	ma.	temperature(s)	temp.
corrected	corr.	milligram(s)	mg.	†tertiary	tert.
critical	crit.	millilitre(s)	ml.	vacuum	vac.
crystalline	cryst.	millimetre(s)	mm.	value	val.
crystallised (adjective only)	cryst.	millivolt(s)	mv.	vapour density	v.d.
cubic centimetre(s)	c.c.	minimum	min.	vapour pressure	v.p.
cubic metre(s)	cu.m.	minute(s)	min.	viscosity	η
current density	c.d.	molecul-e, -ar	mol.	volt(s)	v.
decimetre(s)	dm.	molecular weight	mol. wt.	volume	vol.
decompos-ing, -ition	decomp.	namely	viz.	watt(s)	w.
density	p. d.	normal	N.	wave-length	λ
dilute	dil.	number	no.	weight	wt.
direct current	d.c.	organic	org.		

† The abbreviations for secondary and tertiary are used only in connexion with organic compounds.

In addition, elements, groups, and easily recognised substances are denoted in the text by symbols and formulæ. The groups are as follows: methyl, Me; ethyl, Et; *n*-propyl, Pr^a; isopropyl, Pr^b; *n*-butyl, Bu^a; isobutyl, Bu^b; *tert*-butyl, Bu^r; phenyl, Ph; acetyl (CH₃·CO), Ac; benzoyl (C₆H₅·CO), Bz. (In Section A., III this applies only to inorganic compounds, excluding water, and to chloroform and carbon tetrachloride.) "Oleum" is allowed to describe fuming sulphuric acid and "room temp." for "the ordinary temperature." The symbol for 10 A. is mμ. (not μμ.) and for the International X-ray unit it is X, not XU. The symbol for 10⁻⁶ g. is μg. (not γ).

The following symbols are used except in Section A., III: >, greater than; ≫, much greater than; ≧, not greater than (and <, ≪, ≦ conversely); ∝, (is) proportional to; ~, of the order of, or approximately.

The principal Pharmacopœias are denoted by B.P., U.S.P., and D.A.B., followed in each case by the identifying numeral.

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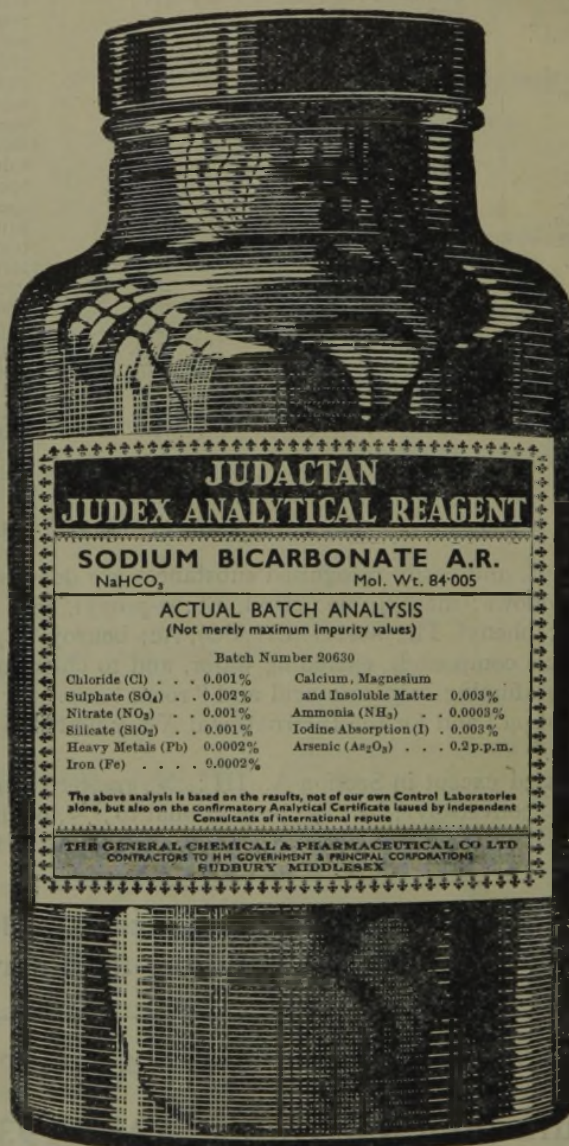
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