

BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

JULY, 1941.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Fasciæ and fascial spaces of palm. M. Grodinsky and E. A. Holyoke (*Anat. Rec.*, 1941, **79**, 435—451).—The palmar spaces and the fibrous and serous sheaths of the flexor tendons were restudied by dissection, injection, and section methods. Several discrepancies are noted between the findings and the descriptions of the palmar spaces by Kanavel and others. Clinical applications are pointed out. W. F. H.

Blood supply of mammary gland. B. J. Anson and R. R. Wright (*Surg. Gynec. Obst.*, 1939, **69**, 468—473).—A detailed description of the arterial supply of the breast as found in a nulliparous negro woman 20 years of age. F. F. R.

Gross anatomy of air-bladders of ten families of fishes. C. N. Dobbin (*J. Morph.*, 1941, **68**, 1—25). J. D. B.

Structure of tongue of *Lichanura roseofusca*. J. Hershkovitz (*J. Morph.*, 1941, **68**, 71—79).—A general account of the structure of the tongue in this boa. J. D. B.

Feeding organs of *Rhineodon typus* (the whale shark). E. W. Gudger (*J. Morph.*, 1941, **68**, 81—100).—The mouth is huge, comparable with that of the whale-bone whale, is terminal in position, and possesses numerous small teeth. The gills are highly modified to form a sieve and the oesophagus possesses numerous horny tubercles. These feeding organs are considered to be adapted to the method of feeding, which probably resembles that of the basking shark. J. D. B.

Effect of progesterone on growing cartilage and bone in immature guinea-pigs. M. Silberberg and R. Silberberg (*Arch. Path.*, 1941, **31**, 85—92).—In growing guinea-pigs, progesterone (1 rabbit unit) administered subcutaneously over periods up to 2 months increases slightly the proliferation, and more markedly the hypertrophy, of the euhyaline cartilage of epiphyseal zones, articular surfaces, and ribs, inhibits the retrogressive changes, calcification, and sclerosis of the cartilage which normally occur with advancing age, and inhibits the conversion of immature osseous substance into mature bone, thus counteracting the ageing of bone. (4 photomicrographs.) C. J. C. B.

Spondylarthritis ankylopoietica. C. L. Dunham and F. G. Kautz (*Amer. J. Med. Sci.*, 1941, **201**, 232—250).—A review and report of 20 cases. C. J. C. B.

Atypical late rickets. E. Hässler (*Msehr. Kinderheilk.*, 1940, **82**, 63—75).—Case report of a 6½-year-old girl with atypical X-ray findings similar to dysostosis enchondralis metaphysaria (Merk Jansen). Serum-Ca and -P vals. were normal. Administration of 7.5 mg. of vitamin-D₃ effected a prompt cure. M. K.

Pseudofractures in diseases affecting skeletal system. J. A. L. McCullough (*Proc. Staff Mayo Clin.*, 1940, **15**, 785—788). H. H. K.

Multiple pseudofractures. H. B. Macey (*Proc. Staff Mayo Clin.*, 1940, **15**, 789—791).—Report of a case. H. H. K.

Infantile poikiloderma combined with alopecia, microdontia, and complicated cataract. W. Jäckli (*Msehr. Kinderheilk.*, 1939, **78**, 73—81).—Report of a case of a 2½-year-old child. The disease is attributed to degenerative changes of the skin ectoderm. M. K.

Anomalies of renal rotation. H. M. Weyrauch (*Surg. Gynec. Obst.*, 1939, **69**, 183—189).—The anomalies of renal rotation are reviewed and the clinical aspects of the condition are discussed and illustrated by reference to 19 cases examined. F. F. R.

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Simple method of mounting small specimens of mammals and birds. C. E. Keeler (*Science*, 1940, **92**, 463—464).—The body is hardened in formalin and skinned. A cast of the body is made and the skin fitted on, and the whole mounted with screws and brads. E. R. S.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Differentiation of motor cell columns in cervical cord of albino rat fetuses. A. W. Angulo y Gonzalez (*J. comp. Neurol.*, 1940, **73**, 469—488).—A description of the development of the motor nerve cells and columns of the cervical cord of rat fetuses from 14 days (post insemination) to birth. The cell columns do not arise as individual units but emerge by a process of segregation from a homogeneous mass in the ventral horn. The segregation into groups begins at the medial and progresses towards the lateral region of the cell mass. At 17 days segregation of the cells into groups is almost complete, yet the behavioural activity of the animal up to the early part of the 19th day is of a total mass activity type. There is some evidence that an increase of Nissl substance in the nerve cells is indicative of a higher potential capability for an increase of behavioural activity but the instability of this substance renders it unsuitable as a basis for correlative studies. J. D. B.

Development of periovarial sac in white rat. M. P. Kellogg (*Anat. Rec.*, 1941, **79**, 465—477).—The periovarial sac is developed mainly from the mesosalpinx. In addition there are smaller contributions from the diaphragmatic ligament, the ligamentum ovarii, and the mesovarium. The sac is complete 7 days after birth and, apart from further histological differentiation, changes relatively little until puberty. When fully formed it is a double layer of mesothelium surrounding the ovary with the opening of the oviduct within its cavity. The ligaments taking part in its formation are continuous with the sac near the hilus. W. F. H.

Dislocation of phallus, penis, and clitoris following malformation in human fetus. R. Meyer (*Anat. Rec.*, 1941, **79**, 231—241).—Two cases of dislocation of the phallus described demonstrate the dependence of epidermis on embryonic cavernous tissue. It is considered that normal morphogenesis of the phallus including the glans is induced by embryonic cavernous tissue and this determines the site of development. Vascular tissue may induce malformation in the embryonic stage only when it is destined to become cavernous tissue. Cases of double penis or clitoris prove that the development of the corpus cavernosum is not dependent on the entodermal epithelium because it is not associated with the urethra. W. F. H.

Anatomical relationships of abnormally located Mauthner's cells in *Fundulus* embryos. J. M. Oppenheimer (*J. comp. Neurol.*, 1941, **74**, 131—167).—An account of the distribution of ectopic Mauthner's cells in *Fundulus* embryos in which extra brain structures have been produced by transplantation experiments during gastrulation stages. 21 axons from the ectopic cells could be traced; 18 of these entered the host spinal cord and 13 of these occupied the usual position in the cord adjacent to the medial longitudinal fasciculus. This relationship of the accessory fibres to the medial longitudinal fasciculus suggests that sp. influences from this fasciculus guide the Mauthner fibres to their final distribution. J. D. B.

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Experimental studies on regenerating lens and eye in adult *Triturus viridescens*. L. S. Stone and R. R. Chace (*Anat. Rec.*, 1941, 79, 333—348).—In 58 animals one eye was excised and reimplanted with normal orientation in the orbit; in 45 the lens was removed through the cornea and in 50 the optic nerve or large blood vessels to the eye were severed. Grafting or cutting off the blood supply reduces the size of the eye with degeneration of the lens and most of the retina. Complete interference with the blood supply is followed by a return of circulation in a few days. Removal of the lens produces reduction in the size of the eye followed by various degrees of recovery. A new lens begins to develop from the dorsal rim of the iris before the 10th day. The max. growth period of the regenerating lens occurs during the first 4 months but the normal lens-eye ratio is never regained. Provided some of the blood supply is left intact after section of the optic nerve there is no effect on other structures and the sectioned nerve regenerates rapidly, return of vision being demonstrated 63 days after operation. W. F. H.

Cytological and experimental studies of polyspermy in *Triturus viridescens*. I. Normal fertilisation. II. Behaviour of sperm nuclei in androgenetic eggs [in absence of egg nucleus]. J. Fankhauser and C. Moore (*J. Morph.*, 1941, 68, 347—385, 387—423). J. D. B.

Observations on hermaphroditism in turtles. P. L. Risley (*J. Morph.*, 1941, 68, 101—121).—Two new cases of hermaphroditism in turtles are described. The first is true hermaphroditism in a predominantly male *Chrysemys marginata*, and is accompanied by pathological alterations of the accessory sex ducts of the left side. The second is female pseudo-hermaphroditism in a young *Malaclemmys centrata*, associated with a medullary tumour of the left ovary. The literature on hermaphroditism in reptiles is reviewed and the types and causes are discussed. It is suggested that the apparent unequal sex ratio in favour of the female (heterozygous) sex in turtles is due to a tendency for the elimination of the *z* chromosome from the egg at the time of polar body formation. J. D. B.

Development of chicken embryo. S. Suzuki (*J. Orient. Med.*, 1938, 29, 36).—Effect of artificial incubation on growth rate of blastoderm and chicken embryo was studied. Wt. of egg decreased during incubation; the decrease in rate on the 20th day of incubation was 8.26%. The extent of the extra-embryonic vascular network on the 6th day of incubation was 29.79 cm. and it was 309 times as great as the blastoderm before incubation. Body length of chicken embryo was 5.56 cm. on the 20th day of incubation and 6 times that on the 5th day; body wt. was 24.24 g. and 170 times that on the 5th day of incubation. The proportion between body wt. and wt. of brain, eyeball, and heart decreased gradually in the course of incubation, while the proportion to wt. of liver increased. Wt. of each embryo during incubation is proportional to wt. of egg before incubation. M. K.

Comparison of maternal histories of premature and full-term infants. N. A. Anderson, E. W. Brown, and R. A. Lyon (*Amer. J. Dis. Child.*, 1941, 61, 72—87).—A history of illness or abnormality of the mother was obtained with greater frequency from women who gave birth to infants of low birth wt. and, conversely, a history of normal pregnancy and spontaneous delivery was obtained with increased frequency from those who bore heavier infants. Antepartum bleeding is associated with low birth wt. Infants of low birth wt. were frequently firstborn and born of young mothers. C. J. C. B.

Genetics of kidney dystopias. P. Grünwald (*Virchow's Arch.*, 1938, 303, 47—59).—In a human embryo of 16 mm. length a horseshoe kidney was found as the only malformation on serial section. It is assumed that an abnormal growth of the metanephric bud is responsible for coalescence and dystopias of the kidneys, the primary cause being either the metanephric bud itself or its displacement by an abnormal growth of other pelvic organs. In one case (10-mm. embryo of Boyden) primary displacement of the metanephrogenic tissue was responsible for improper joining of the metanephric bud. Displacement with secondary coalescence of both kidneys *in toto* may occur only in extreme malformation of the pelvic region. J. A.

Gene relations and synthetic processes. G. H. Beale (*J. Genet.*, 1941, 42, 197—214).—The genetic phenomena of mutation, dominance, and epistasy are analysed as possible indicators of the direction of synthetic processes. From general considerations it is concluded that: (1) mutation away from a wild type usually results in the formation of simpler substances; (2) dominance cannot be used as an indicator of synthetic processes in all cases but in mild types gives data for inferring the direction of mutation; (3) a reaction brought about by an epistatic gene is an essential precursor of a reaction brought about by the corresponding hypostatic gene. These conclusions are applied to variations affecting anthocyanins in plants. J. D. B.

Lethal hereditary factors. E. Hadorn (*Schweiz. med. Wschr.*, 1940, 70, 1237—1243).—A review. A. S.

Pseudo-dominance in polygenic characters. T. M. Olbrycht (*Nature*, 1941, 147, 57—58).—The inheritance of so-called halo-hairs (*N*-type) in lambs observed by Dry *et al.* (*ibid.*, 1940, 145, 390) requires another interpretation. The reciprocal appearance of *N*-type in alternate generations is due to its polygenic basis, and an assumption of dominance, dominigenes, or linkage is superfluous. After many generations of selection in one direction there is produced an assortment of modifiers of the same type, and the observed character becomes pseudo-dominant. E. R. S.

Evolution of the sex chromosomes. II. X-Chromosome in Tettigonidae and Acrididae and the principle of "evolutionary isolation" of *X*. M. J. D. White (*J. Genet.*, 1941, 42, 173—190).—In the Tettigonidae, Acrididae, and Mantodea the *X* chromosome is regarded as being in a state of "evolutionary isolation" on account of the fact that structural changes involving it and an autosome simultaneously occur only very rarely. The available evidence indicates that the only interchanges of material between the *X*-chromosome and the autosomes which have become permanently established in wild species have been those which changed the *XO* system into an *XY* or into an *X₁X₂Y* system. The evidence for the theory of structural isolation of the *X*-chromosome in orthopteroid groups is discussed. W. F. H.

Operations on pupal wing of *Drosophila melanogaster*. A. D. Lees (*J. Genet.*, 1941, 42, 115—142).—Defect experiments on the pupal wing were made on a long inbred stock of Oregon R. Appreciable effects were only produced 0—25 hr. after pupation at 25°. The injuries are classified under 3 chronological headings. In the period 0—3½ hr. scalloping, disruption of venation, fused, tilt, and vesiculation effects are produced. Operation at the period 3½—6 hr. produced round, short wings resulting from an inhibition of cell multiplication which occurs normally at this time. Injuries from 6 to 21 hr. when the wing is inflated produce large holes in the epithelium and local or widespread crowding of cells. In addition extra vein material as found in the mutant Delta frequently result. W. F. H.

III.—PHYSICAL ANTHROPOLOGY.

Nutritional and physical status and response to exercise of 16 negro boys 13—17 years of age. F. W. Schlutz, M. Morse, D. E. Cassels, and L. V. Iob (*J. Pediat.*, 1940, 17, 466—480).—The status of the negro boys was a little below that of white boys of the same ages. C. J. C. B.

South African Pleistocene apes. R. Broom (*Ann. Transvaal Museum*, 1940, 20, 89—100). J. D. B.

New Sterkfontein primate. J. C. Middleton-Shaw (*Ann. Transvaal Museum*, 1940, 20, 145—156).—A detailed account of a human-like upper left third molar primate tooth found embedded in limestone in the same region which yielded the fragmentary fossil remains referred by Broom to two new genera *Paranthropus* and *Plesianthropus*. The tooth is shown to be markedly different from the corresponding teeth of the latter types and it is tentatively taken to be human, closely resembling mid-Pleistocene Neanderthaloid teeth. J. D. B.

New palaeolithic remains from German East Africa. W. Bauermeister (*Z. Morph. Anth.*, 1939, 38, 25—32). W. F. H.

Indians and half-breeds in South Chili. J. Schaeuble (*Z. Morph. Anth.*, 1939, 38, 63—66). W. F. H.

Racial crosses between Negroes and Chinese in Trinidad. R. Hauschild (*Z. Morph. Anth.*, 1939, 38, 67—71).

W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Cytology of parathyroid and thyroid glands of rats with experimental rickets. E. De Robertis (*Anat. Rec.*, 1941, 79, 417—433).—Hypertrophy and hyperplasia of parathyroid cells occur in low-P and low-Ca rickets. The cells become activated, osmiophilic cells increase in no., and the Golgi apparatus increases in complexity. In both types the evidence suggests that the hyperplastic change was induced in the early stages of the action of the rachitogenic diet and not after rickets is marked. The thyroid remains normal in low-Ca rickets. In low-P rickets it becomes hypertrophied and most of the central follicles are collapsed with little or no colloid content.

W. F. H.

Microstructure of turtle's liver. F. H. Tyler (*Anat. Rec.*, 1941, 79, 541—547).—The intrahepatic portal vessels of *Pseudemys elegans* consist mainly of endothelial cells with a small amount of collagenous connective tissue. At the point of branching endothelial cells only are present. The smaller vessels and sinusoids consist only of endothelium and a "basement membrane." Muscular spiral valves were observed where the sinusoids empty into the smallest hepatic venules. Muscle bundles occurred at the point where small hepatic veins emptied into larger ones. Literature on muscular valves in other animals is reviewed and their physiological significance considered. Hepatic arterioles contain two layers of smooth muscle set at right angles to each other. Arterial capillaries joining the portal end of sinusoids were observed but no anastomoses between arterioles and the portal system.

W. F. H.

Comparative histology of bird pituitary. H. Rahn and B. T. Painter (*Anat. Rec.*, 1941, 79, 297—306).—18 different species representing 7 orders and 12 families were studied. In all the pars anterior could be divided into two cytologically distinct regions designated "cephalic" and "caudal" lobes. Chromophobes, basophils, and light staining acidophils occur in the cephalic lobe whilst deeply staining coarsely granular acidophils characterise the caudal lobe. The latter resembles most closely the mammalian pars anterior. The buccal portion is separated from the neural portion by a distinct connective tissue sheath but a structural pars intermedia is absent. The hypophyseal cavity disappears during development but the cavity of the infundibular process remains. The close agreement in the histology of the pars anterior in the species studied has suggested the term "avian pituitary pattern."

W. F. H.

Effects of mechanical agitation on *Paramecium caudatum*. R. L. King and H. W. Beams (*J. Morph.*, 1941, 68, 149—159).—Mechanical agitation causes a marked decrease in locomotion and ingestion due probably to effects on ciliary activity. Short exposures to agitation increase these processes. The agitation also causes a decrease in the viscosity of the endoplasm and there are changes in the refractive indices of the nuclei.

J. D. B.

Supravital staining. R. MacKeith and U. M. Bailey (*Lancet*, 1941, 240, 41—43).—A simple technique for supravital staining without a warm stage or other special apparatus is described and its use illustrated in 3 cases of monocytic leukaemia.

C. A. K.

Silver impregnation method for reticulum which may be used with any fixative and any embedding medium. J. Negrin (*Arch. Path.*, 1941, 31, 108—111).—Treatment with NaCN before impregnation increased the affinity of the tissue for Ag so that Ag impregnations were obtained in conditions not possible before. (3 photomicrographs.)

C. J. C. B.

Use of diaphane for mounting Giesma type preparations. F. Coulston (*J. Lab. clin. Med.*, 1941, 26, 869—873).—Diaphane is recommended instead of balsam or cedar oil as a mounting medium for preps. stained with any Romanowsky-type stains.

C. J. C. B.

V.—BLOOD AND LYMPH.

Extrinsic factor and Castle reaction. P. Formijne (*Arch. intern. Med.*, 1940, 66, 1191—1214).—The properties of Castle's extrinsic factor in meat were studied in cases of pernicious anaemia. It is sol. in 70—80% alcohol, is not extracted by ether, passes through an ultrafilter, and is pptd. by saturation with $(\text{NH}_4)_2\text{SO}_4$. The antianæmic liver factor is not formed by *in vitro* incubation of meat and gastric juice mixture, the reaction between extrinsic and intrinsic factors probably occurring in the intestinal wall. C. A. K.

Blood in congestive heart failure. J. V. Waller, H. L. Blumgart, and M. C. Volk (*Arch. intern. Med.*, 1940, 66, 1230—1245).—In marked congestive failure the plasma vol. and total red cell mass are increased, the red cell fragility is increased, and the reticulocyte % is raised. The excretion of urobilinogen in the urine is frequently increased and the serum-bilirubin concn. is raised.

C. A. K.

Myelosis erythraemica. A. Sakamoto and K. Tukune (*Msch. Kinderheilk.*, 1938, 76, 72—79).—Case report of hypertrophy of liver and spleen, ascites, hydrothorax, and marked hypochromic anaemia with myeloid leukaemia in a boy, aged 19 months. Myeloid tissue was found post-mortem in kidney, testis, dura mater, and in all lymphatic glands.

M. K.

Management of nutritional anaemia of infancy. K. L. McAlpine (*Canad. Med. Assoc. J.*, 1941, 44, 386—390).—A lecture.

C. J. C. B.

Blood-brain barrier in experimental poliomyelitis. M. Kasahara, T. Kakusui, and S. S. Nan (*Z. Kinderheilk.*, 1938—39, 60, 391—393).—1—3 c.c. of 2—10% fuchsin solution per kg. body-wt. was injected intravenously or intramuscularly into monkeys. C.s.f. was removed by suboccipital puncture 40—80 min. after injection and the dye concn. determined colorimetrically. After several weeks 0.5 c.c. of 10% virus emulsion was injected intracranially. The passage of fuchsin from blood into the c.s.f. was 3—20-fold greater in the paralytic stage of all cases and 17—3-fold greater in the pre-paralytic stage than in normal animals.

M. K.

Sympathectomy for control of pain. O. H. Fulcher (*Med. Ann. Columbia*, 1938, 7, 89—92).—A review.

E. M. J.

Factors affecting maintenance of cobalt polycythaemia in the rat. H. D. Anderson, E. J. Underwood, and C. A. Elvehjem (*Amer. J. Physiol.*, 1940, 130, 373—378).—Fluctuation in the haemoglobin level of polycythaemic rats was prevented by modifying the technique of blood sampling to prevent unnecessary loss of blood. Whole liver powder, Wilson's liver extract, or pernicious anaemia concentrate for oral use (Lilly) added to a milk diet helped to maintain a higher level of Co polycythaemia. When the Ca:P ratio of the milk was decreased to 0.6 by the addition of NaH_2PO_4 the rate and development of polycythaemia increased with toxemia and depression of growth.

M. W. G.

Familial non-haemolytic jaundice. W. Dameshek and K. Singer (*Arch. intern. Med.*, 1941, 67, 259—285).—Two families with chronic hereditary non-haemolytic jaundice were studied. There was no splenomegaly, spherocytosis, reticulocytosis, or increased fragility and the faecal urobilinogen was normal or low. There was greatly delayed excretion of injected bilirubin from the blood, indicating altered hepatic permeability. An indirect van den Bergh reaction does not always imply haemolysis. The condition resembles hereditary jaundice of rats (cf. Malloy and Lowenstein, *Canad. Med. Assoc. J.*, 1940, 42, 122).

C. A. K.

Influence of methaemoglobin formation on living body. S. Nagazumi (*J. Orient. Med.*, 1938, 28, 54—60).—The degree of methaemoglobin formation in various species after injection of drugs is described. There is a close relationship between blood change and degree of impairment of liver function, probably owing to associated anoxia.

M. K.

Blood sedimentation rate in healthy girls. L. Benson and E. J. Rogers (*J. Lab. clin. Med.*, 1941, 26, 987—989).—Using the Cutler method, 92% of 327 healthy girls had sedimentation rates between 2 and 13 mm. per hr. and 8% between 14 and 25 mm. per hr.

C. J. C. B.

Photo-electric haemoglobinometer. P. L. McLain and G. J. Pastorius (*J. Lab. clin. Med.*, 1941, 26, 1054—1057).

C. J. C. B.

Determination of packed white cell volume of blood. I. R. Morrison (*J. Kansas Med. Soc.*, 1941, 42, 17—18).—5 c.c. of blood are mixed with 95 c.c. of 3% acetic acid and shaken a few times. 10 c.c. of the mixture are then placed in each of two special "leucocrit" tubes, 12.5 cm. in length with an inner diameter of 14 mm. in the longer upper part and of 1.25 mm. in the tip, which is calibrated directly in % of blood vol., showing divisions down to 0.2%. The vol. of packed white cells is read after centrifuging at 1750 r.p.m. for 5 min. and the normal ranged from 0.5 to 1.0% (100 cases). E. M. J.

Leucopenia in Negro workmen. W. H. Forbes and F. Consolazio (*Amer. J. med. Sci.*, 1941, 201, 407—412).—Most healthy Negro sharecroppers in Mississippi showed a leucopenia and a slightly lower erythrocyte level and O_2 capacity than normal whites under the same economic conditions. The leucopenia was principally a neutropenia, but involved the lymphocytes as well in some cases. Administration of Fe markedly increased the leucocyte count in 10 out of 12 selected sharecroppers, the increase being largely in the neutrophils. C. J. C. B.

Disturbances in blood following exposure to benzole. L. J. Goldwater (*J. Lab. clin. Med.*, 1941, 26, 957—973).—The abnormalities most frequently observed among the workers exposed to benzole were anaemia, macrocytosis, and thrombocytopenia. Leucopenia was present in only a small %. Comparison of the benzole group with the controls indicated that benzole exposure is likely to result in both relative and abs. lymphopenia. Prolongation of the bleeding time following benzole exposure was rare and did not parallel the reduction in thrombocytes. The fragility of the erythrocytes was not significantly altered in benzole exposure but there was a slight elevation of the serum-bilirubin. C. J. C. B.

Blood [cell] picture in typhus. K. Kikuta (*J. Orient. Med.*, 1938, 29, 131).—In 44 cases of typhus there was a reduced white cell count during the early stage, which increased gradually and became normal during convalescence. The % of neutrophils was inversely proportional to that of lymphocytes. Eosinophils disappeared during the illness and reappeared in convalescence, when they were slightly increased. Nuclear shifting to the left was very marked in the early and max. stage. Red cells were unchanged, but reticulocytes were reduced during the febrile period. Platelets were markedly reduced in severe cases. M. K.

[Blood changes in] falciparum malaria of drug addicts. H. Most and M. H. Tewkesbury (*J. Lab. clin. Med.*, 1941, 26, 1034—1039).—The outstanding findings were: anaemia, which may be macrocytic, hyperbilirubinæmia, hypoproteinæmia, due to depression in serum-albumin and resulting frequently in reduction or inversion of the albumin-globulin ratio; the serum-globulin may be considerably elevated. There was a relatively high incidence of positive Wassermann reactions, positive Henry's flocculation tests, and increased urinary output of urobilinogen. C. J. C. B.

Postoperative reaction and blood group. P. Cokkalis and D. Dedes (*Dtsch. Z. Chir.*, 1938—39, 251, 394—399).—Reaction after 246 typical aseptic operations (hernia repair or appendicectomy), measured by rise of temp., pulse rate, and leucocyte count, were more marked in persons of group O than group A; the no. of complications, however, was lower. E. M. J.

Plasma-prothrombin; vitamin-K. K. M. Brinkhous (*Medicine*, 1940, 19, 329—416).—A review. E. M. J.

Influence of liver damage on plasma-prothrombin concentration and the response to vitamin-K. S. P. Lucia and P. M. Aggeler (*Amer. J. med. Sci.*, 1941, 201, 326—340).—No significant correlation was found between the results of the hippuric acid liver function test and the plasma-prothrombin concn. in various diseases either before or after the administration of vitamin-K. Patients with severe impairment of liver function as demonstrated by the hippuric acid test may have a normal prothrombin concn.; plasma-prothrombin concn. may be elevated to normal following the administration of -K, despite markedly impaired liver function. Regardless of the results of liver function tests, it has been found that in acute diseases of the liver (acute hepatitis, acute yellow atrophy), the fluctuations in the prothrombin concn. are conditioned by the severity of the illness and are not ordinarily influenced by the administration of -K; in chronic

diseases of the liver (portal cirrhosis), there may be a low prothrombin concn. which is usually not elevated following the administration of -K. In obstructive jaundice, there may be a low prothrombin concn, which usually can be significantly elevated by the administration of -K. When obstructive jaundice is complicated by severe liver damage, the response to -K may be limited. C. J. C. B.

Assay of heparin. L. B. Jaques and A. F. Charles (*Quart. J. Pharm.*, 1941, 14, 1—15).—Techniques developed for the assay of heparin are based on (a) the Charles-Scott modification (A., 1936, 1534) of Howell's method, (b) a new thrombin assay in which the unknown and standard solutions are titrated against an oxalated ox blood-thrombin system, using a const. clotting time, and (c) the Fischer assay (Fischer and Schmitz, A., 1932, 1054). The accuracy of the results is affected by factors, e.g., anticoagulant activity of impurities and interference by salts. The activity of pure heparin depends on the base bound and the water content; with the Ba salt, the Ba interferes in assays using oxalated blood or plasma. F. O. H.

Biological standardisation of anticoagulants [heparin preparations]. F. Schütz (*Quart. J. Pharm.*, 1941, 14, 45—48).—A simple method is described in which the anticoagulating power (using rabbit's blood) of the prep. under examination is directly compared with that of a standard heparin (e.g., Na salt of heparin) prep. F. O. H.

Significance of albumin fraction of serum. A. A. Weech (*Harvey Lectures*, 1938—39, Series 34, 57—87). E. M. J.

Determination of serum-protein. F. A. Simeone and S. P. Sarris (*J. Lab. clin. Med.*, 1941, 26, 1046—1052).—The method (for blood- or serum-protein) which is described depends on the determination of the sp. gr. of the fluid by means of calibrated hollow glass beads. C. J. C. B.

Serum-protein in typhus. K. Kikuta (*J. Orient. Med.*, 1938, 29, 165).— η of 37 sera decreased during defervescence and convalescence; protein content was reduced in defervescence, but increased during convalescence. Amount of globulin and sedimentation rate during these periods were greatly increased. M. K.

Human serum-proteins. II. Crystallisation of human serum-albumin. F. E. Kendall (*J. Biol. Chem.*, 1941, 138, 97—109; cf. A., 1938, III, 79).—The prep. of cryst. albumin from human serum by fractional pptn. with $(NH_4)_2SO_4$ is described. The yield is unaffected by long storage of the plasma, by hæmolysis, by clotting with $CaCl_2$, or by inactivation by heating at 56° for 30 min. The cryst. albumin is associated with a small amount of free fatty acid, which cannot be removed without first denaturing the albumin. Solubility determinations show that the albumin is more homogeneous than is the corresponding albumin from horse serum. J. N. A.

New method for preparation of dilute blood plasma. J. B. Alsever and R. G. Ainslie (*N.Y. Sta. J. Med.*, 1941, 41, 126—135).—500 c.c. of blood are collected in a transfusion flask containing 500 c.c. of a preservative solution of 18.66 g. of anhyd. glucose, 4.18 g. of NaCl, and 8.0 g. of Na citrate dihydrate per l. After 14—16 days the supernatant fluid is aspirated into a smaller vac. flask through a closed system, adding merthiolate to make a 1:10,000 concn., by allowing the remaining vac. to pull in the proper amount of a 1% solution. The organisation of a complete transfusion service is also described. E. M. J.

Blood-copper of Northumbrian sheep. A. Eden (*J. Agric. Sci.*, 1941, 31, 186—193).—Blood-Cu data for sheep grazing in "border pinning" areas are recorded. Variations in vals. for individuals are considerable. Ingestion of Cu had little effect on blood vals. except in young sheep. Blood-Cu level in ewes is probably not the primary factor determining the incidence of enzootic ataxia or "swayback." A. G. P.

Determination of iron and copper in blood serum. A. Sachs, V. E. Levine, A. C. Anderson, and A. Schmit (*J. Lab. clin. Med.*, 1941, 26, 734—739).—A dry ash method is described for the determination of Fe and Cu in serum. Aliquot samples of serum were evaporated to dryness and ashed in an electric furnace for 8 hr.; the ash was treated with HNO_3 , dissolved in dil. HCl, and transferred to glass-stoppered cylinders. The solution in one cylinder was then analysed for serum-Fe, that in the other for serum-Cu. For Fe

analysis the solution was treated with HNO_3 and KCNS solution, the colour was extracted with isoamyl alcohol, and the unknown was compared with a standard in a colorimeter. For Cu analysis the solution was treated with aq. NH_3 , $\text{Na}_2\text{P}_2\text{O}_7$, and Na diethyldithiocarbamate, the colour was extracted with isoamyl alcohol, and the unknown compared with a standard in the colorimeter. Using this method, vals. in 10 male adults are reported. The serum-Fe vals. range from 0.103 to 0.258 mg.-% and the serum-Cu vals. from 0.084 to 0.132 mg.-%. C. J. C. B.

Plasma-ascorbic acid during treatment of infantile scurvy. R. L. Mindlin (*J. Pediat.*, 1940, 17, 621—625).—The curves of ascorbic acid in the plasma of 3 cases given increasing dosage of this drug are described. C. J. C. B.

Distribution of ascorbic acid between cells and serum of human blood. M. Heinemann (*J. Clin. Invest.*, 1941, 20, 39—46).—Transfer of ascorbic acid from serum to cells was determined from concns. in the former removed from whole blood immediately and at intervals after the addition of ascorbic acid (*in vitro*). Distribution ratios are above unity with serum concns. over 3.5 mg.-% of water, lower than unity below this val. The partition of ascorbic acid is not governed by simple diffusion. Ascorbic acid is not transferred from cells to serum when the former contain concns. higher than the latter, either at 37° or at 7°. Ascorbic acid may combine irreversibly with some intracellular substance. The serum-ascorbic acid concn. affects the cellular functions involved in the mechanism of transfer of added ascorbic acid. No uptake occurred when cells, prior to addition, were kept in serum with low concns. of ascorbic acid. C. J. C. B.

Influence of parotid gland on blood-sugar. W. B. Birnkrant (*J. Lab. clin. Med.*, 1941, 26, 1009—1011).—Blood-sugar decreased markedly, though temporarily, in totally parotidectomised rats. The blood-sugar was not affected when 1/12th of the total wt. of both glands was left *in situ* but it was increased markedly, though temporarily, following ligation of part of the parotid gland. The blood-sugar returned to preoperative levels 8 days following the operative procedure. Histological examinations of the liver, pancreas, adrenals, spleen, and testicles of the parotidectomised rats revealed no changes. C. J. C. B.

Structure and properties of fat particles in human serum. A. C. Frazer (*Trans. Faraday Soc.*, 1941, 37, 125—129).—Observations and experiments are described which indicate that particles seen in normal plasma or serum under dark-ground illumination consist of neutral fat. The particles are surrounded by a membrane of globulin, and their behaviour is similar to that of a finely dispersed oil-in-water emulsion to which globulin has been added. Agglutinins, insulin, diphtheria and tetanus toxins, and cobra venom are adsorbed at the oil-water interface in such emulsions and are then inactive; and it is suggested that the similar interface occurring in normal blood may be of importance as a protection against bacterial toxins. F. L. U.

Contents of non-protein-nitrogen in blood and cerebrospinal fluid of newborn. S. Okuda (*J. Orient. Med.*, 1938, 29, 82).—Serum-non-protein-N of 29 normal infants aged less than 1 year was 18.7—42.5 mg.-%; in c.s.f. it was 12—37 mg.-%. It was higher in newborn babies. M. K.

Iodic acid number in blood and cerebrospinal fluid of newborn. S. Okuda (*J. Orient. Med.*, 1938, 29, 84).— HIO_3 no. in serum of 29 infants less than 1 year of age was 0.08—0.17 c.c., that in c.s.f. was 0.017—0.050 c.c. There was no relation to age. M. K.

Total fat content in blood and cerebrospinal fluid of newborn. S. Okuda (*J. Orient. Med.*, 1938, 29, 85).—Total fat content of serum of 28 newborn was 400—1000 mg.-%, that of c.s.f. 20—90 mg.-%. There was no relation to age. M. K.

Acetone content in blood and cerebrospinal fluid of newborn. S. Okuda (*J. Orient. Med.*, 1938, 29, 86).—Serum-ketone of 21 normal newborn infants was 0—10 mg.-%; c.s.f.-ketone content was 0—28 mg.-%. M. K.

Cystine and tryptophan content of normal and pathological sera. H. S. Milone and M. X. Sullivan (*Med. Ann. Columbia*, 1938, 7, 335—340).—38 normal sera showed a cystine content of 320—444 mg.-% (average 363 mg.-%), a tryptophan content of 162—212 mg.-% (average 181 mg.-%), and a

cystine/tryptophan ratio of 1.93—2.12 (average, 2.00). The ratio varied from 1.11 to 1.87 (average 1.60) in 36 patients of whom 25 suffered from acute conditions; this resulted from a depression of cystine and a rise in tryptophan content. The ratio was normal in 21 chronic conditions. E. M. J.

Case of hypercholesterolaemia with skin lesions. [Action of thyroid.] M. Delp (*J. Kansas Med. Soc.*, 1940, 41, 95—97).—A man of 52 who lived on a diet consisting almost solely of breakfast cereal and cream for 6 months had symptoms suggestive of intermittent claudication and cutaneous xanthoma tuberosum. The blood-cholesterol fell from 764 to 181 mg.-% in 8 weeks on a fat-poor diet + 15 g. of thyroid extract daily; it rose again with reappearance of the cutaneous lesions when the thyroid was discontinued. A maintenance dose of 10 g. was finally necessary. E. M. J.

Biochemical studies of blood of dogs with *n*-propyl disulphide anaemia. H. H. Williams, B. N. Erickson, E. F. Beach, and I. G. Macy (*J. Lab. clin. Med.*, 1941, 26, 996—1007).—Serum-Cl, -phospholipin, and -cholesterol esters were lowered, and -neutral fat was increased. The plasma-lipin changes were similar to those observed in the hamolytic anaemias of childhood and pernicious anaemia and appear to be typical of all anaemias. In *n*-propyl disulphide anaemia the erythrocytes are larger and heavier, as shown by increased vol., wt., and diameter of the cells; an increase in water content accompanied by a lower sp. gr. and greater fragility indicate osmotic swelling of the red cells. Marked alteration in the cellular structure of the erythrocyte is indicated by the changes in the lipin fractions, especially a decrease in cephalin. The erythrocyte stroma was changed both quantitatively and qualitatively in its lipin content; the protein fraction of the stroma was similar in composition to normal stroma, but larger amounts were present. It is significant, in view of the acidic nature of the stroma-protein, that the red blood cells contained greater amounts of base. C. J. C. B.

Influence of organ-extracts on diastase in blood of right and left ventricles. T. Takano (*J. Orient. Med.*, 1938, 28, 98—99).—Addition of glycerin extracts prepared from organs of heterogeneous animals increases the diastatic action of right heart blood serum of rabbits, whilst glycerin extracts of pulmonary tissue of rabbits added to left heart blood serum of animals of the same kind have no effect. M. K.

Blood changes in severe infectious and toxic conditions and their relation to damage of adrenal gland. K. Stenger (*Z. Kinderheilk.*, 1939, 61, 31—51; cf. A., 1939, 111, 651).—Investigations in 24 children suffering from burns, dysentery, enteric fever, septicaemia, whooping-cough, polyarthritis, etc. showed the same pathological changes in blood as those found in toxic diphtheria: increase of K, decrease of Cl, haemo-concn., and high colour index. These changes are attributed to a reversible hypofunction of the adrenal cortex. M. K.

Sugar in blood and cerebrospinal fluid of newborn. S. Okuda (*J. Orient. Med.*, 1938, 29, 82).—Blood-sugar of 30 normal newborns was smallest on the day of birth (less than 70 mg.-%), but increased gradually to 80 mg.-% 2 weeks after birth and reached 100 mg.-% after 1 year. C.s.f.-sugar of the same infants was highest on the day of birth (70—80 mg.-%) but decreased to 40—60 mg.-% after 2 months. M. K.

Serum-phosphatase of cattle and sheep. W. M. Allcroft and S. J. Folley (*Biochem. J.*, 1941, 35, 254—266).—The amounts of serum-phosphatase in normal cows and ewes vary from 0.3 to 114.3 and 3.0 to 166.1 units per 100 c.c. respectively, and owing to these wide variations, the determination of the phosphatase is of no diagnostic val. Dairy Shorthorn cows show a wider range of vals. and a greater no. of high vals. than do cows of four other breeds and one beef breed. The reason for this breed difference is unknown. Although the amount of phosphatase varies considerably from animal to animal, the general level of the individual remains fairly const. over long periods of time. The activity of the phosphatase in cattle and sheep decreases with increase of age up to maturity, and then with cattle there is very little alteration, but in the case of sheep there is a further decrease with increase of age. Pregnancy in dairy cows is accompanied by a slight increase in serum-phosphatase, but the amount is not related to the stage of pregnancy. There is no relation between milking capacity and activity of

serum-phosphatase in dairy cows. The high phosphatase activity of some healthy cows does not seem to be due to an enzyme activator in the serum. J. N. A.

Distribution of acid-soluble phosphorus in blood cells of various vertebrates. S. Rapoport and G. M. Guest (*J. Biol. Chem.*, 1941, **138**, 269—282).—Whilst most mammalian bloods contain 50—100 mg.-% of org. acid-sol. P in the cells, in some (e.g., ox, sheep, goat) the concn. is only 9—15 mg.-%. Avian blood contains 90—135 mg.-%, at least half of which is phytic acid-P. Adenosine triphosphate occurs in the blood of all species examined in widely varying amounts. The concn. of diphosphoglyceric acid is lowest in the blood of those animals that have a low concn. of total acid-sol. P. P. G. M.

VI.—VASCULAR SYSTEM.

Clinical and electrocardiographic findings in ageing heart. H. B. Sprague (*Med. Ann. Columbia*, 1941, **10**, 49—56).

Value of combined measurements of circulation time and venous pressure (by direct method) in heart failure. H. H. Hudson (*Med. Ann. Columbia*, 1938, **7**, 350—353).

Distention of abdominal viscera and coronary blood flow. N. C. Gilbert, G. K. Fenn, and G. V. Le Roy (*J. Amer. Med. Assoc.*, 1940, **115**, 1962—1967).—Distention of the stomach in non-anæsthetised or lightly anæsthetised dogs decreased the coronary blood flow measured with Rein's thermistor-muhr. This effect was abolished by atropine. 3 patients with angina pectoris were made to breathe 10% O₂; pain developed more rapidly after meals than at other times; atropine delayed the onset of pain in these conditions. C. A. K.

Advances in study of coronary artery disease. L. T. Gager (*Med. Ann. Columbia*, 1938, **7**, 180—186).—E.c.g. evidence of disease was found in 95, 89, and 97.5% respectively in the three groups of coronary thrombosis (23 cases), coronary artery sclerosis with angina (37 cases), and with myocardial degeneration (40 cases). Chest leads were used in addition to lead I—III. E. M. J.

Site of origin of human ventricular extrasystoles. M. R. Castex, A. Battro, and R. González (*Arch. intern. Med.*, 1941, **67**, 76—90).—Simultaneous recording of the e.c.g., phonocardiogram, and central arterial pulse shows which ventricle gives rise to extrasystoles. In 10 cases with a negative main deflexion in lead I the left ventricle contracted before the right and in 13 cases with a positive deflexion in lead I the right ventricle contracted before the left. C. A. K.

Reciprocating [cardiac] rhythm. D. Scherf (*Arch. intern. Med.*, 1941, **67**, 372—382).—Auriculoventricular rhythm was produced in dogs by compression of the sino-auricular node. Prolongation of the RP interval, e.g., by left vagal stimulation, produced return extrasystoles, i.e., ventricular beats in response to P wave in the auricle (reciprocating rhythm). Bigeminal or trigeminal rhythm may thus be due to a re-entry mechanism. C. A. K.

Heart lesions in infectious arthritis. A. H. Baggenstoss and E. F. Rosenberg (*Arch. intern. Med.*, 1941, **67**, 241—258).—Post-mortem studies in 25 cases of chronic infectious (rheumatoid) arthritis showed cardiac lesions in 20. C. A. K.

Chronic constrictive pericarditis. W. M. Yater (*Med. Ann. Columbia*, 1938, **7**, 354—360).—Report of 3 cases improved by surgical removal of epicardial scar tissue. E. M. J.

Mural thrombi in heart as source of emboli. C. F. Garvin (*Amer. J. med. Sci.*, 1941, **201**, 412—415).—In 771 consecutive autopsies on patients who had died of heart disease, pulmonary infarction was almost 3 times as frequent in those cases with mural thrombi in the right side of the heart as in those cases without. Infarcts of the brain, kidneys, spleen, intestines, and/or extremities were more than twice as common in cases with mural thrombi in the left side of the heart than in their absence. C. J. C. B.

Hyperactive carotid sinus reflex. L. H. Sigler (*Arch. intern. Med.*, 1941, **67**, 177—193).—Hyperactive carotid sinus reflex is commoner in males than in females and increases with age. It is commonest in cases of coronary disease. This is

attributed, not to increased sensitivity of the afferent nerve-endings in the sinus, but to hypersensitivity of the nerve centres, vagal ganglia, or myoneural junction. C. A. K.

Influence of carbon dioxide on excitability of vasomotor centre in hypoglycæmia. E. Gellhorn, W. F. Kieley, and S. L. Hamilton (*Amer. J. Physiol.*, 1940, **130**, 256—260).—Blood pressure response to various concns. of CO₂ in anæsthetised dogs with and without buffer nerves, was determined at various blood-sugar levels. The pressor response to CO₂ increases with falling blood-sugar. High concns. (15% CO₂) which at normal blood-sugar level lower blood pressure, will raise the pressure when the blood-sugar falls below 40 mg.-%. The reaction is completely reversible on injection of glucose. M. W. G.

Saddle thrombus at aortic bifurcation. W. R. Morris (*Med. Ann. Columbia*, 1938, **7**, 285—286).—This diagnosis was made in a man of 45 with tabo-paresis when shortly after the 8th chill of malarial treatment he developed most severe abdominal pain with vomiting, cyanosis and coldness of both legs, and bilateral absence of femoral pulsation. He was treated with large doses of morphine, whiskey, and local heat. 48 hr. later both legs were placed in Pavaex boots, resulting in final improvement of the general condition. Gangrene then developed in one foot and the leg was amputated below the knee. He is still well 18 months later. E. M. J.

Clinical importance of small intracutaneous veins in human chest. J. B. Burrett and D. Scherf (*Amer. J. med. Sci.*, 1941, **201**, 399—407).—Examination of 385 patients showed that the presence of small intracutaneous veins is not the result of pulmonary, pleural, or cardiac disease. They are found in healthy people. C. J. C. B.

Arterial circulation of lower extremities in chronic arthritis. O. Steinbrocker and S. S. Samuels (*J. Lab. clin. Med.*, 1941, **26**, 974—980).—69% of 47 cases of rheumatoid arthritis and 35 of 71 cases of osteoarthritis showed abnormalities, usually vasomotor disturbances of the arterial circulation of the lower extremities. There was no direct or consistent relationship between the location of the vascular signs and the site of the arthritic process. C. J. C. B.

Glomus tumours; clinical picture and physiology. J. H. Couch (*Canad. Med. Assoc. J.*, 1941, **44**, 356—357).—A lecture. C. J. C. B.

Pathology of glomus tumours. A. J. Blanchard (*Canad. Med. Assoc. J.*, 1941, **44**, 357—360).—A lecture. C. J. C. B.

Multiple glomus tumours; four in one finger tip. B. Plewes (*Canad. Med. Assoc. J.*, 1941, **44**, 364—365).—A case report. C. J. C. B.

Effect of high-protein diets on experimental atherosclerosis of rabbits. D. R. Meeker and H. D. Kesten (*Arch. Path.*, 1941, **31**, 147—162).—A high-protein diet containing soyabean flour diminishes the incidence and degree of experimental sclerosis in rabbits fed cholesterol, but a high-protein diet containing defatted casein increases the degree of sclerosis. In rabbits fed the high-protein diet containing defatted casein alone, hypercholesteræmia and atheromatous lesions of the aorta may develop, indistinguishable from those produced by cholesterol. C. J. C. B.

Hypertension in relation to height. S. C. Robinson (*J. Lab. clin. Med.*, 1941, **26**, 930—949).—A gross anthropological study of 2552 men and 2021 women shows a positive correlation of height to blood pressure. The tall lateral or broad individual is 2½ times as susceptible to hypertension as the short lateral one and is less likely to have a low pressure. Although the tall person carries a greater hazard of hypertension than any other individual, the large no. of lateral builds among short persons causes the bulk of the hypertensive population to be found among short persons. C. J. C. B.

Arterial hypertension and splanchnic nerve section. D. A. Rytand and E. Holman (*Arch. intern. Med.*, 1941, **67**, 1—24).—Splanchnic nerve section and removal of lower 3 pairs of thoracic ganglia in 40 cases of arterial hypertension produced generally poor results. In 6 cases the blood pressure was reduced, in 6 more cases there was subjective improvement but no fall in blood pressure, in 9 cases there was no change, 8 died within 2 weeks of the operation, and 11 died within 18 months. C. A. K.

Arterial hypertension. A. C. Corcoran and I. H. Page (*J. Amer. Med. Assoc.*, 1941, **116**, 690—694).—A review.

C. A. K.

High blood pressure in man. G. W. Pickering (*J. Mt. Sinai Hosp.*, 1938—39, **5**, 649—656).—A review.

E. M. J.

Effects of angiotonin on renal blood flow and glomerular filtration. A. C. Corcoran and I. H. Page (*Amer. J. Physiol.*, 1940, **130**, 335—339).—Infusion of angiotonin into conscious dogs with explanted kidneys results in increased arterial pressure, decreases renal blood flow, and increases inulin clearance. The effects are similar to those observed during infusion of renin, and are attributed to efferent arteriolar constriction. Angiotonin is the active agent in "renin."

M. W. G.

VII.—RESPIRATION AND BLOOD GASES.

Carbon dioxide in venous blood on rebreathing. H. Landt and J. E. Benjamin (*Arch. intern. Med.*, 1941, **67**, 72—75).—Rebreathing of air with CO₂ absorption in normal subjects raises the CO₂ content of venous blood. In cases of heart disease the CO₂ content falls; this increases the O₂-carrying power of the blood.

C. A. K.

Asphyxia of newborn. H. R. Litchfield and J. S. Beilly (*Med. Ann. Columbia*, 1938, **7**, 307—313).—Asphyxia of the central type was successfully treated in 4 cases by aspiration of mucus and intraumbilical injection of 0.05—0.15 grain of α -lobeline after clamping the cord. While the child is held head downwards the cord is stripped and its blood pushed into the general circulation; the child is then laryngoscoped and the air passages are inflated with a mixture of O₂ and 7% of CO₂ under a pressure not exceeding 5 mm. Hg; the mixture is then given through a face mask until respiration is established. Respiration curves are given. One case of congenital atelectasis and enlarged thymus did not respond to treatment.

E. M. J.

Emphysema under forty; clinical and pathological significance. P. M. Andrus (*Canad. Med. Assoc. J.*, 1941, **44**, 344—347).—Abnormal depth of thorax is a common physical sign in persons under 40 years of age; it strongly suggests important vascular or pulmonary injury, even in the complete absence of other clinical evidence, and its presence invariably calls for radiography.

C. J. C. B.

Fatal bronchial asthma. B. Craige (*Arch. intern. Med.*, 1941, **67**, 399—410).—Clinical and autopsy studies in 7 fatal cases of status asthmaticus are reported.

C. A. K.

Influence of partial obstruction of nose on allergic pneumonia. J. Hayakawa (*J. Orient. Med.*, 1938, **29**, 215).

M. K.

Congenital stridor. E. Traub (*Z. Kinderheilk.*, 1938—39, **60**, 222—235).—Report and discussion of cases.

M. K.

VIII.—MUSCLE.

Oxygen consumption of skeletal muscle from animals deprived of vitamin-E. I. Friedman and H. A. Mattill (*Amer. J. Physiol.*, 1941, **131**, 595—600).—O₂ consumption of the semitendinosus muscle of 6-months-old rats, reared from weaning on a diet deficient in vitamin-E, was 40% above normal. 13-month-old rats, severely paralysed from -E lack, had an O₂ consumption only slightly above normal and markedly lower than the muscles of the younger deficient rats. O₂ consumption of the semitendinosus muscle of -E-deficient rabbits was higher than normal.

M. W. G.

Recovery of fatigued muscle following intravenous injection of potassium chloride. H. E. Hoff, A. W. Winckler, and P. R. Smith (*Amer. J. Physiol.*, 1941, **131**, 615—618).—Cats (deep nembutal anaesthesia) were used; the decrease in tension normally produced after a series of twitches (quadriceps stimulated through its motor nerve) is prevented by slow intravenous injection of isotonic KCl. After the decrease in twitch tension is established, it may be restored to normal by the same means.

M. W. G.

Creatine, phosphorus, and potassium in heart and voluntary muscle. G. H. Mangun, H. S. Reichle, and V. C. Myers (*Arch. intern. Med.*, 1941, **67**, 320—332).—In 17 cases of congestive heart failure the creatine, P, and K concns. of both ventricles and of voluntary muscle were decreased

(creatine most, P least). This is attributed to breakdown of K₂ phosphocreatine. In uraemia the vals. were raised.

C. A. K.

Creatine and creatinine excretion in dystrophia myotonica. R. C. Lewis, jun., and R. C. Lewis (*J. Lab. clin. Med.*, 1941, **26**, 990—995).—Creatinuria was present in 3 patients with dystrophia myotonica not given glycine. The amount of creatine excreted by the 1 woman was greater than normal; the amount excreted by the 2 men was small and probably within normal limits. Glycine administration increased creatine excretion in the woman and in one of the men. The excretion of creatinine was subnormal in the patient who showed the greatest degree of muscle atrophy, but was normal in the other 2 patients. It was not affected by glycine administration in any of the 3 patients.

C. J. C. B.

Inhibitory nerve supply of leg muscles of different decapod crustaceans. C. A. G. Wiersma (*J. comp. Neurol.*, 1941, **14**, 63—79).—The distribution and function of fibres innervating the muscles in the legs of three decapod species were studied with special reference to inhibitory fibres. The physiological significance of the distribution of the inhibition is discussed and the conclusion reached that peripheral inhibition does not play a part in reciprocal contractions and relaxations of antagonistic muscles.

J. D. B.

IX.—NERVOUS SYSTEM.

Action potential artifacts from single nerve fibres. J. Marmont (*Amer. J. Physiol.*, 1940, **130**, 392—402).—A new method for leading off the action potentials from single unmyelinated nerve fibres is described; the fibre is mounted in a lucite trough and surrounded by a small vol. of fluid. Single nerve fibres were obtained from the claw of the crayfish, *Cambarus clarkii*. Although the external action potential decreases as the conductance about the fibre is increased, the shape, duration, and velocity of the action potential remain unchanged within the limits of experimental error. The medium about the action potential acts as a linear conductor for the action current. Artifacts resulting from irregularities in the conductance outside the fibre are described and analysed.

M. W. G.

Use of chronaxie in surgery. Y. Osawa and I. Nagai (*Dtsch. Z. Chir.*, 1938—39, **251**, 34—63).—Section of the sciatic nerve in pigeons caused a slow rise of chronaxie in flexor and extensor muscles after 6 hr. and a steep rise after 24 hr.; a fall of 50% was seen after excision of the prosencephalon; a fall in the extensor and a rise in the flexor muscle chronaxie occurred after excision of the thalamus. Increased chronaxie was seen in 683 patients with diseases of the central and peripheral nervous system including trauma and tumour. Topographical diagnosis of cerebral and spinal disease processes was successful with this method. Changes in chronaxie were seen even in the absence of reaction of degeneration. Chronaxie was not changed in cases of hysteria or malingering.

E. M. J.

Ester-hydrolysing activity of the central nervous system. D. J. Cohn, I. Kaplan, and M. Janota (*J. Lab. clin. Med.*, 1941, **26**, 1017—1023).—Fresh minced tissue of the brain and spinal cord of *Macaca mulatta* has ester-splitting activity. The tributyrin-splitting power was greatest in the cerebral cortex, least in the white matter, and intermediate in the mixed areas. Mixed tissues rich in grey matter, such as thalamus and cerebellum, were more active than mixed tissues rich in white matter, such as brain stem and spinal cord. The ethyl butyrate-splitting activity was greatest in the cerebral cortex and least in the spinal cord. The cerebellum has less activity than other mixed tissues including the brain stem.

C. J. C. B.

Ætiology of Sydenham's chorea; electro-encephalographic studies. S. J. Usher and H. H. Jasper (*Canad. Med. Assoc. J.*, 1941, **44**, 365—371).—In all cases of severe chorea, the electro-encephalogram showed a decrease or absence of normal alpha rhythms and the presence of continuous delta or slow wave activity of increased amplitude. The more severe was the chorea, the greater were the changes in the electro-encephalogram. Clinical improvement showed a definite correlation with decreased abnormality in the electro-encephalogram. The abnormal electro-encephalogram of chorea is not sp. for this condition since it resembles closely

certain dysrhythmias found in epileptic patients between attacks, those found in acute head injury, and other conditions causing generalised impairment of cerebral function.

C. J. C. B.

Electrical excitability of superior cervical ganglion of cat. G. H. Acheson and F. A. Simeone (*Amer. J. Physiol.*, 1941, 131, 572—577).—Voltage-capacity and voltage-response curves were constructed for the superior cervical ganglion (cat) and its pre- and post-ganglionic nerves. Responses of the nictitating membrane were used as indicator of the no. of elements excited. The curves for pre- and post-ganglionic nerve trunks were smooth. Curves obtained with electrodes at the cephalic and caudal tips of the ganglion present one or two breaks, both for the normal ganglion and after degeneration of its preganglionic fibres. It is concluded that the cell body and dendrites are electrically excitable and have different characteristics of excitation from those of the postganglionic axon.

M. W. G.

Use of syntropan in Parkinsonism. N. S. Schlezinger and B. J. Alpers (*Amer. J. med. Sci.*, 1941, 201, 374—379).—14 of 16 patients treated by means of syntropan obtained mild or moderate symptomatic relief without toxic manifestations.

C. J. C. B.

Influence of brain temperature on peripheral reflexes. G. G. Jaure (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 28, 666—668).—The max. inhibition of peripheral reflexes in frogs occurred at a water temp. of 25°. The peripheral stimulation was produced by Tjurk's method with 5% H₂SO₄; the water was directly applied to the intact head of frogs at intervals of 5—10 min. Inhibition of reflexes was diminished at temp. above 25°.

M. K.

Influence of temperature on excitability of brain in frogs. G. G. Jaure (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 28, 850—852).—Max. of excitability of frogs' brain occur at a temp. of 25°.

M. K.

Toxic delirium following intrathecal magnesium sulphate. O. J. McKendree and S. R. Lehrman (*N.Y. Sta. J. Med.*, 1940, 40, 1666—1667).—A patient treated by repeated intrathecal injections of 2 c.c. of a 50% solution of MgSO₄ for tabetic crises suddenly sat up after one of these. On resuming a horizontal position he complained of severe abdominal and intrathoracic pain, followed by a choking sensation. He then became comatose and stopped breathing. Artificial respiration and an injection of 10 minims of 1:1000 adrenaline and 2 c.c. of coramine produced some improvement although he remained in coma. Delirium set in a few hr. later and he did not recover completely for 4 days, having regained consciousness after 2 days.

E. M. J.

Present status of metrazol (cardiazol) therapy of schizophrenia. Z. M. Lebensohn (*Med. Ann. Columbia*, 1938, 7, 33—41).—A review.

E. M. J.

Results of metrazol treatment in psychotics. W. W. Corwin and A. C. Voth (*J. Kansas Med. Soc.*, 1941, 42, 57—61).—A better response was obtained in manic depressives than in schizophrenics, and early treatment was more beneficial than one undertaken more than a year after the disease was established. Recovery rates (including paroled patients) varied from 20% in late schizophrenics to 86% in early depressives (214 cases).

E. M. J.

Mechanism of production of brain damage during insulin shock. D. B. Tyler (*Amer. J. Physiol.*, 1941, 131, 554—560).—It is necessary to maintain cats in the medullary phase of insulin shock to produce clinical symptoms of brain damage. With increasing doses of insulin the medullary phase occurs more often and the incidence of brain damage is greater. The length of time that cats must be maintained in the medullary phase of insulin shock to produce brain damage is a function of the O₂ need of the brain. At normal or above normal levels of body temp., medullary phase occurs sooner, the time to produce brain damage is shortened, and the incidence of brain damage is greater. Low body temp. produces the opposite results. Although prolonged coma results when Na pentobarbital is given during insulin shock, the survival time of the animal is increased.

M. W. G.

Review of neuro-psychiatry for 1940. S. Cobb (*Arch. intern. Med.*, 1940, 66, 1341—1354).

C. A. K.

Guillain-Barre syndrome in children. L. Casmajor and G. R. Alpert (*Amer. J. Dis. Child.*, 1941, 61, 99—107).—

Radiculoneuritis of unknown causation, characterised by development of progressive flaccid paralysis in ascending order, albuminocytological dissociation (i.e., increase of albumin without increase in cells) in the c.s.f., and good prognosis, is described under the name of the Guillain-Barre syndrome. Three additional cases of the disease in children are added to those already reported in the literature.

C. J. C. B.

Apoplexy apparently precipitated by low blood pressure. A. D. Ecker and M. Deren (*Amer. J. med. Sci.*, 1941, 201, 415—419).—In each of the 3 cases reported there was a slow postoperative drop in systemic arterial blood pressure in an elderly arteriosclerotic male. When the pressure reached a low level there occurred an "apoplectic stroke" marked by unconsciousness and progressive hemiplegia. Necropsy revealed widespread areas of partly hemorrhagic necrosis in the cerebral cortex with little involvement of the subjacent white matter. There were no thrombi in the main arterial or venous trunks, but some of the pial vessels lying over the centre of the necrotic areas of the cortex were occluded with thrombi consisting largely of fibrin and masses of platelets.

C. J. C. B.

X.—SENSE ORGANS.

Eye and sleep. J. E. Lebensohn (*Arch. Ophthalm.*, N.Y., 1941, 25, 401—411).—The ocular appearances during sleep and prolonged wakefulness are reviewed. The ocular apparatus during drowsiness shows evidence of diminished sympathetic function. The syndrome in some cases of intractable conjunctival asthenopia is similar and a no. of such cases were relieved by administration of thyroid.

W. T. A.

Digest of problems of vision testing for screening purposes. E. W. Mumford (*Sight Saving Rev.*, 1941, 11, 40—53).—Abstracts of recent literature.

H. L.

Problem of sight conservation as related to general program of school organisation. R. S. French (*Sight Saving Rev.*, 1941, 11, 7—12).—The significance of bad print in cheap text-books and of the high proportion of visual tasks is often overlooked. Teachers should acquaint themselves with visual and lighting standards. It is recommended to introduce eye-rest periods of 2—3 min. in the midst of exacting visual work.

H. L.

Functional lighting in the college. J. O. Kraehenbuehl (*Sight Saving Rev.*, 1941, 11, 13—31).—Lighting should not be judged in terms of ft.-candles only but also with regard to brightness. No sources of excessive brightness should be within the range of the eye; the brightness contrast should not exceed 10:1; a contrast of 5:1 is preferable. In a classroom of average size and height and proper coloration, 6 500-Watt lamps properly spaced and controlled with indirect or semi-indirect equipment will be satisfactory, but special provision is needed for lighting the surfaces of writing boards. Regular repainting of walls, cleaning of lamps and reflectors, and use of lamps of proper voltage is urged. Recommendations are given for lighting of school-rooms used for special visual work and data for assessing the proper val. of fluorescent lamps.

H. L.

Facts and factors in prevention of blindness program. C. E. Kerby (*Sight Saving Rev.*, 1941, 11, 32—39).—Data are given on prevalence and causes of defective vision in the U.S.A. The object of the Nat. Soc. for the Prevention of Blindness is to stimulate and co-ordinate the efforts of official and voluntary organisations towards sight conservation.

H. L.

Visual efficiency in industry. A. M. Culler (*J. Amer. Med. Assoc.*, 1941, 116, 1349—1355).—The necessity for recording the visual acuity of industrial workers and for establishing standards of visual efficiency for various occupations is stressed. Conservation of eyesight in industry is considered.

W. T. A.

Industrial injuries to the eye. S. Walker and H. L. Auten (*J. Amer. Med. Assoc.*, 1941, 116, 1356—1357).—The essentials of first aid and later treatment are given.

W. T. A.

Mustard gas, with special reference to eye lesions. D. R. Gawler (*Med. J. Australia*, 1940, 27, 11, 106—108).—A review of current views, especially as regards treatment.

H. L.

Ophthalmic problems in aviation. L. Price (*Med. J. Australia*, 1941, 28, I, 235—237).—A note on the importance of muscle balance and depth perception in aviation.

W. T. A.

Vitamin-B in ophthalmology. C. A. Veasey (*Arch. Ophthalmol.*, N.Y., 1941, 25, 450—468).—A review of the effects of deficiency of the vitamin-B group on the eye in man and animals and of the use of -B in ophthalmology. Illustrative cases are described.

W. T. A.

Relationship between myopia and avitaminosis. J. Laval (*Amer. J. Ophthalmol.*, 1941, 24, 408—412).—There is no evidence that lack of vitamin-A or -D is concerned in the aetiology of myopia.

W. T. A.

Development and prevention of myopia at United States Naval Academy. R. Hayden (*Arch. Ophthalmol.*, N.Y., 1941, 25, 539—547).—When the visual requirements for entrance to the Academy were 20/20 in each eye by Snellen test 14—31% of candidates had to be rejected later on account of myopia developing during the 4 years' course. The % of late rejections was much reduced by insisting on refraction before admission. Candidates with a hyperopic reserve of less than 1 D were advised not to enter; those showing any sign of myopia under a cycloplegic were rejected.

W. T. A.

Blindness in Hawaii. W. J. Holmes and G. C. Hamman (*Arch. Ophthalmol.*, N.Y., 1941, 25, 643—650).—A survey of age and racial incidence, and of aetiological classification.

W. T. A.

Progress report on orthoptics in Tasmania. J. B. Hamilton (*Med. J. Australia*, 1941, 28, I, 233—235).—A survey of 189 patients.

W. T. A.

Measurement of heterophoria. II. N. Cridland (*Brit. J. Ophthalmol.*, 1941, 25, 189—229; cf. A., 1941, III, 432).—Tests for heterophoria are discussed and classified. It is concluded that the parallax test is the best available, closely followed by the Maddox rod. The Maddox rod and the red-green tests were compared in a large group of subjects. The Maddox rod was preferred as the variability of the test was very small, it was more convenient in application, and the suppression of the fusion tendency was good and was increased by darkness.

W. T. A.

Prism compensation in cases of anisometropia. P. L. Cusick and H. W. Hawn (*Arch. Ophthalmol.*, N.Y., 1941, 25, 651—654).—When correcting lenses differ in power in the two eyes there is a tendency to hyperphoria when the eyes are moved from the primary to the reading position. In some cases this causes discomfort and should be corr. with prisms.

W. T. A.

Exophthalmic ophthalmoplegia. L. Martin and V. Pennel (*Lancet*, 1941, 240, 39).—A patient with moderate thyrotoxicosis showed ophthalmoplegia with diplopia and slight exophthalmos.

C. A. K.

Van der Hoeve's syndrome. P. M. Corboy (*Amer. J. Ophthalmol.*, 1941, 24, 57—60).—A mother and 3 of her 4 children (2 sons and 1 daughter) were suffering from blue sclerotics, fragilitas ossium, and otosclerosis. The mother's mother had had blue sclerotics, and in the only grandchild the bones showed decalcification. In the 4 cases of the full syndrome blood-Ca ranged from 7.53 to 8 mg.-% and blood-P from 1.96 to 2.19 mg.-%.

H. L.

Ocular phenomena produced with polarised light. D. C. Cogan (*Arch. Ophthalmol.*, N.Y., 1941, 25, 391—400).—When the isolated lens of the eye was viewed between crossed polaroids a dark cross on a light background was seen; the same appearance was given by other structures in which the elements were arranged radially or concentrically. An appearance strikingly similar to Haidinger's brushes was obtained by inserting an interference plate between the lens and either polaroid. The intact eye was illuminated by polarised light and examined through an analyser at right angles; a black cross apparently on the iris was seen. This appearance was determined by transmission through the cornea.

W. T. A.

Corneal oedema. D. C. Cogan (*Arch. Ophthalmol.*, N.Y., 1941, 25, 552—556).—Cloudiness of the cornea is frequently due to oedema from irrigation with hypotonic solutions. If 1.5% NaCl is used, the corneal opacity resulting from certain operative procedures, the wearing of contact glasses, the

application of cocaine, and from acute glaucoma is largely abolished.

W. T. A.

Distribution of sulphapyridine between blood, aqueous humour, and cornea. K. Meyer, H. S. Bloch, and W. P. Chamberlain (*Amer. J. Ophthalmol.*, 1941, 24, 60—62).—Rabbits were given 1.2 g. of sulphapyridine, and heart blood and aqueous were aspirated and the cornea removed 4½—10 hr. later. In most of the animals from which samples had been taken 7—10 hr. after intake of the drug, its concn. in the cornea was equal to, or higher than, that in the blood. Concn. in the aqueous was persistently lower than blood concn. *In vitro* experiments showed that the drug was taken up by the whole or ground-up cornea by adsorption. Concn. in the cornea was 1.4 times that in the buffer solution in which the cornea was suspended; in similar experiments with sulphanilamide the cornea attained a drug concn. 3.5—4 times that of the buffer solution.

H. L.

Limits of tyndallimetry in anterior chamber. P. C. Kornfeld (*Amer. J. Ophthalmol.*, 1941, 24, 51—57).—It is confirmed that attachment of a Roenne colloidometer to the slit-lamp will overcome the limiting effect on the visibility of the Tyndall cone in the aqueous exerted by variations in the luminescence of the portion of the anterior chamber surrounding the aqueous section. Three variations depend on the amount of light scattered in the anterior chamber by reflexion on the anterior surface of iris and lens. The colloidometer permits estimation of the intensity of the Tyndall cone in the aqueous by comparing it with the Tyndall cone of the lower ⅓ of the corneal section, the intensity of which can be reduced by means of neutral-grey filters. Data are given showing fair parallelism between colloidometric readings and protein content of the aqueous in 6 cases. A method is described by which, with the aid of the colloidometer, the Tyndall cone of the cornea can be measured and standardised.

H. L.

Pharmacological behaviour of the intraocular muscles. III. "Cholinergic" behaviour of dilator iridis. E. Sachs and P. Heath (*Amer. J. Ophthalmol.*, 1941, 24, 34—39; cf. A., 1941, III, 258).—Strips of dilator muscle from both irides were prepared from 2 rabbits 16 and 18 days respectively after unilateral cervical sympathetic ganglionectomy. The dilator strips contracted in response to acetylcholine (1:50,000 and 1:200,000) and, less strongly, to eserine (1:50,000); when one of the drugs was added after stimulation with the other, the combined effect exceeded the total of the single actions whatever the order of application. This augmentative sensitisation was observed both in denervated strips and in those from the normal side, but the contractions of the former exceeded on the average those of the latter by 100%. Cholinergically contracted dilator strips invariably relaxed when 1:50,000 atropine sulphate, and contracted still further when 1:1,000,000 adrenaline, was added. The dilator did not respond to eserine-acetylcholine with a "twitch" as was observed in the sphincter muscle, and the form of the contraction was the same under both cholinergic and adrenergic drugs. It is inferred that the iris muscles are neither adrenergic nor cholinergic and that their apparent differential sp. reactivity depends on (a) the production, in proximity to them, of chemical agents which are sp. for their respective neural sources and command the effectors by virtue of their proximity, and on (b) differences of the 2 muscles in threshold to the various stimuli. When the threshold is lowered by sensitisation (by denervation and/or pharmacologically) the effector may react to the "opposite" stimulus, thus revealing its actual non-specificity.

H. L.

Actions of adrenaline and acetylcholine on denervated iris of cat and monkey. M. B. Bender and E. A. Weinstein (*Amer. J. Physiol.*, 1940, 130, 268—275).—The denervated iris of the cat responds to autonomic drugs chiefly with the dilator, whilst the monkey reacts with the constrictor mechanism of the denervated iris. After sectioning of all the ciliary and optic nerves the iris is rigid to all forms of neural stimuli but responds to chemical agents. Intravenous injections of adrenaline produce a dilatation of the completely denervated iris in the cat but a delayed miosis in the monkey. Intravenous injections of acetylcholine produce an inconst. constriction and a more frequent secondary dilatation in the cat and only constriction in the monkey. Bilateral adrenalectomy usually abolishes the pupillary dilatation of the cat obtained after acetylcholine. The

pupillary constriction in the monkey after intravenous injections of adrenaline is potentiated by eserisation and occurs only while the constrictor fibres of the iris are sensitive to acetylcholine. M. W. G.

Evolution of lens lesions in eye perforations and ruptures. M. Davidson (*Amer. J. Ophthalm.*, 1940, **23**, 1358—1375).—Out of 62 cases of primary opacity of the lens due to ocular perforation by a foreign body or rupture without retention of foreign body the majority resulted from lens contusion; posterior feathery star-shaped opacities were rare. Capsule perforation, lens penetration, or double penetration had occurred in less than $\frac{1}{3}$ of those cases which had not led to immediate cataract. The retrospective diagnosis of a traumatic origin of an opacity was sometimes difficult owing to blurring of the corneal scar and also in old cases of partial limbus and scleral perforation or rupture. While recession of originally subcapsular opacities into the depth of the lens was generally related to the length of the period which had passed since the trauma, its rate was also affected by the presence of capsular lesions, hypertension, and siderosis (retarding factors) and of lens penetration and hypotension (accelerating factors) respectively. The outcome was good in about $\frac{2}{3}$ of the cases but in individuals over 30 years prognosis should be guarded and deterioration watched for in the 5th decade. H. L.

Cataract in adult rickets (osteomalacia). J. P. Maxwell (*Proc. Roy. Soc. Med.*, 1940, **33**, 777—782).—These cataracts occur after parathyroidectomy and in idiopathic tetany, and are associated with endocrine imbalance, changes in hair and finger nails, dental caries, and diminished bone growth. The density of the lenticular opacities varies, being mild in the early stages and detectable only with a slit-lamp, later becoming more extensive and visible with the naked eye. Improvement but not disappearance results from appropriate treatment. W. J. G.

Effect of hydrolytic products of casein and deaminised casein on cataractogenic action of galactose. E. L. Moore, M. D. Henderson, H. S. Mitchell, and W. S. Ritchie (*J. Nutrition*, 1941, **21**, 125—133).—Rats from a strain susceptible to galactose cataract were fed on a diet containing 25% of galactose, 10% (calc. according to N content or equiv. fraction) of hydrolytic products of casein and deaminised casein (obtained by enzymic or by acid hydrolysis), and 5.5% of casein, the latter being required for the survival of the animals, which had no further supply of protein in their diet. It is concluded from the simple averages of incidence and rate of cataract development in each experiment (comprising 2—6, mostly 4, animals apart from the controls) that the enzymic hydrolysate of deaminised casein was somewhat more protective than the deaminised casein, and that the diaminodicarboxylic acid fraction of the hydrolysate afforded the same protection as the whole hydrolysate whilst the monoamino-, proline, and peptide fractions showed no protection whatever. The protective action was effected without a lowering of the blood-sugar level. H. L.

Cataract complicated in hyperglycaemia by persistent chromatopsia. S. Morse (*Eye, Ear, Nose & Throat*, 1940, **19**, 43—45).—In a non-glycosuric patient, aged 62, with blood-sugar vals. between 125 and 175 mg.-% erythropsia and cyanopsia developed $2\frac{1}{2}$ months after cataract extraction. A slight degree of cyanopsia was still present 15 months after the operation but only when the patient was wearing lenses correcting vision optimally. There were no other abnormal findings. H. L.

Opacities of lens induced by adrenaline in mouse. C. T. Suden (*Amer. J. Physiol.*, 1940, **130**, 543—548; cf. A., 1941, III, 11).—Transitory opacities, consisting of a semifluid milky substance confined to the superficial cells of the anterior cortex, developed in mice within 1 hr. after intraperitoneal injection of 0.3—0.75 mg. of adrenaline per 100 g. body-wt. Their duration was proportional to the density attained (30 min. to 3 hr.). Their incidence was increased when 25—50 mg. of histamine per 100 g. body-wt. were given a few min. before the adrenaline injection but declined progressively with higher doses of histamine, the highest incidence being obtained with an adrenaline-histamine ratio of 1:25. With histamine pre-administration, 1-mg. doses of adrenaline per 100 g. body-wt. did not produce the usual acutely fatal systemic reaction. Administration of ergotamine or phlor-

idizin prior to adrenaline prevented the development of opacities. Hagedorn-Jensen blood-sugar vals. were within normal limits after adrenaline administration, but the Folin-Malmros method, which is also sensitive to reducing substances other than glucose, gave persistently high vals. It is suggested that conditions causing acute glycogenolysis not necessarily accompanied by hyperglycaemia can lead to temporary changes in the stability of the lens and its capsule when they are associated with circulatory impairment of a degree sufficient to interfere with complete oxidation of the carbohydrate metabolites and/or osmotic adjustments.

H. L.

Total lipid and cholesterol content of cataractous and sclerosed human lenses. P. W. Salit (*Amer. J. Ophthalm.*, 1941, **24**, 191—195).—Data, obtained from 259 lenses, are given on wt. of the lens, content in total lipins and cholesterol, and cholesterol-total lipin ratio, arranged according to stage of cataract, stage of sclerosis, age of the patient, and to stage of sclerosis as related to each of the cataract-stage groups. Wt. of the lens decreased in both cataract and sclerosis but increased with age. The cholesterol-total lipin ratio was low in intumescent as compared with incipient and mature cataracts (30.71, 34.65, and 34.45%, respectively), mainly owing to increase in non-cholesterol lipin fractions. In advanced sclerosis there was also an abs. increase in total lipins whereas the increase in cholesterol was accounted for by the decrease in wt. of the lenses, the cholesterol-total lipin ratio therefore decreasing with increase in sclerosis. With advancing age the total lipins increased at a faster rate than the cholesterol, the ratio decreasing from 38% in the 5th to 33.52% in the 9th decade, i.e., inversely to the changes in water content. As cholesterol counteracts absorption of water and as intumescent cataracts are generally much less frequent than incipient and mature cataracts, it is suggested that only lenses with a low cholesterol-total lipin ratio go through an intumescent stage. H. L.

Effect of thyroxine on incipient senile cataracts. D. F. Gillette (*Arch. Ophthalm.*, N.Y., 1941, **25**, 438—442).—Investigation in 20 patients showed that thyroxine applied to the eye had no influence on the development of senile lens opacities. W. T. A.

Functions of relative accommodation. M. Luckiesh and F. K. Moss (*Amer. J. Ophthalm.*, 1941, **24**, 423—428).—The authors' sensitometer (A., 1940, III, 639) was used to test the visual acuity of 20 subjects at various distances. The subjects were emmetropic, with or without correction, by the usual tests. It was found that the eye at rest, in the absence of a stimulus to accommodation, required negative lenses for max. visual acuity at 6 m. distance. The average correction was 0.75 D with extremes of 0.4 and 1.4 D. Detailed study of two subjects showed that for all distances over 0.3 m. negative lenses were needed for max. visual acuity, the strength of lens required increasing with distance up to 6 m. It is concluded that the eye is normally myopic for distant vision, and that this is corr. by negative relative accommodation during ordinary vision when a stimulus to accommodation is present. W. T. A.

Coloboma of optic nerve in human embryo. B. F. Payne (*Amer. J. Ophthalm.*, 1941, **24**, 395—402).—In a 61-mm. human embryo a fold of retina was included in the temporal side of the optic nerve. W. T. A.

Eye grounds of patients with functional psychoses given insulin-shock therapy. Review of literature. A. Gralnik (*Amer. J. Ophthalm.*, 1941, **24**, 26—33).—35 cases were examined biweekly while under treatment and 35 further cases 5—34 months after the end of treatment; nearly all were suffering from schizophrenia. No fundus lesions were found which could be attributed to either psychosis or insulin-shock treatment. H. L.

New dark adaptation tester. S. Yudkin (*Brit. J. Ophthalm.*, 1941, **25**, 231—236).—The instrument first exposes the eye to a bright light; after 7 min. this is extinguished and a test light is shown. The time taken to see this is noted. The intensity of the test light is diminished in steps and the time required for perception at each level recorded. The instrument may also be used for determining the min. visible light after complete dark adaptation. The normal range of dark adaptation is shown in a curve. W. T. A.

Effect of reduced contrast on visual acuity as measured with Snellen test letters. E. Ludvig (Arch. Ophthalm., N.Y., 1941, 25, 469—474).—Snellen test charts were constructed with differing degrees of brightness contrast between letters and background. Visual acuity at first decreased slowly with diminishing contrast and then fell rapidly. Therefore it should not be assumed that a correction giving greatest contrast sensitivity will also produce greatest visual acuity by Snellen test at high contrast levels. W. T. A.

Fluctuations in peripheral vision. P. P. Lazarev and Z. V. Bulanova (Compt. rend. Acad. Sci. U.R.S.S., 1940, 29, 372—375).—During the course of dark adaptation the visual threshold fluctuates, as a rule synchronously, for corresponding parts of the retinas of the two eyes. It is concluded that the fluctuations may occur in parts of the cerebral hemispheres where the corresponding areas for parts of the visual fields of the two eyes are close together; preliminary results indicate that the synchrony does not hold for non-corresponding parts of the two retinas. The fluctuations are tentatively attributed to diffusion of sensitising substances.

K. J. W. C.

Equivalent losses in accuracy of response after central and after peripheral sense deprivation. C. B. Finley (J. comp. Neurol., 1941, 74, 203—237).—Rats were trained to run a maze in light and darkness. The no. of errors made in the dark varied widely in different animals, indicating a range from complete dependence on to complete independence of visual stimuli. Areas of the occipital cortex were destroyed by bilateral application of a thermo-cautery to the external surface of the skull. 3 months later the brains were histologically examined; in 28 rats the lesions were limited to the visual cortex, and in 10 they extended to adjacent areas and deeper structures. Visual cortical lesions of approx. equal size affected the accuracy of rats in running the maze to widely differing degrees, but the no. of errors made was closely related to the no. made by the same rat in pre-operative dark runs. Cortical lesions of the same extent but affecting more than one functional area caused much greater loss in accuracy. Lesions of the visual cortex caused no greater loss in accuracy than did enucleation of the eyes.

W. T. A.

Perceptual disorientation during landing of airplane. D. L. Webster (Science, 1940, 92, 603—604).—The phenomenon noted by A. D. Moore that, when looking across the airplane from a seat in the passenger's cabin after the plane has started to skim along the runway, the field appears to slope down forward at an angle of about 15° (an illusion which continued after the wheels had touched the ground even when the observer's head was repeatedly turned between that window and one on his own side through which the ground remained horizontal, and which ceased abruptly when the plane with a low remaining speed wheeled through a short turn to taxi back) is explained as being due to the smoothness with which in flying accelerations can grow so as not to warn the observer of the differences between backward acceleration and forward gravity. The latter is fading out while the former increases when after a straight glide the throttles are smoothly closed and the propeller thrust is reduced to zero. After the wheels touch, backward acceleration may not change much owing to the effect of the wheel brakes but its quick change from backward to forward when the engines start up for taxiing causes the phenomenon to end abruptly. The ability to separate internal and visual senses of level and to use them concurrently but independently for different purposes has to be acquired with some effort by the learning pilot.

H. L.

Spatial disorientation during landing from airplane. R. B. McLeod (Science, 1940, 92, 604).—The principle underlying Moore's phenomenon (cf. preceding abstract) is described as that of the conflict of 2 spatial frames of reference both of which reside in the visual field of the observer but one of which is more closely related to the directional system of the observer's body. The ground, as seen through the near window, occupying a visual angle large enough to dominate perception, provides a "true" system of horizontal and vertical directions, while, as seen through the far window, the ground is imbedded in the framework of the interior of the plane and appears therefore as tilted.

H. L.

Rhythmic stimulation of labyrinth. E. A. Spiegel (Arch. Otolaryng., 1941, 33, 572—578).—The labyrinth in cats was

stimulated by a rhythmically interrupted current. While on binaural stimulation (with the electrodes placed in the external meatuses) nystagmus (either observed directly or recorded by a modified Majewski nystagmograph) was elicited by currents up to 9 ma., it appeared on monaural stimulation (by a concentric needle electrode introduced into the inner ear through the bulla ossea) on application of smaller currents (1—3 ma.). With a low frequency of stimulation (1—5 per sec.) the frequency of the nystagmus was sometimes higher than that of the stimulation, reactions appearing while the current was on as well as on each break. With a higher rate (6 or more per sec.) the rhythm of the nystagmus corresponded with that of the stimulation. A slow and a fast component were distinguished at rates below 10 per sec. while at higher rates a fine tremor was observed sometimes followed by a coarse after-discharge. Ocular reactions in the rhythm of the stimulation were observed up to frequencies of 27 per sec. The movements were of a mixed type: horizontal and rotatory, sometimes with a vertical component. While during the flow of the current the fast component was directed towards the cathode, the direction was less constant when the current was broken. It is argued that the responses were due to excitation of the vestibulo-ocular reflex arc rather than to direct stimulation of the ocular muscles or their motor neurons. H. L.

Sense of hearing in fishes. C. B. Williams (Nature, 1941, 147, 543).—While the existence of spontaneous reactions to musical tones in fishes is denied by von Frisch in view of their biological insignificance in this order of animals, a flight reaction to accidental noises (ringing of bicycle bell, clapping of hands) was observed in surface-feeding fishes in British Guiana which lived in shallow, frequently bridged, canals in sugar estates along which the sugar cane is towed in barges. No response to tones was observed in goldfish held in a pond at Rothamsted.

H. L.

Danger to hearing apparatus in modern warfare. W. A. Wells (Eye, Ear, Nose, & Throat, 1941, 20, 45—50).—A review of the measures which should be taken to prevent permanent ill-effects of intense noise, blast, and of sudden variations of atm. pressure (insulation of machines, recognition of early defects, ear protectors, selection of personnel).

H. L.

Progressive analogous nerve deafness in three successive generations with sex-linked inheritance. M. S. Ersner and M. Saltzman (Laryngoscope, 1941, 51, 241—245).—Only females were affected, 2 of whom had 1 normal-hearing sister while 1 had a deaf sister; all had normal-hearing brothers (2, 5, 1, respectively). In all 3 cases the right ear had been affected first. Loss for higher tones was greater than that for lower tones in the cases of the 1st and 3rd generation, while diminution of hearing was about the same for all the octaves in the remaining case. The affection had been noticed in the oldest case at the age of 26, in her daughter during early youth, and in the grandchild at the age of 9.

H. L.

Discussion on psychological aspects of deafness. H. Frey, A. B. Stokes, I. R. Ewing (Proc. Roy. Soc. Med., 1940—1941, 34, 309—320).—H. Frey: As far as mental anomalies appear in deaf-mutes, they are probably due to difficulties in expressing themselves or to associated cerebral lesions rather than to the deafness itself. In individuals becoming deaf during life, overestimation of their defect is often observed, due in cases of unilateral or bilateral asymmetric deafness mainly to physiological reasons; many of them also overestimate the practical consequences of their deafness. Loss of integrity of the body may cause a severe psychic shock from which a traumatic neurosis may originate. Otosclerosis represents a special type of highly "nervous" character which may form the basis of their depressive reaction. The depression of the deafened is open to relief by psychotherapy and re-education.

A. B. Stokes: The mental reactions associated with deafness are not sp. for this disability but are grounded in the pre-morbid personality and released by the deafness and its social stress; within the broad patterns of reactions deafness may specify the details. A more acute onset of deafness tends to precipitate, in predisposed individuals, an affective response whereas a slowly developing deafness enlarges the possibilities of compensation although it may also bring out in predisposed individuals a paranoid response. Occurrence

of deafness in children presents the special problem of personality maturation: trends of conduct are impeded in their social organisation while at the same time social stress is increased. An understanding of the kind of personality to be dealt with will indicate how the best compensations may be fostered.

I. R. Ewing: Case histories are given of adult and adolescent individuals deaf from middle or lateral ear disease and are analysed with regard to capacity to follow speech, ability to continue to talk intelligibly and audibly, thinking, and employability. Delay in thinking and performance in deaf children accounts for the degree of mental retardation which accumulates throughout the pre-school years. H. L.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

The goitre patient. O. W. Longwood (*J. Kansas Med. Soc.*, 1941, 42, 10—17).—A clinico-pathological study. E. M. J.

Histo-pathological changes of thyroid in vitamin-A, -B, and -C deficiency. W. Yano (*J. Orient. Med.*, 1938, 29, 165).—Vitamin-A deficiency produces slight enlargement of thyroid; -B and -C deficiency have no influence. M. K.

Case of osteitis fibrosa cystica with a pathological fracture and renal calculi cured by removal of parathyroid adenoma. I. E. Siris (*N.Y. Sta. J. Med.*, 1940, 40, 1788—1795). E. M. J.

Production of shock by prolonged continuous injection of adrenaline in unanæsthetised dogs. N. F. Freeman, H. Freedman, and C. C. Miller (*Amer. J. Physiol.*, 1941, 131, 545—553).—Vasoconstriction produced by continuous intravenous injection of adrenaline solution (0.0034—0.0164 mg. per kg. per min.) in unanæsthetised dogs for 1—1½ hr. resulted in decreased plasma vol. and a state of shock. No change in plasma vol. occurred after continuous injection of equiv. amounts of normal saline. Post mortem showed excess of extravascular fluid in the lymph, pericardial sac, lumen of the intestine, peritoneal cavity, and tissue spaces. M. W. G.

Effect of adrenalectomy on histamine content of tissues of the rat. B. Rose and J. S. L. Browne (*Amer. J. Physiol.*, 1941, 131, 589—594).—There is a marked increase of the histamine content of the gastro-intestinal tract, and a smaller increase in liver and lung, after adrenalectomy in the rat. Histamine may be related to the production of symptoms of adrenal insufficiency and shock; histamine metabolism may be influenced by the adrenal cortex. M. W. G.

Comparative parenteral and oral assays of adrenal cortical hormone substances. M. H. Knizenga, J. W. Nelson, and G. F. Cartland (*Amer. J. Physiol.*, 1940, 130, 298—303).—A method of assaying adrenal cortex extracts by stomach tube administration is described; similar results are obtained with oral or parenteral administration of extracts, but the potency of deoxycorticosterone was 35 rat units per mg. when given by subcutaneous injection, and less than 1 unit when given orally. There was no cortical hormone activity in faecal extracts of rats receiving deoxycorticosterone acetate by mouth. Corticosterone and dehydrocorticosterone are as effective orally as parenterally. M. W. G.

Test object for determining thyrotropic hormone. P. A. Wunder and K. G. Wiebe (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 28, 357—359).—Thyroid gland of the domestic sparrow (*Passer domesticus*) has an average wt. of 2.1 mg. from Dec. to March and maintains a state of quiescence. Injection of extracts of human pituitary gland increases the wt. of the gland and the height of the follicular epithelium, the response being proportional to the dose. An unfiltered is more effective than a filtered extract. The response is max. after 48 hr. There is no difference between the sensitivity of the two sexes. Sparrows are preferable to chicks as test objects. J. N. A.

Does extent of thyrotropic reaction depend on the functional condition of testis? P. A. Wunder (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 28, 360—362).—Stimulation of testicular function in sparrows by prolonged exposure to light does not affect their thyrotropic reaction as based on change in wt. of the thyroid. An actively functioning testis does not inhibit the action of the thyrotropic hormone, nor does it suppress the ability of the thyroid gland to respond to the hormone. J. N. A.

Antigonadotrophic substance in rabbits. K. Takahashi (*Z. Geburtsh. Gynäkol.*, 1939, 118, 391—404).—Prolan, obtained by Zondek's method at the 3rd—6th month of pregnancy, or extracts of cattle anterior pituitary, produce the appearance in blood of an antigonadotrophic substance (AGS) which, on injection into adult rabbits, inhibits ovulation. The AGS disappears from the blood 14—32 days after the last injection of prolactin and 20—28 days after the last injection of pituitary extract. On continuing the treatment, AGS was always present (longest period of observation 385 days). Heating prolactin or anterior pituitary extracts did not prevent the formation of AGS. AGS is sol. in water, thermolabile, pptd. by alcohol, but not extractable by ether or CHCl_3 ; acetone destroys, phenol preserves, AGS. AGS does not prevent, in rabbits, the ovulation due to coitus; it has no effect on the course of pregnancy; it was not found in blood of women post partum. Blood containing AGS reacts positively to homologous antigens in pptn. experiments and complement reaction. A. S.

Renal responses to repeated administration of post-pituitary extract. H. Silvette (*Amer. J. Physiol.*, 1941, 131, 601—605).—The antidiuretic action of post-pituitary extracts is maintained (in male rats, wt. 200 g.), on repeated injections 2—8 hr. apart, for at least 48 hr., and during this time no tolerance develops. When the administration is stopped, urine output promptly rises to control level. Post-pituitary solution (U.S.P. XI) and pitressin have similar effects on urine output; the oxytocic fraction present in the U.S.P. extract is without effect. M. W. G.

Factors which influence inhibition of water loss in albino rats by pituitrin. E. M. Boyd and N. D. Garand (*Amer. J. Physiol.*, 1940, 130, 403—409).—Small rats lose water more rapidly than large and pituitrin is less effective in inhibiting or preventing wt. loss. Extremes of environmental temp., or administered salt, decrease the water-retaining effect of pituitrin and the latter may reverse it. Pituitrin retains water more effectively in rats dehydrated and kept thirsty for a prolonged period. M. W. G.

XII.—REPRODUCTION.

Artificial insemination. W. R. Stokes (*Med. Ann. Columbia*, 1938, 7, 218—219). E. M. J.

Spermatogenesis in rats outside the body. N. Diomidova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 28, 567—570).—Early stages of spermatogenesis *in vitro* did not differ from those *in vivo*, but the formation of spermatids and spermatozoa depend on the integrity of the whole organism. M. K.

Results of operative treatment for cryptorchism. E. Wessel (*Dtsch. Z. Chir.*, 1938—39, 251, 235—244).—In 50% of the 34 unilaterally and 59% of the 22 bilaterally operated cryptorchids the testis attained a vol. equal to 70% or more of the average for the respective ages. These results were obtained with operations at an average age of 11.5 and 10.6 years; cases with poorer results had been operated on at a higher average age. Body-wt. and -height were satisfactory in most cases. E. M. J.

Inhibiting action of testosterone propionate on post-partum lactation. A. M. Hellmann and L. F. Ciner (*N.Y. Sta. J. Med.*, 1941, 41, 30—33).—Testosterone propionate in daily doses of 10—50 mg. and total doses of 40—275 mg. (average 87 mg.) was given in 77 cases at 8—120 hr. post partum. Lactation was totally inhibited in 50% of a group of 70 where it had been used prophylactically and good results as regards objective and subjective symptoms were seen in 73% of all cases. Menstruation returned within 4 weeks in 2 cases and within 2 months in practically all cases; no other after-effects were seen. E. M. J.

Involution of thymus of young albino rat under treatment with testosterone propionate. E. C. Persike, jun. (*Amer. J. Physiol.*, 1940, 130, 384—391).—Thymus of male and female albino rats (under 100 days old) involuted following injections of testosterone propionate: the max. effect developed after 19 days with daily doses of 0.02 mg. or more. Involution (not mere arrest in growth) began about the 4th to 5th day. Refractoriness occurred to prolonged injections, more so in the females. Daily doses of 0.04 mg. or more caused involution in the thymus of castrated rats of either sex, hypertrophy occurring when the injections ceased. Injections of

pure sesamé oil caused a slight degree of involution for a short time when refractoriness had occurred. M. W. G.

Menstruation. G. W. Bartelmez (*J. Amer. Med. Assoc.*, 1941, 116, 702—704).—A review. C. A. K.

Rheological properties of bovine cervical secretions during oestrous cycle. G. W. S. Blair, S. J. Folley, F. M. V. Coppen, and F. H. Malpress (*Nature*, 1941, 147, 453—454).—The viscosity of the cervical secretions are measured at intervals during the oestrous cycle with a Scott Blair emptying-capillary viscometer. The viscosity is reduced during oestrus. A simpler method for assessing the stage of the cycle is provided by the fact that there is an increased "flow-elasticity" during oestrus. This is measured by applying pressure to a column of secretion in the capillary and recording the recoil of the fluid on releasing the pressure ("oestroscope"). A practical method is being worked out for agricultural application. P. C. W.

Squamous metaplasia of columnar epithelium in human cervix. R. Carmichael and B. L. Jeaffreson (*J. Path. Bact.*, 1941, 52, 172—186).—In 40% of 400 adult human cervixes there are patches of an atypical multilayered epithelium intermediate between columnar-celled and squamous epithelium. This change in structure is accompanied by a parallel alteration in function; the secretion of mucin gradually diminishes and finally the cells accumulate glycogen. Age, reproductive history, and diseases of the genital tract have little influence on the incidence of these metaplastic changes. Both hormonal influences and local environmental factors may be concerned in its development. (17 photomicrographs.) C. J. C. B.

Substance for promoting growth and function of the genital glands of young rats. M. Iwata, S. Susuki, and K. Iwata (*Bull. Inst. Phys. Chem. Res. Japan*, 1941, 20, 25—40).—Egg yolk or the fat-free material fed to rats on a basal diet has an effect on the genitalia similar to that of prolactin. The active substance is moderately stable in air and when heated, and any loss of potency is restored by cod-liver oil, which, alone, is without this effect on the rats. The active principle is sol. in weak alkalis, the extract being feebly oestrogenic. The factor also occurs in ox, pig, and fur-seal liver, and in the ova and semen of cod, salmon, and herring. J. L. D.

Allergic reaction to stilboestrol. K. A. Baird (*Canad. Med. Assoc. J.*, 1941, 44, 401).—A case report. C. J. C. B.

Stilboestrol. C. Mazer, S. L. Israel, and E. Ravetz (*J. Amer. Med. Assoc.*, 1941, 116, 675—681).—Stilboestrol was therapeutically as active as natural oestrogens in 189 cases. The ratio of effective oral to hypodermic dose is 5/1. In doses of 2 mg. hypodermically every 4th day, nausea, vomiting, epigastric pain, and malaise occurred in 52% of cases. With the same dosage daily by mouth the toxicity occurrence was 21% and with 0.5 mg. daily it was 3%. There was no evidence of any metabolic disturbances. C. A. K.

Preparation of stilbene derivatives. II. Unsymmetrical stilbenes. W. H. Linnell and H. S. Shaikhmahamud (*Quart. J. Pharm.*, 1941, 14, 64—72).—4 : 4'-Dihydroxy-, 4-hydroxy-4'-methoxy-, 4 : 4'-dimethoxy-, and 4 : 4'-diacetoxy-stilbene have oestrogenic activity of 0.5, 0.5, 0.15, and 0.22 i.u. per mg., respectively. Thus in the stilbene mol., only one hydroxyl in the *p*-position is necessary for oestrogenic activity. For new compounds, see A., 1941, II, 193. F. O. H.

Ovarian damage in mature baboons produced by progesterone and oestradiol benzoate. J. Gillman (*Nature*, 1941, 147, 575—576).—Doses of progesterone (15—20 mg.) which when given in the first part of the normal oestrous cycle produce perineal deturgescence also produce 1—2 cystic follicles in one ovary. These follicles may be 4 times as large as the normal ovary. Single injections of oestradiol benzoate (0.5—5 mg.) at the same period cause deturgescence and the onset of the next menstruation is delayed by 18 days. There is degeneration of the membrana granulosa in the fluid-containing ovarian follicles. If oestradiol benzoate is given daily from the 8th day of the cycle the perineal deturgescence is maintained for as long as the injections, and the ovarian follicles undergo massive atresia. If 1 mg. of oestradiol benzoate and 5 mg. of progesterone are injected simultaneously on the 8th day the perineum becomes deturgescent and one ovary contains a large cyst and both have atretic follicles. Normal con-

ditions are restored at the 2nd—3rd cycle following such treatment. P. C. W.

Adaptation to oestrogen overdose : acquired hormone resistance without anti-hormone formation. H. Selye (*Amer. J. Physiol.*, 1940, 130, 258—364).—The wt. of growing rats treated with oestrogens first declines; growth is later resumed and body-wt. may exceed the initial level in spite of continued administration of massive doses of oestradiol or diethylstilboestrol. Rats adapted to natural oestradiol prove equally resistant to the artificial and conversely. This "crossed resistance" is interpreted as adaptation to an action or effect rather than to a chemical substance. After very prolonged administration of large doses of oestrogen (2—5 mg. per 100—150 g. body-wt.), the acquired adaptation is lost, and the rats eventually lose wt. again and die after 2—3 months' oestrogen administration. M. W. G.

Solubilities of oestrogens. E. A. Doisy, jun., M. N. Huffman, S. A. Thayer, and E. A. Doisy (*J. Biol. Chem.*, 1941, 138, 283—285).—Vals. are given for the solubility of oestril, oestrone, α -oestradiol, and equilin at 10° and 30° in methyl and ethyl alcohol, benzene, acetone, pyridine, and other org. solvents. P. G. M.

Corpus luteum hormone. G. W. Corner (*J. Amer. Med. Assoc.*, 1941, 116, 591—594).—A review. C. A. K.

Wheat-germ oil (vitamin-E) in treatment of habitual and threatened abortion. J. K. Cromer (*Med. Ann. Columbia*, 1938, 7, 145—148).—Wheat-germ oil was given to 3 women with one, and one with two, previous abortions. The latter and one other in whom treatment lasted throughout pregnancy had living children at full term; in one in whom treatment stopped after 4 months pregnancy terminated at 8 months through partial placental separation, the child surviving, and the 4th, who would not co-operate, aborted at 4 months. 3 other women with threatened abortion in whom treatment was begun after 2 months, 4 months, and before conception produced living children at full term. (No doses given.) E. M. J.

Endometrial patterns in menorrhagia and metrorrhagia. J. Kotz and E. Parker (*Med. Ann. Columbia*, 1938, 7, 371—380).—Of 50 cases with excessive bleeding studied, the endometrium was in the secretory phase in 27 and in the follicular phase in 23. Of the first group 6 showed prolonged oestrin action; in 14 cases of the second group hyperplastic changes were associated with relative or absolute hyperoestrinism. E. M. J.

Histamine-like substance in post-partum rabbit uterus. B. Krichesky and W. Pollock (*Amer. J. Physiol.*, 1940, 130, 319—326).—Saline extracts of post-partum rabbit uterus, taken within 12 hr. after delivery, contain a toxic substance, probably histamine or a histamine-like substance, which kills non-pregnant rabbits, or animals one day pre- or post-partum. The toxic factor resembles histamine in physiological properties and is readily inactivated by incubation with histaminase; with one exception it was not present in non-pregnant uterus, skeletal muscle, serum, or whole blood of rabbits in late stages of pregnancy or one day post-partum. M. W. G.

Viscosity, protein distribution, and "gold number" of antenatal and postnatal secretions of human mammary gland. H. Waller, R. Aschaffenburg, and M. W. Grant (*Biochem. J.*, 1941, 35, 272—282).—Data are given for the level of, and changes in, η , total and non-protein-N, globulin, and casein in human mammary secretions during late pregnancy and early lactation. The rapid determination of the "Au no." is described; this is the reciprocal of the dilution of the secretion contained in 1 c.c. of solution which is just insufficient to prevent a change of colour in 5 c.c. of a stable red Au sol when 0.5 c.c. of 10% aq. NaCl is added to it. The "Au no." is linearly related to the total N content. Regular removal of the prenatal fluid does not cause any pronounced alterations in its composition, but characteristic changes occur during the first few days post partum, and it is suggested that the term "colostrum" should be confined to the fluid secreted during this period. In the postnatal secretion η , total N, and "Au no." all fall rapidly to much lower levels during the first 5 days post partum. There is no simple linear relation between η and total N, for the former increases more rapidly than does the concn. of N compounds. The non-protein-N falls only slightly during the first few days after parturition.

Casein is present in considerable amounts as early as the 22nd week of pregnancy. It decreases during the first 4—5 days of lactation, but as a % of total N, there is a definite increase of casein as lactation is established. Globulin is the main protein constituent of the antenatal secretions. After parturition the amount decreases sharply during the first 4—5 days post partum. It is suggested that the principal cause of lactational difficulties encountered during the early post-natal stages is due to faults in the mechanism of expulsion rather than in the mechanism of milk production.

J. N. A.

Utilisation of β -hydroxybutyric acid by lactating mammary gland. J. C. Shaw and C. B. Knott (*J. Biol. Chem.*, 1941, **138**, 287—292).—If all the β -hydroxybutyric acid in the mammary gland (cow) is oxidised for energy purposes, 42% of the total O_2 consumption of the lactating gland can be accounted for in this way. The non-lactating gland uses only negligible amounts of ketonic compounds.

P. G. M.

XIII.—DIGESTIVE SYSTEM.

Phrenic nerve interruption for para-oesophageal hernia. I. Cohen (*J. Mt. Sinai Hosp.*, 1938—39, **5**, 690—692).

E. M. J.

Effects of gastrectomy in animals. A. C. Ivy (*Amer. J. digest. Dis.*, 1940, **7**, 500—502).—The stomach is not an essential organ in the dog, pig, or monkey, but may be in the rat. Its removal, however, places a strain on digestive activities and impedes Ca storage. Total gastrectomy does not cause pernicious anaemia, subacute combined degeneration of the cord, stomatitis, or glossitis in any of the above animals.

N. F. M.

Mechanics of gastric evacuation. J. M. Werle, D. A. Brody, E. W. Ligon, jun., M. R. Read, and J. P. Quigley (*Amer. J. Physiol.*, 1941, **131**, 606—614).—Optical registration of intralumen pressures of the pyloric antrum and duodenal bulb (unanesthetised dogs) combined with simultaneous fluoroscopic observations was used to study gastric evacuation. In each evacuation cycle, first period of evacuation (*A*) was associated with a moderate basal pressure gradient from antrum to bulb; the pyloric sphincter and duodenal bulb offered little resistance to expulsion. The antral pressure remained low and the energy of the antral contraction occurring at that time was chiefly transformed into propulsive force. As material accumulated in the duodenum and together with contraction of the sphincter increased the resistance distally, the advancing antral peristaltic wave elevated the antral pressure and the antral phasic pressure wave was produced. Gastric evacuation persisted (period *B*) under the augmented pressure head until terminated by several factors, among which was complete closure of the sphincter. Bulbar contraction occurred at this time and caused bulbar emptying, but regurgitation was prevented by the closed sphincter.

M. W. G.

Gastroscopic observation of pyloric function. M. Fenger (*Dtsch. Z. Chir.*, 1938—39, **251**, 629—640).—In a normal stomach the pylorus contracted rhythmically at 18—20 sec. interval, uninfluenced by introduction of acid or alkali into stomach or duodenum.

E. M. J.

Biopsy forceps for flexible gastroscope. B. Kenamore (*Amer. J. digest. Dis.*, 1940, **7**, 539).

N. F. M.

New nasal duodenal tube. D. Macdonald (*Amer. J. digest. Dis.*, 1940, **7**, 537—538).

N. F. M.

Ætiology of megaduodenum. W. Weiss (*Dtsch. Z. Chir.*, 1938—39, **251**, 317—330).—6 members of 3 generations of a family were affected; in 5 the condition was associated with developmental errors of other parts of the intestine or of the kidney.

E. M. J.

Intubation studies of human small intestine. Diagnostic significance of motor disturbances. F. J. Ingelfinger and W. O. Abbott (*Amer. J. digest. Dis.*, 1940, **7**, 468—474).—Kymographic records were taken from various levels of the small intestine of human subjects who had swallowed a special balloon system. A total of 76 records made on 64 patients gave useful information about the calibre of the intestine, the pattern of its large and small waves, and the motility of its contents. Characteristic curves are given by hypermotility, duodenal ileus, and chronic partial ileal obstruction. The method is of diagnostic val. in patients

unsuitable for radiography or in whom no diagnosis can be made by other methods.

N. F. M.

Radioactive indicators, enteric coatings, and intestinal absorption. K. Lark-Horowitz and H. R. Leng (*Nature*, 1941, **147**, 580—581).—Gelatin capsules filled with 0.3 g. of radioactive NaCl (obtained by bombardment with 8.5-Me.v. deuterons for 2—6 μ -amp.-hr., and with initial activity of 500—700 μ c.) and coated with a mixture of shellac, castor oil, and alcohol, were administered orally. Each was followed through the digestive tract with a movable bell-type counter, and the activity of the patient's hand measured. With no pill coating, activity was detected in the hand within a few min. and reaches a steady val. in 3 hr. An efficiently coated pill reaches the small intestine in 3½ hr. and dissolves, activity then appearing in the hand, reaching a max. at 8 hr., and falling slightly to a steady level. Inefficiently coated pills show an intermediate hand activity-time relation. The rate of absorption from the stomach of Na, K, and Cl ions differs from that from the small intestine.

E. R. S.

Balance of physical forces which determine rate and direction of flow of fluid through intestinal mucosa. H. S. Wells (*Amer. J. Physiol.*, 1940, **130**, 410—419).—Moderate congestion of the mesenteric veins and lymphatics slows the rate of absorption of isotonic saline from isolated loops of small intestine in dogs. At a definite congesting pressure absorbing and secreting forces may be exactly balanced. Higher grades of congestion produce secretion of intestinal juice, the rates of secretion increasing geometrically as mesenteric venous pressure is increased above the val. required to abolish absorption. An analysis of the physical hypothesis which probably accounts for intestinal absorption and secretion of fluid is given and some objections are discussed.

M. W. G.

Clinical importance of ileal diverticulum and pathology of its intramural plexus. H. Miyake and M. Oda (*Dtsch. Z. Chir.*, 1938—39, **251**, 111—119).—Two cases of abdominal discomfort were cured by resection of a Meckel's diverticulum, one after unsuccessful appendectomy; microscopically there was evidence of subacute diverticulitis in one case. Auerbach's and Meissner's plexus showed degenerative changes in the axial cylinders of the former and in the ganglion cells of the latter in both cases.

E. M. J.

Enteropathy in deficiency states. D. Adlersberg and M. Weingarten (*N.Y. Sta. J. Med.*, 1941, **41**, 14—19).—A review.

E. M. J.

Fat absorption in sucklings. F. Küster (*Z. Kinderheilk.*, 1938—39, **60**, 458—466).—Pure oil given between meals to 12 sucklings was incompletely absorbed (e.g., less than ½). Emulsified oil, however, was almost entirely absorbed. Pure oil given in milk feeds was absorbed less completely than emulsified oil without milk. Addition of milk to emulsified oil did not increase its absorption.

M. K.

Intestinal obstruction from inspissated meconium. W. Bronaugh and R. D. Latimer (*Amer. J. Dis. Child.*, 1940, **60**, 1371—1374).—A case is reported in which the meconium, thick, gummy, and wax-like, caused intestinal obstruction which was relieved by operation; recovery was precluded by the congenital absence or fibrosis of the terminal portion of the pancreatic duct system, with obstruction and atrophy of the pancreatic tissue and resultant failure of pancreatic secretion.

C. J. C. B.

Dietary management of intestinal tuberculosis. A. S. Kennedy, O. Snider, J. S. Hazen, and C. McLean (*Canad. Med. Assoc. J.*, 1941, **44**, 380—385).—The best diet for relieving symptoms and for supplying nutrition is one that is relatively bland, low in residue, with sufficient protein, ample in vitamins and minerals, given in 4 feeds per day. In this diet ample supplies of vitamins and minerals were obtained by the incorporation of cod-liver oil, citrus fruit juices, tomato juice, and pabulum.

C. J. C. B.

Woldman's phenolphthalein test in intestinal tuberculosis. L. E. Siltzbach and H. R. Nayer (*Amer. J. digest. Dis.*, 1940, **7**, 519—521).—The test was performed on 206 patients, including 173 with acute pulmonary tuberculosis. 33 of the patients came to autopsy, and in this group the test had a positive error of 42% and a negative error of 19%. The test is therefore valueless in determining the presence of tuberculous ulcers of the gastro-intestinal tract.

N. F. M.

Peritoneal irritation and intestinal activity. D. M. Douglas and F. C. Mann (*Brit. Med. J.*, 1941, I, 227—231).—Lugol's I solution was used to produce peritoneal irritation in rabbits and dogs in which a loop of gut was exteriorised for observation of activity. Inhibition was shown to result reflexly, the effector path being the splanchnic nerves, the afferent limb of the arc being unknown. This suggests a neurogenic basis for paralytic ileus. C. A. K.

Peritoneal exudate. B. Steinberg (*J. Amer. Med. Assoc.*, 1941, 116, 572—578).—A review. C. A. K.

Serum and urinary diastase after experimental pancreatic damage [in dog]. O. Schürch and O. Iseli (*Dtsch. Z. Chir.*, 1938—39, 251, 245—257).—Increased diastase was seen after ligation of the pancreatic ducts or inflammatory and necrobiotic processes affecting the pancreas itself, but not with peripancreatitis produced by painting with I, ligation of the common bile duct, or partial excision and reimplantation. Animals survived total extirpation of the pancreas for 13 days, and diastase in serum and urine was reduced. Chronic changes produced by irradiation with Ra did not influence diastase val. E. M. J.

Case of adenoma of pancreas cured by excision. H. Krauss (*Dtsch. Z. Chir.*, 1938—39, 251, 512—519). E. M. J.

Elimination of sodium in pancreatic juice as measured by radioactive sodium. M. L. Montgomery, G. E. Sheline, and I. L. Chaikoff (*Amer. J. Physiol.*, 1941, 131, 578—583).—Elimination of Na in pancreatic juice was studied in dogs with pancreatic fistulae with the aid of radioactive Na. Labelled Na appeared in pancreatic juice within 3 min. of the intravenous injection of the radioactive salt; max. concns. were found within 15 min. Except in the early periods, the concns. of labelled Na in the pancreatic juice follow closely those in serum. M. W. G.

Exocrine pancreatic secretion in fasting dog. V. B. Scott, J. S. Graham, and D. H. McCartney (*Amer. J. digest. Dis.*, 1940, 7, 533—537).—The outflow of pancreatic juice in fasting dogs showed marked irregularities according to the surgical method employed. Bilateral vagotomy did not alter the irregularities in pancreatic outflow of Dragstedt fistulae or the vol. of juice collected. N. F. M.

Giant colon in adult psychotic patient. A. C. Bach, H. M. Ierman, and J. K. Kerns (*Amer. J. digest. Dis.*, 1940, 7, 523—525).—The subject was a white male aged 27 who had suffered from abdominal swelling and constipation since 6 months, and whose mentality had always been abnormal. The colon, said to be the largest ever reported, was 6½ ft. in length and weighed (at autopsy) 45 lb. full and 6 lb. empty. N. F. M.

Immunological test for human blood and human protein in stools. L. Pincussen (*J. Lab. clin. Med.*, 1941, 26, 1030—1031).—By precipitin reaction, using as antibody a sp. human serum-rabbit antiserum, the presence of human blood-protein may be detected in human stools. Using as antiserum a human haemoglobin-rabbit antiserum, the presence of human corpuscles or derivatives thereof can be demonstrated. Positive precipitin reaction of stool extract with both serum antiserum and globin antiserum is characteristic for bleeding, whereas precipitin reaction with serum antiserum and negative test with globin antiserum indicate an exudate from the bowels as produced by an exudative process. Testing with dilutions of the faeces extract gives a rough quant. estimation. C. J. C. B.

Determination of blood in sheep faeces by Evelyn photo-electric colorimeter. J. S. Andrews and H. J. Brooks (*J. Biol. Chem.*, 1941, 138, 341—351).—A quant. method is described, by means of which 25—50% of ingested blood was recovered from the faeces within 72 hr. P. G. M.

XIV.—LIVER AND BILE.

Liver function tests in alcoholic cirrhosis. H. B. Cates (*Arch. intern. Med.*, 1941, 67, 383—398).—Liver function tests were correlated with the appearance of the liver seen through the peritoneoscope and with biopsy specimens in 42 cases of cirrhosis and in 17 cases of acute alcoholism. The order of val. was bromsulphalein test first, then total serum-proteins, serum-albumin-globulin ratio, hippuric acid test, serum-cholesterol and -cholesterol esters. C. A. K.

New test of liver function determined from concentration of bile salts in bile and urine. L. M. Morrison (*Amer. J. digest. Dis.*, 1940, 7, 527—533).—The bile salts were determined by the surface tension method with a special stalagmometer (A., 1940, III, 620). The bile salt concn. (in mg. per 100 c.c.) in surgical drainage bile from normal livers averaged 1800 and in abnormal livers 740. Bile obtained by duodenal tube showed similar differences, averaging 1200 in normal and 800 in patients with depressed liver function. Normal urinary bile salt concns. were below 400; this val. was often exceeded with liver failure. Bile salt concn. of bile is a valuable index of liver function. N. F. M.

Vitamin-K deficiency in gall-bladder disease without clinical jaundice or hepatitis. G. Cheney (*Amer. J. digest. Dis.*, 1940, 7, 521—523).—A case of cholecystitis with an unexplained prothrombin deficiency, which responded to parenteral vitamin-K therapy. N. F. M.

Recurrent cholangitis due to common duct stone associated with colon bacillus infection. W. T. Doran and E. C. Hanssen (*Amer. J. digest. Dis.*, 1940, 7, 525—527).—A case report. N. F. M.

Typical anaphylaxis in dog in absence of liver. E. T. Waters and J. Markowitz (*Amer. J. Physiol.*, 1940, 130, 379—383).—Dogs were sensitised to horse serum treated with alum. Hepatectomy was carried out by the one-stage technique (Markowitz, Yater, Burrows, 1933). Criterion of shock was the pronounced fall in arterial blood pressure which immediately follows the injection of shock dose of antigen. Typical anaphylactic shock was obtained. M. W. G.

Choledochal denervation. H. Reich (*Surg. Gynec. Obst.*, 1940, 71, 39—43).—Denervation of the common bile duct or excision of the lowermost nerves supplying it may relieve biliary dyskinæsia by affecting the function of the sphincter of Oddi. F. F. R.

Congenital atresia of the extrahepatic bile ducts. N. F. Hicken and H. G. Crellin (*Surg. Gynec. Obst.*, 1940, 71, 437—444).—Five cases of congenital atresia of the bile ducts were studied. A radiological method of visualising the abnormality of the duct at operation is described. F. F. R.

XV.—KIDNEY AND URINE.

Iodosecretory and ureosecretory indices of renal function. J. T. Peters (*Arch. intern. Med.*, 1941, 67, 345—371).—Renal function may be tested by means of iodosecretory and ureosecretory indices which are obtained from blood and urine concns. of I and urea, urinary min. vol., and the estimated wt. of renal parenchyma. Technical procedures are described in detail. C. A. K.

Renal function in late toxæmia of pregnancy. A. C. Corcoran and I. H. Page (*Amer. J. med. Sci.*, 1941, 201, 385—396).—The characteristic renal lesion of sp. late toxæmia of pregnancy, namely swelling of the glomerular basement membrane, is expressed functionally in a decrease in the proportion of water removed from plasma by glomerular filtration. C. J. C. B.

Bilateral cortical necrosis of kidneys. G. L. Duff and R. H. More (*Amer. J. med. Sci.*, 1941, 201, 428—448).—A crit. review. C. J. C. B.

Clinical and functional course of nephrotoxic nephritis in dogs. P. J. Fouts, A. C. Corcoran, and I. H. Page (*Amer. J. med. Sci.*, 1941, 201, 313—326).—Nephrotoxic nephritis due to injection of organ-sp. nephrotoxic sera in dogs is associated at its onset with increased renal blood flow and decreased glomerular filtration due to thickening of the glomerular basement membrane. This functional alteration persists during the course of active nephrotoxic nephritis. Its presence is indicated by an increase in the ratio of phenol-red/inulin clearance. The hæmaturia which is observed at the onset of nephrotoxic nephritis in the dog and during the persistence of severe chronic nephritis is not related to hæmolytic or anaphylactic reactions which may follow the injection of sera. Although the acute anæmia which followed injection of nephrotoxic sera in dogs is due to hæmolytic factors present in the sera, the course of the anæmia subsequent to the development of nephritis suggests that depression of bone marrow activity is present during the persistence of severe renal disease. C. J. C. B.

Gum acacia for nephrotic syndrome. A. Goudsmit and M. W. Binger (*Arch. intern. Med.*, 1940, **66**, 1252—1281).—Gum acacia given intravenously in doses of 90—150 g. (30 g. daily) relieved oedema in 36 of 40 cases with nephrotic syndrome. There was no evidence of liver damage and the decrease of serum-proteins was attributed solely to increase in plasma vol., associated with diuresis. Renal insufficiency and cardiovascular disease do not contraindicate its use.

C. A. K.

Experimental lesions in kidneys of rabbits. A. E. Parks and G. Shanks (*J. Lab. clin. Med.*, 1941, **26**, 950—956).—Unsuccessful attempts were made to produce pathological change in the kidneys of rabbits by intravenous injections of serum from rabbits that had been treated with intraperitoneal injections of degenerated rabbit kidney emulsion and by bacterial filtrates.

C. J. C. B.

Changes of leucocytes in urine. V. Goldberg (*Schweiz. med. Wschr.*, 1940, **70**, 1272—1273).—Leucocytes in urine maintain their structure in acid medium; they begin to disintegrate at pH 7.0; leucocytes are rarely found at pH vals. above 8.0. In the presence of staphylococci and in strongly alkaline medium a viscous mucin-like substance is formed from the leucocytes.

A. S.

Effect of varying intake of protein and salts on composition and specific gravity of urine. M. Miller, J. W. Price, and L. P. Longley (*J. clin. Invest.*, 1941, **20**, 31—38).—Large variations in the intake of water, fat, and carbohydrate had little effect on the sp. gr. pattern, i.e., the portion of the sp. gr. accounted for by each of the constituents of the urine. However, when large doses of salts ($NaCl$, Na_2SO_4 , Na phosphate) or urea were given intravenously, the injected substance appeared in high concn. in the urine and might account for at least 50—75% of the sp. gr. Cl^- depletion *per se*, produced either experimentally or by pyloric obstruction, does not result in hyposthenuria.

C. J. C. B.

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

Physiological origin of cellular potassium. E. J. Conway (*Nature*, 1941, **147**, 574—575).—Physicochemical considerations show that the possible concn. of indiffusible material is much greater when the cation permeability is limited to exclude Na but not K in cells with a freely distensible membrane permeable to univalent anions and cations. The argument is extended to explain the limitation of cation permeability to the K level in non-distensible cell membranes of root or absorbing cells of land plants.

E. R. S.

Adsorption of phosphates at 40° by enamel, dentin, bone, and hydroxyapatite as shown by the radioactive isotope. H. C. Hodge, G. Van Huysen, J. F. Bonner, and S. N. Van Voorhis (*J. Biol. Chem.*, 1941, **138**, 451—457).—Using radioactive phosphate solution the adsorption isotherms of bone, dentin, and enamel for phosphate at 40° are determined. The extent of adsorption decreases in the above order and is comparable with that of a synthetic hydroxyapatite.

A. L.

Mucopolysaccharides of skin. K. Meyer and E. Chaffee (*J. Biol. Chem.*, 1941, **138**, 491—499).—A separation of the mucopolysaccharides of pig skin into SO_4^{2-} -free and SO_4^{2-} -containing fractions by pptn. of the latter with alcohol in the presence of Ba acetate is described. The SO_4^{2-} -free fraction consisted of hyaluronic acid. The pptd. fraction yielded equimol. amounts of chondrosamine, hexuronic acid, acetyl, and H_2SO_4 , but the optical rotation of 3 of the 4 samples examined considerably exceeded that of chondroitin-sulphuric acid prepared from beef cartilage.

A. L.

Chemistry of galactogen from *Helix pomatia*. l -Galactose as a component of a polysaccharide of animal origin.—See A., 1941, II, 161.

Proteins as chemical substances and as biological components. E. J. Cohn (*Harvey Lectures*, 1938—39, Series 34, 124—156).

E. M. J.

Fibrous protein from slime of hagfish. J. D. Ferry (*J. Biol. Chem.*, 1941, **138**, 263—268).—The slime of the hagfish is excreted as tightly rolled fibres which extend in water to threads of approx. 1.3 μ . diameter and several cm. length.

The fibre protein has a moderately high tyrosine and low cystine content, and less than 0.2% of tryptophan.

E. M. W.

Determination of the bases of phospholipins by the isotope dilution method. E. Chargaff, M. Ziff, and D. Rittenberg (*J. Biol. Chem.*, 1941, **138**, 439—440).—Ethanolamine accounts for only 40—50% of the amino-N in pig heart and liver phosphatides. The presence of another primary base or hydroxyamino-acid is indicated.

R. L. E.

Sponge sterol.—See A., 1941, II, 167.

XVII.—TUMOURS.

Hepatic and tumour cathepsin in cancerous animals. A. Badinand (*Compt. rend. Soc. Biol.*, 1939, **132**, 566—568).—The cathepsin content of the liver is increased above the normal in rabbits grafted with Brown-Pearce tumours and in mice with mammary adenocarcinoma. Proteolytic activity is also present in the tumours.

P. C. W.

Behaviour of tumours in tissue culture at 24 hours. E. J. Grace (*N.Y. Sta. J. Med.*, 1941, **41**, 459—462).—37 human tumours obtained by operation were grown in a medium containing 1 vol. of chick embryo extract and 1 vol. of a mixture of 3 parts of human serum and 1 of chicken plasma. The behaviour at 24 hr. could be grouped into 4 classes: (I) no liquefaction of medium, no visible cell activity (corresponding with benign tumours); (II) slight liquefaction and presence of a few wandering cells (low or grade I malignancy); (III) much liquefaction, many wandering cells (medium, grades II and III); (IV) much liquefaction, many wandering cells, and fibroblasts originating apparently in the tumour bed (high, grade IV). 2 groups of exceptions were seen: 3 axillary node metastases of breast carcinomas fell into class I (benign) and half of the 8 uterine fibroids into class II (low malignancy).

E. M. J.

Diagnosis of cancer by means of the dropping mercury electrode. T. Klatt, H. P. Rusch, A. Dirksen, and V. W. Meloche (*Trans. Electrochem. Soc.*, 1941, **79**, Preprint 15, 205—207).—Potential determinations with the Heyrovsky-Shikata polarograph gave discordant and overlapping results as applied to cancer diagnosis. Determinations gave indications of the extent of the disease in known cases of cancer.

E. B.

Histogenesis of epulides. H. B. Sprung (*Dtsch. Z. Chir.*, 1938—39, **251**, 64—76).—The epulis is a true blastoma and has its origin in an early embryonic type of mesenchyma from which arise its spindle and giant cells, the osseous trabeculae, and the blood spaces.

E. M. J.

Influence of vitamins on neoplasia. W. G. Harding, 2nd, and W. D. Leech (*Z. Vitaminforsch.*, 1940, **10**, 295—311).—A review dealing with the effects of vitamin-A, -B, -C, -D, -E, and -B₂ on tumours.

J. N. A.

XVIII.—NUTRITION AND VITAMINS.

South Africa and nutrition. F. W. Fox (*S. African J. Sci.*, **36**, 36—57).—A lecture.

E. M. W.

Diet of doctor. W. H. Olmsted (*J. Kansas Med. Soc.*, 1941, **42**, 1—5).—Analysis of a diet providing 2400 kg.-cal.

E. M. J.

Chemical substitutes for dietary protein. R. Benesch (*Nature*, 1941, **147**, 531—534).—A review.

E. R. S.

Choline content of rats on various choline-free diets. H. P. Jacob, C. A. Baumann, and W. J. Meek (*J. Biol. Chem.*, 1941, **138**, 571—582).—Choline is determined by pptn. as the reineckate, separation from other reineckates sol. in water and alcohol, and colorimetric measurement of the red solution in acetone. Satisfactory agreement was obtained between this method and a biological method depending on contraction of the rectus abdominis muscle of the frog in presence of acetylcholine and eserine. The choline content of rats increases with the wt. on a choline-free diet, 76 mg. being synthesised by an animal in 8 weeks. This synthesis is decreased by a high-fat diet but all other dietary variations are without effect.

H. G. R.

Choline in the nutrition of chicks. D. M. Hegsted, R. C. Mills, C. A. Elvehjem, and E. B. Hart (*J. Biol. Chem.*, 1941, **138**, 459—466).—Day-old chicks fed on basal diets which

resulted in inferior growth and severe perosis showed normal development on the addition to the diet of choline (0.1% of the ration) and choline-containing supplements, e.g., liver extract fractions. The choline-deficient chicks did not show fatty livers at 4 weeks, and bone-phosphatase vals. were normal. A. L.

Methionine in the diet of the chick. A. A. Klose and H. J. Almquist (*J. Biol. Chem.*, 1941, 138, 467—469).—Young chicks fed on a basal arachin diet required a supplement of 1% of methionine for optimal growth. Neither *l*-cystine nor creatine could replace the methionine, and homocystine replaced it effectively only when 0.5% of choline was added. A. L.

Calcium content of normal growing body at a given age. K. E. Briwa and H. C. Sherman (*J. Nutrition*, 1941, 21, 155—162).—The % body-Ca in rats was not affected significantly by the rate of growth. In animals of the same sex and nutritional history, age is the dominant factor controlling the increase in % Ca in the body. A. G. P.

Effects of parathyroid deficiency and calcium and phosphorus of the diet on pregnant rats. M. Bodansky and V. A. Duff (*J. Nutrition*, 1941, 21, 179—192).—Parathyroid deficiency in rats is associated with diminution in the no. of young per litter and in the wt. of young at birth, the effects being more marked on low-Ca or high-P diets. The deficiency is characterised by prolonged gestation, tetany at term, prolonged labour, and high foetal and maternal mortality, these effects being related to the lowering of serum-Ca. In affected animals, serum-inorg. P is higher and -phosphatase lower than in control animals on the same diet. Feeding of high-Ca, low-P diets to deficient animals corr. late pregnancy abnormalities. A. G. P.

Blood-uric acid and liver-uricase of zinc-deficient rats on various diets. L. W. Wachtel, E. Hove, C. A. Elvehjem, and E. B. Hart (*J. Biol. Chem.*, 1941, 138, 361—368; cf. A., 1941, III, 136).—High-fat diets have no Zn-sparing effect on the rat. High-protein and high-purine diets have no effect on Zn deficiency, which causes low growth and high blood-uric acid. There is no change in blood-creatinine and liver-uricase. Addition of Zn to the diet causes rapid growth and a slow fall in blood-uric acid. Uricase activity is unaffected by KCNS, but is inhibited by KCN or ZnSO₄. R. L. E.

Iron balances in four normal pre-school children. T. Porter (*J. Nutrition*, 1941, 21, 101—113).—On a mixed diet providing 0.31 mg. of Fe per kg. of body-wt., the average Fe retention in children of 3—5 years was 0.07 mg. per kg. Supplementary feeding of vitamin-D had no significant effect on Fe retention. A. G. P.

Diseases of nutrition. H. R. Butt and W. V. Leang (*Arch. intern. Med.*, 1941, 67, 411—465).—A review of recent literature on the vitamins. C. A. K.

Biological oxidation and vitamins. A. Szent-Györgyi (*Harvey Lectures*, 1938—39, Series 34, 265—279). E. M. J.

Hypovitaminosis-A and -C in soldiers in Madrid in 1938. V. Gilsanz and F. Grande (*Z. Vitaminforsch.*, 1940, 10, 229—235).—Determination of visual adaptation in 430 soldiers with A-avitaminosis in the first and second halves of 1938 by the method of Edmund showed a marked decrease to 0.42 and 0.33, respectively. Göthlin's test for C-avitaminosis, depending on the fragility of the blood vessels, gave unreliable results. J. N. A.

Foetal keratomalacia. H. D. Bouman and S. van Creveld (*Z. Vitaminforsch.*, 1940, 10, 192—197).—A case of foetal keratomalacia is described. A child of a 16-year-old mother whose diet during pregnancy had been extremely deficient, especially as regards its vitamin content, was born with a serious affection of both eyes which resulted in total and permanent blindness. J. N. A.

Carotene and vitamin-A in cattle blood-plasma. Reproductive performance at restricted levels of carotene intake. R. E. Davis and L. L. Madsen (*J. Nutrition*, 1941, 21, 135—146).—A spectrographic method for determining carotene in plasma is described. When applied to vitamin-A, the method yields comparative and not abs. results owing to interfering substances present in plasma. Deficiency of -A in cattle can be detected by examination of plasma. When body reserves of -A are depleted, blood-carotene is proportional to the carotene intake. Blood-A is closely related to the

carotene content but tends to reach a stable level and does not increase proportionally with increasing intake of carotene. Heifers on a ration providing 60 µg. of carotene per kg. produced apparently normal calves although one of the calves showed -A-deficiency symptoms at one month. Heifers receiving 30—45 µg. of carotene per kg. produced deficient calves although themselves remaining apparently normal. A. G. P.

Experimental A-avitaminosis in guinea-pigs. W. Yano (*J. Orient. Med.*, 1938, 29, 123).—The changes resemble those found in rats. M. K.

Resistance of guinea-pigs lacking vitamin-A to diphtheria toxin. W. Yano (*J. Orient. Med.*, 1938, 29, 155).—Resistance in the incubation period of A-avitaminosis to diphtheria toxin is reduced. M. K.

Biological determination of minute amounts of vitamin-A. E. A. Zeller (*Z. Vitaminforsch.*, 1940, 10, 268—272).—The lower limit of determination of vitamin-A can be reduced from 0.3 to 0.06 i.u. of -A per g. by feeding the test animals with a known amount of -A in addition to the product containing the unknown amount. 1 g. of dried Swiss standard bread contains 0.1 i.u. of -A. J. N. A.

Physicochemical assay of vitamin-A. N. D. Embree (*Ind. Eng. Chem. [Anal.]*, 1941, 13, 144—145).—Vitamin-A solutions are stable only in absence of ultra-violet light. All assays of -A should be carried out in amber glass apparatus, in which the solutions are stable. J. D. R.

Colloidal solutions of carotenoids and vitamin-A. Preparation, properties, durability, and methods of quantitative analysis. T. K. With (*Z. Vitaminforsch.*, 1941, 11, 56—64).—The literature is reviewed. Colloidal solutions of carotene or vitamin-A are prepared by dissolving in acetone or whale-liver oil prep. respectively and dropping the solution into water until crystals or oily drops appear. The acetone is removed by evaporation and the crystals or oil by filtration. The filtrates are conc. colloidal solutions which may be sterilised by heating at 80° for 1 hr. They keep for 14 days at 4° in the dark. J. H. B.

Clinical factors of vitamin-B complex. M. L. Drazin (*N.Y. Sta. J. Med.*, 1941, 41, 20—23).—A review. E. M. J.

B-Vitamins and fat metabolism. IV. Synthesis of fat from protein. E. W. McHenry and G. Gavin (*J. Biol. Chem.*, 1941, 138, 471—475).—Rats fed on a protein diet containing no fat or carbohydrate steadily lost wt. and body-fat in the absence of pyridoxine in spite of the presence in the diet of any of the other known B-vitamins. Thiamine administered with pyridoxine prevented wt. and body-fat loss, but further addition of pantothenic acid and riboflavin produced a gain in wt. and body-fat not increased by nicotinic acid or choline. Pyridoxine is therefore essential for the synthesis of fat from protein. A. L.

Aneurin as agent and object of metabolism. H. G. K. Westenbrink (*Z. Vitaminforsch.*, 1940, 10, 272—295).—A review dealing with the rôle of aneurin in the carbohydrate metabolism of cells showing lactic acid and alcoholic fermentations respectively, and in other metabolic processes, and the synthesis and decomp. of aneurin. J. N. A.

Excretion of aneurin in pregnant and lactating women and in infants. K. U. Toverud (*Z. Vitaminforsch.*, 1940, 10, 255—267).—The average val. of urinary excretion of aneurin by 10 normal, non-pregnant, non-lactating women is 80 µg. during 24 hr. when determined by the method of Jansen (A., 1936, 1566). The average val. for 3 of the women by the method of Wang and Harris (A., 1939, III, 920) is 137.5 µg. After a test dose of 5 mg. of aneurin, 2.6—16.1% of the dose is excreted during 24 hr. The mean val. of aneurin excretion in 24-hr. urine of 114 pregnant women is 38 µg. and 40% of these women excrete no aneurin on their ordinary diet. After a test dose of 5 mg. of aneurin only approx. 2% of this amount is excreted. The aneurin excretion of women 7—9 months pregnant does not attain the val. found for normal, non-pregnant women before 4—5 mg. of aneurin is added to their ordinary diet. 19 lactating women show an average 24-hr. excretion of 70 µg. of aneurin. Their excretion, after a test dose of 5 mg. of aneurin, is higher than that of pregnant women, but does not usually reach the normal val. The aneurin content of breast milk increases with increase of aneurin in the diet, but only to an upper

limit of 25 $\mu\text{g.}$ per 100 c.c. as determined by Wang's method, even when the addition is maintained for several days. Breast-fed infants do not usually excrete aneurin in the urine, even on the highest aneurin content of breast milk.

J. N. A.

Absorption of vitamin-B₁ from the placenta. W. Neuweiler (*Z. Vitaminforsch.*, 1941, 11, 88—92).—The human ripe placenta contains 4—8 mg.-% of free and 18—38 of bound aneurin. Injection of a vitamin-B-rich concentrate increases the placental free aneurin. Only free aneurin appears to be absorbed. Aneurin passes through the "filter" of the placenta not phosphorylated but free or as a readily hydrolysed ester.

J. H. B.

Vitamin-B₁ metabolism of sucklings. F. Widenbauer and H. Krüger (*Z. Kinderheilk.*, 1939, 61, 52—62).—Daily requirement of vitamin-B₁ was 19—137 $\mu\text{g.}$ or 16 $\mu\text{g.}$ per 100 cal. in 8 artificially fed sucklings; in 3 naturally fed sucklings the requirement was 9 $\mu\text{g.}$ per 100 cal. -B₁ requirement was increased in fever; the absorption was diminished in diarrhoea.

M. K.

B-Avitaminosis in guinea-pigs. W. Yano (*J. Orient. Med.*, 1938, 29, 156).—The most characteristic symptom was paralysis of hind legs. The incubation period of B-avitaminosis is 2 weeks and animals usually die within 4 days of onset of symptoms. Histological examination showed vascular stasis in all organs.

M. K.

Resistance of guinea-pigs lacking vitamin-B to diphtheria toxin. W. Yano (*J. Orient. Med.*, 1938, 29, 157).—Resistance of animals in the incubation period of B-avitaminosis is reduced. Pathological changes are especially marked in heart, kidney, and liver.

M. K.

Vitamins in the rumen content of sheep and cows fed vitamin-low diets. III. Aneurin. L. W. McElroy and H. Goss (*J. Nutrition*, 1941, 21, 163—173).—The dried contents of the rumen and reticulum of sheep receiving 0.4 $\mu\text{g.}$ of aneurin per g. of ration contained approx. 7 $\mu\text{g.}$ of aneurin per g. No aneurin was present in the rumen of fistulated cows receiving this ration, but the milk of one of them contained 2—2.5 $\mu\text{g.}$ of aneurin per g. of dry matter. Aneurin was present in the rumen of a non-fistulated cow receiving the deficient ration. Probably aneurin is not a dietary essential for ruminants.

A. G. P.

Clinical use of vitamin-B₁ and absolute alcohol intraspinally. E. L. Stearn (*Med. Ann. Columbia*, 1938, 7, 127). E. M. J.

Amino-analogue of vitamin-B₁.—See A., 1941, II, 206.

Inhibiting effect of urea on the microbiological assay of riboflavin. H. Isbell, J. G. Wooley, and H. F. Fraser (*U.S. Publ. Health Repts.*, 1941, 56, 282—285).—The inhibiting effects of urines of low riboflavin content on the microbiological assay for riboflavin according to the method of Snell and Strong is demonstrated. Methods for correcting the error due to the inhibiting effect of urea are presented.

C. G. W.

Riboflavin contents of some typical fruits. C. S. Lanford, B. Finkelstein, and H. C. Sherman (*J. Nutrition*, 1941, 21, 175—177).—The riboflavin contents of grapefruit, orange, banana, and tomato exceed those of apple and pear.

A. G. P.

Relation between pellagra and vitamins. R. Flinker (*Z. Vitaminforsch.*, 1940, 10, 311—320).—A review. J. N. A.

Pellagra and glossitis. Blood-sodium and -potassium. Treatment of pellagra with sodium chloride. V. Gilsanz and N. Larregla (*Z. Vitaminforsch.*, 1940, 10, 223—228).—In pellagrins there is a decrease in blood-Na and an increase in -K, the average vals. for 6 patients being 0.185 and 0.032 g.-% respectively. Similar results are obtained in glossitis, the vals. for blood-Na and -K from 9 patients being 0.261 and 0.0372 g.-%, respectively. Oral administration of 3 g. of NaCl daily to the pellagrins resulted in improvement in 2 of the cases, and it is suggested that combined with yeast and liver extract, NaCl has a beneficial effect. The probable relations between pellagra and Addison's disease are discussed.

J. N. A.

Pellagra and porphyria. R. Kark and A. P. Meiklejohn (*Amer. J. med. Sci.*, 1941, 201, 380—385).—While alcoholic pellagrins occasionally exhibit an increased excretion of ether-sol. porphyrin, this porphyria is by no means a const. finding and bears no relationship to pellagrous der-

matitis or to prolonged exposure to sunlight. No increased porphyrin excretion was found in the 3 patients reported who gave no history of alcoholism, nor in 4 patients with endemic pellagra.

C. J. C. B.

Skin disease of adrenalectomised rats caused by lack of nicotinamide. L. Laszt (*Z. Vitaminforsch.*, 1941, 11, 76—87).—A new form of dermatitis of adrenalectomised rats is described. It is cured by cozymase or nicotinamide and NaCl but not by lactoflavin. If a 1% solution of nicotinamide is painted on the affected skin NaCl is not required. Adrenalectomised rats excrete a substance reacting with CNBr, possibly nicotinamide. After subcutaneous dosage with 3 mg. of nicotinamide the diseased animals excrete less of the amide than normal animals. The development of pellagra may be related to failure of the adrenal cortex.

J. H. B.

Effect of amount ingested on excretion of nicotinic acid by rabbits. P. B. Pearson and A. H. Winegar (*Z. Vitaminforsch.*, 1940, 10, 238—244).—A method for the photometric determination of nicotinic acid in the *Herbivora* by means of CNBr and aniline is described. Interfering pigments are removed by treatment of the urine with ZnSO_4 and NaOH. The average daily urinary excretion of nicotinic acid by rabbits on a stock diet is 15.38×10^{-4} g. or 7.73×10^{-4} g. per kg. of body-wt. For rabbits on a typical pellagra-producing diet, the amount of nicotinic acid excreted is less than 46% of the above amount, the amounts being 6.07 and 3.53×10^{-4} g., respectively. When nicotinic acid is fed to rabbits on a stock diet there is a marked increase in the amount excreted in the urine.

J. N. A.

Distribution of nicotinic acid in human and animal foods. A. L. Bacharach (*Nutrition Abs.*, 1940, 10, 459—465).—Chemical and biological methods of determining nicotinic acid and nicotinamide are reviewed. Fairly good agreement between the results of the methods is recorded and tables showing the nicotinic acid content of vegetable and animal products are given.

W. McC.

Clinical method for determination of nicotinic acid in blood and urine. E. Stotz (*J. Lab. clin. Med.*, 1941, 26, 1042—1046).—The method employs an acid hydrolysis of a tungstic acid filtrate, using *p*-aminophenol as the coupling amine in acid phosphate solution. Although *p*-aminoacetophenone yielded more colour per $\mu\text{g.}$ of nicotinic acid, the colour development was more influenced by light and slight changes in the p_H of the medium than in the case of *p*-aminophenol. The latter, therefore, is preferred for rapid and yet reliable analysis.

C. J. C. B.

Biological assay of pyridoxine (vitamin-B₆). T. W. Conger and C. A. Elvehjem (*J. Biol. Chem.*, 1941, 138, 555—561).—The method is based on the growth response of vitamin-B₆-depleted rats to synthetic pyridoxine or the substance to be assayed. Unidentified factors necessary for the rat are supplied by a fuller's earth filtrate of a butanol extract of liver concentrate or by the untreated concentrate. The pyridoxine hydrochloride contents of 1:20 liver concentrate powder, liver fraction B, yeast, and dried grass are 45, 25, 55, and 8 $\mu\text{g.}$ per g., respectively.

H. G. R.

Essential nature of pantothenic acid and another alkali-labile factor in nutrition of dog. J. M. McKibbin, S. Black, and C. A. Elvehjem (*Amer. J. Physiol.*, 1940, 130, 365—372).—Dogs lose wt. on alkali-inactivated or acid ether-extracted liver preps. and grow on addition of concentrates of pantothenic acid. Dogs receiving the alkali-treated factor *W* prep. and the pantothenic acid concentrate do not show normal growth until other fractions are added to the ration. There is an alkali-labile factor other than pantothenic acid which is essential for the dog.

M. W. G.

Effect of diet on pantothenic acid content of eggs. E. S. Snell, E. Aline, J. R. Couch, and P. B. Pearson (*J. Nutrition*, 1941, 21, 201—205).—Within the limits of the experiments, the pantothenic acid content of eggs was directly proportional to that of the diet of hens.

A. G. P.

Distribution of pantothenic acid in certain products of natural origin. T. H. Jukes (*J. Nutrition*, 1941, 21, 193—200).—The pantothenic acid content of a no. of foodstuffs is recorded. The requirement of aneurin, riboflavin, and pantothenic acid for chicks is discussed in relation to the distribution of the constituents of vitamin-B complex in foods.

A. G. P.

Chromotrichial activity of *p*-aminobenzoic acid. G. J. Martin and S. Ansbacher (*J. Biol. Chem.*, 1941, 138, 441).—Achromotrichia caused by feeding quinol is cured by *p*-aminobenzoic acid more rapidly than by an equal wt. of rice polish concentrate. R. L. E.

Human experimental scurvy. C. C. Lund and J. H. Crandon (*J. Amer. Med. Assoc.*, 1941, 116, 663–668).—A review. C. A. K.

Ascorbic acid and human nutrition. I. Critical review of more recent literature. F. W. Fox. II. Scurvy and requirements of native mine labourers for antiscorbutic vitamin. F. W. Fox and L. F. Dangerfield [with appendices by S. F. Gottlich; E. Jokl and H. Suzman; F. W. Fox] (*Proc. Transvaal Mine Med. Off. Assoc.*, 1940, 19, March; Reprint, 56 pp.).—II. In a group of 950 native mine workers on a diet containing 12–25 mg. of vitamin-C daily 12 cases of scurvy occurred in 7 months and one mild case in a similar group receiving the diet + 40 mg. of -C daily. No other significant difference between the groups was observed. Capillary resistance tests were uniformly negative and Rotter's intra-dermal test was valueless. Both groups had low plasma-C contents. After injections of 1 g. of -C, only small amounts were excreted. Reports on condition of the gums, effects of -C on physical efficiency, and scurvy in gold mines are appended. E. M. W.

Effect of *l*-ascorbic acid on osteogenesis and mineralisation of the bones of normal and scorbutic guinea-pigs. A. Djabri (*Z. Vitaminforsch.*, 1940, 10, 210–223).—Ascorbic acid is one of the most important physiological factors in osteogenesis. The latter depends on the concn. of vitamin-C in the tissues, and this on the amount of -C ingested. The min. requirement of ascorbic acid for the guinea-pig, is approx. 10 mg. per kg. Within certain limits osteogenesis is proportional to the intake of ascorbic acid. During resorption of bone due to lack of -C no chemical changes occur in the bones since the composition is practically the same as that of normal bones. Data are given for the amounts of org. material, N, P, Ca, CaCO_3 , and $\text{Ca}_3(\text{PO}_4)_2$ in the bones of scorbutic guinea-pigs before and after treatment with varying amounts of -C. Increasing the amount of -C in the organism may cause a small decrease in the amount of CaCO_3 and a corresponding increase in the amount of $\text{Ca}_3(\text{PO}_4)_2$ in the bones. J. N. A.

Effect of carbohydrates on vitamin-C requirement. G. Djin-Yüan (*Z. Vitaminforsch.*, 1940, 10, 198–209).—Glucose has no significant effect on the anti-scorbutic action of ascorbic acid in scorbutic guinea-pigs. Addition of vitamin-B and glucose to a scorbutic diet hastens the death of the animals, whilst in presence of ascorbic acid there is synergism between -B₁ and the ascorbic acid. In human scurvy, addition of glucose to the diet has no marked effect on the ascorbic acid requirement. J. N. A.

Increased vitamin-C consumption in fever. O. Dobbela (*Z. ges. exp. Med.*, 1940, 107, 532–536).—The vitamin-C content of blood, determined by the method of Emmerie and van Eekelen, decreased if guinea-pigs were kept at 37.5° (the body-temp. rose by 3.3°) from 0.43 to 0.19 mg.-%. It was lowered to 0.31 mg. if 500 units of pyrifur were intramuscularly injected and to 0.20 mg.-% after injection of 1 mg. of thyroxine. A. S.

Effect of diphtheria toxin on C-avitaminosis in guinea-pigs. W. Yano (*J. Orient. Med.*, 1938, 29, 121).—Symptoms of C-avitaminosis appeared after 15–18 days. The histological changes were fatty degeneration of myocardium and liver, hyperæmia of lungs, swelling of adrenal cortex, petechiæ in the mucous membrane of the stomach, and marked pigmentation of splenic pulp with hæmosiderin. M. K.

Resistance of guinea-pigs lacking vitamin-C to diphtheria toxin. W. Yano (*J. Orient. Med.*, 1938, 29, 122).—Mortality in C-deficient animals was higher than in controls. There were marked pathological changes of liver, heart, kidney, adrenal, spleen, and testis. M. K.

Plasma-vitamin-C and serum-proteins in wound disruption. J. B. Hartzell, J. M. Winfield, and J. L. Irvin (*J. Amer. Med. Assoc.*, 1941, 116, 669–674).—Plasma-vitamin-C and serum-protein vals. were lowered in 20 cases of wound disruption. C. A. K.

Reduced vitamin-C content of viscera of healthy and scorbutic guinea-pigs. C. Kobayashi (*J. Orient. Med.*, 1938, 29,

124–130).—The highest reduced vitamin-C content in healthy guinea-pigs was found in adrenals (71 mg.-%); next in diminishing order were spleen, brain, lung, stomach, liver, kidney, and heart; skeletal muscles and blood contained the smallest amount of -C. In scorbutic guinea-pigs the % decrease of -C was highest in adrenals and spleen (95%). Healthy guinea-pigs kept on -C-deficient diet lost 50% of -C in their organs on the 3rd day, 80% after 1 week, and 90% in the 3rd week, when typical scurvy appeared. Injection of -C showed delayed rate of fixation in -C-deficient animals, but the abs. fixation was not decreased, and even increased in lungs, intestine, and liver within a limited time. M. K.

Vitamin-C content of paprika, and its significance as a protective food in the national diet. B. Vajic (*Z. Vitaminforsch.*, 1941, 11, 42–56).—In Yugoslav paprika the lowest vitamin-C content is found in May–June but it rapidly rises, reaching a max. in autumn. The red fruits are richer in -C than the green. J. H. B.

[Non]-specific properties of vitamin-C oxidase prepared from Kêlor juice (*Moringa oleifera*, Lam.). J. P. Spruyt (*Z. Vitaminforsch.*, 1940, 10, 185–192).—Compared with other methods, the enzyme method for determination of vitamin-C is the most reliable, but occasionally it gives high results. Very high results are given by solutions containing reductone and/or reductic acid but there is practically no evidence of the presence of these substances in org. materials. J. N. A.

Inhibition of the oxidation of ascorbic acid by mustard oil. E. Bach (*Z. Vitaminforsch.*, 1941, 11, 1–9).—Allyl mustard oil inhibits the oxidation of ascorbic acid buffered at pH 5.3–6.8. J. H. B.

Rapid method for determining ascorbic acid concentration. M. A. Elliott, A. L. Sklar, and S. F. Acree (*J. Res. Nat. Bur. Stand.*, 1941, 26, 117–128).—In determining ascorbic acid in blood, 10-ml. samples are centrifuged for 10 min. with 2 drops of 20% aq. K oxalate, and the colour obtained with 3 ml. of the plasma and 1 ml. of 0.05% aq. 2 : 6-dichlorophenol-indophenol is measured in a photo-electric comparator. For samples of low ascorbic acid concn. the dye solution is diluted. The calibration curves are derived from determinations of the fading of the dye produced by known amounts of ascorbic acid. The comparator is compensated automatically for variations in the turbidity of the solution. In similar determinations on urine samples, interfering substances are partially removed by pptn. with Ba acetate before centrifuging. J. W. S.

Vitamin-D requirements of the growing pig. B. J. Senior (*Sci. Proc. Roy. Dublin Soc.*, 1941, 22, 379–385).—Young weaned pigs were kept in rooms not illuminated by direct sunlight and fed diets with Ca : P ratios of 0.76, 1.0, and 1.53, the P content being 0.78% in each case. Vitamin-A was fed in adequate amounts but -D was withheld. Every animal developed swollen joints and a diminished blood-Ca between the 20th and 56th day; direct sunlight cured the condition. Similar results were obtained with Ca : P ratios of 0.8 and 1.5 when the P content of the diet was 0.64% although the period before the development of rickets was longer, probably because during pregnancy and lactation the sows were exposed to summer sunshine. When the animals were fed adequate amounts of -A and -D, Ca : P ratios of 0.5, 1.0, 1.5, and 2.0 with 0.55% of P in the diet prevented the development of clinical signs. J. L. D.

Pathology of rickets. E. A. Park (*Harvey Lectures*, 1938–39, Series 34, 157–213). E. M. J.

Effect of A.T.10 (dihydrotachysterol) on rickets in rats produced by high-calcium, low-phosphorus diets. A. T. Shohl and S. Farber (*J. Nutrition*, 1941, 21, 147–154).—The protective action of the sterol is demonstrated. The therapeutic dose was 25 µg., and the min. toxic dose 125 µg., per rat daily. A. G. P.

Relation between vitamin-E (*dl*- α -tocopherol acetate) and œstrone. P. Spoto (*Z. Vitaminforsch.*, 1940, 10, 235–238).—The sensitivity of normal rats and of castrated rats with a deficiency of vitamin-E towards œstrone is the same. 100% increase of sensitivity is obtained after administration of -E and œstrone to -E-deficient castrated rats, whilst there is no increase with normal castrated rats. J. N. A.

Effect of lack of vitamin-E on the structure and reactivity of the rat's uterus. W. Hessler (*Z. Vitaminforsch.*, 1941, 11,

9—29).—E-avitaminosis in female rats causes in the uterus rapid and persistent hypertrophy, yellow pigmentation, and muscular degeneration. The *in vitro* reaction of the uterus to para- and sympathico-mimetic drugs is unchanged.

J. H. B.
Vitamin-K. L. Lewis (*J. Kansas Med. Soc.*, 1940, 41, 243—246).—A review.
 E. M. J.

Congenital afibrinogenæmia and fibrinopenia in children. E. Glanzmann, H. Steiner, and H. Keller (*Shweiz. med. Wschr.*, 1940, 70, 1243—1246, 1261—1265).—A child suffering from hæmorrhagic diathesis had complete lack of fibrinogen and incoagulable blood, prolonged bleeding time, and occasional thrombocytopenia. There was no other change in the plasma-proteins and no evidence of liver damage. Another infant showed recurrent lack of fibrin with thrombocytopenia and incoagulability of the blood. The plasma-globulin content was increased, the Takata-Ara reaction was positive, and there were jaundice and hepato-splenomegaly. Large doses of vitamin-K were beneficial in both cases.

A. S.
Pharmacological actions of vitamin-K preparations. K. Fromherz (*Z. Vitaminforsch.*, 1941, 11, 65—75).—Vitamin-K active preps. show typical pharmacological effects of the quinone and quinol groups. Thus 2-methyl-1:4-naphthaquinol produces convulsions and inhibits the normal oxidation function of hæmoglobin leading to production of methæmoglobin. The lethal intravenous dose (rabbit) of 2-methyl-1:4-naphthaquinone is 15—20 mg. per kg. (300—500 times the min. dose showing -K activity in chicks). 2-Methyl-1:4-naphthaquinol disuccinate (synkavit) has activity similar to that of the quinone, forms water-sol. salts, and has a lethal dose (mouse) of 275—400 mg. per kg. For rabbits and dogs the lethal dose (50%) is approx. 100 mg. per kg. (1500 times the min. active dose for chicks). The diphosphoric acid ester has the same action as the disuccinate.

J. H. B.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Effect of certain inhibitors and activators on sperm metabolism. H. A. Lardy and P. H. Phillips (*J. Biol. Chem.*, 1941, 138, 195—202).—Succinic dehydrogenase, an alkaline phosphatase, and riboflavin are present in the spermatozoa of bulls. 0.00025M-iodoacetate completely inhibits lactic acid formation by spermatozoa in a Ringer- PO_4^{3-} -glucose medium but does not affect motility. 0.001M-CN⁻ inhibits motility in yolk buffer but not in Ringer- PO_4^{3-} -glucose. 0.01M-selenate, -arsenate, and -malonate have no effect on motility whilst selenite, arsenite, fluoride, and H_2O_2 are toxic.

E. M. W.

Rate of formation and disappearance of body-creatine in normal animals. K. Bloch, R. Schoenheimer, and D. Ritzenberg (*J. Biol. Chem.*, 1941, 138, 155—166).—The synthesis of two different isotopic creatine preps., one of which contains ^{15}N in the sarcosine part only whilst the other contains ^{15}N in the amidine and sarcosine parts of the mol., is described. When both compounds are added to the diet of rats which are subsequently maintained on a creatine-free diet, and creatinine is determined in the urine; the isotope concn. shows that approx. 2% of the total creatine of the tissues is synthesised daily. This is approx. the same amount that is excreted daily as creatinine. Within 29 days, 50% of the creatine in adult rats on a creatine-free diet is replaced by fresh creatine. The amidine group of creatine, unlike that of arginine, is not replaced during metabolism and the linking between the amidine and sarcosine groups remains intact.

J. N. A.

Biological precursors of creatine. K. Bloch and R. Schoenheimer (*J. Biol. Chem.*, 1941, 138, 167—194; cf. A., 1940, III, 596, 753).—The effect of adding NH_3 , *dl*-tyrosine, *l*(-)-leucine, *dl*-glutamic acid, glycine, sarcosine, *l*(+)-arginine, choline, urea, and guanidinoacetic, hydantoic, and methylhydantoic acid (all containing ^{15}N) on the formation of creatine in rats on a normal diet is determined. Urea, choline, and hydantoic and methylhydantoic acid are not precursors of creatine since the creatine isolated after feeding these substances does not contain ^{15}N . Arginine and glycine are the only amino-acids of those examined which are active precursors of creatine. Each of these amino-acids supplies N to different parts of the creatine mol.;

glycine provides the sarcosine part; whilst the amidine group is supplied by the amidine group of arginine. After feeding NH_3 , tyrosine, leucine, and glutamic acid, only very small amounts of isotopic creatine are formed. Most of the ^{15}N is in the amidine group, and these substances are only indirect creatine precursors. They yield N to the amidine group of the arginine of proteins, which in turn is removed to glycine to form guanidinoacetic acid. A min. of 26% of the amidine-N of newly formed creatine is derived from that of added arginine, and 26% of the sarcosine-N is supplied by the added glycine. Guanidinoacetic acid is the most active creatine precursor. Sarcosine, which is almost as effective as glycine, is not an intermediate, and its effectiveness is due to its rapid demethylation to glycine. It is suggested that creatine is formed by reaction of glycine with the amidine group of arginine to form guanidinoacetic acid, which is methylated by removal of the methyl group from methionine. The results do not support the theory of Beard *et al.* (A., 1936, 509, 1143; 1938, III, 825; 1940, III, 533).

J. N. A.

Is choline the factor in the pancreas that prevents fatty livers in depancreatised dogs maintained with insulin? C. Entenman and I. L. Chaikoff (*J. Biol. Chem.*, 1941, 138, 477—485).—36 mg. of choline per kg. per day were required to inhibit completely the deposition of abnormal amounts of lipids in the livers of depancreatised dogs maintained on insulin over a 5-month period. The same result was obtained following the daily ingestion of the equiv. of 5.5 g. of fresh pancreas tissue which had been extracted with acetone and ether and of which the choline content would have been quite inadequate. The lipotropic substance in the extracted pancreas was heat-labile.

A. L.

Biological relationships of choline, ethanolamine, and related compounds. De W. Stetten, jun. (*J. Biol. Chem.*, 1941, 138, 437—438).— ^{15}N is used to trace the metabolism of ethanolamine, choline, glycine, and betaine. All yield urinary NH_3 and urea. Ethanolamine-N appears in the body-phosphatides unchanged and as choline, but little of the choline-N is converted into ethanolamine. Glycine-N appears in ethanolamine, and betaine-N in glycine and ethanolamine, with choline as a probable secondary product.

R. L. E.

Oxidation *in vitro* of N-methylamino-acids by kidney and liver. P. Handler, F. Bernheim, and J. R. Klein (*J. Biol. Chem.*, 1941, 138, 203—209).—Broken cell preps. of rat kidney and liver oxidatively demethylamine the N-methyl derivatives of *dl*-methionine, *dl*-alanine, and *dl*-leucine but not of *dl*-phenylalanine, *dl*-tryptophan, *dl*-valine, *dl*-lysine, or *l*(-)-histidine.

E. M. W.

Oxidative demethylation of sarcosine to glycine. P. Handler, M. L. C. Bernheim, and J. R. Klein (*J. Biol. Chem.*, 1941, 138, 211—218).—Sarcosine is directly demethylated to glycine by broken cell preps. of rat, rabbit, or guinea-pig liver or rat liver slices (slowly) but not by kidney or muscle.

E. M. W.

Formation of glycocholate in animal tissues. H. Borsook and J. W. Dubnoff (*J. Biol. Chem.*, 1941, 138, 389—403).—Glycocholate is formed by rat kidney slices from arginine and glycine. Arginine can be replaced by citrulline, and glycine by glutathione, glycylglycine, leucylglycine, and sarcosine, from which the kidney can liberate glycine. The enzyme concerned, "transaminidase," has its optimum pH about 7 and is unaffected by KCN. The rôle of glycocholate in creatine formation is discussed.

R. L. E.

Formation of glycocholate in man and its urinary excretion. H. Borsook, J. W. Dubnoff, J. C. Lilly, and W. Marriott (*J. Biol. Chem.*, 1941, 138, 405—410; cf. preceding abstract).—Formation and urinary excretion of glycocholate follow the intake of gelatin or of pure glycine and arginine.

R. L. E.

Mercapturic acid synthesis in animals. XII. Synthesis of N-acetyl-S-p-bromobenzyl-L-cysteine in the rat from p-bromobenzyl bromide, S-p-bromobenzyl-L-cysteine, and S-p-bromobenzylglutathione. J. A. Stekol (*J. Biol. Chem.*, 1941, 138, 225—229; cf. A., 1939, III, 609).—N-Acetyl-S-p-bromobenzyl-L-cysteine, m.p. 118—119°, $[\alpha]_D^{25} -37^\circ$ in 95% alcohol (*dl*-compound, m.p. 151—152°), is found in the urine of rats on diets containing p-bromobenzyl bromide, S-p-bromobenzyl-L-cysteine, m.p. 213—214°, and S-p-bromobenzylglutathione, m.p. 199—201° (preps. described).

E. M. W.

Metabolism of sulphur. XXVII. Distribution of sulphur in the ultrafiltrates of blood plasma. XXVIII. Cystine content and sulphur distribution of ultrafiltrates of plasma after administration of *l*-cystine and *dl*-methionine to rabbits. B. H. Brown and H. B. Lewis (*J. Biol. Chem.*, 1941, 138, 705—716, 717—726).—XXVII. The distribution of non-protein-S of blood plasma is determined colorimetrically on ultrafiltrates using a benzidine method for inorg. and total $\text{SO}_4^{''}$ and the β -naphthaquinonesulphonic acid reaction for cystine.

XXVIII. The rate of increase of oxidised ($\text{SO}_4^{''}$) S in the plasma of rabbits receiving *l*-cystine orally or subcutaneously is higher than with *dl*-methionine. The plasma-cystine following administration of *dl*-methionine is higher than in fasting controls. E. M. W.

Acetylation in vivo of *p*-bromophenyl-*d*-cysteine. V. du Vigneaud, J. L. Wood, and F. Binkley (*J. Biol. Chem.*, 1941, 138, 369—374; cf. A., 1940, II, 44).—*p*-Bromophenyl-*d*-cysteine fed or injected into dogs is excreted as acetyl-*p*-bromophenyl-*d*-cysteine. It is suggested that acetyl derivatives are more readily formed from amino-acids which are slowly deaminated. R. L. E.

Effect of 2 : 3 : 5-tri-iodobenzoate and monoiodoacetate on the oxidation of certain substances of rat brain. F. Bernheim and M. L. C. Bernheim (*J. Biol. Chem.*, 1941, 138, 501—505).—The oxidation of glucose by rat brain washed with $\text{PO}_4^{'''}$ buffer solution at pH 7.8 is completely inhibited by 2.7×10^{-4} M-monoiodoacetate. At this concn. pyruvate and lactate oxidation is inhibited only after 90 min. incubation. 1×10^{-3} M-2 : 3 : 5-tri-iodobenzoate has an 80—90% inhibition on the oxidation of the 3 substrates; at 3×10^{-4} M. no inhibition takes place. A. L.

Natural *d*-xylose and its biochemical utilisation. N. A. Sitschev (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 29, 384—387).—Hydrolysis of the hemicelluloses of agricultural waste products gives *d*-xylose, glucose, mannose, galactose, and uronic acid. The isolation of *d*-xylose is described. Ruminants utilise 94—100% of *d*-xylose in the diet whereas pigs excrete about 30% in the urine. J. L. D.

Metabolism of *l*-xylulose. H. W. Larson, N. R. Blatherwick, P. J. Bradshaw, M. E. Ewing, and S. D. Sawyer (*J. Biol. Chem.*, 1941, 138, 353—360).—*l*-Xylulose, a natural sugar, is not metabolised by the rat. The coeff. of absorption is only 0.044 compared with 0.131 for the *d*-form and 0.074 for *d*-xylose, both of which are metabolised. The configuration of these pentoses therefore influences their selective absorption. P. G. M.

Modern concept of diabetes. A. J. Revell (*J. Kansas Med. Soc.*, 1940, 41, 8—13). E. M. J.

Ketosis in man and dog. L. A. Crandall, jun. (*J. Biol. Chem.*, 1941, 138, 123—128).—Comparison of the ketosis of fasting in dogs and men shows that the two species differ only in the rate of onset and intensity of the ketonæmia. In men, ketonæmia develops within 39 hr. as compared with 2—3 days in dogs, and a considerably higher val. is attained. The two species are comparable with regard to the proportions of the various ketonic compounds in the blood, the amount excreted in the urine, and the rate at which ketonæmia decreases after oral administration of glucose. It is suggested that there is no fundamental difference in ketone compound metabolism between the two species. J. N. A.

Effect of concentration on rate of utilisation of β -hydroxybutyric acid by the rabbit. A. N. Wick and D. R. Drury (*J. Biol. Chem.*, 1941, 138, 129—134).—The rate of utilisation of the acid in the intact animal depends on the concn. in the blood. The upper limit of utilisation appears to be attained when the oxidation of the acid requires approx. 90% of the O_2 consumed by the animal. The bearing of the results on the question of oxidation of fat by peripheral tissues is discussed. J. N. A.

"Coupling" of phosphorylation with oxidation of pyruvic acid in brain. S. Ochoa (*J. Biol. Chem.*, 1941, 138, 751—773; cf. A., 1940, III, 636, 843).—Not more than half the esterification of inorg. $\text{PO}_4^{'''}$ with either hexose monophosphate or glucose, occurring in brain dispersions when pyruvate is oxidised (with fumarate as catalyst), can be related to oxidation of a dicarboxylic acid. The oxidation of pyruvic acid itself (which accounts for the remainder) is

probably connected with phosphorylation of adenylic acid to adenosine polyphosphate which transfers its labile $\text{PO}_4^{'''}$ groups to either hexose monophosphate or glucose with formation of hexose diphosphate. E. M. W.

Distribution of doses of radioactive phosphorus in rodents. S. Warren and R. F. Cowing (*J. Lab. clin. Med.*, 1941, 26, 1014—1016).—The partition varies in the different species, but in general the spleen, liver, kidneys, and bone show a material degree of absorption and retention. Urinary excretion is rapid. About $\frac{1}{4}$ of the dose is excreted in the first 48 hr. C. J. C. B.

Studies in mineral metabolism with the aid of artificial radioactive isotopes. VI. Cobalt. D. H. Copp and D. M. Greenberg (*Proc. Nat. Acad. Sci.*, 1941, 27, 153—157).—The prep. of the isotope ^{60}Co by bombardment of Fe with deuterons is described. Co is excreted chiefly in the urine (rats), whereas Mn and Fe are excreted exclusively in the faeces and by both routes, respectively. Elimination is rapid, less than 5% being recovered in the body after 4 days even after administering small doses ($10 \mu\text{g}$). H. G. R.

Hæmochromatosis. A. Cantarow and C. J. Bucher (*Arch. intern. Med.*, 1941, 67, 333—344).—A case of hæmochromatosis without glycosuria or Fe-containing pigment in the skin is described. The liver, pancreas, and retroperitoneal lymph glands contained enormous quantities of Fe. C. A. K.

Distribution of body-water in skeletal muscle and liver in normal dogs following injections of potassium salts. L. Eichelberger (*J. Biol. Chem.*, 1941, 138, 583—595).—Normal, fat-free, blood-free skeletal muscle and liver (dog) consists of an intracellular phase of 84.5 and 78.9% containing 74.1 and 64.6% of water, respectively. The increase in bulk of muscle following intravenous injection of large vols. of isotonic NaCl solutions is the same whether these contain K or not, and K does not influence the distribution of fluid in skeletal muscle and is not retained by it. In the liver there are considerable and appreciable increases in the intracellular and extracellular phases, respectively, and K in the liver cells increases with the cellular water. H. G. R.

Mechanism of hydrogen transport in animal tissues. V. R. Potter (*Medicine*, 1940, 19, 441—474).—A review. E. M. J.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Alkamine esters of *p*-fluorobenzoic acid and their salts.—See A., 1941, II, 195.

Synthesis and toxicity of N^1 -*p*-fluorophenylsulphanilamide. G. P. Hager, E. B. Starkey, and C. W. Chapman (*J. Amer. Pharm. Assoc.*, 1941, 30, 65—68).—With single, intraperitoneal injection of an olive-oil suspension into mice, the substance (for synthesis, cf. A., 1941, II, 192) has the same toxicity 30 hr. after injection as sulphanilamide, but after 54 hr. shows a delayed toxicity approx. threefold that of sulphanilamide. F. O. H.

Pharmacology of sulphanilamide. G. B. Roth (*Med. Ann. Columbia*, 1938, 7, 171—180).—A review. E. M. J.

Treatment of pneumonia. R. H. Major (*J. Kansas Med. Soc.*, 1940, 41, 502—507).—A review of recent advances. E. M. J.

Treatment of pneumonia with sulphydrydine. M. Fogel (*N.Y. Sta. J. Med.*, 1941, 41, 122—125).—43 cases of pneumococcal and 1 of streptococcal pneumonia were treated; the group included 20 children age 3.5 months—8 years. The average duration of pyrexia after starting treatment was 25.4 hr. in the children and 19.7 hr. in the adults; the average total dose was 6.8 g. for children and 30.1 g. for adults, but 21 g. only in uncomplicated cases. Blood concns. varied widely and bore no relation to the rate of recovery. There were 4 deaths, 1 in a child. The toxic reactions encountered included weakness, mental confusion, and skin manifestations. Four cases of pneumococcal meningitis were also treated with one recovery. E. M. J.

Sulphydrydine in lobar pneumonia complicated by diabetes. C. B. Johnson (*J. Kansas Med. Soc.*, 1940, 41, 289—290).—18.5 g. of sulphydrydine were given in 3 days and temp. was normal 60 hr. after onset and 38 hr. after start of treatment. 25—60 units of insulin were necessary 3 times a day for the control of the diabetic condition. E. M. J.

[Treatment of] *Streptococcus viridans pneumonia*. F. F. Sencerchia and H. R. Livengood (*N.Y. Sta. J. Med.*, 1941, **41**, 143—145).—7 of 8 atypical pneumonias showing *S. viridans* in the sputum were treated with sulphapyridine in doses of 5—76 g. without the response seen in pneumococcal pneumonias. 6 patients, however, recovered in from 6 to 58 days. E. M. J.

Sulphanilamide in treatment of pneumococcal peritonitis. W. W. Sager and W. Raffel (*Med. Ann. Columbia*, 1938, **7**, 99—100).—A 3-year-old girl recovered from pneumococcal peritonitis after laparotomy and subsequent treatment with prontosil, 11 g. being given with NaHCO_3 over 5 days. E. M. J.

Recovery from pneumococcal meningitis [with sulphapyridine]. H. W. Palmer (*J. Kansas Med. Soc.*, 1941, **42**, 54—56).—A woman, aged 60, was successfully treated with sulphapyridine (101 g. in 25 days) and sp. type anti-serum. E. M. J.

Treatment of subacute bacterial endocarditis. H. A. Solomon (*N.Y. Sta. J. Med.*, 1941, **41**, 45—50).—Combined treatment with sulphapyridine and intravenous injection of 0.5 minim of T.A.B. vaccine daily for 7—10 days, repeated if necessary within 1—2 hr. to maintain temp. above 104°F . for 3 hr. consecutively, resulted in 5 cures out of 8 patients, lasting up to date 18, 15, 3, and in 2 cases 2 months. One patient died of agranulocytosis without showing clinical or bacterial evidence of recurrence. All cases had positive blood cultures. E. M. J.

Successful treatment of lymphogranuloma inguinale with sulphanilamide. M. Bernreiter (*J. Kansas Med. Soc.*, 1940, **41**, 290—291).—Case report. E. M. J.

Prevention and treatment of wound infection. W. W. Sager (*Med. Ann. Columbia*, 1941, **10**, 56—60). E. M. J.

Treatment of infected wounds by local application of powdered sulphanilamide and sulphanilamide-allantoin ointment. J. R. Veal and R. G. Klepser (*Med. Ann. Columbia*, 1941, **10**, 61—63).—Rapid disappearance of a mixed bacterial flora was seen with daily applications of powdered sulphanilamide and practical sterility obtained on the 8th day. Healing was, however, retarded, and it is better to replace the powder on the 6th day by a 10% sulphanilamide, 2% allantoin ointment, resulting in healthy granulations within a few days. E. M. J.

Toxic effect of sulphamethylthiazole. S. Solomon and M. Kalkstein (*N.Y. Sta. J. Med.*, 1941, **41**, 270—272).—A patient was successfully treated for pneumonia with heavy bacteraemia (type II pneumococcus) by sulphamethylthiazole (8 g.) and its Na salt (72 g.) given within 9 days. Severe peripheral neuritis occurred in all four extremities 9 weeks after leaving off the drug. The neuritis cleared up in 6 weeks, treatment consisting of large doses of vitamin-B₁, the -B complex, -E, and physical therapy. E. M. J.

Anuria due to bilateral ureteral impaction with concretions following use of sulphapyridine in pneumonia. R. L. Dourmashkin and M. Worton (*N.Y. Sta. J. Med.*, 1941, **41**, 146—149).—Case report. E. M. J.

Experimental study of tolerance to sulphanilamide in the albino rat. A. D. Krems, A. W. Martin, and J. M. Dille (*J. Pharm. Exp. Ther.*, 1941, **71**, 215—221).—Repeated administration of sulphanilamide (0.4 g. per kg.) decreased the susceptibility of rats to a dose of 2.5 g. per kg. Raised O_2 consumption in liver tissue from tolerant rats was attributed to a physiological readjustment to lowered body temp. Repeated administration did not alter the toxicity of sulphanilamide *in vitro* to liver tissue. E. M. S.

Pyrethrum as parasiticide in man. W. K. Angevine (*Med. Ann. Columbia*, 1941, **10**, 21—22).—An ointment containing 2% of pyrethrins was prepared by a special process from the jelly-like oleoresin of pyrethrum and petroleum jelly. This was non-toxic to guinea-pigs in large oral doses. In man, when used externally, one application was sufficient for eradicating lice and their eggs, and up to 3 applications for the cure of scabies (70 cases), scrubbing and bathing not being essential for successful treatment. E. M. J.

Pharmacology of some derivatives of mono- α -secondary furfurylamine and of di- α -furfuryl tertiary amine. M. G. Mulinos and S. Disick (*J. Pharm. Exp. Ther.*, 1941, **71**, 273—279).—Furfurylamine, and di-2-furfuryl-methyl- and -ethyl-amines stimulated the rabbit uterus and depressed the

intestine. These drugs did not stimulate the frog heart, nor raise the blood pressure of atropinised cats. Other monofurfurylamines were inert; other difurfurylamines depressed smooth muscle. E. M. S.

Rectal digitalis in congestive heart failure. J. S. Diasio (*Med. Ann. Columbia*, 1938, **7**, 118—121).—6 cases which temporarily or permanently did not tolerate digitalis by mouth were successfully treated with digilant suppositories; 3 were given on each of the first 2 days, and 2 daily subsequently. No evidence of irritation or toxicity was observed. E. M. J.

Passage of phenothiazine through the alimentary canal of the sheep. M. Lipson and H. McL. Gordon (*J. Counc. Sci. Ind. Res. Australia*, 1941, **13**, 240—244).—Phenothiazine, administered to sheep, is detected in faeces in approx. 12 hr., faecal elimination reaching max. in 24—36 hr. and being complete in approx. 4 days. Pre-administration of CuSO_4 accelerates the first appearance of phenothiazine in faeces. The amount of phenothiazine excreted averaged 32% of that ingested. The anthelmintic efficiency of phenothiazine was unrelated to the proportion appearing in the faeces. Total excretion of phenothiazine was not greatly changed by administration in ruminal or abomasal injections, but the rate of elimination was greater following injection into the abomasum. A. G. P.

Anthelmintic efficiency of phenothiazine against immature *Haemonchus contortus*. H. McL. Gordon (*J. Counc. Sci. Ind. Res. Australia*, 1941, **13**, 245—246).—In dosages of 0.6 g. per kg. body-wt. phenothiazine destroys 10—15-day-old worms. A. G. P.

Effect of histamine on pulmonary blood pressure of various animals with and without anaesthesia. R. A. Woodbury and W. F. Hamilton (*J. Pharm. Exp. Ther.*, 1941, **71**, 293—300; cf. A., 1939, III, 457).—By means of angiotomy cannulae attached to the aorta, pulmonary artery, and pulmonary vein, pressure pulses from these vessels were recorded in unanaesthetised dogs. Intravenous histamine raised the pulmonary arterial pressure. No evidence of pulmonary constriction was observed. On circulatory deterioration, due to anaesthesia and other causes, dogs responded to histamine by a transient rise followed by a prolonged fall in pulmonary pressure. The capacity to increase blood flow determined the type of response. In anaesthetised cats and rabbits histamine produced constriction of the pulmonary vessels which increased pulmonary arterial pressure. E. M. S.

Metabolism of cats under chloralose anaesthesia. F. R. Griffith, jun., F. E. Emery, and J. E. Lockwood (*Amer. J. Physiol.*, 1941, **131**, 561—571).—A report is given of the variability and degree of correlation between O_2 consumption, CO_2 output, R.Q., pulmonary ventilation, systolic blood pressure, heart rate, and blood-sugar and -lactic acid concns. of chloralose-anaesthetised cats. During the 2nd—4th hr. of anaesthesia all these factors were unchanged over experimental periods of 15—20 min. Inter-individual variability of all functions (range and coeff. of variation) was large; the variations are normally inter-related (coeffs. of correlation), indicating that chloralose produces no gross disturbances. O_2 consumption was not affected by duration of anaesthesia within the time limits employed. M. W. G.

Aminoethanol derivatives possessing local anaesthetic activity. F. C. MacIntosh and T. S. Work (*Quart. J. Pharm.*, 1941, **14**, 16—25).—The local anaesthetic activity, toxicity, and irritant action of 12 compounds of the type $\text{OH-CRR}'\text{-CH}_2\text{-NR}'$ (where R is phenyl, alkylphenyl, diphenyl, naphthyl, methoxynaphthyl, piperidinohydroxyethylidiphenyl, or undecyl, R', H, methyl, or ethyl, and NR' dimethylamino or piperidino) were investigated. The anaesthetic activity was up to 50 times that of procaine hydrochloride when tested on the guinea-pig cornea but only of the same order of activity by the guinea-pig wheel method. Practical application appears to be excluded on account of the highly irritant action. The 50% lethal dose was 150—400 mg. per kg. (mice). The data show that local anaesthetic activity is associated with the dialkylaminoethanol structure and is displayed when appropriate radicals are introduced in the positions R and R'. For new compounds see A., 1941, II, 203. F. O. H.

Influence of sex life on resistance to nortal and pentobarbital. H. G. O. Holck and L. D. Fink (*J. Amer. Pharm. Assoc.*, 1940, **29**, 475—480).—Sexual activity in male or female rats had

no effect on the narcotic or lethal effect of nortal or Na pentobarbital. Resistance to the drugs is increased by recent incidence of pregnancy, whilst tolerance to small or gradually increasing doses is more evident in young than in old virgin rats. F. O. H.

Biological estimation of ergometrine. E. J. de Beer and P. E. Tullar (*J. Pharm. Exp. Ther.*, 1941, **71**, 256—260).—Both the mydriatic and the hyperthermal effects of ergometrine, in the rabbit, are quantitatively related to dose, and may be used for assay of the drug. When both effects are considered simultaneously, it is possible to distinguish between results produced by ergometrine and by ergotamine. Using 16 rabbits the limit of error is $\pm 20\%$. E. M. S.

tert-Dibenzthienyl amino-alcohols.—See A., 1941, II, 203.

Action of barium salts on circulation. S. Iimori (*Japan. J. Med. Sci.*, IV, 1940, **12**, Proc., 51—52).—BaCl₂ in 10⁻⁵ dilution stimulates the isolated frog's heart. In higher concn. the contraction is stronger. 10⁻³ concn. produces systolic arrest. The same effects occur after previous treatment with atropine. 1 mg. of BaCl₂ per kg. produces a rise of blood pressure and stimulation of the heart in rabbits. 5 mg. per kg. have a stronger effect. 20 mg. per kg. produce at first stimulation followed by inhibition with fall of blood pressure, decrease of amplitude and rate of heart. BaCl₂ has a favourable effect on low blood pressure, paralysis of heart, and respiration of rabbits after poisoning with MgSO₄ and chloral hydrate. Min. lethal dose of different Ba compounds is given. The toxicity is parallel with the Ba content. H. H. K.

Fatal lead encephalopathy in child of 10 months. D. N. Medearis (*J. Kansas Med. Soc.*, 1940, **41**, 5—8).—The child came from a household where old storage-battery casings had been used as fuel. The mother nursing the baby and all other members of the family showed punctate basophilia and secondary anaemia. E. M. J.

Allergy to trypanamide. J. R. Wiseman and D. F. Gillette (*N.Y. Sta. J. Med.*, 1941, **41**, 62—66).—A patient with syphilitic meningo-encephalitis received a total of 220 g. of trypanamide within 2 years with no unfavourable symptoms. After 2 years treatment was resumed and amblyopia followed the 2nd injection. Eventual recovery ensued. E. M. J.

Modern treatment of syphilis. R. A. Vonderlehr (*Med. Ann. Columbia*, 1938, **7**, 241—245). E. M. J.

Bismuth poisoning after oral administration. J. H. Bena (*J. Kansas Med. Soc.*, 1940, **41**, 60—61).—A child of 3 years given large doses of Bi for diarrhoea and vomiting became collapsed and stuporose. There was cyanosis, dry, inflamed mouth, muscular weakness, and transient albuminuria. Stools and urine contained Bi, and the blood was cherry-red, not changing in colour on exposure to air. No test for methaemoglobin was performed. The child recovered in 5 days following two blood transfusions of 200 c.c. each and intravenous injections of Na₂S₂O₃. E. M. J.

Treatment of rheumatoid arthritis. D. C. Crain (*Med. Ann. Columbia*, 1941, **10**, 1—10).—Bee venom, chaulmoogra oil, S, vitamin-D, and Au are reviewed as therapeutic agents and only Au is found to be of val. E. M. J.

Calcium therapy in puerperal infections. W. J. Cusack (*Med. Ann. Columbia*, 1938, **7**, 41—44).—Ca gluconate in daily doses of 5 c.c. of a 10% solution intravenously and 5 c.c. intramuscularly together with 3 teaspoonfuls orally was given in 26 cases in addition to the usual treatment, resulting in early relief from pain and disappearance of lower abdominal rigidity with a reduction of the average period of hospitalisation from 21 to 14 days. E. M. J.

Phagedenic ulcer treated with zinc peroxide. N. Mintz (*J. Mt. Sinai Hosp.*, 1938—39, **5**, 697—701). E. M. J.

Experimental metallic osteodystrophies. Hepato-renal elimination of metals. M. Queloz (*Helv. med. Acta*, 1938, **5**, 195—267, 347—365).—Pt, Cu, Sn, Fe, Cr, U, Te, Ba, Li, and Si, but not Ag, Cu, and I, produce alterations in the bones of rabbits; the action of As is uncertain. The metals act directly on the bone, except Pt and U which cause bone lesions secondarily to nephritis. Au, Ba, Li, and Si initially stimulate the osteoblasts and produce a primary osteosclerosis. The bone lesions belong to the groups of fibrous exogenous osteitis and are of acidotic origin. The hepatic lesions produced by the metals consist in rapid disappearance

of glycogen and to a smaller extent of fat and lipins, and appearance of necrosis. In some cases, metallic pigmentation in hepatic and in Kupffer's cells and proliferation of the reticular apparatus have been observed. Inflammatory reactions are rare. Marked renal lesions were caused by Pt, U, Cr, and Si. Nephritic osseous dystrophies are accompanied by hypocalcaemia and hyperphosphatemia; fibrous osteodystrophies show hypercalcaemia and hypophosphatemia, owing to hyperparathyroidism or hyperthyroidism.

M. K.

Distribution of injected organic diselenides in tissues of tumour-bearing animals. S. B. Gusberg, P. Zamecnik, and J. C. Aub (*J. Pharm. Exp. Ther.*, 1941, **71**, 239—245).—After intravenous injection of diselenidodiacetic acid and diselenido-*n*-dibutyric acid, the greatest concn. of Se was found in the lungs of mice. With similar compounds containing Hg the greatest concn. was in the kidneys, and more Se was deposited throughout the tissues. Se did not inhibit the growth of experimental sarcoma in mice, and little Se was found in the tumours. E. M. S.

Incidence of aspirin hypersensitivity. E. Gardner and W. B. Blanton (*Amer. J. med. Sci.*, 1940, **200**, 390—394).—The histories of 467 patients were reviewed to determine the incidence of aspirin sensitisation. More than half the patients were asthmatics. 46 allergists were also circularised. From these reports probably not more than 2 out of 1000 persons are sensitive to aspirin and of these very few react violently. C. J. C. B.

Effect of halogenation of the phenol molecule on toxicity to goldfish. III. Monoiodophenols. W. A. Gersdorff and L. E. Smith (*Amer. J. Pharm.*, 1940, **112**, 389—394; cf. A., 1940, III, 761, 928).—Monoiodophenols are more toxic to goldfish at 27° than phenol, being lethal in lower concns. and more quickly lethal at high concns. The threshold concns. of toxicity of the halogenophenols are approx. equal, but in the range of toxic concns., the iodophenols are more lethal than the Cl- and Br-isomerides. The toxicities of phenol, *o*-, *m*-, and *p*-iodophenol are as 1.0 : 2.01 : 1.61 : 7.78.

J. L. D.

Cinchophen poisoning. M. G. Berry (*J. Kansas Med. Soc.*, 1940, **41**, 337—339).—Report of 2 cases, one fatal in which subacute yellow atrophy was the cause of death. E. M. J.

Biological and biochemical studies of curare. M. E. Pusitz, J. L. Lattimore, A. Gold, and H. Ebdorf (*J. Kansas Med. Soc.*, 1940, **41**, 374—379).—Curare was obtained in two lots, one botanically authenticated, the other from native sources, unauthenticated; the latter was much the stronger. Subcutaneous injection of 0.5 c.c. of 3.36% solution per kg. body-wt. killed a rabbit in 1 min. If the conc. solution was diluted 1 : 10, a dose previously lethal on oral administration to rabbits was no longer lethal. The min. active dose of 8 mg. per kg. injected subcutaneously in rabbits caused brief excitability followed by a period of lessened irritability lasting 1 hr. 10.5 mg. per kg. produced complete paralysis and failure of respiration after 30 min. Starting with $\frac{1}{2}$ rabbit lethal dose, increasing doses were given clinically to release muscles from hypertonus and enable re-education to take place. Spastic muscles reacted with smaller dosage than normal ones, and some good results were seen in cases of spastic paralysis. E. M. J.

Toxic amblyopia resulting from sodium diphenylhydantoinate. J. M. Levitt and M. Blonstein (*N.Y. Sta. J. Med.*, 1940, **40**, 1538—1539).—Amblyopia set in after 6.1 g. of the drug had been taken in 0.1-g. doses over a period of 3 months for epilepsy. Restitution to the previous degree of vision occurred after withdrawal of the drug and administration of thiamine chloride and vitamin-C. E. M. J.

Toxicity of naphthaquinones with vitamin-K activity in mice. M. B. Shimkin (*J. Pharm. Exp. Ther.*, 1941, **71**, 210—214).—Acutely toxic doses of vitamin-K₁ (2-methyl-3-phenyl-1 : 4-naphthaquinone) and 5 related naphthaquinones caused respiratory depression and vascular congestion associated with haemorrhages in the renal tubules and liver. Repeated subcutaneous injections, during 3—6 weeks, of a total dose of 4—18 mg. of 2-methyl-1 : 4-naphthaquinone gave no evidence of chronic toxicity. E. M. S.

Toxicity of red squill. J. A. Lubitz, A. S. Levine, and C. R. Fellers (*J. Amer. Pharm. Assoc.*, 1941, **30**, 69—72).—The toxicity of red squill in female rats is approx. twice that in males,

is diminished by heating the dry prep., and is not affected by water, protein, or carbohydrate (but is slightly decreased by fat or pectin) in the bait. F. O. H.

Action of methylene-blue on cyanide poisoning in turtle. J. M. Johlin (*J. Pharm. Exp. Ther.*, 1941, **71**, 280—286).—The heart-glycogen of turtles receiving methylene-blue following NaCN does not remain depleted as with CN' alone. Blood-glucose and -lactate remain at high levels after administration of methylene-blue. O₂ consumption of turtles poisoned by CN' is increased to normal levels by methylene-blue; the amount of CN' recoverable from the respiratory gases is decreased. Methylene-blue converts hæmoglobin into methæmoglobin under the stabilising influence of the cyanides, rather than takes the place of poisoned enzymes of the cytochrome system. E. M. S.

General cryomotherapy: a symposium. Description of method. J. C. A. Gerster. Cardiovascular aspects. C. E. Kossmann. Haematology. C. Reich. Blood chemistry. A. Bernhard. Basal metabolism determinations. J. Geiger. Neurological observations. T. K. Davis. Temperature observations. M. C. L. McGuinness. Urologic aspects. H. R. Kenyon. Pulmonary complications. J. F. Dixon. Roentgenological observations. F. Huber. Biopsies and deaths. R. M. Paltauf. Clinical manifestations. P. K. Sauer. Discussion. W. L. Whittemore (*Bull. N.Y. Acad. Med.*, 1940, **16**, 312—340).

Cryomotherapy and its relation to hibernation. W. L. Whittemore, J. R. Lisa, and P. K. Sauer (*N.Y. Sta. J. Med.*, 1940, **40**, 1563—1566). E. M. J.

Artificial fever therapy. L. F. Glaser (*J. Kansas Med. Soc.*, 1940, **41**, 192—195). E. M. J.

Pectin therapy and pectin types. A. G. Olsen (*Amer. J. digest. Dis.*, 1940, **7**, 515—519).—A review of the indications for pectin therapy and of the chemical nature of various commercial preps. N. F. M.

Pharmacological responses of *Daphne magna*. T. Sollmann and W. Webb (*J. Pharm. Exp. Ther.*, 1941, **71**, 261—267).—This small crustacean is suitable for direct microscopic observation. Drug effects on the heart, intestine, striated muscle, and respiration are described. The responses differ qualitatively from those in vertebrates. E. M. S.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Heat loss from human body. E. F. du Bois (*Harvey Lectures*, 1938—39, Series 34, 88—123). E. M. J.

Response of peritoneal tissue to industrial dusts. J. W. Miller and R. R. Sayers (*U.S. Publ. Health Repts.*, 1941, **56**, 264—272).—A definite quantity of dust injected into the peritoneal cavity of a guinea-pig produces one of three types of reaction. It disappears, causes proliferation of the peritoneal tissue, or remains as an inert foreign body. These reactions may be used as a basis for the biological classification of industrial dusts and seem to indicate that some relationship exists between the type of reaction produced in the peritoneal tissue by a dust and the ability of this dust to produce a characteristic pneumoconiosis. An absorptive reaction may indicate that a dust is relatively harmless, while a proliferative reaction, characteristic of quartz, may be associated with the ability to produce pulmonary fibrosis. Dusts of the inert group that show a tendency to remain in the tissues should be considered as potentially harmful but not so dangerous as those causing a proliferative process. It is possible to determine the pneumoconiotic potentialities of a dust in a relatively short time, usually 60 days. C. G. W.

Effect of exposure to lead arsenate. P. A. Neal, W. C. Drensen, T. I. Edwards, W. H. Reinhart, S. H. Webster, H. T. Castberg, and L. T. Fairhall (*U.S. Publ. Health Bull.*, 1941, No. 267, 84 pp.).—This bulletin reports the results of an epidemiologic study based on field operations extending over a 14-month period of 1231 men, women, and children who live in an apple-growing region where large quantities of Pb arsenate have been used for many years as insecticide sprays. Toxicologic studies of the effect of Pb arsenate on man and laboratory animals are being published separately. C. G. W.

XXII.—RADIATIONS.

Importance of accurate collimation of beam in deep roentgen therapy. E. Schons (*Radiology*, 1941, **36**, 154—158).—With irradiation at 1000 kv. and 100 cm. target-skin distance an avoidable penumbra of 18.65% of the vol. irradiated by the full intensity beam for a field of 15 cm. and 67.3% for a field of 5 cm. diameter is calc. if the limiting diaphragm is placed 22 cm. from the skin instead of on the skin surface. With 200 kv. at 50 cm. and the diaphragm at 11 cm. the figures are 7.88 and 25.33%, respectively. E. M. J.

Intestine in radiation sickness. W. S. Wallace (*J. Amer. Med. Assoc.*, 1941, **116**, 583—586).—After irradiation of the pelvis for carcinoma of the cervix the ileum showed segmentation of the Ba, flattening of the mucosa, diminished motility and narrowing of the lumen. The duodenum and jejunum were unaltered in radiation sickness. C. A. K.

Electric burns in infants. H. Lempke (*Dtsch. Z. Chir.*, 1938—39, **251**, 331—342).—In addition to the local burns caused by putting live plugs (220 v.) into their mouths only one out of 4 infants fell into a coma for 5 days with increased c.s.f. pressure. All the burns were painless. E. M. J.

Mitogenetic emission spectra of radicals.—See A., 1941, I, 239.

Quenching and inhibition of mitogenetic radiation.—See A., 1941, I, 240.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Shape of protein molecules. II. Viscosity and diffusion studies of native proteins. H. Neurath, G. R. Cooper, and J. O. Erickson (*J. Biol. Chem.*, 1941, **138**, 411—436; cf. A., 1939, III, 938).—Viscosity (η) and diffusion measurements on samples of lactoglobulin, pepsin, cryst. and amorphous albumin, and pseudoglobulin are recorded. Relative η is linear with respect to protein concn. up to 1.1%. Mol. wt. and dissymmetry consts. calc. from sedimentation, diffusion, and η measurements indicate the applicability of Simha's equation for rod-shaped mols. The influence of hydration is discussed. R. L. E.

Catalytic effect of crystalline papain on denaturation of thyroglobulin. H. P. Lundgren (*J. Biol. Chem.*, 1941, **138**, 293—303).—Active, but not inactive native or denatured, papain catalyses denaturation of thyroglobulin under conditions in which only negligible hydrolysis occurs. It involves reaction between the unstable α -form and the denatured form of the protein. Electrophoretic analysis and a study of the kinetics of pptn. confirm Linderström-Lang's hypothesis that structural blocking opposes enzyme action in the inactive native protein. P. G. M.

Nucleoproteins. General electrophoretic behaviour.—See A., 1941, I, 261.

Structure and electrical behaviour of collodion membranes.—See A., 1941, I, 258.

XXIV.—ENZYMES.

Distribution of enzymes in tissue and cells. K. Linderström-Lang (*Harvey Lectures*, 1938—39, Series 34, 214—245). E. M. J.

Ascorbic acid deficiency and enzyme activity in guinea-pig tissues. C. J. Harrer and C. G. King (*J. Biol. Chem.*, 1941, **138**, 111—121).—The effect of ascorbic acid deficiency on the activities of phosphatase of intestinal mucosa, liver, kidney, and brain, liver-esterase, succinic dehydrogenase of skeletal and heart muscle, and cytochrome oxidase of skeletal muscle, heart, and brain is determined. The activity of liver-esterase decreases with decrease of ascorbic acid, in acute scurvy the decrease being approx. 60%. The properties of the enzyme do not afford evidence that ascorbic acid is present as a part of the enzyme. The activity of the phosphatase is only moderately affected by ascorbic acid deficiency, and with liver- and brain-phosphatase the effect is only slight. Hence the vitamin does not play an important part in regulating phosphatase activity. Decreasing the amount of ascorbic acid causes a marked decrease in the activity of succinic

dehydrogenase of heart and skeletal muscle, and only a moderate decrease in the activity of cytochrome oxidase.

Oxidising enzymes of certain vinifera grapes. A. A. Hussein and W. V. Cruess (*Food Res.*, 1940, 5, 637—648).—The enzyme extract which produces darkening of white grapes or wine on ageing is obtained by extraction of acetone-extracted grape pomace with citrate buffer at pH 4.5, pptn. with 95% alcohol, and extraction of the ppt. with citrate buffer. The activity is estimated by the depth of colour produced with guaiacol in presence of H_2O_2 . The natural substrate is conc. by acetone extraction, pptn. with Pb acetate, liberation with H_2SO_4 , and concn. The concn. of the enzyme is higher in the fibrovascular bundles and epidermis than in the pericarp. Activity is optimum at pH 4.5—5.5 and 33—40° and is markedly affected by H_2O_2 concn. It is inhibited or destroyed by KCN, F⁻, 60% alcohol, and papain or trypsin digestion, is increased by 10—50% sucrose, and decreased by higher concns. of sucrose or by increasing concns. of SO_2 . Ascorbic acid is oxidised only in presence of pyrocatechol, the colour of *o*-benzoquinone appearing only after disappearance of all the ascorbic acid; methylene-blue is not reduced. The enzyme is classified as a peroxidase and contains little or no dehydrogenase.

H. G. R.

Inhibition of *d*-amino-acid oxidase by benzoic acid. J. R. Klein and H. Kamin (*J. Biol. Chem.*, 1941, 138, 507—512).—The oxidation of *d*-amino-acids by various preps. of *d*-amino-acid oxidase is markedly inhibited by benzoic acid, 10⁻⁴M-benzoic acid causing a 60% inhibition of the rate of oxidation of *d*-alanine. The inhibition is reversible and some evidence of the formation of a benzoic acid-oxidase complex is adduced.

A. L.

Uterine respiration, cytochrome oxidase, and copper. M. Grambard (*Amer. J. Physiol.*, 1941, 131, 584—588).—A water-sol. cytochrome oxidase is described; it is inhibited by substances which inhibit Cu catalysis. Cu is the active metal of cytochrome oxidase. The rates of O_2 uptake of uteri of rats or pregnant and non-pregnant rabbits are affected by Cu inhibitors in the same manner as is cytochrome oxidase. Cytochrome oxidase is necessary for the total respiration of rabbit and rat uterine tissues.

M. W. G.

Carboxylase. D. E. Green, D. Herbert, and V. Subrahmanyam (*J. Biol. Chem.*, 1941, 138, 327—339).—Washed and dried top brewer's yeast is incubated with PO_4^{4-} buffer at pH 7.2 for 1 hr., further diluted, and centrifuged. 0.5M- PO_4^{4-} buffer is added to the supernatant fluid followed by *m*-Ca acetate, and after removal of $Ca_3(PO_4)_2$, 38 g. of $(NH_4)_2SO_4$ are added per 100 c.c. of solution. The ppt. is dissolved in 0.04M-citrate buffer at pH 6, and further fractional pptn. with $(NH_4)_2SO_4$ is carried out. In this way an activity ratio of 0.78 is achieved, and such preps. of the enzyme contain 0.46% of diphosphothiamine and 0.13% of Mg; dissociation occurs at pH above 8 but not at pH 6. The diphosphothiamine component cannot be replaced by monophosphothiamine, thiamine, adenylic acid, etc. Most bivalent, but not trivalent, metals can replace Mg. 0.0001M-Ag, -Cu, or -Hg completely inhibit enzyme activity. α -Keto-acids other than pyruvic are decarboxylated, but acetoacetic acid (β -keto-acid) is unattacked. Factors affecting the reconstruction of the resolved enzyme have been studied.

P. G. M.

Tributyryl esterase activity of damaged rabbit's liver. T. T. Chen (*Tohoku J. exp. Med.*, 1940, 38, 193—198).—The tributyrin hydrolysis of liver tissue was diminished after subcutaneous injections of 0.5 c.c. of a 4% solution in olive oil per kg. body-wt., $CHCl_3$ (20%), or CCl_4 (20%) or after ligation of the common bile duct.

A. S.

Inhibition of choline-esterase by morphine *in vitro*. G. S. Eadie (*J. Biol. Chem.*, 1941, 138, 597—602).—Morphine inhibition of hydrolysis of acetylcholine by dog serum-esterase takes place as though both substrate and inhibitor combine with and compete for the enzyme. The inhibition is const. for pH 7.4—7.0 and then decreases rapidly to zero at pH 6.2.

H. G. R.

Activity of crystalline urease as a function of oxidation-reduction potential. I. W. Sizer and A. A. Tytell (*J. Biol. Chem.*, 1941, 138, 631—642).— E_h was adjusted by using a variety of oxidising and reducing agents, varying concns. of Na_2S or $KMnO_4$, or mixed oxidising and reducing agents with

a total concn. of 0.005M. All three methods gave similar curves, with optimum E_h about +150 mv. Urease is more active in presence of the salts used than in water at the same E_h . Strong oxidising or reducing agents cause irreversible inactivation. Crude urease is unaffected by varying E_h . The E_h of jackbeans after soaking in water is about +190 mv.

R. L. E.

Activation of intestinal peptidases by manganese. E. I. Smith and M. Bergmann (*J. Biol. Chem.*, 1941, 138, 789—790).—The intestinal enzyme which hydrolyses *l*-leucylglycine is a metal-protein compound. On purification its ability to hydrolyse glycylglycine, *l*-alanylglycine, and *d*-leucylglycine is greatly reduced. The existence of several sp. metal-proteases in intestinal mucosa is inferred.

E. M. W.

Kinetics of proteinase action. Application to specificity problems. G. W. Irving, jun., J. S. Fruton, and M. Bergmann (*J. Biol. Chem.*, 1941, 138, 231—242).—First-order reactions occur when benzoyl-*l*-arginineamide is hydrolysed by papain, ficin, or ox spleen cathepsin activated by cysteine and when hippurylamide and carbobenzyloxy-*l*-leucylglycylglycine are hydrolysed by cysteine-papain. The const. *K* is proportional to enzyme concn. *E* and independent of initial concn. The proteolytic coeff. *K/E* is used as a measure of enzyme strength towards a substrate and the quotient of two coeffs. obtained with two substrates can be used to measure homogeneity of the enzyme during purification.

E. M. W.

Kinetics of action of trypsin on synthetic substrates. K. Hofmann and M. Bergmann (*J. Biol. Chem.*, 1941, 138, 243—248).—The digestion of benzoylarginineamide, benzoylglycyllysineamide, and benzoylglycylarginineamide by cryst. ox trypsin are first-order reactions and the reaction consts. are proportional to the trypsin concn. The proteolytic coeffs. are 0.038, 0.22, and 0.40, respectively.

E. M. W.

Proteolytic enzymes of animal tissues. II. Composite nature of ox spleen cathepsin. J. S. Fruton, G. W. Irving, jun., and M. Bergmann (*J. Biol. Chem.*, 1941, 138, 249—261; cf. A., 1939, III, 1009).—The three types of proteolytic activity exhibited by ox spleen cathepsin are shown to be produced by three enzymes, cathepsin I which hydrolyses carbobenzyloxy-*l*-glutamyl-*l*-tyrosine and does not require an activator, cathepsin II which hydrolyses benzoyl-*l*-arginineamide in the presence of cysteine, and cathepsin III which hydrolyses *l*-leucineamide and *l*-leucylglycine in the presence of cysteine or ascorbic acid.

E. M. W.

Action of almond emulsin on the phenyl-glycosides of synthetic sugars and on β -thiophenyl-*d*-glucoside. W. W. Pigman (*J. Res. Nat. Bur. Stand.*, 1941, 26, 197—204).— β -Phenyl-*d*-mannoheptoside is hydrolysed by the enzymes in sweet almond emulsin, but α -phenyl-*d*-mannoheptoside, α - and β -phenyl-*d*-glucoheptoside, and α -phenyl-*d*-taloside are unaffected. This behaviour is in accord with the view (cf. A., 1940, III, 766) that almond emulsin hydrolyses only the glycosides of naturally occurring sugars and of compounds derived from them by simple substitution outside the pyranose ring. β -Thiophenyl-*d*-glucoside is not hydrolysed by the emulsin, whereas β -phenyl-*d*-glucoside is easily hydrolysed. The reason for this difference is discussed.

J. W. S.

Degradation of starch and of glycogen by β -amylase. Residual dextrin from maize starch.—See A., 1941, II, 186, 187.

Isolation of diphosphopyridine nucleotide. B. J. Jandorf (*J. Biol. Chem.*, 1941, 138, 305—309).—The prep. is described of pure cozymase (diphosphopyridine nucleotide), involving adsorption on C from aq. solution and elution by 6% aq. amyl alcohol. 400—450 mg. of a white hygroscopic powder (P 9.32%) are obtained from 4 kg. of yeast.

P. G. M.

Manometric determination of diphosphopyridine nucleotide. B. J. Jandorf, F. W. Klemperer, and A. B. Hastings (*J. Biol. Chem.*, 1941, 138, 311—320).—A method described for determination of cozymase in aq. solution is based on the catalysis by the cozymase of the breakdown of hexose diphosphate in the presence of AsO_4^{3-} and an aq. muscle extract (freed from nucleotide by C adsorption) as the source of necessary enzymes. Solutions containing 1—10 μ g. of cozymase per c.c. are used.

P. G. M.

Synthesis of diphosphopyridine nucleotide by *Chilomonas paramecium*. J. O. Hutchens, B. J. Jandorf, and A. B. Hastings (*J. Biol. Chem.*, 1941, 138, 321—325).—The cozymase content of *C. paramecium* cultured in synthetic media, as

determined manometrically, is $0.85 \pm 0.06 \mu\text{g.}$ per mg. of dry cells. Only the oxidised form of co-enzyme is determined by the procedure described, the reduced form being destroyed by heating to 100° at initial p_{H} 6.0. The synthesis is effected by the organism using NH_3 and acetic acid as the sole source of NH_3 and C, respectively. P. G. M.

Effect of nicotinic acid deficiency on the co-enzyme I content of the human erythrocyte and muscle. A. E. Axelrod, T. D. Spies, and C. A. Elvehjem (*J. Biol. Chem.*, 1941, **138**, 667—676; cf. A., 1940, III, 594).—The co-enzyme I content of the muscle of pellagrins is low, but the relation between blood-co-enzyme I and pellagra is doubtful. Administration of nicotinic acid, but not of coramine or pyrazinemonocarboxylic acid, raises the co-enzyme I content of erythrocytes and muscle in mild and severe pellagra cases. Co-enzyme I is formed by blood *in vitro* from nicotinamide, but not from coramine, pyrazinemonocarboxylic or quinolinic acid. The beneficial clinical effect of these substances is not due to formation of co-enzyme I in blood or muscle. R. L. E.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Flavoprotein from yeast. D. E. Green, W. E. Knox, and P. K. Stumpf. **Ultracentrifuge analysis.** J. L. Oncley (*J. Biol. Chem.*, 1941, **138**, 775—781, 781—782).—The isolation of a flavoprotein from brewer's yeast is described. It is brownish-red in conc. solutions. $\text{Na}_2\text{S}_2\text{O}_4$ bleaches 37% of the colour of λ 450 $m\mu$. and 46% at 465 $m\mu$, indicating the presence of another coloured constituent besides flavin. The protein is denatured by heat or acidification and flavin is split off, while a coloured non-flavin group remains attached to the protein. A mol. wt. of 50,000—70,000 is suggested from ultracentrifuge data. E. M. W.

Washing of *Paramecia*. F. T. Rosser (*Canad. J. Res.*, 1941, **15**, D, 144—149).—*Paramecia* can be freed from bacteria by 5 washings in 0.1 ml. of sterile water, the third lasting 5 hr. No division of *Paramecium* was obtained in media containing Ca pantothenate, oestriol, riboflavin, inositol, ascorbic or nicotinic acids (1—10 p.p.m.) or when 18 *Paramecia* were kept together. Division occurred in media containing thyroxine (saturated and 0.1 saturated). R. L. E.

Cotton-plug wrapping machine for bacteriological culture tubes and bottles. L. L. Kempe and H. R. Shipman (*J. Lab. clin. Med.*, 1941, **26**, 1040—1041). C. J. C. B.

Solution for staining differentially the spores and vegetative cells of micro-organisms. P. H. H. Gray (*Canad. J. Res.*, 1941, **19**, C, 95—98).—A mixed aq. malachite-green—basic-fuchsin stain serves to differentiate spores and vegetative cytoplasm of bacteria, yeasts, and certain fungi. Heating, decolorising, and counterstaining are unnecessary. A. G. P.

Fate of acid-fast bacilli injected into peritoneal cavity of animals. T. Hashimoto (*J. Orient. Med.*, 1938, **28**, 49).—Various suspensions of 27 strains containing 0.1, 1, 5, and 10 mg. of dead or living acid-fast bacilli were introduced into the peritoneal cavity of rabbits, guinea-pigs, and mice. The injected bacilli were ingested by polymorphonuclear cells after 1—2 hr. and by histiocytes after 24 hr. They then decreased gradually in no.; those in the peritoneal fluids disappeared within 24 hr. of the injection, those inside the phagocytes after 2 weeks. Virulent tubercle bacilli reappeared in the peritoneal fluids of mice after 2 weeks. Tubercle bacilli injected intraperitoneally into rabbits or guinea-pigs were found in the blood stream after 2—3 hr. for 10—14 days by means of isolation in Kirchner's medium. 1 mg. of acid-fast bacilli injected intraperitoneally into mice were found after 2 weeks in lung, liver, spleen, and kidney. Tubercle bacilli (living or dead) injected intraperitoneally into rabbits or guinea-pigs were excreted in the urine after 2—3 hr. for 10 days. M. K.

Resistance of thermophiles to high temperatures. A. A. Egorova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **28**, 660—662).—Autoclaved meat peptone-agar remained sterile when incubated at 14 — 35° but at 54 — 75° produced colonies of spore-bearing bacteria under aerobic and anaerobic conditions. No similar phenomenon is observed in cultures in liquid media. The organisms are rods with rounded ends, granular proto-

plasm, and terminal spores, the size depending on the culture medium. Culture is favoured by the addition of 3% of sea salt, thus indicating the possible maritime origin of these forms. J. L. D.

Delaying effect of highly concentrated media on destruction of bacteria and spores by heat. K. von Angerer and E. Küster (*Arch. Hyg.*, 1939, **122**, 57—97).—Suspensions of *B. gossypii*, Heim, *Bact. coli*, and staphylococci in conc. solutions of glycol, glycerin, erythritol, sorbitol, or glucose were exposed to 56° . The protective effect of these substances was determined by changes of opacity. BaSO_4 ppt. in glycerin was used as standard. The strongest protective effect was found in the 25% solution of erythritol, the least in arabinose. M. K.

Bacteriostatic action of nitrites. H. L. A. Tarr (*Nature*, 1941, **147**, 417—418).—A review. L. S. T.

Detection of coliform organisms in water. N. J. Howard, A. G. Lochhead, and M. H. McCrady (*Canad. Publ. Health J.*, 1941, **32**, 29—36).—The brilliant-green-bile method of confirming lactose broth presumptives proved quite as satisfactory, for detection of coliform organisms in a no. of Canadian waters, as the more involved "completed test." The application of the "completed test" to brilliant-green-bile gas-positives yielded a no. of coliform isolations that compares favourably with that obtained by applying the "completed test" directly to the original lactose broth presumptives. C. G. W.

Relative value of 2% and 5% brilliant-green-bile confirmatory media. D. Richey (*J. Amer. Water Works Assoc.*, 1941, **33**, 649—658).—The total nos. of coliform organisms isolated by 5% or 2% brilliant-green and the usual completed test were 93.3, 90.8, and 88.3%, respectively. Either brilliant-green media would serve for routine water analysis as a reliable simple confirmatory procedure; both gave better results than the usual completed test, but the 5% medium is superior in nos. and % of coliform bacteria isolated. The 5% medium had the smallest total cumulative error, though only slightly less than that of the 2% medium. The high proportion of coliform organisms isolated to gas-positive tubes obtained with either brilliant-green media indicates that both are sp. for the coliform group. O. M.

Biological nitrogen fixation. VI. Inhibition of azotobacter by hydrogen. O. Wyss and P. W. Wilson (*Proc. Nat. Acad. Sci.*, 1941, **27**, 162—168).—Fixation of N by *Azotobacter* or the symbiotic N fixation system of red clover is inhibited by H_2 , whereas He and A are without effect. H. G. R.

Action of micro-organisms on fat. III. Oxidation and hydrolysis of triolein by pure cultures of bacteria. IV. Changes produced in globules of triolein by pure cultures of bacteria. C. H. Castell and E. H. Garrard (*Canad. J. Res.*, 1941, **19**, C, 106—110, 111—120).—III. Most Gram-negative lipolytic bacteria oxidise triolein. A relationship exists between the oxidase activity of the bacterial colony and its ability to cause oxidative rancidity in fats.

IV. The lipolytic activity of micro-organisms as demonstrated by Nile-blue sulphate or methylene-blue tests or by formation of Cu soaps agrees with that shown by titration of free acid produced. Preliminary hydrolysis of fats accelerates the oxidation of the products. Hydrolysis of fats is effected by a diffusible enzyme; the subsequent oxidation of fatty acid occurs at the surface of bacterial cells. A. G. P.

Radioactive carbon as tracer in synthesis of propionic acid from carbon dioxide by propionic acid bacteria. S. F. Carson, J. W. Foster, S. Ruben, and M. D. Kamen (*Science*, 1940, **92**, 433—434).—Radioactive propionic and succinic acids, prepared by using propionic acid bacteria, were introduced separately into fresh bacterial suspensions in presence of inactive CO_2 and glycerol. No evidence for the reaction $\text{succinic} \rightleftharpoons \text{propionic acid}$ (A., 1940, III, 934) was obtained. Decarboxylation of the radioactive propionate to oxalate and carbonate (alkaline KMnO_4), and dry distillation of Ba propionate, indicated that all the C atoms in propionic acid are labelled, and all originate from CO_2 . The two main products of the glycerol fermentation, propionic and succinic acids, are not formed via each other, and CO_2 is reduced to propionic acid with an org. compound (glycerol) acting as the ultimate reducing agent. The fermentation of pyruvic acid by the propionic acid bacteria in presence of radioactive CO_2 has also been investigated. L. S. T.

Degradation of propionic acid synthesised by propionibacterium. H. G. Wood, C. H. Werkman, A. Hemingway, and A. O. Nier (*Iowa State Coll. J. Sci.*, 1941, 15, 213—214).—Propionic acid obtained from glycerol fermentations in which ^{13}C is used to "trace" CO_2 is converted into α -bromopropionic acid and then (AgOH) into lactic acid which is oxidised (KMnO_4) to CO_2 and acetaldehyde. All the ^{13}C was found in the CO_2 moiety (cf. preceding abstract). J. L. D.

Control and prevention of common contagious diseases. W. F. Burdick (*Med. Ann. Columbia*, 1938, 7, 81—85).—A review. E. M. J.

Prevention of common communicable diseases. P. W. Gard (*Med. Ann. Columbia*, 1938, 7, 279—285).—A review. E. M. J.

Anthrax in shaving brushes. R. V. Stone (*J. Lab. clin. Med.*, 1941, 26, 1032—1033).—Breaking open the handles of bristle or hair brushes, removal of the handle binder from the hairs, and subsection of this portion of the hair to cultural and animal procedures for the demonstration of anthrax, yielded a positive result of 1 of 9 used shaving brushes of Japanese manufacture. C. J. C. B.

Current problems in diphtheria. E. Seligmann (*N.Y. Sta. J. Med.*, 1941, 41, 136—142).—A review. E. M. J.

Infrequency of diphtheria toxoid reactions in school children. J. H. Landes (*N.Y. Sta. J. Med.*, 1940, 40, 1594—1598).—Less than 0.3% of the 6822 children receiving a supplementary injection of 1 c.c. of diphtheria toxoid and less than 0.4% of 4504 children freshly immunised by two injections of 0.25 and 1 c.c. 2 weeks apart developed reactions ranging from mild to severe in character. E. M. J.

Results of Schick test in children one to ten years after injections of toxoid. B. Benjamin, G. Fleming, and M. A. Ross (*Amer. J. Dis. Child.*, 1940, 60, 1304—1312).—Positive Schick reactions were observed in 14.9% of 325 children who were tested 5—11 years after the third dose of diphtheria toxoid, or twice the % of positive reactions observed 4—5 years after the 3rd dose of toxoid. In none of the children did the Schick reactions revert from negative to positive in less than 2 years after the 3rd dose. The Schick reactions of 8.4% of the children reverted from negative to positive in 2—10 years. Diphtheria toxoid administered to infants 6 months old achieved immunisation which, gauged by the Schick test, is as lasting as that produced in older children. C. J. C. B.

Familial susceptibility to leprosy. W. L. Aycock (*Amer. J. med. Sci.*, 1941, 201, 450—465).—A review. C. J. C. B.

Bacteriological observations on pneumonia. M. M. Bracken (*Amer. J. med. Sci.*, 1941, 201, 340c—347).—During the 5 years 1935—1940, there has been a marked variation in the bacteriology of pneumonia patients in this series of 842 consecutive cases. In addition to *Dip. pneumoniae*, *Strep. pyogenes*, *Staph. aureus*, and *H. influenzae* have played a major rôle. *Dip. pneumoniae* type II varied greatly in incidence during this period, and assumed almost epidemic proportions in 1937—38; this type showed greater invasiveness of the blood than any other type. C. J. C. B.

Pneumococcal pneumonia. F. J. Moore, R. E. Thomas, M. Kistler, R. M. Ireland, and V. E. Hallstone (*Arch. intern. Med.*, 1940, 66, 1290—1316).—The character of pneumonia caused by various types of pneumococci, the complications, and prognosis are analysed statistically from records of 1469 patients. C. A. K.

Pneumococcal pneumonia. F. J. Moore, B. O. Raulston, R. E. Thomas, J. F. Maguire, and G. K. Ridge (*Arch. intern. Med.*, 1940, 66, 1317—1330).—The outcome and character of pneumonia in the presence of concomitant diseases are analysed statistically from records of 1469 patients (see preceding abstract). C. A. K.

Tetanus prophylaxis and circulating antitoxin. D. M. Marvell and H. J. Parish (*Brit. Med. J.*, 1940, II, 891—895).—2 doses of tetanus toxoid at an interval of 6 weeks induce effective amounts of circulating antitoxin, more in women than in men. A longer interval is more effective and a third injection after 7—9 months produces a marked increase of antitoxin. C. A. K.

Influence of partial obstruction of the nose on pulmonary tuberculosis. J. Hayakawa (*J. Orient. Med.*, 1938, 29, 214).

—Tubercles were larger and more numerous than in controls and caseation was very pronounced. M. K.

Bacillary excretion in experimental tuberculosis of rabbits. Y. Tsuge (*J. Orient. Med.*, 1938, 29, 177—184).—Human or bovine tubercle bacilli injected into the ear vein of 6 rabbits were found in the albumin-free urine of these animals. There were no histological changes in the kidneys, examined 5 hr. after injection. M. K.

Excretion of tubercle bacilli in glomerulonephritis. Y. Tsuge (*J. Orient. Med.*, 1938, 29, 185—188).—Permeability for tubercle bacilli was increased in kidneys with toxic glomerulonephritis. Morphological and pathogenic properties of excreted tubercle bacilli remained unchanged. M. K.

Chemistry of lipins of tubercle bacilli. LXIII. Fatty acids in phosphatide prepared from cell residues from tuberculin. R. L. Peck and R. J. Anderson (*J. Biol. Chem.*, 1941, 138, 135—140; cf. A., 1940, III, 613).—The solid saturated acids consist mainly of palmitic, with traces of stearic and mycolic acid. The principal liquid unsaturated acid is oleic whilst the liquid saturated acids consist mainly of tuberculostearic acid with small amounts of higher branched-chain dextrorotatory acids. No pure phthioic acid was found. J. N. A.

Bacteriological culture of bone marrow in typhoid fever. M. S. Sacks and F. W. Hachtel (*J. Lab. clin. Med.*, 1941, 26, 1024—1029).—Bacteriological culture of sternal marrow obtained by needle puncture on the 14th, 19th, and 21st days of the illness in 3 cases of typhoid fever was uniformly positive. C. J. C. B.

Inactivation of causative agent of fowl leukosis by X-rays. L. Doljanski, G. Goldhaber, and M. Pikovski (*Nature*, 1941, 147, 481).—Citratized blood from an animal at the height of infection (haemocytoblastosis, strain T Engelbroth-Holm) was irradiated on a slide and then diluted with Ringer's solution for inoculation. The X-ray tube with Cu anode (operated at 35 kv. and 30 ma.) gave 105,000 r. per min. at the distance used. A dose of 4 million r. destroys the virus with certainty, 3 million r. uncertain, and 2 million r. has no effect. E. R. S.

Human immune globulin in modification and prevention of measles. H. W. Lyall and P. P. Murdick (*N.Y. Sta. J. Med.*, 1941, 41, 452—454).—Of 457 children in private practice reported as having had close or casual exposure to measles and treated with 1—6 c.c. of placental globulin solution 93% either had a mild attack or were protected against it, in comparison with 78% of 201 children in institutions. The most susceptible age group was that between 1 and 3 years. Greatest protection was obtained in those injected within 2 days of exposure. E. M. J.

Convalescent urine for measles. M. Krebs (*Mtschr. Kinderheilk.*, 1940, 82, 1—8).—Convalescent serum was given in small enemas to 25 children exposed to infection with measles. Two did not get measles, in 11 it appeared in a mitigated form. The enemas were given once daily on 9th—10th day of incubation or twice daily after appearance of the rash until defecation. Autogenous urine enemas were the most effective. M. K.

Cotton rats and white mice in poliomyelitis research. C. Armstrong (*Amer. J. Publ. Health*, 1941, 31, 228—232).—The animals are insusceptible to unadapted strains but uniformly susceptible to the adapted Lansing strain of virus, which must be inoculated by direct implantation in the central nervous system, after which they are immune. Mice are recommended for determining the virus-neutralising properties of human sera. H. G. R.

Determination of some amino-acids in tobacco mosaic virus protein. A. F. Ross (*J. Biol. Chem.*, 1941, 138, 741—749).—Tobacco mosaic virus protein isolated chemically or ultracentrifugally contains tyrosine 3.9%, tryptophan 4.5%, proline 4.7%, arginine 9.0%, phenylalanine 6.7%, serine 6.4%, and threonine approx. 5.3%. No glycine or histidine was found. E. M. W.

Allergy. F. M. Rackemann (*Arch. intern. Med.*, 1941, 67, 207—234).—A review of the literature for 1940. C. A. K.

XXVI.—PLANT PHYSIOLOGY.

Vernalisation of rice. V. V. Skriptschinski (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 29, 425—428).—Germinated rice

seeds vernalised for 15 days at temp. up to 22° developed panicles no sooner than did controls. Effects were similar whether a 10-hr. or longer day period was used. Even when the daily temp. was higher only one of many varieties tested benefited by vernalisation. J. L. D.

Vernalisation of Marquis wheat and other spring cereals. D. J. Wort (*Bot. Gaz.*, 1939, 101, 457—481).—Responses of wheat to vernalisation are examined. With progress in vernalisation the growing point of the embryo becomes less able to reduce FeCl_3 and the isoelectric point of embryo tissues changes from p_H 5.32 to 4.88. A micro-technique for following this change is described. A. G. P.

Vernalisation and photoperiodic induction. I. Perennial rye-grass (*Lolium perenne*). D. Cairns (*New Zealand J. Sci. Tech.*, 1940, 22, a, 86—96).—Vernalisation of *L. perenne* increased the yield of green matter up to 63% according to the period of treatment. With prolongation of treatment the no. of plants reaching maturity diminished. Short treatments tended to prolong the vegetative period. Short photoperiodic induction conditions (6 hr. daily) depressed dry matter yields. A. G. P.

Photoperiodic responses of several varieties of soya beans. H. A. Borthwick and M. W. Parker (*Bot. Gaz.*, 1939, 101, 341—365).—The influence of the length of photoperiod on flower-bud initiation, seed production, and on the N and carbohydrate contents of 8 varieties of soya beans is examined. A. G. P.

Effect of day length on cambial growth. G. M. Psarev and N. F. Neuman (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 29, 497—499).—Short photoperiods greatly increase the activity of cambial growth in soya bean. E. M. W.

Natural conditions reproduced in a chamber for studying gas metabolism in plants. A. E. Votschal (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 29, 500—503).—The apparatus described has a closed air current of variable speed for controlling temp. and an independent slow current for analysis. The influence of R.H., temp., wind, and light on spring wheat has been studied by this means. E. M. W.

Modification of diurnal transpiration in wheat by infections of *Puccinia triticina*. C. O. Johnston and E. C. Miller (*J. Agric. Res.*, 1940, 61, 427—444).—The transpiration of rusted plants of susceptible varieties exceeded that of normal controls, differences being most marked during the night. High nocturnal transpiration in rusted plants resulted partly from ruptures in the cuticle caused by uredia and partly by transpiration of the fungus itself. A. G. P.

Influence of awns on rate of transpiration from heads of wheat. H. G. Gauch and E. C. Miller (*J. Agric. Res.*, 1940, 61, 445—458).—Wheat heads from which awns were removed lost considerably less water by transpiration than did controls. The form of transpiration curves was the same in both cases, showing max. at flowering and at the approach of maturity. A. G. P.

Continuous determination of rate of transpiration in plants. A. E. Votschal (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 29, 422—424).—The apparatus and method are described. J. L. D.

Pectic substances in sugar beetroot. T. K. Gaponenkov (*Kolloid. Shurn.*, 1940, 6, 541—544).—The % of pectin in beetroot is small in the beginning of the season, rises, and for 2—3 months remains const. at about 20% on watered fields, and at about 25% without watering. The ratio of water-sol. to water-insol. pectin is high in young beetroot and very low in ripe ones; watering reduces it. The amount of substances which are pptd. from normal juice by alcohol and ether decreases in the course of growth; it is lowered by watering. The amount of "bound" water increases during the growth and is higher for unwatered beetroot; accumulation of hydrophilic colloids is used by the plant to fight drought. J. J. B.

Heavy oxygen (^{18}O) as a tracer in the study of photosynthesis. S. Ruben, M. Randall, M. Kamen, and J. L. Hyde (*J. Amer. Chem. Soc.*, 1941, 63, 877—879).—In the photosynthetic process by *Chlorella*, $\text{CO}_2 + \text{H}_2\text{O} + h\nu \rightarrow \text{O}_2 + \frac{1}{n}(\text{CH}_2\text{O})_n$, it has been shown by using ^{18}O that the O_2 comes from the H_2O rather than from the CO_2 . There are no indications of exchange reactions involving O_2 . W. R. A.

Effects of temperature, calcium, and arsenious acid on seedlings of *Poa pratensis*. A. W. Naylor (*Bot. Gaz.*, 1939, 101, 366—379).—Germination of seeds in sand containing much CaCO_3 (p_H 8.0) occurred about a week later than in that of p_H 5.6 (CaCO_3 -free). In the high-Ca culture growth and metabolic rates were the greater at all temp. Root growth of seedlings was affected more by temp. than by CaCO_3 . H_3AsO_3 in small concns. favoured, but in larger proportions retarded, germination and growth. Treatment with 0.1% H_3AsO_3 killed seeds and seedlings. The As concn. necessary to kill leaves is less than that necessary to kill the growing points of stems. H_3AsO_3 is more toxic to seeds of *P. pratensis* than to those of other grasses. A. G. P.

Rôle of molybdenum in development of plants. E. V. Bobko and A. G. Savvina (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 29, 507—509).—Mo added to water cultures of peas in concns. of 0.01—0.1 mg. per kg. produces an increase in yield; slight increases are observed in sand culture and none in soil. Nodule development is stimulated in all cases. E. M. W.

Effect of potassium and nitrogen supply on the carbohydrate metabolism of the Kok-sagyz plant. A. Kalinkevitch (*Biokhimiya*, 1939, 4, 381—391).—The carbohydrate contents of the leaves and roots of the plant vary with the stage of development. At the flowering season, transfer of carbohydrate from leaves to reproductive organs occurs and after the fruit has appeared, transfer to the roots occurs. Towards the end of the vegetation period, sol. carbohydrates and inulin are stored in the roots. Increase in N supply to the plant leads to increased content of reducing sugars and increased K supply to increased total sugar (especially sucrose). If there is lack of N or increase of K at the end of the vegetation period, sugar transfer from leaves to roots occurs. Increased K supply stimulates photosynthesis. W. McC.

Phytotoxic tests with raw and heated mother's milk in *Lupinus albus*. H. Uflacker (*Msch. Kinderheilk.*, 1939, 80, 372—374).—Growth of embryo germs of *L. albus* is inhibited by addition of raw or sterilised (15 min.) human milk to Shive solution (1:100). In 8 of 10 tests the sterilised milk had a stronger inhibitory action than raw milk. M. K.

Relation of vitamin- B_1 to growth of green plants. J. Bonner and J. Greene (*Bot. Gaz.*, 1939, 101, 491—500).—Addition of vitamin- B_1 to the nutrient used for sand-cultured plants resulted in increased rates of dry matter accumulation in certain species, the effect persisting over 1 year. Other species (tomato, pea) which do not show a growth response to $-B_1$ accumulated relatively large proportions of $-B_1$ in the leaves. The amount of $-B_1$ synthesised in leaves of individual species probably controls the response of that species to the vitamin. A. G. P.

Evidence for auxin production in isolated roots growing in vitro. J. van Overbeek (*Bot. Gaz.*, 1939, 101, 450—456).—Auxin is produced in isolated pea roots cultivated under sterile conditions. A. G. P.

Growth effects of aneurin hydrochloride, ascorbic acid, and phytohormones on belladonna and *Ricinus*. L. C. Zopf (*J. Amer. Pharm. Assoc.*, 1940, 29, 487—497).—Dust treatment of *Atropa belladonna* or *R. communis* with α -naphthyl- or indolyl-acetic acid, with or without vitamin- B_1 and -C, affects germination and growth, the degree of beneficial or injurious action depending on the concn. of stimulant and on the age and species of the plant. The toxicity of the phytohormones is reduced by $-B_1$ and -C, whilst the effect of $-B_1$ and -C appears to be more than a mere additive stimulus to that of the hormones. Addition of aq. photosensitiser (eosin prep.) to soil containing $-B_1$ and -C increases the top growth of the plant. F. O. H.

Comparison of growth responses induced in plants by naphthylacetamide and naphthylacetic acid. J. W. Mitchell and W. S. Stewart (*Bot. Gaz.*, 1939, 101, 410—427).—Positive and negative curvatures in seedling stems and *Avena* coleoptiles, according to the manner of application and concn. used, were obtained by treatment with naphthyl-acetic acid and -acetamide. Both compounds, when sprayed in fairly high concns. on to bean plants, inhibited terminal bud development and expansion of primary leaves. The amide but not the acid stimulated root growth. Terminal application of the growth substances to decapitated beans or

lateral application on stems effected mobilisation of solid constituents in treated regions, the amide causing secondary thickening and the acid cellular proliferation. A. G. P.

Growth-substances and gametic reproduction by *Phyco-mycetes*. W. J. Robbins (*Bot. Gaz.*, 1939, 101, 428—449).—At 25° the intensity of gametic reproduction in *P. blakes-leanus* on glucose-asparagine-minerals-aneurin-agar was influenced by the distance between inocula, the concn. of agar, the amounts of asparagine and carbohydrate, and by addition of plant extracts. Beneficial substances in agar were sol. in methyl alcohol and aq. pyridine. Plant extracts tended to counteract the adverse effect of large proportions of asparagine. Growth-substances other than aneurin are probably concerned in the gametic reproduction of the organism. A. G. P.

Correspondence between the effects of acenaphthene in plants and of carcinogenic compounds on animal tissues. A. Shmuk, A. Guseva, and G. Iljin (*Biochimia*, 1939, 4, 470—482).—Acenaphthene diminishes the respiration of wheat sprouts, profoundly alters their chemical composition, increases the rate of glycolytic production of lactic acid in them, and causes increase in the acidity of the cell sap. Alterations resembling malignant tumours are produced. Derivatives of acenaphthene act similarly, their effects depending on the position and character of the groups introduced into the mol. In general, the changes produced correspond with those brought about in animals by carcinogenic compounds. W. McC.

Rooting and growth of leafy stem cuttings stimulated by heteroauxin. L. F. Pravin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 29, 494—496).—Heteroauxin stimulates root formation in cuttings of oleander but not of other plants tested. The further growth of the oleander cuttings is not affected. E. M. W.

Analogues of traumatic acid.—See A., 1941, II, 184.

Action of ultrasonic waves on sugar beet seed. G. K. Davidov (*Compt. rend. Acad. Sci., U.R.S.S.*, 1940, 29, 491—493).—Plants grown from seeds of sugar beet subjected to ultrasonic waves for 2—4 min. give higher yields of root, leaf, and sugar than do controls. With increasing time of exposure the yield falls again. E. M. W.

Phytotoxic reactions of some blood sera. D. I. Macht and M. B. Macht (*J. Lab. clin. Med.*, 1941, 26, 597—614; cf. A., 1939, III, 341).—A biometric analysis of data obtained with various human sera illustrates the reliability of the phyto-pharmacological test and the significance of results secured by this means. C. J. C. B.

XXVII.—PLANT CONSTITUENTS.

Boron content of plants. E. V. Bobko (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 29, 510—513).—The B content of various plants is recorded. That of spring wheat varies from 3.7 to 10.2 mg. per kg. according to conditions of growth. The yield of millet is increased by addition of B to the soil. E. M. W.

Phytochemistry and histology of *Purshia tridentata* (Pursh). D. C. C. V. Netz, C. H. Rogers, and G. L. Jenkins (*J. Amer. Pharm. Assoc.*, 1940, 29, 480—485).—The plant material (ash 3.12, water 6.91, tannin 6.55, protein 8.37, pectin 1.28%) contains a fixed oil or aromatic acid (yielding an org. acid, m.p. 38.0°), reducing substances and carbohydrates (including galactose), fatty material (yielding an org. acid, m.p. 41.5°), a fraction (acid val. 50.9, sap. val. 151.3, ester val. 100.4; org. acids, m.p. 51.0 and 42.4°, and an α -naphthylurethane derivative, m.p. 296.8° were separated) sol. in light petroleum, and a vac. distillate affording an org. acid (*p*-bromophenacyl bromide ester, m.p. 69.0°). The ether-sol. fraction of an alcoholic extract yielded org. acids of m.p. 137—144°, 186.6° (ethyl ester, m.p. 152.4°), 196—201° (*p*-bromophenacyl bromide ester, m.p. 151—171°), and 54.7°. No alkaloids or glucosides were present. The pharmacological properties of extracts and decoctions of the plant appear to be due to the content of tannin, pectin, and mucilage. F. O. H.

Chemical constituents of cottonseed hulls. Partial separation by non-chemical methods. M. A. Smith and C. B. Purves (*Ind. Eng. Chem. [Anal.]*, 1941, 13, 157—159).—Crushed hulls, extracted with alcohol-benzene, are ground in a ball mill and the less fibrous portion is separated by sieves and

by sedimentation from water into coarse and fine fractions. The original hulls contain 27, 6.5, and 25%, whilst the fine and coarse fractions contained 3, 9, and 50%, and 40, 6, and 24%, respectively of pentosan, uronic anhydride, and lignin. The detailed results are in agreement with the hypothesis that pentosan and lignin are present as separate chemical complexes, both of which include uronic anhydride. J. D. R.

Composition of the fatty oil from *Carya cordifolia* nuts. J. L. Riebsomer, R. Larson, and L. Bishman (*J. Amer. Chem. Soc.*, 1940, 62, 3065—3066).—The oil from these nuts, d_{20}^{25} 0.9319, n_D^{20} 1.4712, I vol. (Hanus) 77.5, sap. val. 189.1, acetyl val. 37.2, acid val. 10.5, unsaponifiable matter 0.67%, yields oleic (86.0), palmitic (6.4), and stearic acid (5.4%), but no other acids. R. S. C.

Chemical composition of "I-mu-tsao." T. H. Tang and C. W. Hsu (*J. Chinese Chem. Soc.*, 1940, 7, 105—110).—The ethyl alcoholic extract of I-mu-tsao (leaves of *Leonorus sibiricus*, L., violet-blue variety) contains leonuridin, a phytosterol, m.p. 124—125°, and lauric, oleic, β -linoleic, and linolenic acids. A. Li.

Orthosiphon *stamineus*, Benth. T. H. Tang and C. W. Hsu (*J. Chinese Chem. Soc.*, 1940, 7, 111—116).—The ethyl alcoholic extract of the leaves of *O. stamineus* (from Java) contains sitosterol, oleic, α - and β -linoleic, and linolenic acids, traces of steric acids, a hexose, a pentose, an alkaloid, and a cryst. substance volatile in steam, m.p. 59°. A haemolytic test on the methyl alcoholic extract shows the presence of saponin. A. Li.

Volatile acids of *Viburnum* stem and root barks. I. W. Grote and C. Colburn (*J. Amer. Pharm. Assoc.*, 1940, 29, 485—487).—After acid hydrolysis, the root bark of *V. prunifolium* yields 20% more total volatile acid than does the stem bark. The increased yield is represented by all the typical acids present rather than by the higher acids, e.g., valeric. F. O. H.

Determination of some amino-acids in maize grain. D. M. Doty (*Ind. Eng. Chem. [Anal.]*, 1941, 13, 169—172).—The air-dried ground grain is extracted with ether, the starch is gelatinised, the residue incubated with saliva, and the total $\text{NH}_3\text{-N}$ determined by Kjeldahl's method using HCl. The aq. solution of the residue, after distillation of the NH_3 , is divided into portions for individual determinations. Cystine and cysteine are determined colorimetrically with NaHSO_3 and phospho-18-tungstic acid using a KWSZ photometer. Since cystine and cysteine with NaHSO_3 develop the same amount of colour (mol. for mol.) and cysteine develops half as much colour in the absence of NaHSO_3 as in its presence, both may be determined with a calibration curve. In another portion the basic amino-acids are pptd. with phosphotungstic acid and regenerated with Ba(OH)_2 . Histidine is determined colorimetrically by adding Br-acetic acid, followed by aq. $\text{NH}_3\text{-(NH}_4)_2\text{CO}_3$, and arginine by addition of α -naphthol in NaOH followed by NaOBr, both with reference to calibration curves. A sample of maize is hydrolysed with alkali and tyrosine determined colorimetrically using Millon's reagent, and tryptophan by the colour developed with *p*-dimethyl-aminobenzaldehyde. J. D. R.

Microscopic structure of the cotton fibre. C. W. Hock, R. C. Ramsay, and M. Harris (*J. Res. Nat. Bur. Stand.*, 1941, 26, 93—104).—The secondary wall, forming the bulk of the cotton fibre, comprises spirally oriented cellulose fibrils, enclosed in a winding formed spirally in the reverse direction. The directions of both fibrils and winding reverse at frequent intervals along the axis of the fibre, the points of reversal being coincident. The secondary wall is enclosed in a thin primary wall composed of crossed cellulose strands embedded in a membrane containing wax and pectic material. The lumen also contains wax and pectic material together with degenerated protoplasm. On treatment with $\text{Cu(OH)}_2\text{-NH}_3$ reagent immature fibres swell relatively little, and the wax and pectic substance retain the tubular shape of the primary wall, but older fibres swell abruptly, causing breaking of the primary wall in many places and the formation of "balloons." This irregular swelling seems to depend on the orientation of the fibrils and on the constricting influences of the winding of the primary wall. Treatment of the fibre with the Cu reagent diluted with conc. aq. NH_3 shows a lamellate structure in the secondary wall, the no. of lamellae increasing with increasing age of the fibre. J. W. S.

Composition of cotton-seeds. IV. Lipase of germinated seed. H. S. Olcott and T. D. Fontaine (*J. Amer. Chem. Soc.*, 1941, **63**, 825—827; cf. B., 1940, 745).—Dormant cotton-seeds contain no lipase. Lipolytic activity (triacetin, tributyrin, benzyl isobutyrate) develops during germination, whilst the content of total lipins decreases and that of free fatty acids increases. The lipase is active at pH 6—9 (optimum 7—8). $CaCl_2$ or $(NaPO_3)_6$ activates the enzyme, but hexyl-resorcinol, $NaCN$, and cysteine are without effect. The solid prep. loses 30% of its activity in 4 months at 0° . An extract (pH 8.8 or 87% glycerol) is stable. R. S. C.

Improved isolation of eriodictyol and homoeriodictyol. T. A. Geissman (*J. Amer. Chem. Soc.*, 1940, **62**, 3258—3259).—Prep. of eriodictyol, m.p. variable, 262° to 267° (immediate) (decomp.), and homoeriodictyol from *Eriodictyon californicum* is improved. R. S. C.

Isolation of a new phytosterol: campesterol.—See A., 1941, II, 194.

Anthochlor pigments. Pigment of *Coreopsis Douglasii*. T. A. Geissman (*J. Amer. Chem. Soc.*, 1941, **63**, 656—658).—The anthochlor pigment of *C. douglasii* is butein, the synthesis of which is modified. The method of isolation precludes its formation by hydrolysis of butin. Anthochlor pigments are probably all polyhydroxychalcones. R. S. C.

Alkaloids of Chinese Hanfongchi. Hanfongchine-C.—See A., 1941, II, 177.

Coumagine from bark of *Erythrophleum coumanga*.—See A., 1941, II, 206.

Detection of quinine and cinchonine.—See A., 1941, II, 208.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Clinical laboratory photography. New method of preparing photomicrographs. W. J. Tomlinson (*J. Lab. clin. Med.*, 1941, **26**, 1064—1065). C. J. C. B.

Importance of temperature for colorimetric determinations. L. Pincussen (*J. Lab. clin. Med.*, 1941, **26**, 1062—1063).—Colour changes due to differences in temp. between the test solutions and standard in colorimeter cups are described. C. J. C. B.

Apparatus for extraction of lipins from liquids and solids, with further applications to the fractionation of faecal fat. I. A. Kaye, I. W. Leibner, and A. E. Sobel (*J. Biol. Chem.*, 1941, **138**, 643—649; cf. A., 1940, III, 274).—The apparatus has Hg-sealed joints and can be used in a vac. or with inert gas. Quinol is suggested as an antioxidant for isopropyl ether to prevent peroxide formation. R. L. E.

Quantitative aspects of biological assay. C. I. Bliss (*J. Amer. Pharm. Assoc.*, 1940, **29**, 465—475).—A general discussion on the accuracy obtained in biological assay methods is exemplified by data (by various workers) for insulin, ouabain, and diphtheria antitoxin. Characteristics of satisfactory assay procedures are outlined. F. O. H.

Elimination of acetoacetic acid in the determination of pyruvic acid by Lu's method. S. Elgart and N. Nelson (*J. Biol. Chem.*, 1941, **138**, 443—444; cf. A., 1939, III, 540).—Acetoacetic acid is removed by heating with HCl prior to the treatment with 2:4-dinitrophenylhydrazine. R. L. E.

Colorimetric determination of lactic acid in biological material. S. B. Barker and W. H. Summerson (*J. Biol. Chem.*, 1941, **138**, 535—554).—Lactic acid in deproteinised material is converted into acetaldehyde by conc. H_2SO_4 and is then determined by the colour reaction with p -hydroxydiphenyl in presence of Cu^{++} , the colour being read in a photoelectric colorimeter with a filter with peak transmission at 560 $m\mu$. The method is highly sp. if a Cu-Ca separation is included and is sensitive to 0.1 μg . in 5—10 μg . of lactic acid per c.c. Electrometric data indicate that colour development depends on the establishment of an oxidation-reduction equilibrium (in presence of Cu and Fe ions for optimal conditions) and the relationship between colour development and e.m.f. against a Pt electrode in presence of these ions has been studied. H. G. R.

Micro-method for the determination of glycocyamine in biological fluids and tissue extracts. J. W. Dubnoff and H. Borsook (*J. Biol. Chem.*, 1941, **138**, 381—388; cf. A., 1938,

III, 454).—Arginine is removed by permutit adsorption, the permutit being washed with PO_4^{---} buffer or aq. NaCl to remove adsorbed glycocyamine. The Sakaguchi method is then used to determine glycocyamine. R. L. E.

Determination of glycogen in oysters. H. N. Calderwood and A. R. Armstrong (*J. Assoc. Off. Agric. Chem.*, 1941, **24**, 154—165).—The A.O.A.C. (1935) method is advantageously replaced by one in which the tissue (5—10 g.) is digested with 30% NaOH (CO_2 -free) at $80^\circ \pm 10^\circ$ for 30 min. The resulting liquid is pptd. by alcohol (final concn. about 50%) and the ppt. is separated by filtration, washed with 66% alcohol, dissolved in hot water, and hydrolysed by HCl (12.5 ml. of conc. HCl, d not less than 1.185, per 175 ml.) at 92° , glucose being determined in the hydrolysate by any of the accepted methods. F. O. H.

Applications of periodic acid to the study of the hydroxy-amino-acids of protein hydrolysis.—See 1941, II, 179.

Determination of threonine by periodate.—See A., 1941, II, 208.

Simplification of the Petering-Wolman-Hibberd method for determination of chlorophyll and carotene.—See A., 1941, II, 208.

Changes in official and tentative methods of analysis (*J. Assoc. Off. Agric. Chem.*, 1941, **24, 66—101).**—Numerous modifications are detailed, including determination of acid-sol. Ca in mixed fertilisers, Cu (volumetrically), Zn (gravimetrically as ZnO and colorimetrically by dithione method), acid-sol. Mn ($NaBiO_3$ method), tannin in distilled liquors, chocolate constituents, caseinogen in dairy products, pasteurisation of milk (phosphatase test), urea, NH_3 -N, and carotene in grain and stock feeds, saccharin in beverages and foods, ash in condiments, vitamin-K (biological assay depending on determination of the effect of the prep. on clotting time in chicks compared with that due to 2-methyl-1:4-naphthoquinone), riboflavin in yeast and dried skim milk (method depending on use of *Lactobacillus casei* ϵ ; fluorometric determination), pyrimidine, phenacetin, and caffeine in their mixtures, eserine salicylate, (detection of) eserine, dilaudid, sulphapyridine, and Na-sulphapyridine, free I and KI in I ointment, microbiological examination of frozen egg products, (prep. of) culture media for examination of canned fruits etc., N (modified Parnas-Wagner micro-Kjeldahl apparatus described), and (prep. and standardisation of) standard As_2O_3 , I, and $AgNO_3$ solutions. F. O. H.

Spectrochemical determination of bismuth in biological material. L. T. Steadman and H. E. Thompson, jun. (*J. Biol. Chem.*, 1941, **138**, 611—617).—Bi is pptd. with H_2S after ashing and determined spectrographically, using Zn as internal standard, with a standard error of $\pm 16\%$. R. L. E.

XXIX.—NEW BOOKS.

Clinique et Physiopathologie des Maladies Coeliaques. [Clinical Physiology and Pathology of Coeliac Disease.] R. Dubois (Masson & Cie., Paris, 1939, 349 pp.).—After reviewing the literature the author describes in detail the case histories of 4 children with coeliac disease and 2 adults with non-tropical sprue. Studies on the alimentary tract show that there is a loss of fats, water, and minerals from this source; disorders of digestive secretion or of intestinal function leading to accelerated passage of food through it are not sufficiently const. or great to account for the lack of absorption. Protein metabolism and absorption are normal but there is selective lack of absorption of lipins, glucose, galactose, and possibly of lactoflavin. Disorders of water, Ca, and P metabolism and vitamin deficiencies were variable and secondary. In the acute stages of the disease the urine was hyperacid and there was latent acidosis due to lack of base and buffering substances. These symptoms disappeared during amelioration of the condition caused by dietetic treatment. Similar disorders of absorption may be caused experimentally by poisons such as iodoacetic acid, by adrenalectomy, and by vitamin- B_{12} deficiency. The last-named is considered the most likely cause of the human condition. Details of the dietary treatment are given. The book is illustrated with photo- and radio-graphs. P. C. W.